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PERTANIKA JOURNAL OF SOCIAL SCIENCES & HUMANITIES

About the Journal

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Pertanika Journal of Social Science & Humanities is a **quarterly** (*March*, *June*, *September*, *and December*) periodical that considers for publication original articles as per its scope. The journal publishes in **English** as well as in **Bahasa Malaysia** and it is open for submission by authors from all over the world.

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without exception, reviewers' comments (to the authors) are forwarded to the authors. If a revision is indicated, the editor provides guidelines to the authors for attending to the reviewers' suggestions and perhaps additional advice about revising the manuscript.

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Foreword

Welcome to the second issue of 2022 for the Pertanika Journal of Social Sciences and Humanities (PJSSH)!

PJSSH is an open-access journal for studies in Social Sciences and Humianities published by Universiti Putra Malaysia Press. It is independently owned and managed by the university for the benefit of the world-wide science community.

This issue contains 25 articles; two review articles and the rest are regular articles. The authors of these articles come from different countries namely India, Indonesia, Japan, Malaysia, Nepal, Oman, Philippines, Russia, Sri Lanka, Thailand, Turkey and United Arab Emirates.

A selected article from the scope of consumer and family economics, titled "Going Green at the Workplace: Through the Lens of the Extended Theory of Planned Behaviour" aimed to examine the determinants of green workplace behaviour in the Malaysian governmental work settings. Green workplace behavioural intention is predicted by attitude towards green workplace behaviour, colleagues' green workplace behaviour, supervisor's green workplace behaviour, and perceived behavioural control. Details of this study are available on page 419.

Tharshini Sivabalan and colleagues had researched a very important and necessary study to identify mate crime victimisation among people with disabilities in Sarawak, Malaysia, in their article entitled "Mate Crime Victimisation Against People with Disabilities: An Exploratory Study in Sarawak, Malaysia". The study proved that multiple-level approaches should be implemented for optimal reporting and investigating mate crime victimisation among people with disabilities, especially in Malaysia. Further details of the study can be found on page 501.

A regular article titled "An Extended Decision-Making Model of Coastal Recreational Area Use During the COVID-19 through Goal-directed Behavior and Perceived Benefits Framework" sought to investigate the behavioural intention of the decision-making approach of the visitors of coastal recreational areas to deal with the COVID-19

pandemic focusing on Izmir province. This study is significant to the growing literature on decision-making processes of the uses of recreational areas and enables focusing on the importance of the areas. The detailed information of this article is presented on page 541.

We anticipate that you will find the evidence presented in this issue to be intriguing, thought-provoking and useful in reaching new milestones in your own research. Please recommend the journal to your colleagues and students to make this endeavour meaningful.

All the papers published in this edition underwent Pertanika's stringent peer-review process involving a minimum of two reviewers comprising internal as well as external referees. This was to ensure that the quality of the papers justified the high ranking of the journal, which is renowned as a heavily-cited journal not only by authors and researchers in Malaysia but by those in other countries around the world as well.

We would also like to express our gratitude to all the contributors, namely the authors, reviewers, Editor-in-Chief and Editorial Board Members of PJSSH, who have made this issue possible.

PJSSH is currently accepting manuscripts for upcoming issues based on original qualitative or quantitative research that opens new areas of inquiry and investigation.

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Thailand's Balancing Behavior, 1947–1991: Some Empirical Evidence

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ABSTRACT

This study examines the determinants that shaped the balancing behavior of Thailand from 1947 to 1991 by testing hypotheses developed from arguments on three competing theories of balancing behavior, namely the systemic balance of power and balance of threat theories, as well as Martin's simple model of balancing behavior. We found that a combination of power, geographic distance, and perceived offensive intentions was the factor that prompted Thailand to balance against threatening states. The finding was found using quantitative data extracted from the Correlates of War (COW) Project and the Alliance Treaty Obligations and Provisions (ATOP) Project and those generated by Expected Utility Generation and Data Management Program (EUGene) software to test the hypotheses. The statistical evidence confirms the historical narrative of Thai diplomatic history: that is, Thailand did not try to balance against communist China, its giant neighbor, but rather against Vietnam and Cambodia, which were perceived as essentially dangerous to the

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country's security and territorial integrity. In addition, we found that the major-power capability concentration of the Cold War international system had a mild effect on Thai behavior. However, it is difficult to generalize how such systemic attributes dictated directions in Thai foreign policy.

Keywords: Balancing behavior, security, Thai foreign policy, Thailand, threat

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INTRODUCTION

Historically, patterns in Thai foreign policy have been described by alignment flexibility, usually dubbed "bending-with-the-wind" behavior (Kislenko, 2002). Despite criticism, Thailand has observed a balanced position vis-à-vis major powers (Medeiros et al., 2008). However, its balancing act varied based on conditions at particular times, like bamboos that "bend with the wind and bow to the storm" (Dhiravegin, 1974, p. 48). Thailand's behavior has sometimes been metaphorized as a barometer of changes in the regional balance of power (see Phuangkasem, 1984).

Thailand's foreign policy appears to be a worthwhile case study in the scientific investigation of a foreign policy due to its uniqueness. It was marked by the country's fluid posture in aligning with the (emerging) nation with the strongest power projection in the relevant geography (mainland Southeast Asia). The policy is broadly referred to as behavioralism in international relations. focusing on regularities in the behavior of nation-states and their key determinants. However, many students of international relations in Thailand tend to believe that behavioralism is obsolete. As reflected in the state of the discipline, behavioral scientific research on Thai foreign policy has been scarce (Prasirtsuk, 2008). So it has in wider Thai political science scholarship (Sawasdee, 2016).

Among the rare exceptions are Phuangkasem (1980), who used social field theory to test hypotheses on Thailand's behavior, and Bunyavejchewin (2015), who applied expected utility theory to explain the Thai decision to wage war with Cambodia at the height of the Cold War. Thus, there remains a gap in the literature on Thailand's relations with the world. Filling that gap from behavioral perspectives with quantitative analytics has been a worthy aim of the present authors.

Prima facie, recent studies, mostly by the younger generation of Thai scholars, have appeared to make the international relations literature more diverse. Thai political science has been retooled toward post-positivist trends (Na Thalang et al., 2019). However, Lawlor (1996, p. 120) criticized post-positivism in policy analysis as "...a swamp of ambiguity, relativism, and self-doubt. The new argumentation... creates more problems for the policy analysis business...To paraphrase a famous Texas politician...This new argumentative dog can't hunt...." Apart from that, new research has employed various strands of social constructivism to make sense of Thailand's external policy (e.g., Busbarat, 2012; Charoenvattananukul, 2020; Yensabai, 2019). However, no recent studies quantify factors that shape directions in Thai foreign policy to the best of our knowledge.

A development that plausibly fills a missing link in research on Thailand's foreign policy is the application of statistics. By combining quantitative scientific evidence with the existing literature, we could achieve a synergy allowing us to understand Thailand's foreign policy better. More specifically, research on Thailand's balancing behavior deserves more attention.

Accordingly, this study examines Thailand's foreign policy behavior through the lens of behavioralism. We explain the balancing behavior of Thailand in the Cold War period (1947–1991) through statistical analyses using quantitative datasets. The questions this study explores are as follows:

- What or whom did Thailand balance against during the Cold War?
- How can we explain Thailand's balancing behavior in that period?
- What factors were at play?

We first summarize the main arguments derived from competing theories on balancing behavior used to generate hypotheses for this study. We then outline the research design and provide details of the predictor and outcome variables, data sources, and analysis methods. Next, we present the results of our analyses and discuss statistical evidence. Finally, we conclude with a summary of general explanations on the balancing behavior of Cold War Thailand and a note on the limitations of this study.

Theories on Balancing Behavior

We addressed the abovementioned questions by testing hypotheses derived from theories on balancing behavior, namely the systemic balance of power and balance of threat theories and the simple model of balancing behavior. Their central arguments are summarized below.

Systemic Balance of Power Theory. Balance of power theory is probably the most

widely applied analytical tool in studying politics among nations. Nevertheless, it has various explanatory versions—the most popular yet most problematic version is Waltz's (1979) systemic theory, often called neorealism. Neorealism— aiming to be a general theory at the systemic level narrowly explains long-term recurrent patterns of international outcomes. In a nutshell, the balance of power behavior among states is structurally induced by the anarchical structure of the international system. Given the systemic constraints facing states, they tend to balance each other to prevent any of them from growing sufficiently strong to become an unchecked hegemon and unilateral power (Waltz, 1979). A neorealist theory thus considers power a threat, as the self-help structure inherently implies that power imbalances are essentially dangerous (Martin, 2003).

In neorealism, "[t]he theory, like the story, of international politics is written in terms of the great powers of an era" (Waltz, 1979, p. 72). Thus, Waltz's explanation of systemic balance of power behavior was primarily concerned with the behavior of major powers rather than that of minor ones. He wrote:

Theories that apply to systems are written in terms of the systems' principal parts. It would be as ridiculous to construct a theory of international politics based on Malaysia and Costa Rica as it would be to construct an economic theory based on the minor firms in a sector of an economy. (Waltz, 1979, p. 72)

Applying the systemic balance of power theory to explain the behavior of minor power states is difficult. Despite this, some scholars have argued that Waltz's neorealist theory is applicable in explaining and predicting an individual state's behavior (e.g., Elman, 1996; Labs, 1992; Telbami, 2002). Nonetheless, as the theory was originally constructed as systemic and not as one of foreign policy, to use it at another level of analysis will inevitably attract the level-of-analysis problem (see Martin, 2003).

The argument becomes a tautology by positing systemic balancing prepositions in a state-level case study. For example, balancing is normal state behavior and can be predicted solely by a general law governing international politics. Nevertheless, as Waltz (1971, p. 471) contended, "structural constraints are barriers, but men can try to jump over them. Structure shapes and limits choices; it establishes behavioral tendencies without determining behavior." His words seem to leave room for the possibility that other factors may shape the behavior of states. It thus requires what Singer (1961) called an "act of translation," that is, theoretical adaptation.

Balance of Threat Theory. The balance of threat theory, proposed by Walt (1985, 1987, 1988), can be seen as a refinement of Waltz's (1979) systemic balance of power theory. While conceding that balancing is typical state behavior, Walt argued that states' balancing is not in response to relative power alone but rather to threats.

That is, states do not balance other power with increasing capabilities. Instead, they balance against a threatening one.

In the balance of threat theory, states' balancing behavior, especially alliance formation, is precipitated by imbalances of threat. One state or entente becomes dangerous to others because of its aggregate power, geographic proximity, offensive capability, and perceived aggressive intentions. Overall, other things being equal, the higher a state's *perceived* threat level, the higher the chance it will trigger a balancing response by others (Walt, 1988). The theory's hypotheses on the sources of threat are as follows. Ceteris paribus:

- The larger a state's total resources (e.g., population, economic-industrial capacity, military capability, and technological advancements), the greater a threat it can pose to others;
- The nearer a state is to others, the greater a threat it can pose to them;
- The larger a state's offensive capabilities, defined in terms of its capacity to threaten the territorial security of another state at a bearable cost, the greater a threat it can pose to others; and
- The more a state's intentions are viewed as dangerous and hostile, the greater a threat it can pose to others when compared to that of a state with perceived status-quo intent (Walt, 1987).

Unit-level variables are incorporated in Walt's explanation. However, relative power remains highly significant when states make decisions around alignment. The balance of threat theory still holds that the systemic structural pressures remain and prevail in influencing the behavior of states, and balancing is the norm. Regardless of the critiques, the crucial contribution of Walt's theory is to bring geography back into a contemporary realist explanation of balancing behavior. It allows realists to say more about state behavior than the standard Waltzian account, although there is no consensus on how geographic distance determines behavioral action (e.g., Mearsheimer, 2001; Parent & Rosato, 2015; Snyder, 1996; Taliaferro, 2000).

Arguably, geographic factors—above all else, location and distance—are immensely influential in shaping threat perceptions and policy responses. It is best exemplified through the notion of the loss-of-strength gradient (LSG), devised by Boulding (1962), which describes distance as a diminution of capability, and by extension, a state's ability for power projection declines with increasing distance. Thus, location and distance should be relative rather than absolute variations (Starr, 2005). The threat is a product of power and geography (see Jaewook, 2020; Parent & Rosato, 2015). It may explain why European powers have tended not to combine against the US (see Walt, 2002).

Thus, nearby states have a greater propensity to be concerned about situations in countries near them, particularly those with whom they share borders, rather than those far away (Chan, 2013). As proximity increases opportunities for interaction, their close distance risks their involvement in events, such as boundary skirmishes, probably instigating armed conflicts. The more neighbors a state shares borders with, the higher the chance it will be enmeshed in militarized disputes (Starr & Most, 1976). As a result, the US, a major insular power surrounded by only two weaker neighbors, has fewer historical enemies than China and larger nations in Europe (Chan, 2013).

Besides geographic distance and barriers, recent works have postulated that the nature of power a state possesses affects other states' threat perceptions and the likelihood they will build up national armaments and combine against it. For example, Levy and Thompson (2005, 2010) articulated that land powers pose greater threats than sea powers. Accordingly, the former tends to be perceived as essentially dangerous and more likely to provoke balancing than the latter. It is seemingly true in the case of major powers, as they are more vulnerable to dangers from continental land states than powerful but distant maritime powers (Parent & Rosato, 2015).

Simple Model of Balancing Behavior.

The level-of-analysis problem has prevailed when systemic theories' balancing propositions are used to explain behavioral patterns of state actions at the unit level. Notwithstanding this, systemic theories, notably neorealism, and semi-systemic conceptions like Walt's balance of threat

theory, remain insightful in explaining state behavior; however, translation—converting systemic variables into corresponding state-level ones— is necessary (Martin, 2003). Despite it not being a complete explanatory model, Martin's (2003) simple modeling of balancing behavior, a refinement of Waltz's (1979) systemic balance of power theory, offers practical strategies for our study.

As problems using balancing theories usually lie in the imprecise definition of balancing and not in the theories themselves, a simple yet viable analytical solution is to develop a useful definition for balancing as foreign policy behavior (Martin, 2003). It is vital, as balancing has been used in various analytical contexts, such as evaluating state behavior and the outcome of the anarchical systemic structure (Claude, 1989). Two variables have prevailed in scholarly debates on balancing: the state's perception of a threat and motivations. Thus, in Martin's simple model of balancing behavior, threat perceptions and motivations were integrated into the definition of balancing instead of being placed separately under the assumptions. He defined balancing as "a state's attempt to counter an external threat" (Martin, 2003, p. 72).

Balancing is an action carried out by a state to counter a perceived threat rather than appease, accommodate, or hide from it (Martin, 2003). Martin's simple model of balancing behavior comprises two constituents: threat perception and action in response to the perceived threat. Separating how states perceive threats from responding to them allows researchers to test hypotheses derived from competing theories and compare key variables relevant to each process (Martin, 2003). This strategy, we argue, is more practical than other approaches. Therefore, we applied Martin's (2003) model to explain Thailand's balancing behavior during the Cold War.

METHODS

Hypotheses

This study defines balancing as a state's effort to counter an external threat. The key question is what constitutes a threat. Based on the earlier theoretical considerations, we develop hypotheses on Thailand's balancing behavior and test them against relevant data from 1947 to 1990. Our first set of hypotheses focuses on the effects of power, defined solely in material capability, on Thailand's balancing behavior.

H1 Thailand tends to internally and externally balance against the strongest state in the relevant geography, regardless of all else.

Hypothesis 1 addresses the unit-level relative power. It refers to the level of power possessed by another state, which acts as a driving force that triggers Thailand's balancing behavior. Relevant geography refers to the geographic region in which Thailand is located—East Asia in general and mainland Southeast Asia in particular—as Bangkok may be no pressing reason to balance against states like Argentina and Ethiopia, which are far away.

Hypothesis 2 deals with the systemiclevel power structure. It refers to the concentration of capabilities within the international system and its impact on Thailand's balancing act.

H2 Fluctuations in systemic capability concentration affect Thailand's balancing behavior, both internally and externally.

It seeks to test claims made by scholars that adjustments in the capability concentration at the systemic level do not substantially influence the behavior of medium-size or smaller powers, including Thailand when compared to that of major powers. For example, Phuangkasem (1980) found that internal considerations overrode the external factors in shaping the foreign policy behavior of Thailand in the mid-Cold War period.

The third hypothesis determines the threat level, constituted by proximity, relatively strong capability, and perceived hostile intentions that prompt Thailand's counter-action.

H3 Thailand tends to internally and externally balance against a state with closer proximity, relatively robust capability, and perceived belligerent intentions and counter a coalition whose members share the preceding conditions.

However, the constituents of threat here are selectively derived from the prepositions

of the balance of threat theory, as indicated above. Our selection criteria are based on the availability of reliable empirical data—viz., measurable units (e.g., material capabilities, number of signed treaties).

Our last hypothesis deals with Thailand's alliance portfolios and major powers involved in peninsular Southeast Asia during the Cold War. It explores the extent to which empirical evidence matches a chronological narrative of Thai diplomatic history: that is, the American abandonment of their mainland Southeast Asian allies in the mid-1970s forced Bangkok to reconcile and limitedly align with Beijing to deter Hanoi's aggression (Khoman, 1982; Viraphol, 1982).

H4 The lower the similarity in alliance portfolios of Thailand and the US, the higher the similarity in alliance portfolios of Thailand and China.

If hypothesis 4 holds, the data on its alliance portfolios shall reflect the country's attempt to balance Vietnam externally by taking sides with China to keep the aggressive Vietnamese-Soviet expansion at bay. It derives from the fact that China was the only nearby country with the ability to counter Vietnam's expanding power.

Data Sources

This study used data from open-access databases, namely the Correlates of War (COW) Project and the Alliance Treaty Obligations and Provisions (ATOP) Project. To analyze Thailand's balancing behavior,

it relied heavily on the COW National Material Capabilities (v5.0) dataset (Singer et al., 1972) and the ATOP (v5.0) datasets (Leeds et al., 2002). The Composite Index of National Capability (CINC) scores, provided by COW, measured Thailand and relevant parties' relative capabilities. In addition, the state-year dataset extracted from ATOP was used as a reference for the total number of alliances that Thailand was a member of from 1947 to 1991.

Aside from the preceding datasets, we used the Expected Utility Generation and Data Management Program (EUGene) developed by Bennett and Stam (2000) to compute the tau-b scores formulated by de Mesquita (1975) based on the original COW datasets in order to measure the similarity in Thailand and relevant actors' alliance portfolios. EUGene software was employed for its substantive utility in dealing with complex formulas; otherwise, all the data would need to be calculated manually. In addition, this study used the data reported by Suporn et al. (2021) to evaluate how the concentration of capabilities affected Thailand's balancing behavior, which calculated the COW data using Singer et al.'s (1972) formula. Finally, besides quantitative data, this study treated secondary qualitative sources on Thai security perceptions, especially those written by high-level policymakers, as supplementary data to define relevant variables for hypothesis testing.

Variables

Outcome Variables. Two outcome variables were set for hypotheses 1 to 3, namely Thailand's CINC score from 1947 to 1991 and the total number of ATOP alliances Thailand committed to for each year of observation from 1947 to 1991. The CINC score is a capability indicator developed by Singer et al. (1972) to measure each nation's percentage share of the total capability pool of all states in the international system. It is computed using six variables: military expenditure and personnel, energy consumption, iron, and steel production, and urban and total population. Widely used in the subfield of international conflict, the CINC score accurately measures states' current overall power (e.g., Quackenbush, 2015; Sabrosky, 1985). The total number of ATOP alliances refers to the sum of alliances reported in the ATOP (v5.0) state-year dataset that each nation has any active commitments during the years observed. In ATOP datasets, allied commitments include defensive, offensive, neutrality, non-aggression, and consultation obligations toward another state (see Leeds et al., 2002). We multiplied all CINC scores by 100 to ease the interpretability of the results. Here, the CINC score can therefore take values from 0.01 to 100.

The outcome variable for hypothesis 4 was the tau-b score for Thailand and China from 1949 to 1991. The period differed from the abovementioned years because communist China was founded in October 1949. The tau-b score, or τ_b ,

was constructed by de Mesquita (1975) to evaluate similarities in alliance portfolios by measuring the shared interests of a state pair. An alliance portfolio refers to each nation's entire range of alliance commitments. The score ranges from -1 to 1. Whereas -1 indicates that the alliance portfolios of a state pair are completely different, 1 indicates that they are identical. The former means that the pair shares no common interests, whereas the latter means that the pair has identical shared interests. States tend to align with those they share common interests and are less likely to do so with those they have nothing in common.

Predictor Variables. The predictor variables for hypotheses 1 and 3 were set as the CINC scores of China, Vietnam, and Cambodia from 1947 to 1991. These three countries were selected as they were perceived as Thailand's adversaries at certain times (e.g., Bunyavejchewin, 2015; Jha, 1978; Viraphol, 1982). The factors are contributing to Thai threat perceptions varied, ranging from geographic proximity to countries' level of support for the Thai communist insurgency. It is noteworthy that Myanmar was deliberately omitted; this is because, regardless of nationalist discourses, Thailand's bilateral relations with Myanmar were relatively positive during the Cold War (Ganesan, 2006). In addition, military elites in the two capitals have reportedly had close ties and shared interests, including in the international political domain (Chambers, 2021).

To enhance interpretability, we multiplied the CINC scores by 100. If hypothesis 1 held, only the increasing CINC score of China would explain Thailand's CINC score and its total number of ATOP alliances, as China had the most robust capability in Thailand's region in the Cold War years. In contrast, if hypothesis 3 held, the increasing CINC score of Vietnam or those of both Vietnam and Cambodia would explain the outcome variables described above.

For hypothesis 2, the predictor variable was the multiplied concentration index of major-power capabilities (PERCON), which was computed using the concentration index of major-power capabilities (CON) as reported in Suporn et al. (2021). It measured fluctuations in the system's capability concentration during the Cold War. The CON index is calculated based on the standard deviation of the capabilities of major powers. It uses the capabilities of major powers alone as its military reach is effectively global (Sarkees & Wayman, 2010). Here, the term "major power" strictly refers to major-power states as listed in the COW State System Membership (v2016) dataset (Correlates of War Project, 2017). The CON value ranges from .00 to 1.00: it comes closer to 0 when major powers are more or less equal in capabilities and closer to 1 when very few major powers have a relatively large share of majorpower capabilities. In addition, the value implicitly indicates certain types of polarity, or the number of poles in the international system, that is, unipolarity, bipolarity, and

multipolarity. For ease of interpretation, we multiplied the CON index by 100. Our PERCON index then took values from 0.00 to 100. If the second hypothesis held, the PERCON value, a systemic variable, would explain Thailand's CINC score, the total number of ATOP alliances, or both. It was based hypothetically on Martin's (2003) balancing behavior model.

Finally, the predictor variable for hypothesis 4 was set as the tau-b score for Thailand and the US over the same period as the explained variable of the hypothesis. If the fourth hypothesis held, the declining tau-b score for Thailand and the US should explain the increasing tau-b score for Thailand and China. Lessening common interests between Bangkok and Washington contributed to growing mutual interest between Bangkok and Beijing.

Data Analysis

The methods of analysis included simple and multiple linear regression analyses. All statistics were calculated using the SPSS Statistics 20.0 software (IBM Corporation, 2011). Adjusted determination coefficients ($R^2_{adjusted}$) were interpreted according to Cohen (1988) criteria (small = .10-.29, medium = .30-.49, $large \ge .50$). Each method is briefly described below.

Simple Linear Regression Analysis.

Thailand's CINC score and the total ATOP alliances were regressed separately on the PERCON value. The goal was to evaluate how systemic capability concentration could explain Thailand's internal and

external balancing behavior. It addressed hypothesis 2. The tau-b score of Thailand and China was regressed on the tau-b score for Thailand and the US. The objective was to assess the extent to which the alliance portfolios of Thailand and the US could explain those of Thailand and China, thus addressing hypothesis 4.

Multiple Linear Regression Analysis.

Thailand's CINC score and the total number of ATOP alliances were regressed separately on the CINC scores of China, Vietnam, and Cambodia. The objectives were to determine whether the power alone or the threatening power with nearer geography could explain Thailand's internal and external balancing. It addressed hypotheses 1 and 3.

RESULTS

Descriptive Statistics

The first step in our analyses was to compute and evaluate the descriptive statistics for the data used to predict outcomes. Table 1 presents the descriptive statistics for predictor variables, namely the CINC scores for China, Vietnam, and Cambodia, CON, and the tau-b score for Thailand and the US. The mean CINC score values for China, Vietnam, and Cambodia were 11.08, 0.71, and 0.10, respectively. The mean PERCON value was 33.06. The average tau-b score for Thailand and the US was .26. Figure 1 presents the scatterplot of the indices for PERCON. Figure 2 presents the scatterplot of tau-b scores for both Thailand and the US and Thailand and China.

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Table 1
Descriptive statistics for predictor variables

	CHNCINC	DRVCINC	CAMCINC	PERCON	TAUTHIUSA
Mean	11.080	0.709	0.100	33.056	.264
Median	11.290	0.601	0.094	32.400	.571
Maximum	12.10	1.30	0.19	40.90	.628
Minimum	9.13	0.28	0.05	24.60	156
Range	2.96	1.02	0.14	16.30	.784
Std.	.794	.319	.035	.028	.351
Deviation					
N	43	38	39	45	45

Note: CHNCINC = China's CINC score; DRVCINC = Vietnam's CINC score; CAMCINC = Cambodia's CINC score; PERCON = multiplied concentration index of major-power capabilities; TAUTHIUSA = tau-b score for Thailand and the US.

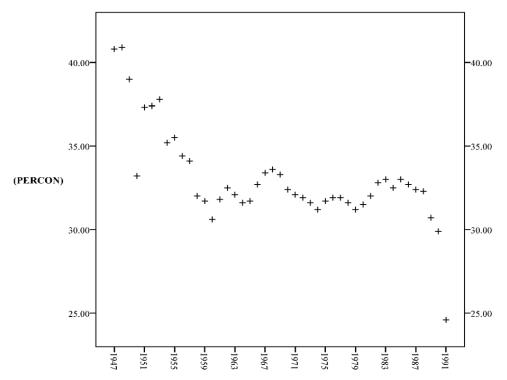


Figure 1. Scatterplot of indices for the concentration of major-power capabilities from 1947 to 1991 *Note*: PERCON is the multiplied concentration index of major-power capabilities.

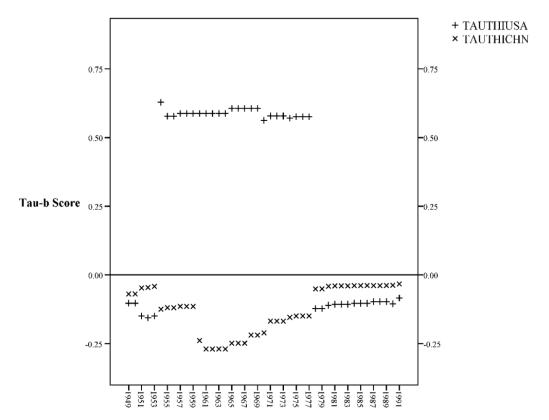


Figure 2. Scatterplot of tau-b scores for Thailand and the US and Thailand and China

Note: TAUTHIUSA = tau-b score for Thailand and the US; TAUTHICHN = tau-b score for Thailand and China.

Simple Linear Regression Analyses

The PERCON index was used to predict Thailand's CINC score using ordinary least squares regression. A statistically significant degree of prediction was obtained, F(1, 43) = 16.80, p < .001, $R^2 = .28$, $R^2_{\text{adjusted}} = .26$. The raw regression coefficient was -0.0002, which indicated an inverse relationship between both variables. The PERCON value explained approximately 26.4% of the variance of the Thai CINC score. The PERCON index was used to predict Thailand's total number of ATOP alliances

using simple linear regression. A statistically significant degree of prediction was obtained, F(1,43) = 55.61, p < .001, $R^2 = .56$, $R^2_{\text{adjusted}} = .55$. The raw regression coefficient was -0.39, which showed an inverse relationship between both variables. The PERCON value explained approximately 55.4% of the variance of Thailand's total number of ATOP alliances.

The tau-b score for Thailand and the US was used to predict that of Thailand and China using ordinary least squares regression. The tau-b score of the former pair significantly predicted that of the latter pair, F(1, 41) = 114.74, p < .001, $R^2 = .74$, $R^2_{\text{adjusted}} = .73$. The raw regression coefficient was -0.21, which showed an

inverse relationship between variables. The tau-b score of Thailand and the US explained approximately 73% of the variance in that of Thailand and China.

Table 2
Simple regression results for Thailand's CINC score

Variable	R^2	R^2_{adjusted}	F	p	SE	95% CI
PERCON Value	.281	.264	16.798	.000	0.00	[0.00, 0.00]

Note: CI = confidence interval

Table 3
Simple regression results for Thailand's total number of ATOP alliances

Variable	R^2	$R^2_{ m adjusted}$	F	p	SE	95% CI
PERCON Value	.564	.554	55.606	.000	0.05	[-0.50, -0.29]

Note: CI = confidence interval

Table 4
Simple regression results for the tau-b score for Thailand and China

Variable	R^2	R^2_{adjusted}	F	p	SE	95% CI
Tau-b Score for Thailand and the US	.737	.730	114.737	.000	0.02	[-0.25, -0.17]

Note: CI = confidence interval

Multiple Linear Regression Analysis

The CINC scores of China, Vietnam, and Cambodia were used in a stepwise multiple regression analysis to predict Thailand. A stepwise multiple regression method was employed to generate the best model fit for predicting the Thai CINC score. The final model contained two of the three predictors and was arrived at in two steps with one variable removed (see Table 5). The model was statistically significant, $F(2, \frac{1}{2})$

35) = 197.06, p < .001, and accounted for approximately 91.4% of the variance of the Thai CINC score ($R^2 = .92$, $R^2_{adjusted} = .91$). The CINC scores of Vietnam, $\beta = 1.00$, t(35) = 19.74, p < .001, and Cambodia, $\beta = 0.21$, t(35) = 4.10, p < .001, were significant predictors of Thailand's CINC score as well.

The same set of predictors was used to predict Thailand's total number of ATOP alliances using stepwise multiple regression to provide the best model fit for predicting the sum of Thailand's ATOP alliance bonds. The final model contained two of the three predictors and was arrived at in two steps with one variable removed (see Table 6). The model was statistically significant, F(2, 35) = 75.07, p < .001, and accounted for approximately 80% of the variance of Thailand's total number of ATOP alliances

 $(R^2 = .81, R^2_{\text{adjusted}} = .80)$. Vietnam's CINC score was a significant predictor of the sum of Thailand's ATOP alliance bonds, $\beta = .83$, t(35) = 10.70, p < .001. Cambodia's CINC score was a significant predictor of the same outcome variable, $\beta = -.18$, t(35) = -2.36, p = .024.

Table 5
Stepwise regression results for Thailand's CINC scores

Model	R^2	$R^2_{ m adjusted}$	F	p	SE	95% CI
1	.879	.876	262.062	.000		
Predictors:						
Vietnam's CINC Score					0.02	[0.25, 0.32]
2	.918	.914	197.062	.000		
Predictors:						
Vietnam's CINC Score					0.02	[0.27, 0.34]
Cambodia's CINC					0.14	[0.29, 0.85]
Score						

Note: CI = confidence interval

Table 6
Stepwise regression results for Thailand's total number of ATOP alliances

Model	R^2	R^2_{adjusted}	F	p	SE	95% CI
1	.781	.775	128.329	.000		
Predictors:						
Vietnam's CINC Score					0.23	[2.17, 3.12]
2	.811	.800	75.074	.000		
Predictors:						
Vietnam's CINC Score					0.23	[2.01, 2.95]
Cambodia's CINC Score					2.09	[-9.16, -0.67]

Note: CI = confidence interval

DISCUSSION

Based on the systemic balance of power theory, hypothesis 1 suggests a tendency for Thailand to internally and externally balance against the strongest power in the relevant geography. However, the results do not support the hypothesis: Thailand did not balance against China. It appears to be in line with Chinvanno (1991), who argued, based on primary sources from the Foreign Ministry in Bangkok, that, even during the mid-1950s, at the height of the Cold War, Thai leaders had reportedly tried to create a secret diplomatic channel for cooperative dialogue with communist China.

Contrariwise, the regression evidence indicates a strong tendency for Thailand to balance against Vietnam and Cambodia, both internally and externally. In other words, Vietnam and Cambodia's increasing material capabilities had a very large impact on Thailand's internal and external balancing, represented by the country's CINC score and the total number of ATOP alliances, respectively. Strong evidence supports hypothesis 3 on the tendency to balance against states that are more proximate, relatively stronger, and have perceived hostile intentions. It is nothing much surprising. Still, it statistically confirms the findings of earlier studies on Thai foreign policy that the balancing behavior of Thailand predominantly targeted the growing Vietnamese threat to its security interests in the region, which included Vietnam's proxy regime in Phnom Penh (e.g., Chambers, 2005; Sirichote, 1986; Viraphol, 1982).

Table 2 shows that the systemic capability concentration measured by PERCON slightly impacted Thailand's internal balancing behavior. The higher concentration of major-power capabilities was in the international system, indicating a slightly higher tendency for Thailand to keep its strength at the same level. The absence of internal balancing is probably explained by the lower levels of uncertainty caused by a relatively high concentration of major-power capabilities. In a highly robust system, that is, bipolarity, it is easier for policymakers to predict the behavior of other states. Moreover, it helps policy elites in smaller nations choose the right horse, as the great-power game and alliance bonds tend to be unambiguous (Singer et al., 1972).

Historically, Thailand has been less concerned about the bigger picture of great-power competition. Rather, the mindset and considerations of policy elites in Bangkok, according to former top Thai diplomats (e.g., Khoman, 1982; Viraphol, 1982), were preoccupied with the country's security and interests in its region. In 1949, Thailand swiftly aligned with the US when China became communist (Hewison, 2020). Until the US walked away in the mid-1970s, Thailand's independence and territorial integrity relied heavily on American troops stationed on its soil and American investment, such as US-sponsored infrastructure.

Given the presence of the US armed forces safeguarding its territory from external threats, the Thai military, in general, was neither designed for nor experienced in external warfare. Conversely, its role focused heavily on internal security, such as regime legitimation and counter-insurgency (Chaloemtiarana, 1978). It helps understand

why fluctuations in the international system did not substantially condition Thailand's internal balancing.

Table 7
List of formal alliances signed by Thailand

ATOP ID	Signature Year	Title
3195	1949	Treaty of Friendship between the Republic of the Philippines and the Kingdom of Thailand
3250	1954	Treaty of Friendship between the Kingdom of Thailand and the Republic of Indonesia
3260	1954	Pacific Charter; Southeast Asia Collective Defense Treaty ^{a, b}
3460	1962	Declaration on the Neutrality of Laos
3737	1975	Joint Communique on the Establishment of Diplomatic Relations between the Kingdom of Thailand and the People's Republic of China
3755	1976	Treaty of Amity and Cooperation in Southeast Asia
3260.2	1977	Phase 2 of the Southeast Asia Collective Defense Treaty ^c

Note: Data extracted from the ATOP state-year dataset (Leeds et al., 2002); a = Southeast Asia Collective Defense Treaty, or Manila Treaty, which established the Southeast Asia Treaty Organization (SEATO) in 1954; b = It must be noted that ATOP has classified the Thanat–Rusk communiqué of 1962 as part of the Southeast Asia Collective Defense Treaty (noted as ATOP ID: 3260, Phase 2); c = This alliance was a new phase of the Treaty that formerly governed SEATO, which was disbanded in 1977 (see Buszynski, 1980)

Contrary to the abovementioned evidence on internal balancing, Table 3 shows that the systemic capability concentration greatly impacted Thailand's external balancing behavior. A one-unit difference in the systemic capability concentration was associated, on average, with a 0.39 percentage point lower likelihood that Thailand signed and participated in alliance commitments. Table 7 and Figure 3 list the

formal alliances signed by Bangkok and Thailand's active alliances during the Cold War, respectively.

Our results show that fluctuations in the Cold War system impacted Thailand's internal balancing only minimally. However, such fluctuations had a considerable impact on Thailand's external balancing. The data in Tables 2 and 3 provide at least mild support for hypothesis 2. It probably sounds counter-

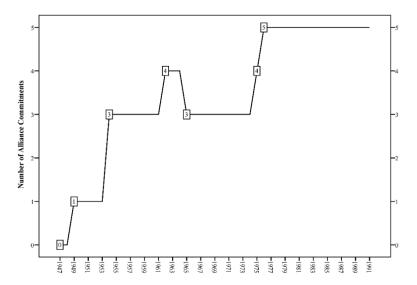


Figure 3. Thailand's formal alliances

Note: Data extracted from the ATOP state-year dataset (Leeds et al., 2002)

intuitive because it is slightly at odds with the existing literature, whose arguments have often downplayed the influence of the international system in Thai foreign policy directions (e.g., Phuangkasem, 1980; Suthiwart-Narueput, 1980; Viraphol, 1982). Despite this, our findings seem justifiable, at least statistically. Additionally, the findings appear somewhat in line with the recent monograph by Raymond and Blaxland (2021).

Table 4 shows that the similarity in the alliance portfolio between Thailand and the US was strongly and negatively associated with that between Thailand and China. An increase in dissimilarity in the Thai and US alliance portfolios substantially contributed to greater similarity in the alliance portfolios of Thailand and China. Hypothesis 4 is well supported by our data. This trendline seems

to correspond with the opinions shared by policy elites in Bangkok, which considered the American withdrawal from mainland Southeast Asia a root cause of regional uncertainty that forced Thailand to align with communist China (e.g., Khoman, 1982).

The statistical evidence demonstrates that the systemic balance of power theory does not explain the Thai case. The emergence of a rising power in the relevant region did not prompt Thailand to perceive it as threatening, which needed to be counterbalanced. It is best exemplified that Thailand's internal and external balancing was not directed at China during the Cold War, notwithstanding the increasing Chinese capabilities.

Thailand balanced against Vietnam and Vietnamese-controlled Cambodia.

Obviously, because of their hostile actions and proximity to Thai territories, both capitals were perceived as immediate threats to the nation's security and territorial integrity (Raymond, 2020). The Thai threat perceptions of Vietnam and Cambodia were greatly intensified by the "Cambodia Problem," which began toward the end of the 1970s when Soviet-supported Vietnam seized Phnom Penh, augmented by the US retreat and abandonment of its allies in continental Southeast Asia which took place earlier (Niyomsilpa, 1989).

If an external threat is a product of power and geographic distance, with the support of the Soviet Union, Hanoi was far more dangerous to Bangkok than any other power in mainland Southeast Asia. Moreover, Vietnam's land power posed a more severe threat than communist China in wider East Asia (Niyomsilpa, 1989). The balance of threat theory in general and Martin's simple model of balancing behavior in particular tally with our findings in this regard.

Finally, our analysis shows that the concentration of major-power capabilities—the Cold War international system—profoundly impacted Thailand's balancing behavior. It is fairly in line with Labs (1992) and Goldgeier and McFaul (1992), who argued that systemic conditions shape the foreign policy behavior of smaller states. However, it is difficult to ascertain how systemic fluctuations decisively prescribed Thailand's alignment and coalition formation. Present statistics cannot tell us

how the changing systemic concentration would have correlated with state-level determinants of Thai foreign policy, commonly reported in earlier research, such as regime type and nation-building history (see Neher, 1990; Phuangkasem, 1984). A considerable amount of quantitative research is needed if we must deal with these conundrums.

CONCLUSION

Four general conclusions can be drawn on Thailand's balancing behavior during the Cold War as a result of the analyses presented in this study: (a) Thailand's internal and external balancing tended to be directed at Vietnam (and its ally, Cambodia) rather than at China; (b) Thailand's balancing behavior was best explained by Martin's simple model of balancing behavior; (c) the prevalent combination of power, geographic distance, and perceived hostile intentions was the predominant determinant, which alarmed Thailand and motivated it to balance against external threats, both internally and externally; and (d) changes in the international system, as measured by the major-power capability concentration, had an effect on Thailand's foreign policy behavior, though it is unclear how this came about.

Still, we acknowledge several limitations of our analysis, especially regarding explanations. Like other systemic theories of international relations, Martin's (2013) simple model of balancing behavior has inherited a theoretical weak point

that derives from the trade-off between parsimony-seeking and case-specific understanding. The model we employed considered the Thai state a black box or unitary actor. It, in turn, restrained analytical ability in accounting for dynamics inside the box, like the impact of ideologies on individual decisions. For instance, it could not explain how the rightist beliefs of Prime Minister Thanin Kraivichien (in office: 1976-1977)—who reportedly had a pro-Taiwan stance—temporarily froze the normalization of Sino-Thai relations (US Department of State, 1977). Nor could it address the fact that Thailand did receive aid from the American intelligence agencies operating covertly against communist China (Kislenko, 2004) while attempting to create a secret channel for confidential communication with the Chinese leaders in the mid-1950s.

Finally, one should be circumspect in inferring the underlying regular patterns of Thai foreign policy from the general conclusions arrived at in this study. It is simply because the validity of our explanations of Thailand's balancing remains contextually specific. It would be statistically valid only if one were examining Cold War Thailand, whose foreign policy was exposed to specific conditions. Our conclusions do not necessarily hold for post-Cold War Thailand's actions. Therefore, it is clear that further research efforts are still necessary to sufficiently and scientifically explain Thailand's behavior from ancient to modern times.

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Going Green in the Workplace: Through the Lens of the Extended Theory of Planned Behaviour

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ABSTRACT

The success of green organisational initiatives depends completely on individual employees' behaviour. Therefore, the current study aimed to examine the determinants of green workplace behaviour in the Malaysian governmental work settings. The study's theoretical framework was based on the theory of planned behaviour. PLS-SEM was utilised to analyse data collected from 460 respondents from Malaysian public organisations, which revealed the following results: (1) green workplace behavioural intention positively influences green workplace behaviour; (2) attitude towards green workplace behaviour, supervisor's green workplace behaviour, colleagues' green workplace behaviour, and perceived behavioural control have positive effects on green workplace behavioural intention; (3) environmental knowledge positively influences attitude towards green workplace behaviour. This study's findings enhance the theoretical foundation of green workplace behaviour and can assist public organisations in promoting green workplace behaviour.

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INTRODUCTION

of Planned Behaviour

Environmental issues have gradually become woven into the organisational context following the increase in the public consciousness of the role and responsibility

Keywords: Attitude, colleagues, green workplace behaviour, knowledge, Malaysia, perceived behavioural control, PLS-SEM, supervisors, Theory

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of organisations in handling environment-related issues (Rayner & Morgan, 2018). Governments are also driving organisations to fulfil ecological enactments and guidelines; as a result, many organisations have set up formal and informal environmental administrative settings (Darnall & Sides, 2008). Furthermore, as more environmental rules and regulations are being introduced, coupled with pressures from the market, engaging in pro-environmental practices has become inevitable for organisations.

Besides that, stakeholders are becoming more alert about the consequences of business activities on the environment (Shen et al., 2018). Therefore, as an essential feature of corporate social responsibility, the movement towards green initiatives and sustainability has received overwhelming interest from various organisations, from forprofit to non-profit organisations (Sabri & Wijekoon, 2020). For the former, the notion of "being greener is good for business" is upheld because an organisation that practise green behaviour can generate more sales, increase its recognition, foster a good reputation, and be positively perceived by internal and external stakeholders (Dumont et al., 2017). Therefore, engagement in green initiatives is a responsibility and a form of competitive advantage for the organisation (Shen et al., 2018).

The practice of green human resource management has been widely adopted in various organisations to promote green workplace behaviour among employees (Tom & Soumyaja, 2019). In general, the success of organisational initiatives for green practices depends on individual

employees' behaviour (Norton et al., 2015). To explain, employees spend more than one-third of their daily time in the organisation; thus, their green behaviour at the workplace is impactful (Iqbal et al., 2018). The management of organisations has implemented various measures to meet the relevant requirements and expectations. Many organisations have started to regularly disclose reports of their environmental sustainability performance and allocate more funds to accomplish ecological sustainability (Iqbal et al., 2018).

Accordingly, De Roeck and Farooq (2018) described employees' green workplace behaviour as employees' involvement in environmentally friendly behaviour at the workplace, such as recycling and practising sustainable policies and rational use of resources (Fawehinmi et al., 2020). Furthermore, recent studies have encouraged the need to identify and understand the antecedents of employees' green workplace behaviour (Suganthi, 2019). For instance, Norton et al. (2015) urged future research to study individual-related predictors, such as employee perception and attitude, in determining employees' green workplace behaviour. Unfortunately, limited studies have undertaken such a perspective to study green workplace behaviour (Iqbal et al., 2018; Safari et al., 2018), thus, motivating the present study to address this gap. Furthermore, only a few previous studies identified antecedents of pro-environmental workplace behaviour (Razak & Sabri, 2019; Sabri et al., 2019; Wiernik et al., 2018), and inconsistencies were found (Sabri & Wijekoon, 2020).

Moreover, the effects of lower-level employees and leaders on green behaviour in the workplace can be rather substantial but have been poorly understood (Kim et al., 2017). In terms of managerial implications, identifying the role of lower-level employees and leaders within the context of green behaviour at the workplace is deemed important for employee engagement and commitment toward environmental sustainability. The study's findings may be the spark that ignites leaders' passion for creating environmentally sustainable organisations. Besides that, most past studies used the theory of planned behaviour as the underlying theory, but its adoption within the context of pro-environmental workplace behaviour has remained very limited. In terms of theoretical ramifications, the current study contributed to the knowledge in this field of research to a certain extent.

Therefore, the main objective of the current study is to identify the determinants of public employees' pro-environmental workplace behaviour using an extended model of the Theory of Planned Behaviour (TPB). More specifically, the study aims to test the inter-relationships between employees' environmental knowledge empirically, attitude towards green workplace behaviour, social norm (i.e., colleagues' green workplace behaviour and supervisor's green workplace behaviour), perceived behavioural control, green workplace behavioural intention, and green workplace behaviour. Thus, this study is one of the few studies investigating the antecedents of green behaviour in work settings. More importantly, this study successfully addressed the gap in assessing public employees' intention to behave pro-environmentally, particularly within green human resource management. In other words, this study presented additional empirical evidence in the growing body of literature on the intention to go green in the workplace and the theory of planned behaviour from green human resource management perspectives.

Overall, this paper is structured as follows: after a thorough conceptual development, the study's methodology is explained, followed by the presentation and discussion of empirical results. Finally, the direction for future research and the study's limitations are presented at the end of this paper.

LITERATURE REVIEW

Conceptual Development

Theory of Planned Behaviour (TPB).

According to the Theory of Reasoned Action (TRA), behavioural intention is largely a function of attitude and social norms (Ajzen & Fishbein, 1980). The greater the intensity of one's positive attitude towards a behaviour, the higher the likelihood of performing the behaviour. Meanwhile, social norm refers to the opinions of other individuals who are essential to the individual, such as family, friends, and colleagues, which can also influence one's behavioural intention. TPB originated from the TRA, which explicates that behavioural intention can predict a large part of human behaviour, assuming that the behaviour is

volitional (Ajzen & Fishbein, 1980). As an extension of TRA, TPB argues that one's behavioural intention is often restricted by non-volitional factors (e.g. resources), and there is a need to consider the role of control beliefs (Ajzen, 2002), which explains the addition of perceived behavioural control.

In a recent study, Sabri et al. (2019) examined Malaysian public employees' pro-environmental workplace behaviour and examined attitude, social norms, and perceived behavioural control as the antecedents of pro-environmental workplace behaviour. Based on the results, the study revealed that attitude and perceived behavioural control were directly included in the theoretical framework but opted to replace social norms with the roles of colleagues and supervisors based on the evidence presented by previous studies. For instance, Ndubisi (2004) applied TPB to examine the intention to adopt e-learning and replaced social norms with course supervisors. In another study, Firing et al. (2012) studied the effect of peers in Norwegian cadets' military training and used colleagues as one of the variables under the social norm. Meanwhile, Tilikidou (2007) observed the effect of environmental knowledge on the formation of pro-environmental attitudes in Greeks. In the study, the attitude was translated into pro-environmental purchase behaviour via pro-environmental purchase intention.

Previous studies presented evidence on the positive relationship between supervisors and behavioural intention (Ndubisi, 2004), the positive relationship between colleagues and behavioural intention (Firing et al., 2012), the positive relationship between perceived behavioural control and behavioural intention (Sabri et al., 2019), the positive relationship between perceived behavioural control and behaviour (Wijayaningtyas et al., 2019), and the positive relationship between behavioural intention and behaviour (Sabri et al., 2019). Furthermore, previous studies validated the applicability of TPB in explaining green behaviour, either in workplace settings or non-workplace settings (Razak & Sabri, 2019; Sabri et al., 2019). Thus, TPB and its constructs were used in the current study's theoretical framework.

Green Workplace Behaviour. Ones and Dilchert (2012, p. 452) described green workplace behaviour as "scalable actions and behaviours that employees engage in that are linked with and contribute to or detract from environmental sustainability." In general, individuals are said to be involved in pro-environmental behaviour when they behave positively toward the environment; and green workplace behaviour is a form of pro-environmental behaviour (Safari et al., 2018).

The employees are the core that determines the success of the green workplace movement. Therefore, it is paramount for organisations to redirect their focus on them despite all the efforts from the management to foster green workplace behaviour. Studies have demonstrated the substantial influence of employees' voluntary participation on organisational greening efforts (Kim et al.,

2017). Furthermore, it is significant to note that employees have different financial interests at the workplace and home and, consequently, exhibit different patterns and intensities of green behaviour (Manika et al., 2015). For example, employees would normally be more engaged in energysaving practices at home but less concerned about energy usage at the workplace since they are not bearing the costs. More research attention is needed considering the comparatively fewer studies on green behaviour in the workplace (Wells et al., 2016). Thus, understanding antecedents of green workplace behaviour from employees' perspectives can yield fruitful insights and contribute to the literature on management practices and interventions that promote employees' green workplace behaviour (Kim et al., 2017).

Meanwhile, green workplace behavioural intention refers to employees' intention to behave in environmentally responsible ways at the workplace. Therefore, identifying the relationship between green workplace behavioural intention and actual green workplace behaviour is vital in environmental psychology and organisational sustainability literature (Norton et al., 2015).

Therefore, adhering to the suggestion of Norton et al. (2015), the current study incorporated both behavioural intention and actual behaviour and examined the relationships between both constructs:

H₁: Employees' green workplace behavioural intention is positively linked to green workplace behaviour.

Attitude. Attitude is one's beliefs about the consequences of a particular behaviour (Ajzen, 1991). It corresponds to one's judgment towards a specific behaviour, influencing future behavioural intention (Aw & Chong, 2019). The greater the intensity of one's positive attitude towards a particular behaviour, the higher the likelihood of performing the behaviour (Ajzen, 2002). Money-related attitude is particularly important to enhance the financial well-being of employees (Sabri & Aw, 2019; Sabri et al., 2020). Therefore, attitude is significant to building employees' eagerness to participate in organisational green workplace behaviour.

Past studies discovered a positive relationship between employees' attitude and their intention to perform green workplace behaviour. For example, using a sample of Malaysian public employees, prior studies demonstrated the significant role of attitude in determining pro-environmental workplace behaviour (Razak & Sabri, 2019; Sabri et al., 2019).

Therefore, the following hypothesis was proposed for testing in the current study:

H₂: Attitude towards green workplace behaviour is positively related to employees' green workplace behavioural intention.

Social Norm. Social norm denotes the standards recognised by fellows of a group that can significantly direct and influence one's behaviour (Ajzen, 1991). In the context of the current study, social norm within the organisational context is related

to the perception of what is typically witnessed among colleagues and supervisors (Schneider et al., 2013). Wang et al. (2011) found that individuals are likely to follow the advice on electricity conservation from other individuals close to them. Similarly, a colleague's green workplace behaviour can evoke one's intention to perform green workplace behaviour. Employees tend to conform to electricity conservation practices when they observe or know that their colleagues behave similarly (Wang et al., 2019). Besides that, in the green workplace behaviour context, leaders who engage and encourage employees to perform green behaviour should demonstrate their support to employees, thus, elevating the likelihood of employees performing green workplace behaviour (Manika et al., 2015).

Thus, the following hypotheses were established for testing in the current study:

H₃: Colleague's green workplace behaviour is positively related to employees' green workplace behavioural intention.

H₄: Supervisor's green workplace behaviour is positively related to employees' green workplace behavioural intention.

Perceived Behavioural Control. Perceived behavioural control denotes one's perception of how difficult it would be to perform a particular behaviour (Ajzen, 1991). Employees may be constrained by many factors at the workplace that impede them from engaging in green workplace behaviour. Therefore, employees are more

inclined to perform green behaviour in the workplace when relevant infrastructures and facilities are available (Manika et al., 2015). Previous studies (Razak & Sabri, 2019; Sabri et al., 2019) supported the importance of perceived behavioural control in predicting green workplace behaviour.

Thus, the following hypotheses were formulated:

H₅: Perceived behavioural control is positively related to employees' green workplace behavioural intention.

H₆: Perceived behavioural control is positively related to employees' green workplace behaviour.

Knowledge. Individuals tend to avoid certain behaviours and situations when they have inadequate knowledge of the behaviour and situation (Saeed et al., 2019). Many employees are not aware of the implications of their seemingly non-environmentalrelated behaviour on the environment (Iqbal et al., 2018). Theoretically, possessing strong knowledge about green workplace behaviour induces high passion and emotional involvement, which activates personal disposition (i.e., attitude) towards the behaviour (Afsar et al., 2016). For instance, Safari et al. (2018) found that employees with enhanced environmental knowledge are more committed to engaging in green initiatives at their workplace. In addition, Ojo et al. (2019) highlighted that employees with new knowledge are more likely to develop a positive attitude towards green information technology practices.

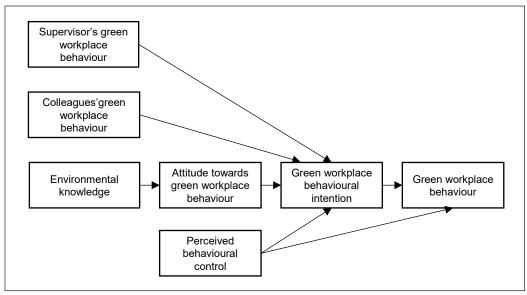


Figure 1. Proposed conceptual model

Therefore, the following hypothesis was formulated for testing in this study:

H₇: Environmental knowledge is positively related to attitude towards green workplace behaviour.

Figure 1 presents the study's proposed model based on the above literature.

MATERIALS AND METHODS

Data Collection

A cross-sectional design was applied in the current study, where all data were gathered via self-administered questionnaires. First, similar to the approach used by Aw and Sabri (2020), five government ministries situated in the Federal Territory of Putrajaya, Malaysia, were selected using the simple random sampling procedure. Following that, the systematic sampling method was utilised to select employees from the existing directories from each government

ministry. Finally, 500 self-administered questionnaires were distributed, and only 460 completed questionnaires were received.

As presented in Table 1, 60.7% of the total respondents in this study were female. Furthermore, about 82.8% of the total respondents were 25 to 44, followed by the older age category of 45 and above (12.2%). In addition, 45.2% of the total respondents reported having at least a bachelor's degree.

Instrumentation

The developed instrument consisted of a different number of survey items to measure different constructs: (1) attitude towards green workplace behaviour (six items); (2) environmental knowledge (10 items); (3) colleagues' green workplace behaviour (four items); (4) supervisor's green workplace behaviour (four items); (5) perceived behavioural control (five items); (6) green workplace behavioural intention (six items).

Table 1
Demographic profile of respondents

Variables	Frequency (n = 460)	Percentage (%)
Gender		
Male	181	39.3
Female	279	60.7
Age Group (years)		
24 and below	23	5.0
25–34	209	45.4
35–44	172	37.4
45–54	39	8.5
55 and above	17	3.7
Education Level		
Secondary School	115	25.0
Diploma	137	29.8
Bachelor's Degree	168	36.5
Postgraduate	40	8.7
Occupational Categories		
Professional White Collar	24	5.2
Skilled White Collar	56	12.2
Light Blue Collar	155	33.7
Skilled Blue Collar	180	39.1
Unskilled Heavy Blue Collar	45	9.8

Accordingly, the measurement items on attitude towards green workplace behaviour, colleagues' green workplace behaviour, supervisor's green workplace behaviour, perceived behavioural control, and green workplace behavioural intention was adopted from previous studies (Blok et al., 2015; Hargreaves, 2011) and altered to fit the settings of green workplace behaviour in Malaysia. The responses for the constructs (except for green workplace behaviour) were anchored on a five-point Likert scale, with the endpoints of "strongly disagree"

(1) and "strongly agree" (5). Meanwhile, the scale of green workplace behaviour was adapted from Lee et al. (1995) and Francoeur et al. (2019), ranging from "never" (1) to "regularly" (3) (Appendix 1).

On the other hand, the measurement items on environmental knowledge were adopted from Dunlap et al. (2000). The environmental knowledge construct was measured based on understanding the guidelines for green workplace activity in Malaysian public organisations. A Yes/No format was used for these questions on environmental knowledge.

Data Analysis

PLS-SEM was utilised for the testing of the suggested hypotheses in this study. PLS-SEM was deemed fitting for the current study due to its soft-modelling approach, with less stringent data distribution assumption, which is often seen as unrealistic in the social science field. Moreover, numerous past studies on green behaviour employed PLS-SEM as their data analysis tool (Al-Ghazali & Afsar, 2020; Chuah et al., 2020).

RESULTS AND DISCUSSION

In the initial phase, the measurement model was assessed in terms of factor loadings, composite reliability (CR), discriminant validity, and average variance explained (AVE) (Hair et al., 2021). As shown in Table 2, all constructs exhibited a CR of greater than 0.7 and an AVE value of greater than 0.5 (Hair et al., 2021). This study had to drop one item for the green workplace behaviour construct as it did not achieve the

threshold value of AVE. The recorded factor loadings ranged from 0.496 to 0.884, above the minimum requirement proposed by Hair et al. (2021). Subsequently, discriminant validity was calculated using the heterotraitmonotrait ratio of correlations (HTMT)

criterion by Henseler et al. (2015). As exhibited in Table 3, the HTMT ratios were lower than the threshold value of 0.85 (Kline, 2011), thus, demonstrating discriminant validity.

Table 2
Measurement model: Factor loadings, composite reliability (CR), and average variance explained (AVE)

Constructs	Loadings	CR	AVE
1) Attitude towards green workplace behaviour		0.913	0.637
I support green activities in the office.	0.820		
I think the information kiosk promoting green activities provided by the management is essential to support green workplace behaviour.	0.815		
Green activities in the office are very important to me.	0.806		
I think green activities in the office are good.	0.853		
I think green behaviour in the office can reduce solid waste.	0.774		
I feel happy to work in an office that supports green activities.	0.716		
2) Environmental knowledge		0.925	0.657
Humans have the right to modify the natural environment to suit their needs.	0.725		
When humans interfere with nature, it often produces disastrous consequences.	0.821		
Human ingenuity will ensure that we do not make the earth unliveable.	0.787		
Humans are severely abusing the environment.	0.931		
The earth has plenty of natural resources if we just learn how to develop them.	0.854		
Plants and animals have as much right to exist as humans.	0.789		
The balance of nature is strong enough to cope with the impacts of modern industrial nations.	0.851		
Despite our special abilities, humans are still subject to the laws of nature.	0.748		
The balance of nature is very delicate and easily upset.	0.964		
If things continue their present course, we will soon experience a major ecological catastrophe.	0.981		
3) Colleagues' green workplace behaviour		0.897	0.688
My colleagues print documents on both sides of the paper.	0.873		
My colleagues photocopied documents on both sides of the paper.	0.884		
My colleagues use recycled paper in the office.	0.842		
My colleagues switch off computers before leaving the office.	0.706		
4) Supervisor's green workplace behaviour		0.882	0.651
My supervisor supports green behaviour in the office.	0.847		
My supervisor uses recycled paper as notes.	0.814		
My supervisor always reminds me of the long-term benefits of green behaviour.	0.796		

Table 2 (continue)

Constructs	Loadings	CR	AVE
My supervisor always challenges me to think of ways to recycle and reuse resources in the office.	0.768		
5) Perceived behavioural control		0.873	0.541
Printing documents on both sides of the paper is an easy task.	0.834		
Photocopying documents on both sides of the paper is an easy task.	0.837		
I have time to cut recycled paper to reuse as small notes.	0.496		
I can prepare my box to collect recycled paper.	0.690		
Reporting water leaking issues to management is an easy task.	0.790		
I can do green activities in the office if I want.	0.709		
6) Green workplace behavioural intention		0.918	0.653
I will print documents on both sides of the paper.	0.877		
I will photocopy documents on both sides of the paper.	0.871		
I will use recycled paper to make notes.	0.700		
I will collect recycled paper.	0.778		
I will report the leaking water issue (if any) to management.	0.796		
I will participate in green activities in the office.	0.813		
7) Green workplace behaviour		0.823	0.539
I print documents on both sides of the paper.	0.733		
I photocopy documents on both sides of the paper.	0.738		
I use recycled paper to make notes.	0.672		
I report the leaking water issue (if any) to management.	0.681		

Table 3
Discriminant validity (HTMT criterion)

	1	2	3	4	5	6	7
1. Attitude towards green workplace behaviour							
2. Green workplace behaviour	0.336						
3. Colleagues' green workplace behaviour	0.452	0.472					
4. Green workplace behavioural intention	0.661	0.464	0.494				
5. Environmental knowledge	0.092	0.185	0.055	0.165			
6. Perceived behavioural control	0.612	0.466	0.479	0.842	0.192		
7. Supervisor's green workplace behaviour	0.425	0.457	0.606	0.509	0.157	0.577	

In the second phase, the structural model was evaluated. Based on the suggestion by Hair et al. (2021), the multicollinearity issue was examined. The results indicated that the highest variance inflation factor (VIF) was 1.596, below the threshold value

of 3.3. The model exhibited R² values of 0.601 for green workplace behavioural intention and 0.215 for green workplace behaviour. The blindfolding procedure returned Q² values of greater than 0 for both green workplace behavioural intention

and green workplace behaviour, thus, implying sufficient predictive accuracy of the structural model. The model exhibited a good fit, indicated by the standardised root mean square residual (SRMR) value of 0.072, below the threshold value of 0.08 (Hair et al., 2021).

Subsequently, a bootstrapping procedure with 5000 sub-samples was applied to examine the significance of the hypothesised effects. As shown in Table 4, the results showed that green workplace behavioural intention ($\beta = 0.250$, p < 0.05) and perceived behavioural intention ($\beta = 0.178$, p < 0.05) positively influenced green workplace behaviour. Based on the results, attitude towards green workplace behaviour ($\beta = 0.253$, p < 0.05), supervisor's green workplace behaviour ($\beta = 0.064$, p < 0.05), colleagues' green workplace behaviour ($\beta = 0.091$, p < 0.05), and perceived behavioural control ($\beta = 0.527$, p < 0.05) significantly

influenced green workplace behavioural intention in this study. Lastly, environmental knowledge significantly influenced attitude towards green workplace behaviour (β = 0.088, p < 0.05). In sum, all hypotheses in this study were supported. In a previous study's review on the determinants of green behavioural intention and green behaviour, Wijekoon and Sabri (2021) found similar constructs as significant determinants of green behaviour.

According to Ajzen (1991), behavioural intention is an immediate antecedent if performing a specific behaviour, and the formation of positive behavioural intention towards the actual behaviour is vital for performing the behaviour. For example, positive intention toward pro-environmental workplace behaviour directs employees to perform green organisational behaviour (Sabri et al., 2019). Hosseinpour et al. (2015) also revealed the importance of

Table 4
Results of hypotheses testing

Hypothesis	Relationship	Std. Beta	t-value	Decision
H_1	Green workplace behavioural intention → Green workplace behaviour	0.250	3.420**	Supported
H_2	Attitude towards green workplace behaviour → Green workplace behavioural intention	0.253	6.144**	Supported
H_3	Colleagues' green workplace behaviour → Green workplace behavioural intention	0.091	2.119*	Supported
H_4	Supervisor's green workplace behaviour → Green workplace behavioural intention	0.064	1.780*	Supported
H_5	Perceived behavioural control → Green workplace behavioural intention	0.527	11.245**	Supported
H_6	Perceived behavioural control → Green workplace behaviour	0.178	2.248*	Supported
H ₇	Environmental knowledge → Attitude toward green workplace behaviour	0.088	1.853*	Supported

Notes: **p < 0.01; *p < 0.05

intention toward green behaviour among Malaysians. Thus, H₁ was also confirmed.

Moreover, a positive attitude influences the formation of one's intention to form a specific behaviour. For example, in a Malaysian study, Sabri et al. (2019) found a positive relationship between employees' pro-environmental attitudes and pro-environmental intention; in other words, employees' positive feelings direct them to perform green behaviour in the workplace. Thus, H_2 in this study was also validated.

One of the most significant green workplace behaviours includes inspiring people to protect the environment through green practices (Francoeur et al., 2019). Furthermore, colleagues would perform certain pro-environmental practices at the workplace, for example, electricity conservation practices, if others practise similar behaviour (Wang et al., 2019). Supervisors can encourage other employees to perform green practices in the workplace (Manika et al., 2015). Their green practices at the workplace can also significantly influence other employees. Thus, the execution of green workplace behaviour at the workplace among the supervisors and colleagues is important, which further confirms H₃ and H₄ in this study.

If one perceives that performing the behaviour of interest is easy, then the positive intention is initiated, and the behaviour is performed (Ajzen, 1991). This fact was further confirmed by the current study results on the significance of perceived behavioural control, in which H₅ and H₆ were accepted. Razak and Sabri

(2019) and Sabri et al. (2019) also revealed similar findings.

According to Ojo et al. (2019), the employees' positive attitude towards green information technology practices accelerated with the acquisition of new knowledge. In addition, employees with an enhanced environmental knowledge were more committed to engaging in green initiatives at the workplace (Safari et al., 2018). Therefore, environmental knowledge plays an important role in forming a favourable attitude towards the appropriate behaviour, thus, supporting H₇ in this study.

By addressing the call for action of previous studies, this study contributed to the literature by exploring beyond external factors to identify individual factors that influence green workplace behaviour (Rezapouraghdam et al., 2018). Firstly, most prior studies focused on domestic settings (Gao et al., 2017). However, studies have shown that the environmental consequences caused by the workplace settings are far greater than that of residential consumption (Greaves et al., 2013). Thus, the current study took a step further by examining green behaviour in workplace settings.

Secondly, prior studies largely focused on employees' intention to perform green workplace behaviour and overlooked the inconsistency between behavioural intention and actual behaviour (Ajzen, 1991). Referring to the recommendation by Wang et al. (2019), the current study addressed the gap by examining both behavioural intention and actual behaviour and subsequently validated their interrelationships.

Thirdly, prior studies that employed TPB to comprehend environmental behaviour rarely explored the additional antecedents of attitude and intention (Greaves et al., 2013), resulting in suboptimal ideas for practitioners. The current study extended the theory by examining and identifying the role of environmental knowledge in forming attitudes towards green workplace behaviour, which was rarely explored in prior studies. Besides that, social norms (i.e., colleagues' and supervisor's green workplace behaviour) were often overlooked in literature (Haouari et al., 2019), addressed in the current study. The obtained results in the current study revealed an interesting fact on the importance of the supervisors' green workplace behaviour in stimulating the employees' intention to perform green workplace behaviour. It suggests valuable insights into green workplace behaviour, suggesting the extended effects of highpower distance belief characteristics in Malaysia (Hofstede, 2001) within the green workplace context. In addition, the influence of colleagues' green workplace behaviour has been largely unexplored despite its significance (Norton et al., 2015), implying the essential role of colleagues in fostering green workplace behaviour in a collectivist culture.

Nonetheless, the current study encountered several drawbacks. Firstly, the current study mainly considered the direct effects of the selected constructs. Therefore, future studies should consider exploring potential heterogeneity within the proposed model. Secondly, the present study

was largely grounded on the theoretical lens of TPB. Hence, it is recommended that future research undertake and integrate other theoretical foundations, such as social exchange theory, to enhance the current model further. Moreover, individual differences have been considered a vital determinant of green behaviour (Brick & Lewis, 2016). Hence, future studies should include personal characteristics of employees, such as personality, in exploring their green workplace behaviour.

CONCLUSION

Green practices within an organisation are becoming increasingly important. However, many employees show less interest in engaging in green behaviour at the workplace. Therefore, organisations' employment of green initiatives would potentially fail without effective cooperation from the employees. Grounded on TPB, the current study identified green workplace behavioural intention as a predictor of actual green workplace behaviour. In addition, green workplace behavioural intention is predicted by attitude towards green workplace behaviour, colleagues' green workplace behaviour, supervisor's green workplace behaviour, and perceived behavioural control. On top of that, environmental knowledge positively and significantly influences attitudes towards green workplace behaviour.

Managerially, the study's findings present useful implications that can benefit various organisations, particularly within the Malaysian context. The proposed constructs

may provide practical interventions for the organisations to improve employees' green workplace behaviour. Firstly, given the importance of environmental knowledge in forming a positive attitude towards green workplace behaviour, relevant lectures and programmes on environmental protection need to be conducted to impart environmental knowledge and raise employees' concern towards green behaviour. Secondly, the members of the top management of organisations in Malaysia rarely provide sufficient incentives or rewards for employees who engage in green behaviour (Fernando et al., 2016). However, given the significant and positive effects of perceived behavioural control, it would be helpful if the management empowers employees to perform green behaviour by providing them with essential resources, such as recycling bins. Thirdly, supervisors need to play an exemplary role by proactively engaging in green workplace behaviour. It ensures that employees feel the urge to perform similar behaviour. Lastly, the significant role of colleagues' green workplace behaviour suggests the need for the human resource department to recruit and hire employees who can proactively initiate green behaviour at the workplace. Their actions can then stimulate other employees' intention to perform green behaviour in the workplace setting.

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APPENDIX

Research instrument

Constructs
1) Attitude - "a set of emotions, beliefs, and behaviors toward a particular object, person, thing, or event"
(Ajzen, 1991, p. 180).
☐ I support green activities in the office.
☐ I think an information kiosk to promote green activities provided by management is essential to support green workplace behavior.
☐ Green activities in the office are very important to me.
☐ I think green activities in the office are good.
☐ I think green behavior in the office can reduce solid waste.
☐ I feel happy to work in an office that supports green activities.
2) Knowledge – "a familiarity, awareness, or understanding of someone or something, such as facts (descriptive knowledge), skills (procedural knowledge), or objects (acquaintance knowledge)" (Wikipedia, 2021b).
☐ Humans have the right to modify the natural environment to suit their needs.
□ When humans interfere with nature it often produces disastrous consequences.
☐ Human ingenuity will ensure that we do not make the earth unlivable.
☐ Humans are severely abusing the environment.
☐ The earth has plenty of natural resources if we just learn how to develop them.
□ Plants and animals have as much right as humans to exist.
☐ The balance of nature is strong enough to cope with the impacts of modern industrial nations.
☐ Despite our special abilities, humans are still subject to the laws of nature.
☐ The balance of nature is very delicate and easily upset.
☐ If things continue on their present course, we will soon experience a major ecological catastrophe.
3) Colleagues – "a person with whom one works in a profession or business" (Wikipedia, 2021a).
☐ My colleagues print documents on both sides of the paper.
☐ My colleagues photocopy documents on both sides of the paper.
☐ My colleagues use recycled paper in the office.
☐ My colleagues switch off computers before leaving the office.
4) Supervisor – "the job title of a management position that is primarily based on authority over workers or workplace" (Wikipedia, 2021c).
☐ My supervisor supports green behavior in the office.
☐ My supervisor uses recycled paper as notes.
☐ My supervisor always reminds me benefits of green behavior in the long term.
☐ My supervisor always challenges me to think of ways to recycle and reuse resources in the office.
5) Perceived behavioral control – "a person's perception of the ease or difficulty of performing the behavior of interest" (Ajzen, 1991, p. 183).
□ Printing documents on both sides of the paper is an easy task.
□ Photocopying documents on both sides of the paper is an easy task.
☐ I have time to cut recycled paper to reuse as small notes.
☐ I can prepare my own box to collect recycled paper.
□ Reporting water leaking issues to management is an easy task.
☐ I can do green activities in the office if I want.

/	ention — "the immediate antecedent that influences a given behavior where the stronger the intention form the behavior, the more likely the behavior will be performed" (Ajzen, 1991, p. 186).
	I will print documents on both sides of the paper.
	I will photocopy documents on both sides of the paper.
	I will use recycled paper to make notes.
	I will collect recycled paper.
	I will report water leaking issues (if any) to management.
	I will participate in green activities in the office.
	en workplace behavior – "a series of behaviors implemented by employees that aim at reducing the we effect on the environment and contributing to environmental sustainability" (Peng et al., 2019, p.
	I print documents on both sides of the paper.
	I photocopy documents on both sides of the paper.
	I use recycled paper to make notes.
	I report water leaking issues (if any) to management.



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The Influence of Financial Literacy and Attitude Towards Financial Behaviour Amongst Undergraduate Students: A Cross-Country Evidence

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ABSTRACT

Undergraduate students should be able to manage their finances wisely while they are living apart from their parents. Therefore, good financial literacy and attitude should be developed during college to instil positive financial behaviour. It is a cross-country study to analyse the influence of financial literacy and attitude toward financial behaviour amongst Indonesian and Malaysian undergraduate students. This research involved 204 students from the Faculty of Human Ecology, IPB University, Indonesia, and Universiti Putra Malaysia. Data were collected through a self-report questionnaire with a convenience sampling technique. In general, the results revealed that the student's level of financial literacy was recorded as moderate, while financial attitude and behaviour were categorised as poor. This study identified that Indonesian students scored higher in financial literacy, whereas Malaysian students recorded better financial attitude and behaviour scores. Multiple regression results showed that financial attitude had a significant positive effect on financial behaviour amongst Indonesian and Malaysian students and the group. In contrast, financial literacy had a negative effect on financial behaviour amongst the respondents, except in Malaysia. Moreover, students' characteristics, such as age, grade point average (GPA), and income, had no significant impact on financial behaviour. The presence of financial education and socialisation to enhance financial behaviour are needed not only to focus on cognitive areas

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but also to encourage a positive attitude. Stronger support and regulation from the government and stakeholders are vital to ensure the programme's success.

Keywords: Cross-country, financial attitude, financial behaviour, financial literacy, Indonesia, Malaysia, undergraduate students

INTRODUCTION

As they live away from their parents and begin to gain independence, undergraduate students often experience more significant responsibilities, particularly concerning their finances. This greater financial freedom, however, also poses a challenge. Students must be wary of their consumption habits, as wisely managing their finances becomes increasingly essential to making ends meet. As the cost of living tends to increase significantly annually, and as students grow into adults with financial independence, these increasingly adult mindsets and emotions should be balanced by positive financial behaviour. Positive financial behaviour developed during college can increase later opportunities to achieve a higher quality of life after graduation (Xiao et al., 2009). This kind of good financial behaviour involves budgeting and cash flow management, account ownership, credit usage, savings behaviour, and asset accumulation. This behavioural pattern is often further associated with financial literacy. For instance, Appleyard and Rowlingson (2013) and Johan et al. (2021) argue that, in addition to shaping financial behaviour, financial knowledge can be gained through interactions with socialisation agents and that it is ideal for carrying these out from childhood. Moreover, Worthy et al. (2010) demonstrate that students' problematic financial behaviour can negatively impact their future financial well-being.

According to the Organisation for Economic Co-operation and Development (OECD, 2020), younger individuals

lack financial literacy and demonstrate largely negative financial attitudes and behaviour. Previous studies have revealed that a student's monthly spending is mostly allocated to pleasure and lifestyle rather than savings or educational needs, with students spending roughly 46% of their income on shopping (Dewi, 2017). Female students, in particular, were found to be more likely to spend their money on consumptive activities (Ridhayani & Johan, 2020). Similarly, around 47% of youth have experienced excessive debt on credit cards, and those under the age of 34 accounted for 26% of all bankruptcy cases in Malaysia. Most of these cases occur due to an inability to repay large amounts of debt owed to install purchases, personal loans, and credit institutions (Mohamad, 2020).

Financial literacy refers to knowing and understanding matters that support financial decision-making. It includes interest rates, inflation, risks, and returns (Lusardi & Mitchell, 2005). Those who have good financial literacy are more likely to engage in more positive financial behaviour, such as paying bills on time, using credit cards responsibly, saving, and investing (Lusardi et al., 2010; Urban et al., 2015). According to Johan et al. (2021), Khoirunnisaa and Johan (2020), Susan and Djajadikerta (2017), and Yahaya et al. (2019), financial behaviour can also be influenced by financial attitude. Individuals who do not treat financial matters promptly and with a sense of urgency are thus more prone to poor financial behaviour. In certain studies, demographic and socioeconomic characteristics had significant effects on financial behaviour,

such as those conducted by Loke (2017) and Herawati et al. (2018). Other studies have demonstrated how income affects the level of financial behaviour (Johan et al., 2021; Klapper & Panos, 2011), while higher grades and Pambudhi (2015) claimed that students with a higher grade point average (GPA) demonstrate a larger proportion of positive financial behaviour.

Numerous studies which explore financial behaviour have been undertaken worldwide, including in Indonesia and Malaysia. In 2020, the OECD published a study on certain countries' financial literacy, attitude, and behaviour. From 1 to 100, Indonesians were rated 53.2 for financial literacy, 66.8 for financial attitude, and 69.7 for financial behaviour, whereas Malaysians scored 52.3 for financial literacy, 54.9 for financial attitude, and 68.1 for financial behaviour (OECD, 2020). Based on these results, it can be inferred that Indonesians slightly outperform Malaysians in these specific facets of financial behaviour. In addition to the larger OECD investigation, several local studies were carried out in both countries. For instance, Johan et al. (2021) investigated financial capability amongst university students in Indonesia, while Herawati et al. (2018) explored the determinant factors of financial behaviour amongst accounting students in Bali, Indonesia. Suryanto (2017) probed financial behaviour amongst students more generally, and Sabri et al. (2008) considered financial behaviour and problems amongst students in Malaysia. Finally, Yahaya et al. (2019) evaluated the effects of financial behaviour amongst Malaysian students.

However, despite these numerous related studies, a gap exists in our understanding of financial literacy, attitude, and behaviour as a comprehensive concept across university students. Currently, minimal research has been undertaken which compares these financial behaviours between various countries, particularly in developing economies. The majority of extant studies have focussed on specific areas such as financial knowledge or behaviour, others otherwise on a specific geographical location. Comparative studies in this field are relatively limited, even though they enable countries to learn valuable lessons from each other moving forward. Indonesia and Malaysia, for example, are neighbouring countries, and both have demonstrated similar characteristics and areas of concern over the development of personal finances. Furthermore, both countries possess a large proportion of young people. In Indonesia, there were around 25.8 million young individuals aged between 19 to 24 (Badan Pusat Statistik [BPS], 2020), and in Malaysia, there were approximately 3 million young individuals (Department of Statistics Malaysia [DOSM], 2021). These younger individuals will play increasingly central roles in economic growth. As a result, they should be equipped with the relevant skills and abilities that will enable them to properly manage financial challenges, such as financial knowledge, attitude, and behaviour.

This study aims to address this gap by analysing financial literacy, attitude, and behaviour amongst a group of university students. The findings of this study can be used as an important input for both government and other relevant stakeholders, such as schools and families. It also offers recommendations for developing effective policies and programmes that will benefit students as they seek to overcome financial challenges, develop financial responsibility, and become financially independent. This study also investigated the effects of certain characteristics concerning undergraduate students' financial behaviour in Indonesia and Malaysia. The findings of this study are expected to help students develop healthy financial capabilities.

This paper is divided into seven sections. Following the introduction, a literature review is conducted in Section 2, examining previous studies on financial literacy, attitude, and behaviour. Section 3 then discusses the study's methodology, including design, data, sampling, variables, measurement, and data analysis. Section 4 provides empirical results and interprets our findings, while Section 5 discusses the relevant results. Finally, Section 6 concludes the study and discusses the potential implications of these findings and possible avenues for further research. Finally, Section 7 describes the research limitations.

LITERATURE REVIEW

Tricomponent Model

The discipline of consumer behaviour has provided a framework for better understanding consumers' decisionmaking process. In the context of this study, the financial process covers financial knowledge, attitude, and behaviour. Ajzen (1991) argued that attitude plays a significant role in understanding consumer behaviour. We, therefore, foreground the theory of attitude in this study. Solomon (2013) later outlined a model of consumer analysis termed the Tricomponent Attitude Model, which consists of cognition, affect, and behaviour. This model demonstrates how a consumer's affective and cognitive areas make up the mental responses to their environment. The cognitive area includes knowledge possessed about the given object or product. In this context, knowledge is the understanding and all other relevant information an individual possesses about those products and services. Meanwhile, the affective element includes a consumer's emotions concerning a given product. Furthermore, the cognitive element demonstrates a consumer's actions or behavioural tendencies towards the objects (Engel et al., 1995). The model thus asserts that these three dimensions are interrelated (Figure 1).

This construct theory was applied in this study. Throughout this study, the cognitive element refers to financial literacy, the affective element refers to a financial attitude, and the behaviour element refers

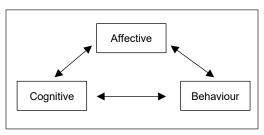


Figure 1. The tricomponent model (Solomon, 2013)

to financial behaviour. The following discussions will present the research development and examine studies related to these three areas.

Financial Literacy

There exist a wide range of definitions of financial literacy. Some focus on specific areas of financial literacy, such as the concept developed by Lusardi and Mitchell (2005), which covers the understanding of inflation, interest rates, and risk diversification. Others have described financial literacy in broader terms, such as Sohn et al. (2012), which defined it as the ability to understand and manage personal financial matters, such as managing money, savings and loans, future planning, and making sound financial decisions.

When they begin studying at a university, undergraduate students encounter several new financial challenges: budgeting, bill payments, credit card usage, and managing savings. Individuals are more likely to confidently navigate financial problems and react appropriately to new development if they understand basic financial concepts and numeracy skills (OECD, 2020). Certain studies have demonstrated that the ability to overcome these challenges can be reliant on their financial literacy (Ameliawati & Setiyani, 2018). A rigorous understanding of finances can also contribute to wider economic growth. On the other hand, individuals with low levels of financial literacy tend to make poorer financial decisions, are more likely to engage in inappropriate financial behaviour, and are less able to manage unexpected financial challenges properly. It negatively impacts financial resilience, both personally and on a macro level (Programme for International Student Assessment [PISA], 2019).

In demographic and socioeconomic terms, Sabri et al. (2021) revealed that men tend to possess greater financial literacy than women, while Ramasawmy et al. (2013) and Shaari et al. (2013) found no significant differences in terms of gender. On the other hand, Harrison et al. (2016) identified that women are less confident than men when making financial decisions. It is especially caused for concern because difficulties in managing finances can create challenging situations for students, especially those who live apart from their parents.

Parents can nurture financial knowledge and teach formal education, such as in schools. School et al. (2018) added that financial education should be included in schools and college curricula. Furthermore, parents are responsible for being excellent role models for their children's financial behaviour from an early age (Fan & Chatterjee, 2018; Gerrans & Heaney, 2016). Besides family and formal education, there are several information sources obtainable, including seminars and training programmes, as well as other informal sources, such as friends and work experiences (Bucher-Koenen & Lusardi, 2011; Ida & Dwinta, 2010; Klapper & Panos, 2011).

Financial Attitude

Attitude is how an individual thinks and feels before acting (Schiffman & Kanuk, 2010).

The term 'financial attitude' thus describes an individual's state of mind, opinion, and judgment towards their finances (Humaira & Sagoro, 2018). A positive financial attitude can be assessed by evaluating the attitude concerning managing cash flow, investments, or planning (Budiono, 2020). Financial attitude can differ according to an individual's economic status, psychological health, occupational psychology, and lifestyle (Abdullah et al., 2019; Sabri et al., 2020). However, various studies have found that financial attitude also affects financial behaviour and plays a role in financial decision-making (Serido et al., 2013; Shih & Ke, 2014; Yap et al., 2018).

A study on Vietnamese individuals conducted by Ameliawati and Setiyani (2018), Khoirunnisaa and Johan (2020), and Miền and Thao (2015), demonstrated similar findings. In addition, Selcuk (2015) found that their attitude toward money influences college students' financial behaviour and that individuals with a positive attitude can better plan out their monthly bill payments, remain within their budget, and effectively manage their future savings. According to Sabri and Aw (2020), individuals with this positive financial attitude are more careful with their expenditures, implemented through rigorous budgeting and planning for upcoming financial necessities.

Financial attitude is measured using several tools, including the Money Attitude Scale (MAS) developed by Yamauchi and Templer (1982) as well as the Money Ethic Scale (MES) developed by Tang (1992). Both of these instruments are pioneers in the development of financial attitude

measurement. The MES consisted of twelve items and was constructed based on 740 samples and six primary factors that were then classified into three components: emotional (good and evil), cognitive (achievement, respect, and freedom/power), and behavioural (budget). Conversely, the MAS comprises five money-attitude factors: power-prestige, retention-time, distrust, quality, and anxiety. The power-prestige factor describes how individuals use the money to impress and influence others and demonstrate success. The retention-time factor refers to future-oriented activities that require careful planning. The distrust factor is associated with doubts and suspicions regarding financial conditions, and the quality factor points to consumers who purchase products based on quality. Meanwhile, Yamauchi, however, dropped this factor because of its similarity to the power-prestige factor and argued that they shared a strong conceptual link. Finally, the anxiety factor assumes that money is a source of stress for individuals.

Financial Behaviour

Financial behaviour refers to the behaviour related to money management (Xiao, 2016). In the context of this study, university students who are entering a phase in which they begin to manage their money were considered independently. They begin budgeting, paying bills, managing credit, and dealing with other financial issues. Students' financial behaviour during these years can influence the decisions they make in the future (Shim et al., 2009). An inability

to manage financial issues can ultimately lead to inappropriate financial decisions and create burdens for their future.

Factors that can influence this behaviour are education, social environment, parental influence, values, personality, habit factors, attitude, and locus of control (Lusardi et al., 2010; Mutlu & Ozer, 2021; Putri & Simanjuntak, 2020). In addition, an individual's attitude toward managing their income and expenses as well as loans and investments can also reveal their financial behaviour (Laily, 2013; Sabri et al., 2020). According to Dew and Xiao (2013), four aspects of financial behaviour can be revealed: consumption or expenditure, cash flow management, savings and investments management, and credit or debt management. Meanwhile, Jacob (2002) noted that account ownership could also be leveraged to measure financial behaviour. Financial behaviour can also be assessed by how individuals conduct their activities, such as what they purchase and why (Ida & Dwinta, 2010). Other factors include

whether an individual pays bills on time, records expenses makes financial budgets, plans ahead, saves for unexpected needs, and compares prices before purchasing (Dwiastanti, 2015; Hilgert et al., 2003; Nababan & Sadalia, 2012).

Research Framework

Given the extant research in this field, a conceptual model was developed to structure this research (Figure 2). This study examines whether students' characteristics, financial literacy, and attitude are the drivers of the financial behaviour of university students in Indonesia and Malaysia. This research also investigates how each of these variables varies within each group.

This study is underpinned by twelve hypotheses (Table 1).

The following section will discuss the methods employed throughout this study. It explains the justification behind which techniques were employed and explores the details of our data collection and data analysis.

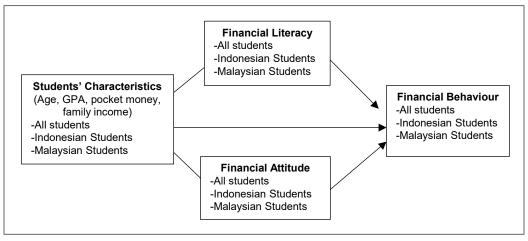


Figure 2. Research framework

Table 1
Hypotheses of study

No	Hypothesis
H1	There is a significant difference in financial literacy between Indonesian and Malaysian students.
H2	There is a significant difference in financial attitudes between Indonesian and Malaysian students.
H3	There is a significant difference in financial behaviour between Indonesian and Malaysian students.
H4	Financial literacy has a positive effect on financial behaviour among all students.
H5	Financial literacy has a positive effect on financial behaviour among Indonesian students.
Н6	Financial literacy has a positive effect on financial behaviour among Malaysian students.
H7	Financial attitude has a positive effect on financial behaviour among all students
H8	Financial attitude has a positive effect on financial behaviour among Indonesian students.
Н9	Financial attitude has a positive effect on financial behaviour among Malaysian students.
H10	Students' characteristics (gender, age, GPA, students pocket money) and family income have a positive effect on financial behaviour among all students.
H11	Students' characteristics (gender, age, GPA, students' pocket money) and family income have a positive effect on financial behaviour among Indonesian students.
H12	Students' characteristics (gender, age, GPA, students' pocket money) and family income have a positive effect on financial behaviour among Malaysian students.

METHODOLOGY

Data and Sample

This research was a cross-sectional study that utilised the survey method. The study was conducted at the Institut Pertanian Bogor (IPB University), Indonesia, and Universiti Putra Malaysia (UPM), Malaysia. The research locations were chosen based on several factors. Besides the ease of access, both are well-recognised public universities with students from various socio-demographic backgrounds. Moreover, both universities should have certain similarities in terms of academic programmes to be comparable. Both IPB and UPM offer a joint programme, the Faculty of Human Ecology (FEMA-IPB and FEM-UPM), which is the faculty with a focus on the interrelationship between humans and the environment. Each faculty

provided a variety of courses, including those related to social and economics, such as personal finance courses. These reasons make it plausible for the research to be carried out in these universities.

A total of 240 students responded to the research; however, after eliminating the incomplete responses and removing the outliers, 204 respondents were chosen for further analysis (Figure 3). In the data collection, self-administered questionnaire surveys were employed. Data were collected offline between October and November 2019. In addition, a pilot study with 36 respondents was conducted prior to this study to assess the suitability of the research instruments.

Samples were selected using a convenience sampling technique. Ideally, a probability sampling technique would make the results more generalised. Unfortunately,

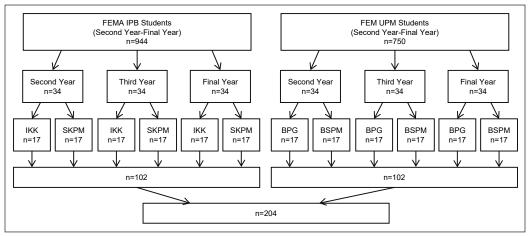


Figure 3. Research sampling method

this was unfeasible due to several limitations, such as different university academic schedules, complex admission requirements, and time constraints. Therefore, a convenience sampling technique was used for both countries. There were 34 students from each level of study; therefore, the total number of respondents was 102 students in each country. The first-year students were excluded from this study because they were still in the preparation stage. In IPB, a sample was selected from the Department of Family and Consumer Sciences (IKK) and the Department of Communication Sciences and Community Development (SKPM). Meanwhile, at UPM, a sample was chosen from the Department of Consumer Studies (BPG) and the Department of Human Development with Family Studies (BSPM).

Variables and Measurement

In this study, financial literacy refers to knowing and understanding financial concepts. Financial literacy was measured using the questionnaires developed by Sabri and Aw (2019) and Lusardi and Mitchell (2011). The questionnaire contained seven domains: cash flow management, credit management, savings and investments, retirement planning, risk management, Islamic products, and taxation. In addition, The Three Big Questions by Lusardi and Mitchell (2011) was included in the savings and investments domain. There were 18 items with two answer options for the respondents, 'true' or 'false'. Moreover, '1' was applied for the correct answers, while '0' for incorrect.

Financial attitude is described as the students' opinions regarding money and financial matters. The Money Attitude Scale developed by Yamauchi and Templer (1982) measured financial attitude. There were four factors: power-prestige, retention-time, distrust, and anxiety, with 29 total items in the origin measurement. For this research, 17 items used a 4-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree), to measure financial attitude with a Cronbach's alpha value of 0.682.

Financial behaviour in this study refers to how the students act concerning their finance. This study measures financial behaviour using a questionnaire adapted from Dew and Xiao (2013), Jacob (2002), and Mokhtar et al. (2020). There were four domains to measure financial behaviour: managing money, planning, choosing financial products, and staying informed. The Cronbach's alpha value was 0.807 with

16 total items. This study applied a 4-point Likert scale, ranging from 1 (never) to 4 (always).

The score of each variable was calculated by first adding the sum of each response to generate the overall score to measure levels of financial literacy, attitude, and behaviour. After that, the score was transformed into an index form using a formula as shown below:

$$Index = \frac{obtained\ score\ -\ minimum\ score}{maximum\ score\ -\ minimum\ score} \times 100$$

The index was then categorised according to the predefined class intervals. Following the computation of the index, the cut-off was decided by identifying the category. The variable indices were classified as low ($0 \le \text{Financial Literacy}$ Index ≤ 60), moderate (60 < Financial Literacy Index ≤ 80), and high (Financial Literacy Index ≥ 80) (DEFINIT et al., 2013). Finally, it was applied to financial literacy, financial attitude, and financial behaviour variables.

An analysis via the Statistical Package for the Social Sciences (SPSS) 25.0 was utilised. Descriptive analyses were used to describe the patterns of responses. The demographic characteristics and variables were described as frequency, percentage, minimum, maximum, mean, and standard deviation. An independent sample t-test was conducted to compare the Indonesian and Malaysian students' financial literacy, financial attitude, and financial behaviour. Furthermore, multiple regression analyses were conducted to analyse students'

characteristics (age, GPA, monthly income), family characteristics (family income), financial literacy, and financial attitude on financial behaviour. Finally, a classic assumption test was performed to confirm that the data met the requirements of the regression analysis and that all criteria had been met.

Three regression models were developed. The independent variables were student and family characteristics, financial literacy, and financial attitude, while the dependent variable was financial behaviour (Table 2).

This methodology section showed the chosen study design, data collection, and rigorous methods employed in this research. Moreover, it provided rich quantitative data from surveys across undergraduate students in two universities in Indonesia and Malaysia. The following section will present the empirical data, covering the students' characteristics, financial literacy, attitude, and behaviour across both countries.

Table 2 Equation model of regression

Model	Equation
1	$Y_1 = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \dots + \beta_8 X_8 + \varepsilon$
2	$Y_2 = \alpha \ + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \dots + \beta_8 X_8 + \epsilon$
3	$Y_3 = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \dots + \beta_8 X_8 + \epsilon$

Note. Y_1 = Financial Behaviour (all students) (index); Y_2 = Indonesian's Students Financial Behaviour (index); Y_3 = Malaysian's Students Financial Behaviour (index); X_1 = Student's Age (years old); X_2 = Students' GPA; X_3 = Students Pocket Money (Rp/RM); X_4 = Family Income (Rp/RM); X_5 = Financial Literacy (index); X_6 = Financial Attitude (index); X_6 = Regression Coefficient; X_6 = Constant; X_6 = Error

RESULTS

Demographic Characteristics

Across the 204 respondents from both countries, the number of female students was dominant (Table 3). The average age of the Malaysian students was 1.7 years older than the Indonesian students. Generally, undergraduate students range from 18 to 25 years old. In terms of their educational achievements during college, the GPA of Malaysian students was 0.18 higher than Indonesian students. The average GPA in Indonesia and Malaysia were 3.28 and 3.46, respectively.

In terms of students' pocket money, half of the students in Indonesia had pocket money of less than or equal to Rp1,000,000¹. In contrast, a similar number of students in Malaysia had pocket money ranging from Rp1,000,000 to Rp1,500,000. Meanwhile, concerning family income, in the Indonesian context, the income level was classified into three categories based on the respondents' average income, which were high, moderate, and low. The family income that exceeded Rp10,623,786,20 was considered 'high'. Family income in the 'middle

Table 3

Profile of respondents

	Indonesia	Malaysia
Variables	(n=102)	(n=102)
	%	%
<u>Gender</u>		
Male	20.6	16.7
Female	79.4	83.3
Age		
18	4.9	0
19	29.4	0
20	29.4	10.8
21	31.4	31.4
22	4.9	39.2
23	0	13.7
24	0	3.9
25	0	1.0
GPA (maximum of 4.00)		
≤ 2.50	0.9	0
2.51 - 3.00	17.7	12.7
3.01 - 3.50	63.7	47.1
3.51 - 4.00	17.7	40.2
Students Pocket Money pe	r Month (in	Indonesian
Rupiah (Rp/IDR))		
\leq Rp1.000.000	50.0	16.7
Rp1.000 001 -	28.4	50.0
Rp1.500.000		
Rp1.500.001 -	16.7	16.7
Rp2.000.000	4.0	165
≥ Rp2.000.0001	4.9	16.7
Family Income per Month	40.0	64.0
Low	40.2	61.8
Middle	40.2	25.4
High	19.6	12.8

¹ 1 USD equal to approximately Rp14,000

category' was between Rp4,279,703,96 and Rp10,623,786,20. For the Malaysians, income was classified into three categories: (1) bottom 40% (B40) (less than Rp14,824,000 [RM4,360]); (2) middle 40% (M40) (between Rp14,824,000 [RM4,360] and Rp32,708,000 [RM9,620]); and (3) top 20% (T20) (more than Rp32,708,000 [RM9,620]) (DOSM, 2016). Furthermore, about 19.6% of the Indonesian respondents came from high-income families, whereas almost 13% of the Malaysian respondents were from high-class society. More details about the respondents' characteristics are presented in Table 3.

Financial Literacy

In terms of financial literacy, this study showed that more than half of Indonesian students (53.9%) recorded a high score, and nearly half of Malaysian students scored moderately. However, only about a third of students in Malaysia recorded a high score on financial literacy. The details are provided in Table 4.

Overall, about four in ten respondents were categorised as moderate in terms of

their level of financial literacy, and a similar proportion was found for the high-level group (Table 4). The average financial literacy index was 80.17 for Indonesian students, 69.49 for Malaysian students, and 74.83 for the overall dataset. The independent sample t-test result showed that significant difference in financial literacy between the Malaysian and Indonesian students (p<0.01). The average financial literacy of Malaysian students was 10.67 lower than Indonesian students.

Table 5 compares average scores in each domain of financial literacy domain amongst Indonesian and Malaysian students. Indonesian students recorded a higher score (85.29) in terms of credit management knowledge than Malaysian students (73.53). Meanwhile, Indonesian students' average score on savings and investments was 10.5 higher than Malaysian students. Similarly, Indonesian students recorded higher scores than Malaysian students in terms of knowledge about Islamic products and taxation. After running the independent t-test, this study found a significant difference in terms of knowledge of credit management

Table 4

The frequency, mean, standard deviation, and independent sample T-Test result of financial literacy

	Indonesia	Malaysia	Total
Level of Financial Literacy	(n=102)	(n=102)	(n=204)
_	%	%	%
Low (≤ 60)	4.9	23.5	14.2
Moderate (61 - 80)	41.2	47.1	44.1
High (> 80)	53.9	29.4	41.7
Total	100.0	100.0	100.0
$Mean \pm SD$	80.17 ± 11.71	69.49 ± 16.18	74.83 ± 15.07
P-Value	0.00	0***	

Note. ***p-value < 0.01

(p < 0.01), savings and investments (p < 0.01), Islamic products (p < 0.01), and taxation (p < 0.01). Even though some domains showed significant differences between the Indonesian and Malaysian students, other domains, such as cash flow management, risk management, and retirement planning, showed no significant differences (p>0.10). In the cash flow management domain, the average score for Indonesian students was 93.63 and for Malaysian students was 95.59. The average score on knowledge about retirement planning for the Indonesian and Malaysian students was 70.10 and 63.24, respectively. Meanwhile, in terms of knowledge about risk management, the average score was 61.76 for Indonesian students and 58.82 for Malaysian students.

Generally, the Indonesian students scored higher in almost all domains of financial literacy, namely credit management, savings and investments, retirement planning, risk management, Islamic products, and taxation. Meanwhile, Malaysian students knew better about cash flow management than Indonesian students.

Financial Attitude

This study showed that the Indonesian and Malaysian respondents were more likely to have a poor financial attitude, with seven in ten Indonesians in this category and half of the Malaysian respondents in this area. Overall, about 62.7% of the respondents were categorised as poor in financial attitude. Only 4% of respondents had a good financial attitude, as indicated by their highlevel index score. The average financial attitude index was 55.47 for Indonesian students, 60.89 for Malaysian students, and 58.18 for the overall dataset. The unpaired t-test result showed a significant difference between Malaysian and Indonesian students (p<0.01). Malaysian students' average financial attitude index was 5.42, higher than Indonesian students. Table 6 describes the category of financial attitudes amongst undergraduate students for both Indonesian and Malaysian students.

Table 7 compares financial attitudes amongst Indonesian and Malaysian university students. Overall, Malaysian students recorded a higher score in

Table 5
Mean and independent sample T-Test results of financial literacy based on each domain

Domains	Indonesia	Malaysia	D 1/l
Domains	Mean	Mean	- P-Value
Cash Flow Management	93.63	95.59	0.413
Credit Management	85.29	73.53	0.008***
Saving and Investment	79.69	69.18	0.000***
Retirement Planning	70.10	63.24	0.131
Risk Management	61.76	58.82	0.670
Islamic Products	72.06	53.92	0.000***
Taxation	90.69	67.65	0.000***

Note. **p-value <0.05; ***p-value <0.01

Table 6
The frequency, mean, standard deviation, and independent sample T-Test result of financial attitudes

	Indonesia	Malaysia	Total
Level of Financial Attitude	(n=102)	(n=102)	(n=204)
	%	%	%
Poor/Low (≤ 60)	73.5	52.0	62.7
Moderate (61 - 80)	26.5	40.2	33.3
Good/High (> 80)	0	7.8	4.0
Total	100.0	100.0	100.0
$Mean \pm SD$	55.47 ± 7.76	60.89 ± 9.84	58.18 ± 9.25
P-Value	0.000***		

Note. ***p-value <0.01

Table 7

Mean and independent sample T-test result of financial attitudes based on each domain

Domains -	Indonesia	Malaysia	- P-Value
	Mean	Mean	
Power-Prestige	36.60	46.07	0.000***
Retention Time	62.65	63.49	0.659
Distrust	57.08	63.94	0.004***
Anxiety	55.88	65.19	0.000***

Note. ***p-value <0.01

all domains than Indonesian students. Regarding the power-prestige domain, the average score was 36.60 for Indonesian students and 46.07 for Malaysian students. Meanwhile, for the distrust domain, the average score for Malaysian students was 6.86, higher than the average score for Indonesian students. Malaysian students scored 9.31 higher on the average index in terms of anxiety.

After running the independent t-test, this study found a significant difference in terms of the power-prestige domain (p<0.01), distrust (p<0.01), and anxiety (p<0.01). However, only the retention-time domain showed no significant difference (p>0.10), and the average score for the Indonesian and

Malaysian students was 62.65 and 63.49, respectively.

Financial Behaviour

Table 8 shows that the respondents in this study were more likely to score low on the level of financial behaviour, which was recorded by 76.5% of Indonesian students, 50.9% of Malaysian students, and 63.7% for the overall dataset. The average financial behaviour indices for Indonesian students, Malaysian students, and the overall dataset were 52.81, 58.00 and 55.41, respectively. The independent sample t-test result showed a significant difference between Malaysian and Indonesian students (p < 0.01). The average financial behaviour of Malaysian

students was 5.18 higher than Indonesian students.

The comparison of financial behaviour between the Indonesian and Malaysian students is displayed in Table 9. Regarding the planning ahead domain, the average score was 44.77 for Malaysian students and 34.42 for Indonesian students. While, for the domain of staying informed, the average score for Malaysian students was 20.92 higher than Indonesian students. Overall, Malaysian students had a higher score in all domains than Indonesian students, except in the choosing product's domain. After running the independent t-test, this study found a significant difference in terms of the planning ahead domain (p < 0.01) and

staying informed domain (p<0.01). On the other hand, there were no significant differences (p>0.10) in the managing money and choosing products domains. In the managing money domain, the average score for Indonesian students was 59.43 and for Malaysian students was 60.70. Meanwhile, both the Indonesian and Malaysian students had an equal average score of 68.73.

The Influence of Students and Family Characteristics, Financial Literacy, and Financial Attitude Towards Financial Behaviour

According to Table 10, the regression model for all the respondents' characteristics, financial literacy, and financial attitude influences was significant, explaining 21.1%

Table 8
The frequency, mean, standard deviation, and independent sample T-test result of financial behaviour

	Indonesia	Malaysia	Total		
Level of Financial Behaviour	(n=102)	(n=102)	(n=204)		
	%	%	%		
Low (≤ 60)	76.5	50.9	63.7		
Moderate (61 - 80)	22.5	43.1	32.8		
High (> 80)	1.0	6.0	3.5		
Total	100.0	100.0	100.0		
$Mean \pm SD$	52.81 ± 10.80	55.41 ± 13.02			
P-Value	0.004***				

Note. ***p-value <0.01

Table 9
Mean and independent sample T-test result of financial behaviour based on each domain

Domains	Indonesia	Malaysia	- P-Value
Domains	Mean	Mean	r-vaiue
Managing Money	59.43	60.70	0.557
Planning Ahead	34.42	44.77	0.000***
Choosing Products	68.73	68.73	1.000
Staying Informed	30.06	50.98	0.000***

Note. ***p-value <0.01

of the total variance in financial behaviour ($Adjusted R^2 = 0.211$, F = 10.046, p < 0.01). This value showed that 21.1% of the undergraduate students' financial behaviour was influenced by the variables examined in this study. Other unexamined factors influenced the remaining 78.9%.

In general, financial literacy had a negative effect on financial behaviour (β = -0.169, p<0.05). However, despite the negative effect of financial literacy on financial behaviour, the effect of financial attitude on financial behaviour showed different results. Financial attitude significantly influenced financial behaviour amongst undergraduate students (β = 0.386, p<0.01). Meanwhile, age, GPA, students' pocket money, and family income did not affect financial behaviour amongst all the undergraduate students.

The regression model for Malaysian students' financial literacy and financial attitude influences was significant, explaining 16.2% of the total variance in financial behaviour (Adjusted $R^2 = 0.162$,

F = 4.249, p<0.01). This value showed that 16.2% of the Malaysian students' financial behaviour was influenced by the variables examined in this study. Other unexamined factors influenced the remaining 83.8%. The financial attitudes amongst Malaysian students had a significant positive effect on financial behaviour (β = 0.352, p<0.01). However, this significant effect was not valid for financial literacy. The results showed that financial literacy had no significant effect on Malaysian students' financial behaviour. Furthermore, there was no effect of age, GPA, students' pocket money, and family income on financial behaviour amongst all Malaysian students.

Meanwhile, the Indonesian students' regression model showed that Indonesian students' influences on financial literacy and financial attitude were significant, explaining 19.7% of the total variance in financial behaviour (Adjusted $R^2 = 0.197$, F = 5.128, p<0.01). This value showed that 19.7% of the financial behaviour amongst Indonesian students was influenced by

Table 10
Comparison of multiple regression analyses between Indonesian, Malaysian, and total respondents

Variables -	Indo	onesia	Mal	laysia	Total		
variables	β	Sig.	β	Sig.	β	Sig.	
Age	016	.859	.093	.328	.052	.462	
GPA	.165	.093	101	.321	.011	.874	
Students Pocket Money	.153	.139	.025	.827	.017	.817	
Family Income	069	.494	055	.627	055	.475	
Financial Literacy	244	.015**	096	.340	169	.017**	
Financial Attitude	.349	.000***	.352	.000***	.386	.000**	
Adjusted R square	.1	.97	.1	162	.211		
F	5.128		4.249		10.046		
Sig	.000		.001		.000		

Note. **p-value <0.05; ***p-value <0.01

the variables examined in this study. The remaining 80.3% was influenced by other unexamined factors, such as motivation, locus of control, lifestyle, peer group, and media. Unlike the Malaysian students, financial literacy and financial attitude had significant effects on financial behaviour amongst Indonesian students. Financial literacy was found to be negative (β = -0.244, p<0.05), while financial attitude had a significant influence on financial behaviour $(\beta = 0.349, p < 0.01)$. Similar to other models, no significant impact was found in terms of age, GPA, students' pocket money, and family income on the financial behaviour of Indonesian students.

In general, the findings indicated that students' financial literacy, attitude, and behaviour levels vary across countries. Financial literacy levels were moderate; however, they were less likely to have good financial attitudes and behaviour. This study revealed that Indonesian students outperformed Malaysian students in financial literacy, while Malaysian students were better in financial attitude and behaviour. According to the multiple regression analysis, the driver of financial behaviour in all models was financial attitude. In contrast, financial literacy had a negative effect on financial behaviour amongst the respondents, except in Malaysia. The effects of student characteristics factors, such as age, GPA, pocket money, and family wealth, on financial behaviour, were not significant. The following section will elaborate on the research findings to gain a deeper understanding and discuss the significance of the results.

DISCUSSIONS

The empirical results from this study revealed some interesting findings. Firstly, Indonesian students surpass Malaysian students in financial literacy, whereas Malaysian students exceed Indonesian students in terms of financial attitude and behaviour. The majority of Malaysian students were categorised as having a moderate financial literacy and were only good at understanding cash flow management. It is consistent with Idris et al. (2013), who found that most young individuals had a moderate to a high level of financial literacy. Malaysian students scored poorly on topics related to insurance and savings (Yahaya et al., 2019). In terms of financial attitude and behaviour, Malaysian students performed better than Indonesian students, even though they had a moderate financial attitude and a low level (poor) of financial behaviour. According to Yong et al. (2018), many young Malaysians were affected by a lack of financial literacy and improper financial management practices. Budgeting, practising living within their means, regular expenditure monitoring, the habit of savings and preparing for old age, and unforeseen expenses should all be instilled amongst Malaysians. In addition, Malaysian adolescents experience financial difficulties due to high-cost borrowings, personal loans, and credit card borrowings (Asian Institute of Finance, 2018). They live beyond their means due to a lack of self-control (Loke, 2015). In this study, the Indonesian students were classified as having a high level of financial literacy

and a moderate level of financial attitude, consistent with Susan and Djajadikerta's (2017) findings. A survey of 200 Telkom University students on financial behaviour conducted by Amanah et al. (2016) found that their financial management behaviour was poor because they were more concerned with wants rather than needs, and they sometimes performed poor credit management.

This study found no significant effect of the students' characteristics (age, GPA, and students' pocket money) and family income on financial behaviour across all the respondents. The findings were similar to Laily's (2013) study, which found that gender, age, academic ability, and work experience were not proven to correlate with students' financial behaviour. Ramasawmy et al. (2013) also revealed that gender, age, and income did not affect financial literacy. In terms of gender, Shaari et al. (2013) found similar findings. One plausible reason is that nowadays, males and females have equal opportunities to gain knowledge, access education, and manage income. In addition, Herdjiono and Damanik (2016) mentioned that income did not influence financial management.

Regarding the effect of financial literacy on financial behaviour, this study indicated a significant negative effect on Indonesian students. It is similar to a previous study by Soraya et al. (2021), while for Malaysian students, the regression model showed no significant effect. Previous research supported the findings, whereby having sound financial literacy does not

automatically lead to better financial behaviour (Nababan & Sadalia, 2012). Johan (2021) argued that changing behaviour involves a complex process and usually requires a long period to form a new positive behaviour. Factors such as motivation, self-regulation, and peer groups also play a role in forming a behaviour (Fenton-O'Creevy et al., 2018; Khoirunnisaa & Johan, 2020; Putri & Simanjuntak, 2020; Schiffman & Kanuk, 2010). Especially in the period of age transition, as experienced by the university students, the influence of peer groups could lead to some specific behaviour, including unfavourable ones.

Indeed, financial knowledge is important, but knowledge alone is insufficient to shape good behaviour. Higher financial knowledge is not always followed by good financial behaviour. Students might realise that managing cash flow, saving money, managing credit, managing risk, and paying taxes is important. However, even though they have good knowledge, it turns out that they do not necessarily practise it in their daily lives. It can be caused by other factors, such as a costly lifestyle or a peer group that drives them to avoid wiser choices. In Indonesia, the consumptive lifestyle fosters unfavourable financial habits, such as a lack of savings and investments and budgeting for the future (Ameliawati & Setiyani, 2018). Generally, those with good financial knowledge are more likely to make informed financial judgments and can utilise skills to prevent poor financial behaviour, including impulsive spending (Sabri & Aw, 2019). Additionally, Shinta

and Lestari (2019) argued that individuals with a healthy lifestyle are more likely to have effective financial behaviour. Today, it is easier for individuals to become impulsive buyers, for example, with increasingly widespread online shopping (ease of shopping everywhere, and supported by endless advertising or promotions), the ease of using credit cards, and the growth of 'buy now pay later' facilities. The lack of skills would increase the possibility of mismanaging money.

However, the study's findings amongst Malaysian students were aligned with Yahaya et al. (2019), who found no significant association between financial literacy and financial behaviour amongst Malaysian students. While financial knowledge is necessary, it was discovered that it is not enough to lead to good behaviour. It also follows Herdjiono and Damanik (2016), who found that financial knowledge did not influence financial behaviour. Consumer and Iramani (2013) also found that financial literacy had no direct influence on financial behaviour, while the locus of control mediated the indirect effect of financial literacy on financial behaviour. From the findings in this study, whether they were financially literate or not, students will behave as they desire, whether the results are positive or negative. Further research is needed to analyse more factors related to internal factors, such as self-control or self-efficacy. A major factor influencing consumer behaviour is self-efficacy, which is having the confidence and the ability to deal with a situation without being overwhelmed (Herawati et al., 2018). Selfefficacy influences attitude and behaviour in students attempting to reach their goals, which can also be applied to financial behaviour.

This paper contributed to the literature in several aspects. Firstly, the current literature regarding the drivers of financial behaviour was extended amongst university students using a comprehensive measure of financial literacy, attitude, and behaviour. This paper goes beyond the existing literature by comparing the effect of financial literacy, attitude, and behaviour in two Southeast Asia countries: Indonesia and Malaysia. Most of the previous studies only examined one single country. Indonesia and Malaysia are interesting cases, as both are neighbouring countries and are dominated by young individuals in their population pyramid.

This study contributed to the existing literature by underlining the significance of financial attitude in changing financial behaviour. This study revealed that financial attitude positively influences financial behaviour amongst undergraduate students, both in Indonesia and Malaysia. A good financial attitude could lead to better behaviour in managing finances. Vice versa, those that are less engaged with a positive attitude toward money tend to be less careful when purchasing things that might be unnecessary and might think that money is a source of happiness. Therefore, they will not worry, even though it might risk their financial security. This research is in line with previous studies conducted by Ameliawati and Setiyani (2018), Herdjiono and Damanik (2016), and Yahaya et al. (2019). A positive attitude towards money could positively impact students' financial behaviour, such as timely bill payments, savings and investments, and the ability to use credit cards responsibly. However, this study also revealed that students experienced poor financial attitudes, requiring special attention. Many young individuals tend to lack proper financial planning. Therefore, a dedicated effort is required to enhance students' attitudes by encouraging and providing sufficient information to students on the importance of effective money management (Yong et al., 2018).

CONCLUSION AND RECOMMENDATIONS

By comparing financial literacy, attitude, and behaviour across undergraduate students in Indonesia and Malaysia, this study has documented new empirical data and relevant findings. Indeed, developing positive financial behaviour will be increasingly important for undergraduate students, especially those who live apart from their parents. They should be able to wisely manage their finances, as it can further support financial security in the future. To the authors' best knowledge, this study is one of the first attempts to compare undergraduate students' financial literacy, attitude, and behaviour across two countries in Southeast Asia, Indonesia and Malaysia. This study revealed that financial literacy among undergraduate students in Indonesia and Malaysia was moderately high. In other words, they possess a good understanding of money matters. By contrast, financial attitude and financial behaviour levels

demonstrated significantly lower results. It can be inferred from this data that students tend to be less engaged with positive attitudes toward money, such as making non-essential purchases, and tend to be unwise when managing their finances. In addition, many students reported poor financial behaviour and attitude, so integrating financial literacy and attitude towards behaviour will be crucial.

The regression analysis performed as part of this study showed that financial literacy has a negative effect on financial behaviour, especially for Indonesian students. At the same time, there was no significant impact on Malaysian students. Where financial attitude was concerned, this research revealed that financial attitude has a positive effect on financial behaviour amongst both Indonesian and Malaysian undergraduate students. Furthermore, the findings revealed that several students reported poor financial behaviour despite being financially literate. All stakeholders should consider it further in the future to avoid long-term effects that can negatively impact wider economic growth. In addition to stimulating the cognitive area, financial education should include affective aspects, as these demonstrate positive impacts on financial behaviour. Building these behavioural patterns is not achieved instantaneously; rather, time and effort are required to shape individuals capable of responsibly managing their finances. This study suggests that financial socialisation should begin during childhood. Policymakers can develop programmes and interventions which encourage parents to have frequent discussions with their children about financial matters throughout childhood, such as the importance of savings, having emergency funds, avoiding unsecured loans, and impulsive buying.

The highlighted results demonstrate the poor financial behaviour of undergraduate students. While personal finance courses can help students improve their financial behaviour, this study also suggests including practical lessons in order for students to implement the theories they learn in class, for example, calculating interest rates, taxation, and budgeting. In addition, students should be encouraged to start saving and investing in springing forth positive financial behaviour and securing their financial future. Moreover, students should also be taught the importance of exercising caution before making financial decisions to reduce the risk of scams and frauds. It can include, for example, reading the terms and conditions carefully before signing a contract.

This study has shown interesting findings that financial literacy has a negative effect on financial behaviour. However, it is expected that other factors may also drive financial behaviour. Researchers may investigate other variables that can influence financial behaviour, such as lifestyle, motivation, self-efficacy, psychological factors, and the influence of peers, media, and family.

LIMITATIONS

One of the limitations of this study was that it employed a convenience sampling technique, which implied that the results could not necessarily be generated throughout the broader population. Future studies are suggested to use a more robust sampling technique, followed by in-depth interviews. Future studies are also expected to be conducted in diversified locations around Indonesia and Malaysia as well as in other countries to provide a more holistic picture of financial behaviour. It is also suggested to involve more samples to obtain further precise results.

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Reading Strategies in Teaching and Learning English as a Foreign Language: A Mixed-Method Study

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ABSTRACT

Reading strategies are essential for teachers and students, especially in an EFL classroom. However, reading comprehension strategies and effective adoption of the strategies have been challenging for both teachers and students in Malaysia. This study aimed to identify the reading strategies used and not used by students and teachers when answering and teaching reading comprehension questions and explore the discord between the responses using an explanatory sequential mixed methods research design. The participants were 91 students and five teachers from a private university in Malaysia recruited using census sampling methods. A questionnaire consisting of literal, reorganization, and inferential reading comprehension questions was administered to the students, whereas interviews and observation were used to examine the strategies targeted by teachers based on Barrett's reading taxonomy (1972). The findings revealed that EFL teachers used a vast

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repertoire of strategies in teaching reading, whereas students only used a small number of strategies when answering reading comprehension questions. This study underscores the importance of the accord between the strategies taught and those utilized by L2 readers. Students' awareness plays a key role in filling in this gap.

Keywords: Inferential, literal, reading, reorganization, strategies

INTRODUCTION

Critical skills (such as connecting between sources of information and detailed meanings and applying reading understanding to reflect the social context) are vital requisites for reading comprehension. Reading comprehension as part of EFL follows an active mode of learning (Othman & Zare, 2013). Reading comprehension skills are acquired through various comprehension strategies (Amini & Amini, 2017; Amini et al., 2016), modes of operation for achieving an end, or plans for regulating information (Brown, 2007). Readers develop the skill to read and identify the intention of the text as their comprehension skill gradually advances (Amini & Amini, 2012; Yovanoff et al., 2005).

The procedure of selecting reading strategies can be generally summarized as (a) ascertaining the reading objective; (b) activating and applying one's knowledge based on the content of the text; (c) depicting the relationship between words, sentences, and paragraphs comprising the envisioning of information and creation of representations; (d) exploring the nature and form of different genres of texts; (e) discovering the theme and main ideas of a text; (f) questioning and answering one's uncertainty; (g) planning, monitoring and rectifying one's reading behavior; (h) assessing a text for its worth; (i) reflecting on the reading processes that have been carried out and their outcomes (Pressley, 2000).

Higher education institutions perceived reading as the most fundamental academic skill (Noor, 2011; Sattar & Salehi, 2014). It is

essential when reading in a second language (Yapp et al., 2021) or as a foreign language (Kazemi, 2021). However, language learners often struggle to master reading (Trudell, 2019). By recruiting suitable strategies for answering comprehension questions, students become autonomous readers (Cadena, 2006; James et al., 2018). Reading strategies are significant in assisting students in planning and monitoring their reading comprehension. Language learners could use reading strategies to develop more strategic and flexible reading comprehension skills (Scheid, 1993).

English language is a second language in Malaysia (Omar, 2011) and is a compulsory subject at all levels of education, including higher education in the country (Pillai & Ong, 2018). Consequently, international students from non-English speaking countries who come to study in Malaysia are mostly required to take up an English proficiency program at the tertiary level. Moreover, English is the teaching medium for several subjects from primary school through university (Thirusanku & Melor, 2012).

However, there are many differences amongst university students entering their first year of studying in the four macro-skills of reading, speaking, writing, and listening (Humphreys et al., 2012). This scenario aggravates L2 students who are less exposed to reading academic materials in English prior to entering tertiary education (Hermida, 2009; Yapp et al., 2021). Consequently, educators may face a critical situation when many foreign language learners struggle to read. Furthermore, teachers

and students may not have an adequate acquaintance with reading strategies (Cadena, 2006). Thus, if this issue is not addressed adequately, the learners' academic performance can be affected negatively. Previous studies, such as Humphreys et al. (2012), found that reading ability is strongly interrelated to academic success. In addition, there is a gap in the literature about the international students' understanding and application of EFL reading comprehension strategies in Malaysia. Reading is often taught directly and systematically using strategies. Reading strategies for young learners could enhance learners' familiarity with the aim, lexicon, comprehension skills, and textual structures (Ng et al., 2020). Likewise, explicit instruction seems necessary in teaching reading strategies to expand phonemic and phonic knowledge, spelling, and comprehension skills. Such explicit teaching could improve learners' fluency, automaticity, and understanding (Javed et al., 2016). Since reading strategies are flexible tools designed to facilitate text comprehension (Javed et al., 2016), comparing the strategies used by instructors and learners could provide an in-depth understanding enhancing reading comprehension skills. Therefore, the following research questions were formulated based on the objectives of the study:

> What strategies are utilized by students and teachers to answer and teach reading comprehension questions in the Malaysian EFL context?

 How do students and teachers use different strategies in answering and teaching reading comprehension questions?

This study investigates reading strategies in teaching and learning English as a foreign language in the Malaysian EFL context. The following section summarizes studies conducted on reading strategies in EFL and Malaysian contexts.

LITERATURE REVIEW

Reading comprehension strategies are intentional plans and procedures that proficient readers apply to comprehend the text (Maine, 2013). Readers should equip themselves with multiple reading strategies to comprehend a text effectively (Sohail, 2016). The complexity of the reading process is often associated with grasping the intended meaning of the text (Yapp et al., 2021). In addition, the process often involves "internal thinking" (Paris & Flukes, 2005). Reading strategies are thus employed by the readers who deliberately attempt to monitor and alter their initiatives in decoding the text, comprehending words, and understanding the meaning of the text (Afflerbach et al., 2008). These strategies enable readers to identify the text's main point from the explicit and implicit information and synthesize the content effectively (Harvey & Goudvis, 2007). Readers who read critically can draw conclusions, find solutions, form justifications, compare concepts, hypothesize, and evaluate different ideas and circumstances (Tran, 2015). It demonstrates how skilled readers are generally more aware of employing reading strategies effectively (L. Zhang, 2017).

Although reading is an important skill for students (Trudell, 2019), it is especially challenging for non-native English learners, given their distinctive linguistic, educational, sociocultural, and institutional backgrounds (L. Zhang, 2017). The reading strategies are not merely about personal preferences but also conventional norms (Alghail & Mahfoodh, 2016). Learners need to compromise between the dimensions of the depth and breadth of information by reading the text (Wallace & Wray, 2021).

The common reading strategies include skimming (searching for key information), scanning (glance for an overview), and intensive reading (a thorough read-through of the text; Wallace & Wray, 2021).

Examining the effectiveness of teaching collaborative reading strategies, Amjadi and Talebi (2021) found that students adopted various reading strategies, such as previewing, scanning, skimming, guessing, grasping the central idea, and looking for a synonym for unfamiliar words while reading.

Reading is largely facilitated by the interplay of cognitive and metacognitive strategies used by the readers (Thongwichit & Buripakdi, 2021). According to L. Zhang (2017), metacognitive strategies consist of planning, assessment, and monitoring. On the other hand, cognitive strategies entail the strategies of progression, identification of the main point, integration of ideas, and making inferences. Previous studies have supported the effectiveness of employing cognitive strategies (N. J. Anderson &

Cheng, 2004) and metacognitive strategies (Thongwichit & Buripakdi, 2021; M. Zhang, 2013) in enhancing students' academic reading performance. In addition, several studies (e.g., Phakiti, 2003; Sun, 2011; L. Zhang, 2017) found that students adopted both strategies simultaneously in reading comprehension.

Shah et al. (2007) investigated reading strategies by Malaysian ESL students and suggested that teachers should employ more reading strategies in teaching English. Similarly, Nordin et al. (2013) reported using different reading strategies by undergraduate ESL learners in Malaysia and suggested effective use of reading strategies to improve the reading proficiency level of low-proficient ESL learners. In another study, Mahmud (2008) examined the role of reading strategies used by ESL teachers in facilitating teaching and learning of reading and found that the dominant strategies were activating students' background knowledge and scanning for specific details. Finally, using a quasi-experimental design, Choo et al. (2011) examined the efficacy of the reciprocal teaching strategies in teaching reading comprehension among low achievers form-sixth Malaysian students. The study reported that employing the strategies of predicting, questioning, summarizing, and positively clarifying affected the learners' comprehension.

It can be concluded that the previous studies have mostly emphasized that reading comprehension strategies are deliberate plans and procedures that competent readers employ to decipher meaning. Moreover, examining how teachers apply strategies can help students answer reading comprehension questions. Students who are taught comprehension strategies become more vigilant and engaged readers who oversee their reading comprehension.

The present study adapted Barrett's (1972) Taxonomy. This taxonomy deals particularly with reading comprehension. Barrett classified reading comprehension strategies into five levels of comprehension: 1) literal, 2) reorganization, 3) inference, 4) evaluation, and 5) appreciation. The levels of comprehension related to language learning skills are literal, reorganization, and inferential comprehension. Evaluation and appreciation levels are mostly used in teaching literature. The first three levels are further divided into sub-categories, i.e., reading comprehension strategies (Barrett, 1972). The present study adapted the three main types from Barrett's taxonomy, i.e., literal, inferential, and organizational, to identify the reading comprehension strategies and how the EFL students and teachers used them. In the present study, EFL refers to the English language taught to international (non-Malaysian) students in Malaysia who intend to enter a degree program.

The following section summarizes the design, participants, and the details of the data collection and analysis procedure in the present study.

METHODOLOGY

Study Design

The current study enjoyed an explanatory sequential mixed-method design (Creswell,

2015) in collecting quantitative and qualitative data.

Participants

The study was conducted at UCSI University Malaysia, Centre for Languages. At UCSI University, international students must complete ten levels of English for Tertiary Education with at least a band score of 5.5 in IELTS to enroll in the degree program. Therefore, the first group of participants in the study was students at the Centre for Languages, UCSI University, Malaysia. Census sampling was used in this study to recruit the maximum number of available EFL teachers and students at the center. Ninety-one out of 123 questionnaires were returned to the researchers (dropout rate = 26%).

Table 1 shows the demographic information of students. The participants were 35 female and 56 male students. The age groups of students were divided into four categories: Below 18, 18 to 21, 22 to 25, and above 25 years old. Most of the students were from the second age group, i.e., 18 to 21 years old (% 63.7). Students' English proficiency levels were categorized into: 1 to 3, 5 to 8, and 9 to 10. More than half of the students were from levels 5 to 8 (% 53.8). Students mainly were from Arab-speaking countries, China and Indonesia.

The students had completed a reading lesson prior to answering the questionnaire. The student's responses to the reading strategies were tallied with the teachers' interviews and the classroom observations.

As for the student's proficiency level, the higher number represents the higher level

Table 1
Demographic characteristics of students

	Frequency	Percentage	Cumulative percentage
Gender			
Female	35	38.5	38.5
Male	56	61.5	100.0
Total	91	100.0	
Age			
< 18	4	4.4	4.4
18-21	58	63.7	68.1
22-25	18	19.8	87.9
> 25	11	12.1	100.0
Total	91	100.0	
English pr	oficiency leve	el	
1–4	5	5.5	5.5
5-8	49	53.8	59.3
9-10	37	40.7	100.0
Total	91	100.0	

of proficiency recorded in the placement test. Students are given a placement test to identify their level at the language center. Therefore, not all students start their English course at level 1. It means that they were given different reading materials appropriate for their level of proficiency. For example, students from level 10 can read more complex texts than students from level 3. Therefore, only the former students were taught reading strategies in this example. Because of students' different levels of English language proficiency, teachers might adopt or teach different reading comprehension strategies to suit the students' proficiency levels. Hence, this might explain why the teachers do not use certain strategies.

The second group of participants in the study was teachers at the Centre for Languages at UCSI University, Malaysia. Five teachers were purposively selected as respondents for the interview and their classroom observation. All teachers were female. They were aged 25 and above. Two teachers had less than seven years of experience, and three teachers had between 8-15 years of teaching experience.

Instruments

A questionnaire consisting of 32 questions with a five-point Likert scale indicating 'Never,' 'Rarely,' 'Sometimes,' 'Regularly,' and 'Often' and three open-ended questions were constructed based on Barrett's (1972) taxonomy of reading comprehension. The 32 multiple-choice and the three open-ended questions were categorized according to the three main types of reading comprehension questions, i.e., literal comprehension, reorganization comprehension and inferential comprehension questions. Three items were categorized under demographics, nine items were categorized under literal comprehension, and ten items each under reorganization comprehension, and inferential comprehension questions. For the internal consistency reliability coefficient, Cronbach's alpha was measured ($\alpha = .71$), indicating an acceptable level of reliability (M. Alavi et al., 2020; Pallant, 2007). The procedure of validating the questionnaire started with the face validation by having the test items validated by three content experts in the field. First, the irrelevant or confusing statements were eliminated (Ahadzadeh et al., 2018). Then a pilot study was conducted on 13 students, and the irrelevant questions were dropped based on the feedback from the respondents and the three experts. The development of a valid content instrument is usually achieved by a rational analysis of the instrument by raters (experts) familiar with the construct of interest or experts on the research subject (M. Alavi et al., 2018; Sangoseni et al., 2013). Moreover, the convergent validity yielded similar results for the same concept measured (Smith, 2005), i.e., via the open-ended questionnaires, expert feedback, and pilot test in the present study.

Observations were conducted using an observation checklist adapted from Javed et al. (2016), originally designed based on Barrett's Taxonomy. The checklist had 46 items with three main categories: literal comprehension strategies, reorganization comprehension strategies, and inferential comprehension strategies. There were 11 strategies under literal comprehension, 19 strategies under reorganization comprehension, and 16 strategies under inferential comprehension.

Finally, interview questions were used to explore the teachers' experiences and their elaborations and interpretations of the experiences (Rubin & Rubin, 2012). The questions were then validated for their content by three experts in reading and assessment.

There were several limitations and constraints in validating the instruments. The main challenge was finding qualified content experts willing to validate the instruments. It was tackled by obtaining a list of 10 experts and approaching them via email and academic platforms. Eventually, three experts agreed to contribute to

the validation of instruments. Another constraint was conducting the pilot study on a sufficient number of students in a short time. Moreover, since the population, i.e., the total number of students at the Center for Languages, UCSI University was not large enough for a questionnairebased survey study, we decided to go for the maximum number of participants from that population for the survey and opted for a mixed methods research design to use the qualitative findings after collecting and analyzing the quantitative data. This merging and comparison of quantitative and qualitative data provided more valid results (Creswell, 2015).

Procedure

All participants were briefed on the purpose of the study. Informed consent was obtained from the participants before data collection. The students were from different levels, which means they had been exposed to different reading materials and reading strategies during their study. It could affect the consistency and trustworthiness of the quantitative results. To address this issue, we tried to give some additional reading materials to the students from different levels. We briefed them for about 30 minutes about reading strategies before distributing questionnaires.

As for the qualitative phase of the study, structured interviews and 'unobtrusive observations' were conducted to explore the use of strategies by the teachers. Unfortunately, single classroom observation was insufficient, considering the long

checklist with 46 items. Therefore, the same teachers and classes were observed twice for about 90 minutes. Nevertheless, we attempted to obtain an accurate view of the use of strategies by the five teachers with these considerations.

The observation allowed us to analyze the participants' negligence or the reasons which contributed to this neglect (Kawulich, 2012). Furthermore, observations facilitated further documenting what was important to the respondents, discovering the time spent on a certain task, observing nonverbal cues, and ascertaining their social circle (Schmuck, 1997). Observations also helped us verify unmentioned information in the interviews (Marshall & Rossman, 1995). Two observations were carried out for each teacher right after the survey was administered, and the reading strategies that teachers applied during the lesson were taken down.

After the observations were conducted, face-to-face, in-depth interviews were conducted with each teacher. Follow-up questions (probing) were used after the initial questions were asked to extract further information on their responses. The interviews were recorded with the consent of the participants. The interviews were then converted into transcripts which were verbatim records of the respondents to the questions asked by the interviewer.

Data Analysis

The IBM SPSS software (v. 25) was used to process the quantitative data. First, the frequencies and percentages were analyzed using descriptive statistics (M. Alavi et al., 2017). Then, the data were tabulated according to the three main types of literal, reorganization, and inferential comprehension questions.

Answers to the open-ended questions on the questionnaire from the students were coded and thematically analyzed. As similar codes were grouped to form the main idea, themes were analyzed (Vaismoradi et al., 2015; Yap & Amini, 2020). As for the qualitative data from the teachers, the emerging themes were categorized based on the strategies adopted by teachers in teaching reading comprehension. Member checking and rereading were processed with the teachers to check if the explanations were accurate and representative of the qualitative data. The reasons why particular themes were more significant in the data and the selection process were reported. Finally, possible reasons for the connection between the qualitative and quantitative data were explained. The results of the data analysis were then summarized and presented. The following section provides the findings of the present study in terms of the strategies used and not used by students and teachers, as well as how the strategies were utilized differently by the instructors and students.

RESULTS

Strategies Used and Not Used by Students and Teachers

The findings indicated differences between the strategies used by the students and teachers in answering and teaching reading comprehension questions. The strategies that both students and teachers used to answer and teach literal comprehension questions were "read the questions first before reading the passage," "identify the keywords from the questions," "find the topic sentence," and "identify the keywords from the passage," "scan the text for a specific piece of information," "locate supporting details from the keywords," "distinguish between important and unimportant supporting details" and "go through the text (skim) to find out the main ideas/ concepts."

Moreover, students applied "read the signpost questions" and "locate answers to the signpost questions through obvious information from the text." Finally, based on the interviews, the teachers applied "guess," "understand the format of the questions," as well as "getting feedback from students."

On the other hand, the new strategy by students was "preview the text." The strategies applied by the teachers were counted as "used" when the teacher applied them during teaching reading. Therefore, all strategies were employed by the teachers during reading comprehension class.

Students' Use of Comprehension Strategies When Answering Reading Comprehension Questions

Use of Literal Comprehension Strategies.

The results show that students practiced different strategies when answering the three types of literal comprehension questions, reorganization comprehension questions, and inferential comprehension questions (see Figure 1 and Table 2).

The students "read the questions first before reading the passage" when answering literal comprehension questions. Based on the scale and open-ended questions, the most frequent strategy used by students "often" was reading the questions first before reading the passage. This finding is consistent with Oxford (1990) and Z. Zhang (1992), who concluded that reading with a purpose would remarkably enhance test results and efficiency. The results indicated that the students would prefer to "identify the keywords from the questions" when answering literal and inferential comprehension questions. This strategy

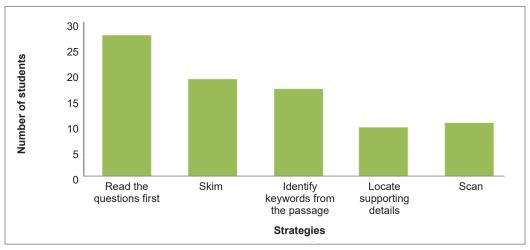


Figure 1. Strategies used by students to answer questions clearly stated in the text

Table 2
Literal comprehension strategies used by students

No.	Item	Never	Rarely	Sometimes	Regularly	Often	Mean	SD
		n*	n*	n*	n*	n*		
1	I read the questions first before reading the passage.	10 (11)	2 (2.2)	27 (29.7)	16 (17.6)	36 (39.6)	3.73	1.31
2	I can identify the keywords from the questions.	3 (3.3)	6 (6.6)	49 (53.8)	17 (18.7)	16 (17.6)	3.41	0.97
3	I look for the topic sentence when reading a text.	2 (2.2)	5 (5.5)	37 (40.7)	22 (24.2)	25 (27.5)	3.69	1.01
4	I can identify the keywords from the passage.	5 (5.5)	16 (17.6)	39 (42.9)	20 (22)	11 (12.1)	3.18	1.04
5	I can locate the supporting details from the keywords.	4 (4.4)	10 (11)	45 (49.5)	18 (19.8)	14 (15.4)	3.31	1.01
6	I can differentiate between important and unimportant supporting details.	8 (8.8)	17 (18.7)	39 (42.9)	12 (13.2)	15 (15.4)	3.10	1.16
7	I go through the text in detail to find out the main ideas/concepts.	2 (2.2)	20 (22)	39 (42.9)	19 (20.9)	11 (12.1)	3.19	0.99
8	I read the signpost questions (questions indicated beside the text.	38 (41.8)	26 (28.6)	17 (18.7)	6 (6.6)	4 (4.4)	2.03	1.13
9	I can locate answers to the signpost questions through obvious information from the text.	32 (35.2)	35 (38.5)	14 (15.4)	6 (6.6)	4 (4.4)	2.07	1.08
10	Average Mean and SD						3.08	1.08

^{*}Number of respondents. Values in parentheses indicate percentage.

was found in both scale and open-ended question responses, with a high percentage of students using it when answering literal comprehension questions.

"Locate supporting details from the keywords" was another strategy employed by the students to answer literal and reorganization comprehension questions. This finding was also supported by Lestari et al. (2015), where students were "fairly" able to locate supporting details in a text. "Go through the text thoroughly (skim) to find out the main ideas/concepts" was also one of the strategies applied by the students. This finding aligns with Amjadi and Talebi's

(2021) study, which reported that students apply to skim during the reading test to grasp the central idea due to time limitations. This strategy also improved students' results, especially reading comprehension (Amjadi & Talebi, 2021).

The students did not "preview the text" when answering literal comprehension questions. Although this strategy was explicitly taught to students, the reason for not "previewing" could be due to the time factor and trying to answer the questions straight away. However, Amjadi and Talebi (2021) reported that students employed the preview strategy in answering the reading

test. This difference could be due to the purpose, research designs, and methods used in the present study. While the study was merely eliciting the types of strategies used by the students, Amjadi and Talebi (2021) administered a reading test that required multiple strategies to deal with the reading test effectively.

Use of Reorganization Comprehension Strategies. The results indicated that the students "go through the text thoroughly to find out the cause and effect" when answering reorganization comprehension questions (see Figure 2 and Table 3). A small number of students applied this strategy. It is in line with Torgesen (2002), i.e., identifying main ideas is one of the difficulties students face when reading comprehension.

Next, students "combine information clearly stated from more than a single source" when answering reorganization comprehension questions. The students used this strategy "often" based on data from the scale analysis. The same result can be seen in the study conducted by Sani et al. (2011) on reading motivation and reading strategies used by undergraduates in Universiti Teknologi MARA. They found that skimming the text to find out the cause and effect is useful in strengthening students' reading ability.

Students did not "read the signpost questions (questions indicated beside the text)" when answering reorganization comprehension questions. The findings also revealed that the students did not "analyze the information to find the answers." It could be because the textbook that they were using did not provide signpost questions, or signpost questions were not part of their IELTS exam that they were supposed to take at the end of the proficiency course. Thus, they possibly found it irrelevant to their studies. This finding is in line with the study by Javed et al. (2016), which concluded that some reading strategies, such as reading the signpost questions, locating answers to the signpost questions, and analyzing the information to find the answers were not

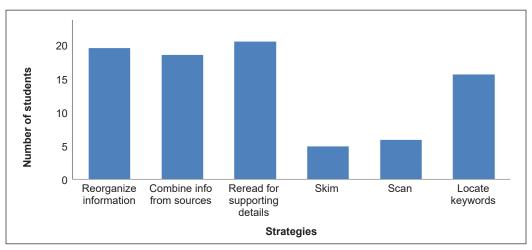


Figure 2. Strategies used by students to answer questions related to keywords and chronological events

Table 3
Reorganization comprehension strategies used by students

No.	Item	Never	Rarely	Sometimes	Regularly	Often	Mean	SD
		n*	n*	n*	n*	n*		
1.	I read the questions first before reading the passage.	2 (2.2)	8 (8.8)	21 (23.1)	26 (28.6)	28 (30.8)	3.77	1.06
2.	I can identify the key concept from the questions.	7 (7.7)	11 (12.1)	22 (24.2)	37 (40.7)	14 (15.4)	3.44	1.13
3.	I summarise the text to identify supporting details.	6 (6.6)	20 (22)	38 (41.8)	17 (18.7)	10 (11)	3.05	1.06
4.	I go through the text thoroughly to find out the cause and effect.	4 (4.4)	18 (19.8)	38 (41.8)	19 (20.9)	12 (13.2)	3.19	1.04
5.	I can connect the previous knowledge with learned knowledge.	5 (5.5)	11 (12.1)	36 (39.6)	27 (29.7)	12 (13.2)	3.33	1.03
6.	I can locate supporting details from the keywords.	6 (6.6)	22 (24.2)	13 (14.3)	38 (41.8)	12 (13.2)	3.31	1.17
7.	I can understand the information that is not clearly stated in the text.	12 (13.2)	17 (18.7)	43 (47.3)	12 (13.2)	7 (7.7)	2.84	1.07
8.	I can combine information clearly stated from more than a single source.	1 (1.1)	16 (17.6)	16 (17.6)	18 (19.8)	40 (44)	3.88	1.19
9.	I can combine information clearly stated in the text to support the main points.	5 (5.5)	12 (13.2)	36 (39.6)	25 (27.5)	13 (14.3)	3.32	1.05
10.	I can formulate the correct answer to the questions.	6 (6.6)	24 (26.4)	33 (36.3)	20 (22)	8 (8.8)	3.00	1.05
	Average Mean and SD						3.31	1.09

^{*}Number of respondents. Values in parentheses indicate percentage.

employed ideally by the teachers. Thus, it is no surprise that the students are unaware of these strategies.

Students did not "identify difficult/new words to figure out their meanings with the contextual clues." They did not "identify the key concepts from the passage" when answering reorganization comprehension questions. This result was also found by S. S. Alavi et al. (2015), Susanto (2017), and Yang (2002). It can be said that most college students are still facing difficulties in reading English textbooks due to insufficient vocabulary knowledge. Moreover, the

students did not "distinguish between important and unimportant supporting details" when answering reorganization comprehension questions. Shah et al. (2007) reported that students never recognize their deprivation of concentration, split sentences into parts, and paraphrase a sentence. He concluded that the students are probably ignorant about those strategies or are unsure of their application method.

Use of Inferential Comprehension Strategies. Figure 3 and Table 4 provide an overview of the strategies used by students

to answer questions that are not stated in the text. Students "make assumptions about the meaning of unfamiliar words" when answering inferential comprehension questions. Students used this strategy "often" based on the analysis of the scale and open-ended questions. This finding aligns with Amjadi and Talebi's (2021) finding. They reported that students make predictions about the meaning of a word and the text's content. One possible explanation for this might be that students are required to accomplish and submit their reading tasks within a short time. Grasping the meaning of the text within a "limited" time could be a major challenge for them, considering their overall language proficiency.

Students "reread the text to draw conclusion" when answering inferential comprehension questions. The analysis revealed that most of the students employed this strategy. This finding is in line with the findings of Shah et al. (2007). They concluded that students often reread the text to find relations among ideas.

Another identified strategy was "relate the text to personal experience." They applied this strategy when answering inferential comprehension questions. However, this finding is inconsistent with Shah et al. (2007). They reported that students never related the sentences to personal experience. A possible justification could be that the students were probably aware or sure of how to use the strategy.

The students did not "identify the contextual clues from the text" when answering inferential comprehension questions. Furthermore, they neither "try to understand the writer's intention" nor "reformulate the assumptions" when answering inferential comprehension questions. Comprehension is the link between prior knowledge and new information. Thus, the readers who did not employ such strategies as using contextual clues, revising predictions, and understanding the purpose of the text are considered as reading but not comprehending a text (R. C. Anderson & Pearson, 1984; Pearson & Johnson, 1978).

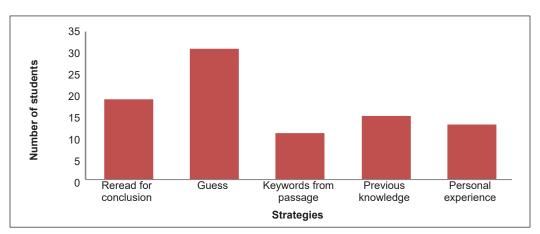


Figure 3. Strategies used by students to answer questions that are not stated in the text

Table 4
Inferential comprehension strategies used by students

No.	Item	Never	Rarely	Sometimes	Regularly	Often	Mean	SD
		n*	n*	n*	n*	n*		
1.	I apply my previous knowledge	4	14	40 (44)	19 (20.9)	14	3.27	1.04
	about the current topic when reading a text.	(4.4)	(15.4)			(15.4)		
2.	I read the questions first before	7	4 (4.4)	10 (11)	23 (25.3)	47	4.09	1.23
	reading the passage.	(7.7)				(51.6)		
3.	I can identify the clue words from	4	15	24 (26.4)	34 (37.4)	14	3.43	1.08
	the questions.	(4.4)	(16.5)			(15.4)		
4.	I reread the text to conclude.	2	7 (7.7)	34 (37.4)	37 (40.7)	11	3.53	0.89
		(2.2)				(12.1)		
5.	I make assumptions about the	3	7 (7.7)	10 (11)	34 (37.4)	37	4.04	1.06
	meaning of unfamiliar words.	(3.3)				(40.7)		
6.	I can justify the acceptance or	4	16	38 (41.8)	16 (17.6)	17	3.29	1.10
	rejection.	(4.4)	(17.6)			(18.7)		
7.	I can relate the text to personal	11	13	22 (24.2)	31 (34.1)	14	3.26	1.24
	experiences.	(12.1)	(14.3)			(15.4)		
8.	I can make multiple	5	22	38 (41.8)	15 (16.5)	11	3.05	1.06
	interpretations of the conclusion.	(5.5)	(24.2)			(12.1)		
9.	I can recollect information from	1	15	35 (38.5)	23 (25.3)	17	3.44	1.01
	memory.	(1.1)	(16.5)			(18.7)		
10.	I can conclude the text.	4	12	40 (44)	21 (23.1)	14	3.32	1.03
		(4.4)	(13.2)			(15.4)		
	Average Mean and SD						3.47	1.07

^{*}Number of respondents. Values in parentheses indicate percentage.

Teachers' Use of Strategies When Teaching Reading Comprehension

Use of Literal Comprehension Strategies.

The results indicated that the teachers applied multiple strategies when teaching literal comprehension questions, i.e., the pedagogical strategies used by teachers in teaching reading comprehension (see Figure 4). Based on the analysis of the observations, all the teachers "read the questions first before reading the passage" when teaching literal and reorganization comprehension questions during their lesson. According to Palinscar and Brown (1984), teachers who read the questions first would allow

the students to anticipate what may be the answer and predict logically.

The analysis revealed that teachers "identify the keywords from the questions" when teaching literal comprehension questions. This strategy was applied by all the teachers when they were observed. The teachers believed that many keywords could be identified from the questions, which would later help the students locate answers. Furthermore, the teachers used "identify keywords from the passage" to teach literal comprehension questions. One of the teachers mentioned she would ask the students questions to make them look at

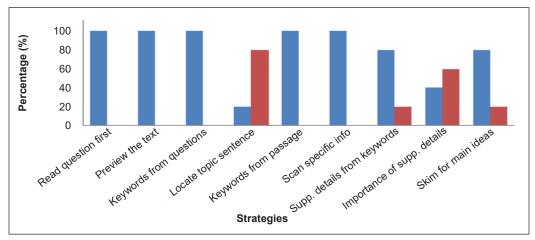


Figure 4. Strategies used and not used by teachers to teach literal comprehension questions *Note*. Blue=Used; Red=Not used

certain words in the passage. Besides that, the teachers preferred to "locate supporting details from the keywords" when teaching literal and reorganization comprehension questions. The teachers applied this strategy when teaching literal comprehension questions based on the interview. Javed et al. (2016) stated that teachers employ various reading strategies, particularly identifying keywords from the questions, identifying keywords from the passage, and locating supporting details from the keywords. The present study's findings also showed that teachers "scan the text for a specific piece of information" and "skim to find out the main ideas or concepts" when teaching literal comprehension questions. One teacher encouraged students to scan "because it saved their time." Skimming and scanning are common effective strategies that teachers can utilize to enhance students' reading comprehension (Wallace & Wray, 2021).

When teaching literal comprehension questions, the teachers did not use "read

the signpost questions" and "locate answers to the signpost questions through obvious information from the text." Again, it could be due to the lack of signpost questions in the textbook. When teaching reorganization comprehension questions, the teachers did not use "read the signpost questions (questions indicated beside the text)" either.

Use of Reorganization Comprehension Strategies. The findings revealed that the teachers used the strategy of "identify the key concepts from the questions" when teaching reorganization comprehension and "summarize the text to identify supporting details" (see Figure 5). For example, one teacher mentioned that she would give the students a brief idea of what the text is about answering the questions. It could imply that teachers should be encouraged to identify the main ideas and support details to help students become proficient readers. Another strategy was using "skim to find out the cause and effect" when teaching

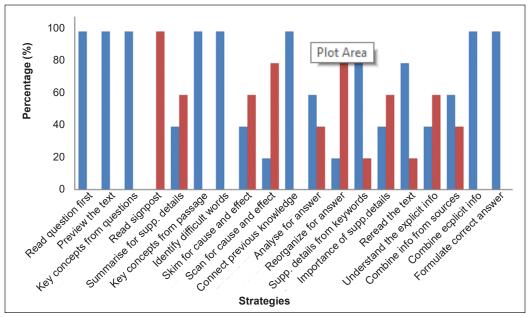


Figure 5. Strategies used and not used by teachers to teach reorganization comprehension questions *Note.* Blue=Used: Red=Not used

reorganization comprehension questions. This finding is consistent with Sani et al.'s (2011) findings as they concluded that skimming the text to find out the cause-and-effect relation should be employed by teachers as a practical strategy.

The data analysis indicated that teachers "connect previous knowledge with the learned information." For example, one of the teachers mentioned that she would expose students to similar examples first before giving them questions so that they can connect what they have learned to the new information. This finding is identical to Johnson (1983) and Pardo (2004). They found that teachers activate students' prior knowledge when teaching reorganization comprehension questions. It should be noted that reading comprehension ability can be enhanced when the reader has relevant prior

knowledge, and relevant words are pretaught (National Institute of Child Health and Human Development, 2000).

The teachers applied the strategy of "understanding the information not clearly stated in the text." When the teachers were observed, they tried to ask students questions about the text's implicit information. Javed et al. (2016) emphasized that teachers frequently employ this strategy when teaching reorganization comprehension questions.

Use of Inferential Comprehension Strategies. The teachers used "identify the contextual clues from the text" when teaching inferential comprehension questions (see Figure 6). Observation results also showed that the teachers applied this strategy. Ahmad et al. (2018) reported

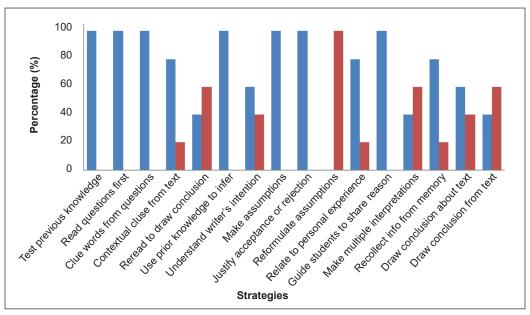


Figure 6. Strategies used and not used by the teachers to teach inferential comprehension questions *Note*. Blue=Used; Red=Not used

that identifying contextual clues from the text by teachers could help students obtain the correct answer. Teachers should adopt the strategies according to the student's proficiency level.

Furthermore, it was found that teachers "make assumptions" about the meaning in the text when they teach inferential comprehension questions. One of the teachers mentioned that she uses "a lot of guessing when it comes to teaching inferential comprehension questions." Celce-Murcia (2001) and Bakhtiarvand (2006) confirmed that guessing by referring to the contextual clues and paraphrasing is an effective strategy to teach reading comprehension.

Teachers' use of "relating the text to personal experience," whereby the text would be linked to the students' personal life by teachers, was another identified strategy. Teachers also "asked students to conclude the text" when teaching inferential comprehension questions. For example, one teacher stated that she would ask the students to share their personal experiences regarding a certain topic before she started the lesson.

Analysis of the interviews indicated that teachers "guide the students to share the reasoning regarding predictions." The teachers asked the students to share their opinions regarding certain questions using this strategy. This finding is supported by Choo et al. (2011), which suggested that teaching questioning and predicting strategies drew positive outcomes for students. Effective questioning is a constructive strategy for teaching reading comprehension (Primas, 2010).

The teachers did not use the "reformulate the assumptions" strategy when teaching

inferential comprehension questions. On the contrary, Gersten et al. (2001) emphasized that developing teachers' assumptions helps improve students' understanding of a text when teachers have relevant prior knowledge.

It can be concluded that teachers frequently relate the text to personal experience and make inferences about a passage, as supported by Javed et al. (2016). The following section discusses the findings and relates them to previous studies on reading strategies. The discussion section summarizes the theoretical and practical implications of the study.

DISCUSSION

The results indicated that students and teachers used slightly different strategies. This finding could imply that ongoing (formative) assessments should accompany comprehension strategies. In addition, teachers should observe the application of reading comprehension strategies among students and their ability to comprehend a text.

The students used "read the signpost questions" and "locate answers to the signpost questions through explicit information from the text. However, none of the teachers used these two strategies.

The teachers applied six strategies that students did not consider: "previewing the text," "providing examples," "guessing," "understanding the format of the questions," "continuous assessment," and "getting feedback from students."

Students and teachers applied a few strategies when answering and teaching literal comprehension questions. It could mean that students and teachers should be introduced to more reading strategies. Teachers applied more strategies when teaching than the number of strategies used by students to answer literal comprehension questions. Such difference could imply that the students were unsure of the application method of the strategies taught by the teachers.

The strategies that the teachers can only use are "identify the contextual clues from the text," "try to understand the writer's intention," "guide the students to share the reasoning regarding predictions," and "ask the students to conclude the text," and "use of synonyms."

When answering and teaching reorganization comprehension questions, the students and teachers employed reading comprehension strategies more frequently. Most students and teachers found reorganization comprehension questions more feasible than literal and inferential questions.

For answering reorganization comprehension questions, the teachers applied almost twice as many as the number of strategies applied by the students. It could generally mean the strategies used by teachers were not considered as important, effective, or feasible by the students. Possibly the teachers did not notice the students' negligence of the strategies. Therefore, teachers should consider students' weaknesses and adapt appropriate

teaching methods according to the student's assessment of their level of understanding, needs, and expectations. Assisting students in utilizing various reading strategies and catering to them with a repertoire of reading materials could be useful for students and teachers.

About half of the strategies used by teachers to teach inferential comprehension questions were employed by students for answering inferential comprehension questions. Teachers are recommended to take the initiative to identify students' favorable strategies and apply effective strategies selectively when teaching inferential comprehension questions. The awareness about the neglected strategies could be raised, and the changes in students' reading comprehension skills could be recorded.

None of the students applied "preview the text," "identify the key concepts from the questions," "identify difficult/new words to figure out their meanings with the contextual clues," "analyse the information to find the answers," or "distinguish between important and unimportant supporting details," "relate the text to personal experience," "read other materials to gain background knowledge," "use visual aids," and "share knowledge among students."

Moreover, some strategies were overlooked by students and teachers when answering and teaching reading comprehension questions. It suggests that the strategies were probably unknown to the students and teachers, for example, when they were too new for the students and teachers.

This study offers insights for students and teachers to strengthen their knowledge and practice a repertoire of strategies, especially those overlooked by students and teachers. In addition, students are recommended to evaluate their preferences for using strategies throughout the reading comprehension course.

CONCLUSION

Reading comprehension strategies play an important role in an EFL classroom for teachers and students. This study was conducted to identify the use of strategies by students and teachers based on three types of reading comprehension questions. The analysis revealed that students occasionally employ a limited number of strategies to answer different reading comprehension questions. On the other hand, teachers apply more diverse strategies when teaching different reading comprehension strategies. For example, using illustrations, guessing, and synonyms for unknown words could strengthen students' reading comprehension (Amjadi & Talebi, 2021).

Furthermore, the analysis showed that identifying the main idea and making inferences could improve students' reading performance. This finding was also supported by N. J. Anderson and Cheng (2004).

Another possible factor within the reading strategies was the role of lexical knowledge. Vocabulary was identified as a challenge for EFL students. This finding was supported by Amini et al. (2018) and Thongwichit and Buripakdi (2021).

Ineffective use of reading comprehension strategies by teachers (Torgesen, 2002), the students' deficiency of linguistic knowledge, or motivational issues to comprehend English, in general, were other factors confirmed by the present study's findings.

Although previewing and pre-learning were not identified in the present study, other studies found that they produce mental representations before reading a text (Burns et al., 2004). Previewing also contributes to enhanced comprehension (Cates et al., 2006) as they activate prior knowledge. It could be because students tend to employ fewer cognitive strategies in reading comprehension (Cates et al., 2006).

Implications

Practically, curriculum developers and syllabus designers can utilize the findings of this study in developing more effective programs and course content for EFL learners. The neglected useful strategies need to be practiced more often by the students. The difference in the use of reorganization and inferential comprehension strategies by students and teachers could indicate their different perceptions about the advantages of the strategies or simply negligence. Additional materials to use reorganization and inferential comprehension strategies and monitoring the use of strategies by both students and teachers could enhance students' reading proficiency. The administrators are recommended to organize more training for teachers and students to improve their knowledge of reading comprehension skills and strategies.

Limitations and Recommendations

The present study has a few limitations that should be highlighted. One limitation was the small number of the participants (teachers and students) from only one institution, making the findings less generalizable despite the efforts to obtain a maximum possible size. Furthermore, future studies may consider exploring gender differences in teaching and learning reading strategies among ESL learners to understand the practicality of exploring this dimension of the efficacy of reading strategies. Also, as this study only investigated teaching and learning of reading strategies employing a mixed-method design, future researchers are encouraged to conduct an experimental design to gauge a more holistic overview of the effectiveness of teaching or learning multiple reading strategies in the ESL/EFL contexts. It will also explore the differences in reading strategies used in various contexts. Besides, this study de-emphasized the types of the reading materials. Therefore, the study did not draw any conclusion in determining the actual reading strategies employed by the teachers and students in other reading contexts. In terms of sampling the materials, other researchers could also focus on specific types of reading materials only, such as research articles and reference books for informative texts, to construct a more congruent outlook concerning reading strategies.

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Mate Crime Victimisation Against People with Disabilities: An Exploratory Study in Sarawak, Malaysia

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ABSTRACT

Individuals with disabilities are highly exposed to mate crime victimisation than their non-disabled counterparts. This research aims to identify mate crime victimisation among people with disabilities in Sarawak, Malaysia. Data was quantitatively collected among 151 respondents from various governmental and non-governmental organisations in Kuching, Kota Samarahan, and Asajaya that provide residential care, medical attention, training, work opportunities, basic education, and rehabilitation for individuals with disabilities. It was found that most respondents (females between 18 and 28 years old) experienced mate crime victimisation, particularly financial abuse ($F_{2,148} = 5.905$, p = .003) and sexual abuse ($F_{2,148} = 10.234$, p = .001). It is deemed important to identify mate crime victimisation against such individuals with sufficient proof to enable law enforcement agencies and policymakers to develop optimal approaches and programmes that complement the needs of individuals with disabilities and alleviate potential mate crime victimisations.

Keywords: Disability, exploitative, friendship, Malaysia, mate crime, vulnerability

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A recent increase in criminology literature on mate crime victimisation against people with disabilities has been identified (Doherty, 2020; Macdonald, 2021; Mcdonald, 2015; Thorneycroft, 2017). Generally, the term "mate crime" denotes a heinous action perpetrated against individuals with disabilities by people who are considered "friends" or "close acquaintances" (Landman, 2014; S. D. M.

ISSN: 0128-7702 e-ISSN: 2231-8534 Thomas et al., 2019). The Association for Real Change (2013) defined mate crime as intentional and repetitive behaviour following power imbalances between the victim and perpetrator. Landman (2014) stated that most cases related to mate crime victimisation are under-reported as such incidents occur in private spaces (homes rather than public spheres) and are instigated by people whom the victim trusts. For example, a mate crime case was reported in the small town of Cornwall, England, in 2006 where Steven Hoskin, a man diagnosed with severe learning difficulties, was tortured, abused, and killed by his "friends" ("Man 'bullied to death", 2007).

Mate-abused victims might display multiple behavioural shifts such as weight loss, self-isolation, and frequent mood swings (Association for Real Change, 2013). Apart from immediate psychological and health impacts, such individuals may also suffer from low self-esteem, depression, and anxiety in adulthood (Chatzitheochari et al., 2016; Takizawa et al., 2014). Besides, several studies have demonstrated that sexual abuse is more prevalent among disabled children and women following multiple risk factors such as limited sexual education, social isolation, communication barriers, and reduced physical defences against abuse (Amborski et al., 2021; Barron et al., 2019). In addition, O'Malley et al.'s (2019) study revealed that children with disabilities are 3.4 times more at risk of experiencing neglect, abuse, and bullying at school (a mate crime type) than their nondisabled counterparts.

The Association for Real Change (2013) launched the Safety Net project in 2013 to prevent mate crime victimisation against people with learning disabilities and uncovered some real-life cases that showed how the individuals were abused. Some of the reported cases are presented as follows: (i) a woman with learning disabilities was pimped out by her boyfriend, (ii) a man proposed to a woman with learning disabilities and frequently made her pay for his daily expenses, (iii) an alcoholic befriended a rich man with learning disabilities to become the victim's sole beneficiary and inheritor, and (iv) a woman with learning disabilities was continuously abused by her paedophile boyfriend. Wissink et al. (2015) stated that compared to their non-disabled counterparts, individuals with learning disabilities tend to experience a wider range of victimisation, including physical abuse (exertion of force to control an individual), sexual abuse (sexual exploitation or coercion into prostitution), emotional abuse (individual manipulation or misleading a person to experience a sense of worthlessness), and financial abuse (stealing, lending, and labour exploitation).

Pestka and Wendt (2014) conducted a small-scale qualitative study by interviewing five women with learning disabilities to examine their experiences with mate crime victimisation. It was found that all the respondents had been exploited by their peers during childhood. Meanwhile, Douglas and Hurpur's (2020) study involving six respondents revealed that physical abuse

(often to the point of hospitalisation) and financial abuse are common among women with learning disabilities. Finally, McCarthy (2017) stated that most individuals with learning disabilities are vulnerable to mate crime victimisation since many of the perpetrators would initiate a "friendship trap" at the beginning of the relationship and persistently attempt to please the victim before displaying controlling behaviours (violence and abusive acts).

Individuals with disabilities (specifically people who are blind, deaf, autistic, or diagnosed with multiple disabilities) encounter persistent social disadvantages, particularly those related to gender-based violence, given the complexities in comprehending information on sexuality, puberty, and healthy relationships (Gordon et al., 2017; Jones et al., 2012). Individuals who self-identify as lesbian, gay, bisexual, transgender, or queer (LGBTQ) are subjected to discrimination or emotional abuse at school, work, or social situations following their disclosure of gender identities and sexual orientations (Duke, 2011; P. Thomas,

2011). Additionally, Muller et al. (2008) and Gravell (2012) noted that the "cuckooing" phenomenon is also common in mate crime victimisation cases where perpetrators (usually close acquaintances) take over the homes of individuals with disabilities by treating them as their property.

Mate Crime Victimisation

Although friendship increases an individual's sense of belonging and alleviates loneliness, particularly during hardships, the concept of "friendship" is often utilised to exploit disabled individuals in mate crime. As mate crime victimisation can occur in several forms, the general population needs to understand different victimisation types. Fisher et al. (2016) note that victimisation can be categorised into three primary components (see Table 1).

People living with disabilities are 1.5 times more at risk of being bullied throughout their lives than their non-disabled counterparts (Fisher et al., 2012). Fisher et al. (2012) stated that the bullying types encountered by individuals with

Table 1 Components of victimisation

Victimisation type	Sub-components of victimisation
Bullying	 Verbal bullying (harmful oral or written communication, taunting or teasing). Relational bullying (public embarrassment, threats, or spreading rumours). Property damage (alteration, property vandalism, or theft).
Child abuse	 Sexual abuse (inappropriate touching or fondling). Physical abuse (internal injuries, broken bones, scratches, burns, cuts, blisters, or bruises). Emotional abuse (terrorising, verbal assault, ignoring or isolating a child). Neglect (leaving a child alone at home).
Criminal Victimisation	Property crime (larceny, theft, arson, vandalism, or burglary).Physical and sexual assault (physical harm and sexual contact without consent).

Source: Fisher et al. (2016)

disabilities could change over time from overt verbal bullying to victim exploitation (stealing money and goods or name-calling). Additionally, Capaldi et al. (2012) mentioned that the high risk of victimisation against individuals with disabilities originates from multiple interconnected reasons such as (i) limited educational opportunities, (ii) history of mistreatment in childhood, and (iii) communication barriers to reporting abuse. Moreover, multiple studies have also implied that risk factors, such as inadequate self-defence skills, low social competence, and unsupportive peer networks, instigate mate crime victimisation against people with disabilities (Basile et al., 2016; Landman, 2014; Turner et al., 2011).

The National Intimate Partner and Sexual Violence Survey (NISVS) revealed that men and women with physical, emotional, and mental disabilities are highly exposed to sexual coercion and unwanted sexual incidents (Basile et al., 2016). Similarly, Mitra et al. (2016) implied that sexual violence is prevalent among disabled high-school and college students. For example, Davies et al. (2015) and the Bureau of Justice Statistics (2017) discovered that men and women between 12 and 65 years of age with disabilities tend to become victims of sexual violence and sex trafficking compared to their nondisabled counterparts. Apart from physical, sexual, financial, and psychological abuse, disabled people also experience care-related abuse by friends, service care providers, or close acquaintances, in which: (i) the perpetrator gets angry if the victim fails to appreciate the provided care, (ii) the

perpetrator refuses to offer appropriate care in inducing compliance, (iii) the perpetrator withholds medication or overmedicates for the victim's adherence, and (iv) the perpetrator continuously threatens the victim to obey instructions (Fitzsimons et al., 2011).

Previous research has established a strong link between learning disability and the risk of victimisation. Specifically, insufficient understanding of exploitation, dependency on the perpetrator, fear of harm if a report is made, and communication deficits increase the victimisation risk of people with learning disabilities (Doherty, 2020; Sivabalan et al., 2018; Wissink et al., 2015). Besides, most sexual assault perpetrators tend to victimise individuals with learning disabilities as this population is less capable of reporting the offences (Doherty, 2020). Additionally, Landman (2014) implied that mate crime victimisation is common among people with learning disabilities who often live alone as they are easily controlled or harassed. On another note, Bowen and Swift (2019) revealed that women with learning disabilities are more willing to "accept" abusive relationships following the fear of being abandoned by their partners.

Many individuals with hearing disabilities reflect negative self-image and psychosocial development following limited abilities to express emotions and life experiences (Calderon & Greenberg, 2003; Marschark, 2007; Traci & Koester, 2003). As a result of such circumstances, a report generated by the Texas Health and Human Services (2016) shows that

there are four common forms of abuse against people with hearing disabilities, namely, (i) intimidation (the perpetrator uses threatening expressions or physical gestures to intimidate the victims), (ii) isolation (the perpetrator isolates the victim from resources or opportunities for help by controlling communication channels and excluding them from social situations or conversations), (iii) manipulation (the perpetrator attempts to exploit information or circumstances and control the victims), and (iv) shaming (the perpetrator continually criticises the victim's inabilities).

The key determinants of mate crime victimisation are the individual's strong desire to establish meaningful friendships or intimate relationships. Ambitious About Autism (2015) stated that autistic individuals often experience social isolation and difficulties developing friendships. For example, such individuals tacitly accept bullies or abusers who behave in degrading ways due to full reliance on the critical support (basic physical needs) provided (Niehaus et al., 2013; P. Thomas, 2011). Despite extensive research in Western nations to understand the nature of mate crime victimisation, the notion remains novel in crime and disabilities studies within Malaysia. In addressing the research paucity, this study aims to identify mate crime victimisation against individuals with disabilities in Sarawak, Malaysia.

Research Objectives

The objectives of this research are:

(i) To identify the demographic profiles

- of mate crime victims in Sarawak, Malaysia.
- (ii) To examine the differences between disabilities (hearing, physical, and learning disabilities) and types of offences (financial, physical, emotional, and sexual abuse) against people with disabilities in Sarawak, Malaysia.

MATERIALS AND METHODS

Research Design

A cross-sectional survey design was employed to collect data among 151 respondents to examine the differences between disability and offence types against people with disabilities. Specifically, 20 closed-ended questions were developed based on current crime and disabilities studies (Doherty, 2020; Garland, 2011; McCarthy, 2017; McNicholas et al., 2020). The survey encompassed two primary components, namely, (i) demographic profiles and (ii) mate crime experiences (financial, physical, emotional, and sexual abuse).

The survey questions were comprehensibly phrased to increase the respondents' understanding, reduce ambiguities, and facilitate quick responses. Content and face validity were also assessed to ensure that the developed instrument reflects the measured phenomena. In this study, face validity was incorporated to obtain subject matter expert feedback to validate all the instrument items. Three panels were selected based on their expertise in disabilities and crime-related studies.

Table 2 summarises the panel comments on face validity.

Table 2
Summary of panel comments on face validity

No.	Comment (s)
1.	Format acceptable
2.	Improvise/simplify sentence structure
3.	Reduce the number of items

Several amendments were made to the instrument items post-panel feedback. Meanwhile, content validity was performed using the Content Validity Index (CVI). In the study context, favourable ratings by two expert panels and a CVI score exceeding 0.78 indicated that the developed questions were relevant to the study topic. Table 3 presents the reliability value of the instrument.

Table 3
Reliability value of the instrument

Variable	Cronbach's alpha (a); n = 151
Financial abuse	.70
Physical abuse	.69
Emotional abuse	.81
Sexual abuse	.75

Sample and Location of Study

The study data were gathered at various governmental and non-governmental organisations in Kuching, Kota Samarahan, and Asajaya that provide residential care, medical attention, general nursing care, training, work opportunities, basic education, guidance, and rehabilitation for people with disabilities regardless of sex, race, and creed.

A total of 151 respondents with various disability types (hearing, learning and physical) from (a) Sarawak Society for the Deaf, (b) The Sarawak Cheshire Home, (c) Community Rehabilitation Centre, Sri Satok, (d) Community Rehabilitation Centre, Petra Jaya, (e) Community Rehabilitation Centre, Kem Penrissen, (f) Community Rehabilitation Centre, Harmoni Asajaya, (g) Mental Health Association Sarawak, (h) Kuching Autistic Association, and (i) CBR Centre, Kuching voluntarily participated in this research.

Procedure

The researchers distributed survey questions to the respondents upon obtaining permission from the agencies. As the respondents comprised of individuals with different disability types, some practical issues were considered to mitigate participation barriers. For example, respondents conveyed the study objective directly through clear and comprehensible conversations. Some of the respondents have learning disabilities, and the questionnaire was prepared in a comprehensible format with large font size and simple language. The respondents' family members, agency staff, or caregivers were only allowed to engage in this study as facilitators rather than substitutes for the respondents' opinions or views.

The researchers complied with the Office for Disability Issues, Government of the United Kingdom (Farmer & Macleod, 2011) while conducting this study. Table 4 presents the researchers' communication methods based on the respondents' disability

types. Respondents were also briefed on their rights to confidentiality. For example, all the respondents were reminded not to write their names or other personal information on the study materials. Notably, no time limit was fixed to address the survey questions. The respondents spent approximately 20 to 30 minutes completing the questionnaire.

Data Analysis

The obtained data were analysed with the Social Sciences (SPSS) Statistical Package. Meanwhile, the ANOVA test was employed to examine the differences between disabilities and offences (financial, physical, emotional, and sexual abuse) against people with disabilities.

Ethical Consideration

The respondents' participation in this study was completely voluntary, and individual responses were recorded anonymously. The study objective was also clearly stated in the questionnaire. The respondents were

required to sign the consent form preparticipation with no provision of benefits or incentives.

RESULTS

The study results were presented in two primary sections, namely, (i) demographic profiles and (ii) differences between types of disabilities and types of offences (financial, physical, emotional, and sexual abuse) against people with disabilities.

Demographic Profile

A demographic profile essentially represents respondents' basic information. Based on the descriptive analysis, most respondents were females (62.9%) between 18 and 28 years old (49.7%). Additionally, most respondents were Malay (39.1%), single (93.4%), diagnosed with learning disabilities (57.6%), had been victimised by friends (84.7%), and had known the perpetrators for over five years (62.3%). Table 5 presents the respondents' demographic profiles.

Table 4
Communication methods based on disability types

No.	Disability types	Communication methods
1.	Hearing Disabilities	Clear and loud voice projection while communicating. Assistance by a sign language translator. Written communication with respondents, particularly individuals with severe hearing disabilities or without hearing aids.
2.	Physical Disabilities	The respondents' family members, agency staff, or caregivers were only allowed to engage in this study as facilitators rather than substitutes for the respondents' opinions or views.
3.	Learning Disabilities	Individuals with mild physical difficulties did not require much support for research participation. Repetition was essential for some individuals to absorb much information at one time. Illustrations and symbols enable some respondents to understand the word's meaning.

Table 5

Demographic profile

Profile	Frequency	Percentage (%)
Gender		
Male	56	37.1
Female	95	62.9
Age		
18-28 years old	75	49.7
29-39 years old	63	41.7
40-50 years old	13	8.6
51 years old and	-	-
above		
Ethnicity		
Malay	59	39.1
Chinese	57	37.7
Iban	14	9.3
Bidayuh	17	11.3
Melanau	4	2.6
Marital Status		
Single	141	93.4
Married	10	6.6
Disability Type		
Hearing	41	27.2
Learning	87	57.6
Physical	23	15.2
Perpetrator		
Friend	128	84.7
Partner	23	15.3
Years of Knowing to	he Perpetrato	or
1–2 years	21	13.9
3–4 years	36	23.8
Over 5 years	94	62.3

Differences between Types of Disabilities and Types of Offences Against People with Disabilities

A significant difference was identified based on the ANOVA results between the type of disability (hearing, learning, and physical) and types of offences (financial and sexual abuse). Meanwhile, no significant differences were determined between the disability types mentioned above with physical and emotional abuse.

Differences Between Disability Types and Financial Abuse

The first study hypothesis is presented as follows:

H₁: There is a significant difference between disability types and financial abuse against people with disabilities.

The ANOVA results in Table 6 outline a significant difference between disability types and financial abuse against people with disabilities ($F_{2,148} = 5.905$, p = .003). A posthoc comparison with Scheffe was selected to assess group variances. Resultantly, the mean score for learning disabilities (M = 1.9356, SD = 0.13466) proved significantly distinct from hearing disabilities (M = 1.8146, SD = 0.27346) at 0.05 significance level. Regardless, no significant differences were determined between hearing-physical disabilities in terms of financial abuse.

Differences Between Disability Types and Sexual Abuse

The second hypothesis is presented as follows:

H₂: There is a significant difference between disability types and sexual abuse against people with disabilities.

The ANOVA results in Table 7 indicate a significant difference between disability types and sexual abuse against people with disabilities ($F_{2,148} = 10.234$, p = .001). A post-hoc comparison with Scheffe was selected to evaluate group variances.

Table 6
Differences between disability types and financial abuse against people with disabilities

			Homogeneity of v	ariance test	ANG	OVA
Disability type	Mean	Std. deviation	Levene statistic	Sig.	F	Sig.
Hearing	1.8146	0.27346	5.905	0.04	5.905	0.03
Learning	1.9356	0.13466				
Physical	1.9130	0.16870				
		Group di	fferences			
D: 1:1:4	Mean	a.	95% (Confidence in	terval	
Disability type	differences	Sig.	Lower-bo	und	Upper	-bound
Hearing-Learning	-0.12100*	0.004	-0.2080	6	-0.0)334

Table 7
Differences between disability types and sexual abuse against people with disabilities

			Homogeneity of	variance test	ANO	VA
Disability type	Mean	Std. deviation	Levene statistic	Sig.	F	Sig.
Hearing	1.7195	0.29152	8.876	0.01	10.234	0.01
Learning	1.9167	0.18935				
Physical	1.8587	0.24802				
		Group	differences			
Disability tyma	Mean	Sic	95%	Confidence inte	erval	
Disability type	differences	Sig.	Lower-bo	ound	Upper-l	oound
Hearing-Learning	-0.19715*	0.001	-0.304	9	-0.08	394

Resultantly, the mean score for learning disabilities (M = 1.9167, SD = 0.18935) proved significantly distinct from hearing disabilities (M = 1.7195, SD = 0.29152) at 0.05 significance level. No significant differences were identified between hearing-physical disabilities and learning-physical disabilities in terms of sexual abuse.

DISCUSSION

Individuals with disabilities are often conceptualised as pathologically vulnerable to criminal exploitation in criminology (Bernama, 2021; Quarmby, 2011; Thorneycroft, 2017). Since most mate

crime victims are humiliated, exploited, and mistreated by their perpetrators, such occurrences may adversely impact the victims in multiple ways following prolonged exposure to exploitative relationships (Forster & Pearson, 2020). In line with Forster and Pearson's (2020) statement, the findings obtained from this study revealed that most of the respondents had been victims of financial abuse where the perpetrators (friends or partners) developed friendships or relationships in the initial stage and later displayed harmful and aggressive behaviours to control the respondents.

Based on the information provided by the Ann Craft Trust (2012), financial abuse denotes a form of exploitation where the perpetrators: (i) force the victim to withdraw money from cash machines for personal utilisation, (ii) pressure the victim to change wills and transfer properties or inheritances, (iii) steal money from the victim, (iv) misuse the victim's property, or (v) take the victim's benefit or pension money without permission or knowledge. Past research conducted by the Ann Craft Trust (2012) and Landman (2014) revealed that individuals with learning disabilities are prone to financial abuse as most victims encounter difficulties in acquiring essential life skills (e.g., reading, writing, or money management) and are financially manipulated. In addition, several studies revealed that people with learning disabilities could not learn specific life skills quickly and require additional help than their non-disabled counterparts, thus exposing themselves to financial abuse (Buhagiar & Lane, 2022; Doherty, 2020; McNicholas et al., 2020).

In the mate crime victimisation and financial abuse contexts, factors such as being "familiar with each other" might have hindered the respondents' ability to acknowledge that people they have known for many years (friends, acquaintances, or confidants) are financially abusing them. For example, approximately 14.6% of the respondents conceded that their friends had used all the credit on their mobile phones without even informing them. In addition, low exposure to victimisation types, communication barriers, and limited

capacities to interpret "dangerous signals" might have led to such incidents. Thus, the findings obtained through this study indicate a dire need to empower individuals with learning disabilities with knowledge of support identification and obtainment techniques in constrained circumstances.

Regarding the prevalence of financial abuse among individuals with hearing disabilities, Doherty (2020) stated that perpetrators attempt to abuse victims with hearing disabilities by excluding the individuals from conversations on financial decisions, misusing a power of attorney, or manipulating financial decisions. Donovan et al. (2018) and Deaf Hope (2021) highlighted that financial abuse occurs when the perpetrators' greed for money supersedes their ability to remain caring, honest, and fair with disabled friends, acquaintances, or confidants. Following the study outcome, approximately 10.6% of the respondents with hearing disabilities admitted that their friends had been taking their money without permission. Likewise, around 11.3% of the respondents revealed that their friends would only visit them when benefit money is received from the Malaysian Social Welfare Department. It is foreseen that insufficient exposure to online or ATM banking contributes to a high reliance on friends, acquaintances, or confidants for financial affairs, thus leading to perpetual financial abuse. Although most respondents have experienced multiple incidents of mate crime victimisation over months or even years, such occurrences were not detected for various reasons.

Thus, there is a need to develop criminal justice intervention to validate the notion of mate crime offences, particularly in Malaysia (under the Convention on the Rights of Persons with Disabilities), to reduce attempts to exploit victims with various manipulative tactics.

Besides financial abuse, many respondents have also experienced multiple forms of sexual abuse perpetrated by their friends or partners. In general, sexual abuse denotes an unwanted and forceful invasion that induces fear, disbelief, term shock, post-traumatic stress disorder, negative self-evaluation, anxiety, depression, and lifelong guilt among victims (American Psychological Association, 2016; McCarthy, 2017). Doherty (2020) mentioned that women with learning disabilities are highly exposed to many potential abusers, including male friends and live-in partners, compared to the general population. Much research stated that sexual abuse against individuals with learning disabilities occurs due to (i) the victim's poor communication skills in disclosing the perpetrator's information, (ii) the victim being continuously threatened by the perpetrator, (iii) the victim's delayed language development, and (iv) a high sense of shame and guilt (Bowen & Swift, 2019; Doherty, 2020; Landman, 2014; Wissink et al., 2015). Additionally, Fisher et al. (2016) and Reid (2016) stated that the perpetrators of sexual assault possibly select individuals with learning disabilities as potential victims based on the individuals' vulnerability, powerlessness, and incapability of reporting such offences.

Approximately 21.2% of the respondents with learning disabilities revealed that their friends had shared pornographic content through social media platforms (e.g., WhatsApp, Instagram, and Facebook). In comparison, 13.9% of the respondents with hearing disabilities disclosed that their friends had attempted to touch or kiss them without their consent. In this vein, various interconnected risk factors involving a sense of powerlessness, communication deficits, or inability to self-protect might have instigated the co-occurrence of such tragic incidents. Besides, Gravell (2012) and McCarthy (2017) highlighted those individuals with hearing disabilities continue to be the "silent population" of sexual assault due to the power imbalances and incongruent control dynamics which hinder victims from reporting such incidents to relevant authorities (the police, social welfare officers, social workers, counsellors, teachers, parents, siblings, or relatives).

CONCLUSION

Stereotypical perspectives that categorise individuals with disabilities as "vulnerable" and "powerless" amplify cruelty and exploitation against this population. Hence, the data obtained from this study should be utilised as a starting point to empower people with disabilities and locally monitor mate crime victimisation cases. Multiple-level approaches should be implemented for optimal reporting and investigating mate crime victimisation among people with disabilities, particularly in Malaysia. It is deemed essential to impart self-protection

skills, such as knowledge of seeking support when abused by friends or close acquaintances. Furthermore, the central government and local authorities need to develop an inclusive mainstream service by including mate crime training at the school level to optimise information access and encourage individuals living with disabilities to lodge reports if abused (Doherty, 2020). In decreasing mate crime victimisation rates, a collaborative approach with the disabled community, social justice system, and social service providers are necessary for a standardised practice to ensure zero tolerance towards mate crime victimisation among people with disabilities.

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Desistance and Recidivism Among Former Prisoners in Malaysia: A Proposed Model According to the Age-Graded Theory

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ABSTRACT

The Age-Graded Theory suggests that the causes of premature delinquency and adult deviant behaviour are not the exclusive outcomes of individual characteristics since a particular incident in life can affect individuals, perpetuating their persistency in committing offences. This paper demonstrates that constructive events in life can successfully prevent former prisoners from being reinvolved in crime, whilst adverse life happenings can derail former prisoners from staying on the right path—a phenomenon known as recidivism. Adopting the phenomenology research paradigm, the findings of this paper are based on the empirical data from a Malaysian case study involving 19 former prisoners with criminal records of

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E-mail addresses: mohd.alif.jasni@uum.edu.my (Mohd Alif Jasni) shajar@um.edu.my (Siti Hajar Abu Bakar Ah) noralina@um.edu.my (Noralina Omar) zeyati@uum.edu.my (Norruzeyati Che Mohd Nasir) *Corresponding author various offences. The findings of this study reveal that Age-Graded life-course events are essential predictors of former prisoner criminal behaviour, rendering the theory valuable, especially when it comes to modelling social reintegration strategies and interventions for former prisoners.

Keywords: Age-Graded Theory, desistance, former prisoners, Malaysia, recidivism

INTRODUCTION

The number of individuals released from imprisonment in Malaysia was recorded to be 210 251 persons in the year 2020, while in the previous five years, the numbers were recorded to be 143 636 persons in 2019, 134 690 persons in 2018, 124 567 persons in 2017, 110 683 persons in 2016, and 102 214 persons in 2015 (Malaysian Prison Department, 2021). These statistics demonstrate that releases exceed 100 000 prisoners annually, charting a steady increase. This situation raises the concern about the extent of successfully reintegrated ex-prisoners into the community. Records demonstrate that recidivism cases were 15 410 (10.88%) in 2019, 13 896 (10.32%) in 2018, 11 520 (9.25%) in 2017, 9 875 (8.92) % in 2016, and 8 997 (8.70%) in 2015 (Malaysian Prison Department, 2021).

In Malaysia, the Malaysian Prisons Department targets achieving an annual crime repetition rate that does not exceed 10% each year. However, a crime repetition rate of more than 10% was recorded in the recent two consecutive years (2018 and 2019), indicating that recidivism is steadily becoming an issue that needs to be swiftly tackled. The reintegration process can be difficult for former prisoners as multiple risk factors can affect the life events of these former prisoners upon their release. Researchers view both risk and protective factors as major factors in determining the life events of a former prisoner based on the Age-Graded theory (Laub & Sampson, 2001; Maruna, 2001). This theory discusses life events as contributing factors that

inform the behavioural choices of former prisoners, specifically focusing on the desistance pathway of former prisoners.

This paper aims to establish Age-Graded life courses on individual criminal behaviours among former convicts by employing the theory as a framework. No particular risk factor is solely responsible for recidivism among former prisoners (Rimke, 2011) since recidivism is often triggered by several risk factors and existing protective factors (Berghuis, 2018; Chikadzi, 2017). However, risk factors are identified as factors that are most likely to increase recidivism among former prisoners and need to be addressed to prevent crime recurrence and re-imprisonment (Andrews & Bonta, 2006). Therefore, a full elaboration of a former prisoner's criminal behaviour upon release from prison would include identifying the risk and protective factors in a former prisoner's life events when they return to the community (Doherty & Bersani, 2016; Maruna, 2015). A former prisoner's behaviour can show a gradual positive or negative change upon their release, depending on the factors that affect their lives (de Vries Robbé et al., 2015; Doherty & Bersani, 2016; Gålnander, 2019).

The works on recidivism and desistance have garnered much attention among Malaysian researchers where an earlier systematic review by Sivabalan and Ibrahim (2018) outlined four underlying factors that contribute towards the successful reintegration of prisoners, namely, (i) motivation to change, (ii) social support, (iii) religious beliefs, and (iv) employment.

Subsequently, Cheah et al. (2019) recorded the experiences of drug offenders who participated in a rehabilitation program by investigating the factors leading to recidivism and the need for rehabilitation, while Jasni et al. (2020) focused on three major interrelated factors that contribute to homelessness and recidivism among former prisoners, i.e. (i) family denial, (ii) addiction and (iii) unemployment. Additionally, in a more recent study, Sivabalan et al. (2020, 2021) discuss the influence of self-concept, sense of community and social support on social integration among young offenders in Malaysia. Similarly, Sathoo et al. (2021) expounded on the importance of social support for prisoners in a parole program that facilitates reintegration. These studies highlight the need to explore reintegration by considering the context of crime repetition, especially since the cessation of crime is highly significant in recidivism. However, to date, only four studies (Sathoo et al., 2021; Sivabalan & Ibrahim, 2018; Sivabalan et al., 2020, 2021) were found to be focused on protective factors in the local context.

In the context of the current research, former prisoners in Malaysia are reported to experience difficulties in reintegrating due to negative life events (Jasni et al., 2020). A society with more dominant risk factors than protective factors is most likely to influence former prisoners' decisions to commit crimes. Thus, this situation prompts the researchers to discuss and understand the risk factors in the former prisoners' current social environment. Understanding these risk and protective factors can contribute to

creating a successful reintegration model for former prisoners in Malaysia. Thus, the next part of this article will discuss the Age-Graded Theory and the relevance of the Age-Graded Theory of informal social control in recidivism and desistance. The proposed model construction is based on the understanding and adaptation of the existing discussions highlighted by this Age-Graded theory as a baseline. Understanding more about the Age-Graded theory enables designing a model of risk-protective and live events of former prisoners.

LITERATURE REVIEW

The Age-Graded Theory

The Age-Graded theory is also known as informal social control and the theory of turning points. Sampson and Laub introduced this theory in 1993 where they contend that a person's criminal behaviour is not constant and can evolve where Sampson and Laub (2003) refer to the prevention of former prisoners from recommitting crime as desistance. The notion of desistance has been discussed in terms of social controls, structured routine activities, purposeful human agency (Sampson & Laub, 2005) and, especially, to explain desistance in an individual's lifetime (Rocque, 2014; Sampson & Laub, 1990, 1993). Sampson and Laub (2005) categorised former prisoners into three groups: those who persist in becoming criminals, those who desist and stop being criminals, and those who commit crime from time to time. They focus on turning points such as marriage, military service, and employment, influencing their social bond. Each individual's criminal behaviour experience often changes according to the age cycle, where the situation is usually better before adulthood and can worsen when they are adults (Rocque & Welsh, 2015; Sampson & Laub, 1993).

According to this theory, individuals experience life transition processes from child to teenager, teenager to adult, single to being married, and being unemployed to having a career. Each life transition process influences an individual's criminal behaviour. This study proves that these risk factors contribute to negative life events while protective factors create positive ones. These life events subsequently encourage individuals to avoid crime or get involved in criminal activities (Maruna, 2017; Rocque, 2014). Therefore, the Age-Graded Theory systematically explains how an individual of a specific age cycle is prompted to be involved or desist from committing a crime based on life stages or turning points that influence his/her decision to either get back into (recidivism) or avoid (desistance) a crime (Maruna, 2017).

The Relevance of Age-Graded Theory of Informal Social Control in the Context of Recidivism and Desistance

Criminologists are now interested in studying life courses or developmental criminology (Rocque, 2014), where they explore why some former prisoners continue to be involved in crime while some desist from doing so. Numerous studies in this area have been conducted by Laub and Sampson (2001), Maruna (2001), Sampson and Laub (1993), and Sweeten et al. (2013). Despite imprisonment, former prisoners experience positive turning points in marriage, parenting, employment, or any event determining their desistance from crime (Doherty & Ensminger, 2013). However, a main challenge in the field is that the explanation of protective factors remains inconsistent. Several studies view protective factors as a spectrum of "weak" risk items (Henry et al., 2012).

Zagar et al. (2009) refer to protective factors as an absence of risk factors. Most researchers agree that protective factors serve as a predictor that prevents the recurrence of crime, reducing the effects of risk factors (Loeber & Farrington, 2012). However, Yoon et al. (2016) argue that the interaction between risk factors and protective factors has not been empirically investigated. Thus, this study focuses on the Age Graded Theory to explain both risk factors that can lead to the recurrence of crime and the protective factors that can lead to the cessation of crime. This theory justifies the social controls through institutions involved in these individuals' life events, determining the trajectory of their tendency to commit criminal activities.

MATERIALS AND METHODS

Research Design

This qualitative study adopts an inductive and interpretive approach involving the systematic study of human experiences and behaviour. Furthermore, this study adopts the phenomenology paradigm to comprehensively explore the life experiences of former prisoners when it comes to their reintegration process. According to Creswell (2007), this paradigm offers insights into the life experiences of a particular group and an understanding of significant happenings. Furthermore, phenomenology provides an in-depth understanding of complex social issues based on the respondents' life experiences. Thus, the researchers would explain the former prisoners' life experiences via their respective reintegration journeys by adopting this research paradigm.

Population and Sample

The population of this study consist of two groups of former prisoners, namely, recidivists and desisters. These two groups of samples allow researchers to investigate two reintegration situations: the repetition of crime among former prisoners and vice versa. Nineteen former prisoners (seventeen men and two women) were selected to participate in this study, where the data is considered saturated.

Sampling Technique

The researchers employed the purposive snowball sampling technique, considering the difficulty in accessing respondents. A small network of respondents introduced the researchers to respondents who fulfilled the selection criteria of this study. This agreement facilitated the process of identifying the appropriate respondents. The selection criteria of the recidivist sample

group include having a repeat criminal record regardless of the offence and must be a Malaysian above 21. On the other hand, those who desist must be free of criminal records for at least three years from their last release period and must be Malaysian above 21. Langan and Levin (2002) mentioned that the decision to select three-year is an important determinant in demonstrating the desistance or the ability to control oneself from committing a crime.

Data Collection Technique and Procedure

The researchers used the semi-structured interview as a data collection instrument. The interview protocol includes related key questions and allows the researcher to obtain more in-depth responses from the respondents. The entire interview sessions with former prisoners were recorded using an audiotape recorder with the respondents' consent. Prior to conducting the interviews, the respondents were briefed on the study and their participation rights. Upon agreeing with the terms and conditions of the study, the respondents were then required to complete the consent form.

Research Instrument

This study developed separate interview protocols for former prisoners who repeat crimes (recidivists) and those who avoid criminal behaviour (desisters). Both interview protocols were developed based on previous studies (Andrews et al., 2011; Doherty & Bersani, 2016; Hanson, 2003; Maruna, 2017; Petersilia, 2003; Sampson

& Laub, 1993, 2003, 2005) and reviewed by two expert academicians from the field of criminology. As a result, both experts can ensure that the questions posed in the interview protocol account for participants' rights and the research objectives.

Data Analysis

The interview recordings were transcribed and then fed into Atlas.ti for the coding process required for the interpretative phenomenological analysis (IPA). The Atlas. ti software identifies concepts by searching for code, concepts, and categories. In the Interpretative Phenomenological Analysis, the aim is to explore and understand the insights of the former prisoners' life experiences throughout the reintegration process. Therefore, the raw data from the interviews were carefully transcribed, and all the important verbatims were highlighted in the transcripts, creating codes and different categories and themes.

RESULTS

The findings of this study are presented in Table 1, involving the perspective of respondents who persisted in criminal activities (recidivist), while Table 2 includes findings from those who avoided crime (desisters). Both tables outline the life events of each interviewee and the significant turning points in their lives after being released from prison. The names of the participants are replaced with pseudonyms to protect their confidentiality.

The positive turning points in the life event of the former prisoners are possible determinants of the success of former prisoners in the community, as observed in Table 2, where the three respondents had positive turning points which led them to refrain from criminal activities. For certain individuals, turning points are due to one or more dramatic occurrences that prompt drastic changes, while for some, these changes can be gradual. These life events either enable these former prisoners to pursue a future or fall behind. These turning points may involve positive or negative decisions as well as events where they have less/no social control in avoiding crimes. The life events of the former prisoners depended on whether they encountered risk factors or protective factors. The findings of this study focus on the life events experienced by these former prisoners upon release. Based on the interviews, former prisoners are more prone to recounting their first experience finding a job, followed by family acceptance, marriage, employment, community, friends, addiction, and health. These eight life events were identified through the coding process.

Thus, the researchers developed a model combining the risk factors and protective factors that were influential in determining the life trajectory of a former prisoner upon release (Figure 1). This model suggests that the higher the risk factors, the higher the possibility of prisoners repeating a crime. Conversely, higher protective factors indicate that his/her life is most likely to be more stable and crime-free. The eight domains of risk-protective factors are illustrated in the model, as seen in Figure 1.

 Table 1

 Profile of recidivists former prisoners based on the eight turning point mechanisms of life events

				В		В	cal
	Health problems	HIV	HIV	Hepatitis B and C	HIV	Hepatitis B	Psychological issues
	Drug addiction	Stopped	Still using	Stopped	Still using	Stopped	Still using
	Society relationship	Rejected by neighbour	Neighbour has a negative perception	Neighbour has a negative perception	Neighbours do not judge	Neighbours are unaware	Always labelled by neighbours
	Peer relationship	Comfortable with friends of own kind	Good relationship with friends of similar experience	Mixes with friends of similar background			
	Employment status	Unemployed	Unemployed	Unemployed	Unemployed	Employed	Hard to find a job
)	Family relationship	Accepted by parents but not siblings	Rejected by family	Partially accepted by family	Rejected by family	Rejected by family	Well
	Place of residence	Lives under a bridge	Homeless	Homeless	Homeless	Homeless	Homeless
	Respondent	Lufti	Siva	Hafiz	Suhaimi	Suhaila	Rahimah

Table 1 (Continue)

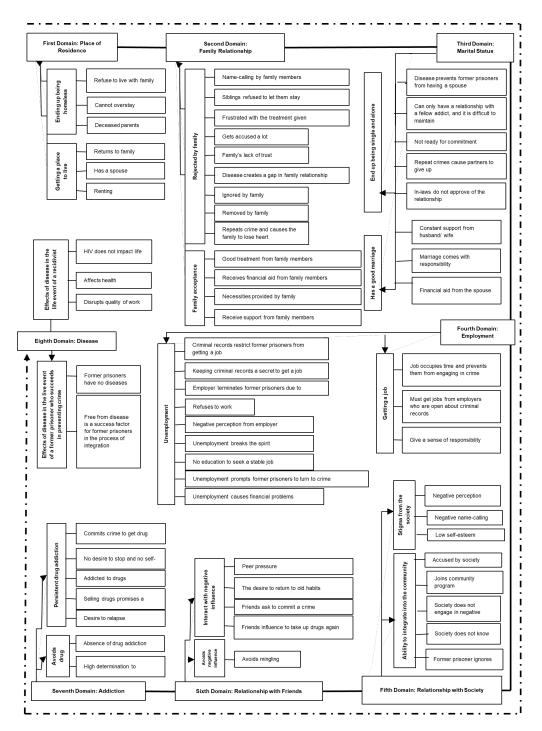
Respondent	Place of residence	Family relationship	Employment status	Peer relationship	Society relationship	Drug addiction	Health
Latif	Refuse to live with family	Rejected by family	Unemployed	Mixes with friends of similar background	Discriminated by neighbours	Still using	HIV
Nabil	Returns to family	Rejected by family after repeating a crime	Unemployed	Mixes with friends of similar background	Neighbours are unaware	Still using	HIV
Amir	Homeless	Rejected by family	Unemployed	Mixes with friends of similar background	Discriminated by neighbours	Still using	Hepatitis C
Ramli	Homeless	Rejected by family	Unemployed- refuses to work	Mixes with friends of similar background	Discriminated by neighbours	Still using	HIV
Razak	Homeless	Rejected by family	Unemployed	Mixes with friends of similar background	Discriminated	Still using	Asthma and Hepatitis C

Table 1 (Continue)

Respondent	Place of residence	Family relationship	Employment status	Peer relationship	Society relationship	Drug addiction	Health
Zahid	Homeless	Accepted by parents but not siblings	Unemployed	Mixes with friends of similar background	Negative perception, although there is no apparent name-calling	Still using	HIV & tuberculosis
Naim	Lives far from family	Well accepted	Unemployed	Mixes with friends of similar background	Discriminated	Still using	Hepatitis C
Zarul	Refuses to stay long with his sister	Accepted by parents but not siblings	Employed	Mixes with friends of similar background	Neighbours are unaware	Still using	HIV, Hepatitis B and C
Fikri	Lives with family	Well accepted	Unemployed	Mixes with friends of similar background	Discriminated	Stopped	None
Syamsul	Homeless	Rejected by family	Unemployed	Mixes with friends of similar background	Discriminated	Still using	HIV and Hepatitis C

Profile of desisting former prisoners based on the eight turning point mechanisms of life events

Respondent	Place of residence	Family relationship	Employment status	Peer relationship	Society relationship	Drug addiction	Health problems
Muiz	Lives with family	Well	Employed	Prevents self from mingling with problematic friends	Neighbour has a negative perception	Stopped	None
Syafiq	Lives with family	Well	Employed	Prevents self from mingling with problematic friends	Neighbours do not judge despite knowing	Never	None
Rizal	Lives with family	Well	Employed	Avoids mingling with people	Sometimes discriminated, especially when a crime happens	Never	None



*In an applicable manner

Figure 1. Proposed model of risk-protective and live events of former prisoners

First Life Event Domain: Housing and Residential

Upon their release, housing is essential for former prisoners since it provides a safe space for them. However, their criminal record makes it difficult for them to find shelter most of the time. Without proper accommodation, most of them will end up homeless and living on the streets. The possibility for a former prisoner to lose proper housing is when their parents pass away. Most respondents reported that they feel awkward and uncomfortable living in their parents' homes after their death, most likely occupied by their married siblings. Being homeless increases the risk of former prisoners re-engaging in criminal behaviours (Bantchevska et al., 2008; Mabhala et al., 2017). Findings show that all the respondents who were homeless were involved in crime. Those with a steady income can rent a place daily, whereas only two individuals can afford to rent monthly.

The three respondents who maintained a crime-free life had proper shelter upon release as they were married and returned to their wives and children. Additionally, former prisoners surrounded by family members also possess high social control to stop engaging in criminal behaviour (Braman, 2004; Seiter & Kadela, 2003; Visher et al., 2004). This finding aligns with the Age-Graded Theory, postulating that social control is formed through family and marriage relationships (Sampson & Laub, 1993). Therefore, strong family institutions can contribute to informal social control that prevents former prisoners from dabbling in criminal activities (Maruna, 2001).

Second Life Event Domain: Family Relationship

Undoubtedly, the family relationship is crucial in encouraging former prisoners to adhere to the rules and become responsible community members. Family support is also important in assisting former prisoners through reintegration (Brunton-Smith & McCarthy, 2017; Butorac et al., 2017; Hochstetler et al., 2010; Travis & Petersilia, 2001). In this study, 13 former prisoners have weak ties with their families, and only three of them are well-received by their families. Upon release from prison, most of the respondents were either rejected or turned away by their family members. Family rejection leads to their relapse into the vicious cycle of criminal activity and imprisonment (Maruna, 2001). More specifically, siblings would often be upset and grudge against former prisoners. The respondents also expressed their hurt when their family members insulted them and chose not to trust them.

Past criminal records of drug addiction and repeated imprisonment can exacerbate the lack of trust from family members (Green & Winik, 2010; Scott et al., 2014). Findings show that respondents are often the first to be accused when there is missing jewellery or valuables at home. This situation fosters unhealthy tension among family members, inevitably forcing former inmates to leave the house rather than face unjust accusations voluntarily. Most family members also no longer care for the respondents where their illnesses such as HIV, Hepatitis B, Hepatitis C, and tuberculosis fuel their rejection.

Therefore, former prisoners often choose to stay away from their family members. Family rejection is a negative turning point in the life of former prisoners that can be considered a risk factor.

Findings show that family relationships influence informal social control, especially among those who live with their family members. The acceptance of former prisoners in their families makes them feel valued and encourages them to stay with them (Barnes & Beaver, 2012; Bersani & Doherty, 2013). It aligns with Sathoo et al. (2021) findings highlighting the importance of good social support from family members in the reintegration process. Those who enjoy familial bonds also have proper financial assistance from their family. Since these former prisoners do not lack financial security and necessities such as food, clothing, and shelter, they have no reason to make a living illegally. The researchers found that an individual would try to avoid committing a crime when he/she understands the consequences of their family losing a loved one to a crime. The family would have to deal with the crime's repercussions, especially if they are breadwinners. These are positive turning points that lead to a high formal social control over themselves (Maruna, 2015).

Third Life Event Domain: Marriage and Responsibility

Out of the 16 recidivist respondents, 11 were single; two were married, two were widowed, and one was reported to be in a relationship. Being single does

not necessarily prompt them to commit the crime; however, having a partner strongly motivate former prisoners to avoid committing crimes. Married individuals tried their best to avoid crime due to the informal social control created by marital relationships (Maruna, 2001; Sampson & Laub, 1993). When marriage is a turning point, the couple directly takes charge of the social control structure and finds meaning in life (Christian et al., 2006). Spouses can also provide social and emotional support, deterring former prisoners from crime. The researchers also discovered that the existing relationship between former prisoners and their spouses could affect the ability to obey legal rules.

However, falling back into crime can lead to divorce as the spouse lose trust. Some respondents also state that disease such as HIV is a prominent issue. In terms of romantic relationships, former prisoners often choose to date among friends. Two respondents mentioned that they would only have sexual relations with a partner who has similar addiction to drugs or a former prisoner. However, romantic relationships usually do not last due to poor finances, lack of plans and fear of commitment. Most of them view romantic relationships as a replacement for the love they lack, where their partner is seen as a social support system sharing the same problem.

Fourth Life Event Domain: Employment

Permanent crime records are seen as one of the largest obstacles for former prisoners to obtaining a job (Levenson, 2009; Ramakers et al., 2014; Wang et al., 2010). All the respondents in this are currently unemployed. This scenario illustrates that being unemployed can trigger a state of homelessness. Thirteen respondents mentioned that past criminal records prevented them from getting jobs. Employers often view former prisoners as liabilities to the company, making it difficult for former prisoners to be transparent (Berg & Huebner, 2011; Denver et al., 2017). Most former prisoners also have low educational levels, limited work skills and no stable employment history. The lack of education and skills makes full-time employment impossible for former prisoners (McGrath et al., 2011) since employers prefer to hire individuals without criminal records, indirectly marginalising former prisoners (Aaltonen et al., 2017). Almost all respondents expressed that they desperately want a job.

The current unemployment trend also perpetuates criminal engagement that eventually forces them to be stuck in continuous criminal activity (Mears & Mestre, 2012). Thus, job instability is a negative turning point and is considered the most significant factor after being released since former prisoners are likely to be unemployed or have stable jobs (McGrath et al., 2011). Sivabalan and Ibrahim (2018) highlight employment as a significant protective factor in ensuring that former prisoners avoid crime, preventing them from reoffending. Therefore, employment provides financial stability and serves as a

medium for former prisoners to productively utilise their time and foster personal responsibilities (Sathoo et al., 2021).

Fifth Life Event Domain: Societal Relationship

The following three situations are common societal relationships for respondents (recidivists) in the community; (1) they are excluded or not accepted by their neighbours, (2) their neighbours are not interested in their presence, and (3) they are being negatively labelled. When a crime occurs in the community, the respondents would often be the first suspects. The attitude of community members has led to inferiority among former prisoners and exacerbated the stigma among them (Hipp et al., 2010; Sampson et al., 2002).

However, the situation is different for former prisoners who had refrained from crime. All three respondents stated that they could integrate well because of their frequent involvement in community programs or community activities. Relationships between individuals and society can encourage emotional attachment to meet community expectations. A positive outcome can be achieved when the neighbourhood community provides a conducive, supportive, and respectful community for former prisoners (McNeill & Whyte, 2007). The researchers also discovered that former prisoners are more likely to reintegrate into the community if they are unaware of their records. In this sense, living in a neighbourhood that provides an environment of societal

solidarity can further encourage cooperative social bonding. It is in line with Sivabalan et al. (2020), who found that individuals who receive ongoing social support from their environment and community have positive self-images.

Sixth Life Event Domain: Peer Influence

Relationships with anti-social peers are important predictors in the re-involvement of criminal activity among former prisoners (Hanson, 2003; Tenibiaje, 2013). Some former prisoners consciously avoid friends who previously contributed to their crime, while others maintain a risky friendships. Peers contribute to social control among the former prisoners (McGrath et al., 2011). Therefore, peers who have criminal records can become risk factors. However, the absence of a sense of belonging prompts many former prisoners to resort to these unhealthy friendships. Reconnecting with these friends often leads to re-involvement in old activities such as drug addiction, theft, and robbery. For former prisoners who are addicts, re-involvement with negative friends is a strong impetus for their return to prison (Tenibiaje, 2013).

As such, avoiding peers of negative influence is one of the protective factors since the interaction between former prisoners, and their friends can lead them back to crime (Andrews et al., 2011; Taylor & Becker, 2015). Findings show that negative relationships diminished with life changes and maturity. In this study, all three respondents who quit crime demonstrated a high degree of maturity when expressing

their opinions and remorse for their previous criminal activities.

Seventh Life Event Domain: Addiction

Most former prisoners fail to manage their addiction upon being released, where they face the challenges of drug and alcohol abuse (Green & Winik, 2010; Malik-Kane & Visher, 2008; Scott et al., 2014). Twelve respondents are still actively using drugs, with only four respondents quitting their addiction. Drug dependency is common among incarcerated prisoners as an effective drug abuse treatment is absent, leaving them at high risk of relapse. Often, they commit crimes to gain money for drugs. Their friends serve as a network for drug or theft activities, supplying former prisoners with drugs. Chronic dependence on drugs and alcohol makes it difficult for former prisoners to fully recover, making them more vulnerable to repeating their offences (Scott et al., 2014). Almost all respondents reported that they repeated their criminal behaviour and failed to integrate because of their inability to handle their addictions. Findings also show that six respondents agreed that they would continue to sell drugs to provide them with a decent income. The difficulty of obtaining a stable job fuels their involvement in drug dealing. Unfortunately, being a drug dealer often led them to personally use available drug stock, eventually forcing them to steal/ rob to replace what they have used. The researchers discovered that the problem of addiction or the tendency to reuse drugs did not occur among respondents who quit crime.

Eighth Life Event Domain: Diseases

Most former prisoners have poor health due to their lifestyles, such as causal unprotected sex, syringe sharing, alcohol, and drug abuse (Khan et al., 2011). While in prison, prisoners have access to health care and can receive medical examinations for chronic diseases such as diabetes and infectious diseases such as Hepatitis C, Hepatitis B and HIV. It was found that 15 respondents were either infected with HIV, hepatitis B or C, tuberculosis, or a combination of the mentioned diseases, whilst one respondent is suffering from a mental health illness. Upon release, former prisoners no longer receive any form of healthcare. They avoid seeking treatment at public health institutions due to stigma, keeping them silent about their illness. These challenges also put their health on the back burner as they have other unmet needs (Abracen et al., 2013, 2015). Locally, a high proportion of homeless individuals, including former prisoners, drug addicts, and those with mental illness, are reported to neglect their health (Yani et al., 2016). A bigger concern is when most homeless people are demotivated and avoid taking medication or seeking treatment, leading to more serious health effects (Yani et al., 2016).

The researchers also discovered that a former prisoner's view on the disease is important. Some feel that their disease does not interfere with their life. However, findings discovered that contagious diseases such as HIV are frowned upon by family members. Recidivists who suffer from diseases have a much more difficult time finding family acceptance and jobs due to the strong stigma.

Physical health and well-being greatly affect the success of the social integration of former prisoners. All three respondents who desisted had good health status and were free from contagious or chronic illnesses. Family acceptance is much stronger for them, preventing them from being reinvolved with crime or drugs. They also enjoy higher employability since the stigma is lesser among employers.

DISCUSSION

The Age-Graded Theory of Informal Social Control emphasizes the importance of certain events and changes experienced by former prisoners in influencing their criminal behaviour. Individual criminal behaviour will change in each age cycle (Martinez & Abrams, 2013; Maruna, 2001; Sampson & Laub, 2003). This study focuses on the life events of former prisoners upon their release from prison. The Age-Graded Theory discusses how an individual's life is determined through certain life events. This theory looks at life events in life stages, turning points and individual pathways. Life trajectories involve stable long-term patterns and changes in one's life, involving various transitions (Maruna, 2001; Sampson & Laub, 2003).

This study proves that the social events faced by former prisoners can prevent criminal behaviour in some individuals while others will continue to offend. Out of the 19 respondents, 16 categorized as recidivists faced various risk factors that

challenged them to integrate. The average recidivist was homeless and forced to live as a homeless person. Finding a home is not an easy task for them, and most of them end up homeless due to their own choices or family rejection. This scenario confirms placement as one of the life events that determine the success of reintegration in the lives of former prisoners. Various studies have proven that family is one factor determining the success of reintegration, where former prisoners' weak relationship with their family members encourages recidivism (Brunton-Smith & McCarthy, 2017). The risk of relapsing and returning to prison is high when former prisoners are not accepted or treated badly by their families (Sanei & Mir-Khalili, 2015).

In addition, marriage is also seen as a protective factor that can prevent former prisoners from repeating the crime. Strong marital relationships enable individuals to comply and reduce their chances of engaging in criminal activity (Laub & Sampson, 2003). However, recidivists are unmarried due to various factors like HIV.

The cessation of crime is also closely related to job search because stable employment encourages the cessation of crime (Kazemian & Maruna, 2009). In addition, having a job reinforces social compliance (Sampson & Laub, 1993) as job stability, job commitment and interdependence between employers and employees are significant factors in influencing former criminals to stop committing crimes. However, this study identified that 16 respondents are

unemployed and recidivists. This condition has been proven based on various studies claiming that unemployment can lead to the recurrence of crime (Berg & Huebner, 2011; Denver et al., 2017; McGrath et al., 2011).

Besides that, peers also play an important role in influencing the behaviour of repeat offenders. For example, positive and prosocial peers may reduce recurrent offences among former prisoners (McGrath et al., 2011). On the other hand, negative and anti-social peer influence can reinforce the criminal behaviour of former prisoners (Hanson, 2003). It aligns with the current study where recidivists prefer to approach negative friends to replace family rejection. As for those who desist, all three stay away from friends because they know the effects of negative peer influences.

Criminal behaviour is influenced by the characteristics of the neighbourhood in which the individual lives (Inzlicht et al., 2012; Moore et al., 2016). Community acceptance and support are important in helping former prisoners reintegrate into community life. The society that discriminates causes them to choose to live away from society. Poor and conflicting relationships between former prisoners and community members increase the risk of former prisoners becoming repeat offenders (Hipp et al., 2010). It is evident in this study as most persistent respondents face discrimination from the community, contrary to the recidivists, who are accepted by society.

In addition, the researchers also view addiction as one of the life events that

influence former prisoners upon release. Some former prisoners successfully quit their drug addiction upon their release, but most recidivists cannot stop abusing drugs. Heavy drug abuse is a critical criminogenic risk factor for recidivism among former prisoners (Scott et al., 2014). Furthermore, former prisoners who do not have access to rehabilitation care are at risk of returning to drug abuse and alcohol addiction (Rowe et al., 2007), where drug abuse is a major contributing factor to high recidivism rates (Castillo & Alarid, 2011). Often, former prisoners commit criminal acts to fuel their addiction (Hiday & Wales, 2009).

Finally, researchers also found that health is a determinant of recidivism in the lives of former prisoners. On average, recidivists have various infectious diseases compared to desisters, who have good health. Those who are ill settle for a very low standard of living, live on the streets and are constantly addicted to drugs. Most former prisoners have poor health due to their lifestyles, such as free sex practices, needle sharing, and alcohol and drug abuse (Khan et al., 2011). While in prison, inmates have access to health care provided by the prison. In prison, prisoners can receive health screening treatment for chronic diseases such as diabetes and infectious diseases such as Hepatitis C, Hepatitis B and HIV. Unfortunately, they no longer have any form of health care after their release.

Most of them do not follow any health treatment in government hospitals. The mentality that has been engraved in their minds will be the stigma that they will go

through if they are in a public area such as a hospital, as well as the hardships of life that make them more willing to remain silent about their illness. The challenges of life are also caused by their health is not something that matters. Problems related to this disease become more critical when former prisoners come out of prison unconscious and know that they have diseases such as Tuberculosis, Hepatitis C and HIV. As a result, their health condition is becoming more critical, as well as the worrying thing is that they have the potential to spread infectious diseases such as tuberculosis, hepatitis, and HIV to the community (Petersilia, 2003). Researchers interviewed the respondents about the effects of their illness on well-being, and most of them claimed that the disease did not cause any problems to them.

CONCLUSION

The discussion on the Age-Graded Theory involves the discussion of turning point that occurs throughout the life events of individuals alongside the risk and protective factors at each event. The same theory can also explain the recurrence of anti-social and criminal behaviour among former prisoners upon their release. More specifically, this theory postulates that criminal behaviours during the reintegration of former prisoners result from the life events they experienced. However, this study only accounts for adulthood and not the experiences of former prisoners when they were younger.

The model explored the interaction between life events to explain the criminal behaviour of the former prisoners. This study confirms that recidivism among former prisoners is often the result of a lack of protective factors. On the other hand, strong protective factors can influence them to stay on the right path. However, it is not necessarily applicable to every former prisoner, as those who experienced positive life events can still be involved in crime. The risk-protective factors and life events of the former prisoners' model presented in Figure 1 attempted to represent the occurring factors in the reintegration process. Therefore, agencies involved in managing former prisoners, particularly the Malaysian Prison Department, can adopt the proposed model into their existing reintegration program to decrease recidivism and increase desistance behaviour among former prisoners.

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An Extended Decision-Making Model of Coastal Recreational Area Use During the COVID-19 Through Goal-Directed Behavior and Perceived Benefits Framework

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ABSTRACT

Recreational areas have gained significant importance regarding human activities during the COVID-19 pandemic, especially when citizens face challenges. This study aims to examine the behavioral intention of the decision-making approach of the visitors of coastal recreational areas to deal with this situation. The Extended Goal-directed Behavior Model (EGBM) was tested with confirmatory factor analysis (CFA) to examine visiting coastal recreational areas to understand how citizens modify their lifestyles. A survey with 41 questions was administered to 311 residents in Izmir province. The results showed that perceived benefits affected attitudes. Attitude, subjective norm, anticipated positive emotion and anticipated negative emotion influenced desire. Desire, past behavior, and perceived

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E-mail addresses: can.sayginer@yasar.edu.tr (Can Sayginer) kubrakrtsn@gmail.com (Kubra Kurtsan) *Corresponding author behavioral control were also effective for coastal recreational visits. The present study contributes to the growing literature on decision-making processes of the uses of recreational areas and enables focusing on the significance of coastal recreational areas.

Keywords: Coastal recreational areas, decision-making process, Izmir province, the model of extended goal-directed behavior, visitors' intention

INTRODUCTION

Following the first announcement of the COVID-19 case in Wuhan, China, on February 22, the first COVID-19 patient was detected in Turkey on March 11 (Republic of Turkey Ministry of Health, 2020). Starting partially on March 22, especially for people older than 65 and those with chronic diseases, restrictions and lockdowns were imposed, according to the Republic of Turkey Ministry of Interior (2020). Moreover, since then, partial restrictions, controlled normalizations, partial lockdowns, complete lockdowns, and gradual normalization processes have continued. With restrictions, lockdowns, and normalizations during this period, the importance of recreational areas in Turkey and worldwide was once more understood. Since Izmir is on the coastline and has many coastal recreational areas, studies on recreational areas are important in helping communities avoid catching COVID-19 and possible other pandemics in the future.

Coastal recreational areas provide outdoor activities for residents that contribute to their well-being and health. They also make it easy to benefit socially, economically, and environmentally, contributing to the lifestyle of people and supporting the development of communities. According to National Recreation and Park Association (2020), 83% of people worldwide found parks, trails, and open spaces necessary for mental health, and 59% also thought that exercising during a pandemic was essential for physical health. Thus, understanding people's behavioral

intention toward coastal recreational use is essential to provide comprehensive knowledge for citizens living in coastal areas to stay safe.

The Goal-directed Behavior model (GBM) is an important tool for measuring people's intentions over desires, intentions, and past behavior (Perugini & Bagozzi, 2001). The EGBM was also built by applying perceived benefits, including environmental, social, physical, and spiritual sections, to understand the attitudes (Park et al., 2017). Many studies have successfully applied EGBM in understanding the decisionmaking process across various areas, including tourism (Bui & Kiatkawsin, 2020; Jin et al., 2020; Kim & Preis, 2016; Kim et al., 2017, 2020), recreational visits (Park et al., 2017), online gaming (Holevova, 2018), online shopping (Ercis & Turk, 2019), and finance (Kim & Hall, 2019). However, the number of studies related to behavioral intentions to use coastal recreational areas, which are crucial parts of open and green spaces to perform many functions and provide many physical and mental health benefits, during the COVID-19 period is limited, and existing research has mostly focused on cities in Western countries (Hansen et al., 2022; Kane et al., 2021; Łapko et al., 2022). The lack of research in the current literature reinforces the need to measure the effects of the perceived benefits on attitudes and the influences of desire on coastal recreational area use during the COVID-19 period in different geographical and social contexts.

Given this, we aim to examine people's behavioral intentions regarding the use of coastal recreational areas during COVID-19 in Izmir and understand how citizens modify their lifestyles by EGBM. The research questions address the following: (1) what are the benefits and challenges of visiting coastal recreational areas regarding how citizens behave in society with a healthy or desperate mind in response to the threat of COVID-19 after the lockdown periods, and (2) how norms attitude, subjective, negative emotions, positive emotions, and perceived coastal recreation benefits affected their desires, and how desires, perceived behavioral control and the frequency of the past behaviors affected the behavioral intention to coastal recreational area use.

This study will contribute to the governments taking the required actions

and creating new places to make preferable and livelier open and green spaces and guide their citizens in using coastal recreational areas during COVID-19. The details of materials and methods to address the aim of this study are given in the next section.

MATERIALS AND METHODS

This research had a quantitative design approach to reveal the significant behavioral intentions of the residents to visit coastal recreational areas of Izmir Province during the COVID-19 partial lockdown. This study was conducted in coastal recreational areas of Izmir Province, on the coast of Izmir Bay, Turkey (Figure 1). The study area covering eight long coastal recreation areas within the urban region of Izmir was chosen as they were popular and the largest communal areas.

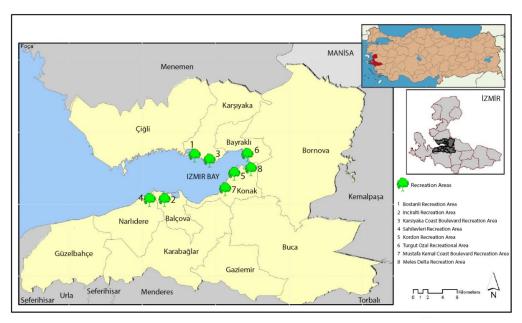


Figure 1. Study area

The EGBM investigates people's desires, intentions, and past behavior regarding coastal recreational area use. This model was applied because negative and positive emotions, were applied to, were effective for understanding people's instant and impulsive behaviors towards coastal recreational use during COVID-19. In this study, the EGBM was applied by incorporating the Perceived Benefits (PB; Park et al., 2017) variable with the Model of Goal-directed Behavior (MGB) (Perugini & Bagozzi, 2001) with variables such as Attitude (AT), Subjective Norm (SN), Positive Anticipated Emotion (PAE), Negative Anticipated Emotion (NAE), Desire (DE), and Perceived Behavioral Control (PBC), Frequency of Past Behavior (FPB), as the hypothesis illustrated in Figure 2. PB served to examine environmental, social, physical, and spiritual benefits. These benefits trigger residents' attitudes. AT and SN were applied to analyze the desire construct for MGB, as H2-a and H2b. PAE (H2-c) and NAE (H2-d) were also constructed by exploring their emotions to examine whether they influence their desires. The FPB, which was declared as H2-e, was also examined by seeking the habits of respondents to check whether it affects their intentions. The H2-f hypothesis was created to measure DE for recreational area visits. PBC, which was deployed as H2g, was applied from the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) to determine people's intentions for the recreations visits.

H1 Perceived Benefits (PB) have a positive impact on Attitude (AT).

H2-a Attitude (AT) has a positive impact on Desire (DE).

H2-b Subjective Norm (SN) has a positive impact on Desire (DE).

H2-c Positive Anticipated Emotion (PAE) has a positive impact on Desire (DE).

H2-d Negative Anticipated Emotion (NAE) has a positive impact on Desire (DE).

H2-e The Frequency of Past Behavior (FPB) has a positive impact on Behavioral Intention (BI).

H2-f Desire (DE) has a positive impact on Behavioral Intention (BI).

H2-g Perceived Behavioral Control (PBC) has a positive impact on Behavioral Intention (BI).

In the present study, an online survey was administered to 311 coastal recreational area users in Izmir Province in the spring of 2021/between mid-March and mid-April 2021, during the last partial lockdown. The online questionnaire was prepared, including 41 questions on the behavioral intention of eight coastal recreational area visitors in Izmir Province and their demographic information via Google forms. Out of 41 questions, nine were gathered by descriptive analysis to specify the profile of the population sample via IBM SPSS 26.0. Thirty-two questions were applied for nine factors to the SmartPLS

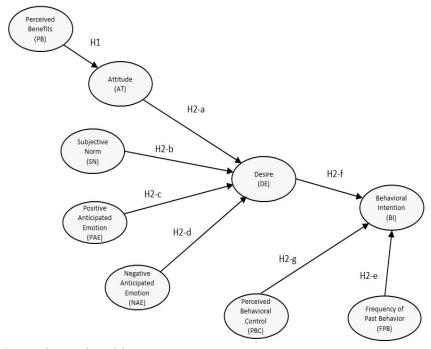


Figure 2. Proposed research model

3.0 to build a structural model for the study areas. Confirmatory Factor Analysis (CFA) was used to test the structural model. Structural Equation Modelling (SEM) was applied to test the hypothesis. From the MGB, the behavioral intention was selected as a dependent variable, including four items. AT, DE, FPB, NAE, PBC, PAE, and SN were chosen as independent variables, containing 3, 4, 2, 4, 4, 3, and 4 items, respectively. Perceived benefits were selected as independent variables, containing four items: environmental, social, physical, and mental aspects. Questions included respondents' coastal recreational area use patterns before the lockdowns, Table 2. The results and discussion of the descriptive data

and EGBM's factors were specified in the following sections.

RESULTS

The descriptive analysis of this study consisted of two main tables: The profile of respondents in the city of Izmir in Table 1 and a summary of responses to motivation for visits and frequency of visits items before COVID-19 and during COVID-19 in Table 2. Table 1 illustrates the proportions and majorities of respondents within the classes; females (74.5%), students (29.2%), people aged between 21 and 30 (29.2%), people with graduate-level (67.2%), and people that have been living in Izmir for more than 25 years (45.9%), respectively.

Table 1
Profile of respondents in the city of Izmir

	TO	TAL
(1) GENDER	N	%
Female	232	4.5
Male	79	5.5
(2) STATUS	N	%
Housework	9	2.8
Retired	47	15.1
Student	91	29.2
Public sector	72	23.1
Academician	12	3.8
Private sector	54	17.3
Independent business	15	4.8
Employee	2	0.6
Tourism	4	1.2
Architect	5	1.6
(3) AGE	N	%
Below 20	21	6.7
21–30	91	29.2
31–40	58	18.6
41–50	41	13.1
51–60	69	22.1
61–70	30	9.6
Above 70	1	0.03
(4) EDUCATION LEVEL	N	%
Literate	0	0
Primary school	1	0.03
Elementary school	2	0.06
High school	16	5.1
Graduate	209	67.2
Postgraduate	83	26.6
(5) THE DURATION OF LIVING IN IZMIR	N	%
I live in another city	26	8.3
0–5 years	38	12.2
6–10 years	21	6.7
11–15 years	15	4.8
16–20 years	34	10.9
21–25 years	34	10.9
Above 25 years	143	45.9

As shown in Table 2, most respondents preferred to walk at Bostanli Recreational Area 79.4%; the second preference was Kordon Recreational Area 64.3%. They were followed by Karsiyaka Coastal Boulevard Recreation Area, which was chosen by 40.8% during the lockdown. Among the thirteen motivations to relax during the lockdown, taking a walk, spending time

with friends, and sitting at benches and cafes were the most preferred activities by 92.9%, 71%, and 68.1%, respectively. Apart from these motivations, the highest frequency of visiting recreational areas before COVID-19 and during COVID-19 was a couple of times a week and never by 40.6% and 23.2%, respectively.

Table 2
Summary of responses for motivation for visits and frequency of visits items

	ТО	TAL
(6) RECREATION AREAS IN IZMIR	N	%
Bostanli Recreation Area (Karsiyaka)	247	79.4
Inciralti Recreation Area (Balçova)	122	39.2
Karsiyaka Coast Boulevard Recreation Area	127	40.8
Sahilevleri Recreation Area (Narlidere)	79	25.4
Kordon Recreation Area (Konak)	200	64.3
Turgut Ozal Recreation Area (Bayrakli),	28	9.0
Mustafa Kemal Pasa Coast Boulevard Recreation Area (Konak)	125	40.1
Meles Delta Recreation Area (Bayrakli)	26	8.3
(7) MOTIVATIONS FOR VISITING IZMIR RECREATIONAL AREAS	N	%
Taking a walk	289	92.9
Sitting (such as sitting bench, cafe)	212	68.1
Walking around with a child	44	14.1
Cycling	85	27.3
Running	41	14.1
Spending time with friends	221	71.0
Using sports facilities (such as basketball, volleyball, and tennis)	42	13.5
Riding scooters, skates, skateboards	16	5.1
Walking a pet	19	6.1
Fishing	6	1.9
Flying a kite	10	3.2
Doing yoga and Pilates	17	5.4
Using outdoor sports exercise equipment	39	12.5

Table 2 (Continue)

	TO	TAL
(8) VISITING FREQUENCY BEFORE COVID-19	N	%
Once a month	29	9.5
A couple of times a month	58	58.0
Once a week	48	15.6
A couple of times a week	126	40.6
Every day	25	8.1
Never	2	0.06
First time	1	0.03
A couple of times a year	22	7.11
(9) VISITING FREQUENCY DURING COVID-19	N	%
Once a month	50	16.0
A couple of times a month	43	13.8
Once a week	30	9.6
A couple of times a week	45	14.5
Every day	11	3.6
Never	72	23.2
First time	4	1.3
A couple of times a year	56	18.0

As shown in Table 3, the model was reliable and valid. For the model fit, the SRMR value, which should be below 0.08, declared by Hu and Bentler (1999), was 0.057, which was a good fit.

Composite Reliability (CR), which exceeded 0.7 as stated by Hair et al. (2010), was satisfactory for reliability measurement. For GDB constructs, AT (3 items), BI (4 items), DE (4 items), FP (2 items), NAE (4 items), PBC (4 items), PAE (3 items), and SN (4 items) were valid, which were between 0.798 and 0.959. PB (4 items) was also valid for PB constructs, which was 0.887.

The Average Variances Extracted (AVE) score, which was above 0.5, clarified by Hair

et al. (2010), was valid. These constructs with the chosen items of the GDB revealed that the AVE scores were between 0.656 and 0.886, which were satisfactory. The construct of PB was also valid by 0.663.

For Cronbach's alpha, according to Hinton et al. (2014), the validity coefficients were categorized into four-level: excellent (0.9-1), high (0.7-0.9), moderate (0.5-0.7), and low (0.5 and below). For GDB constructs, the excellent validity coefficients were PAE, BI, DE, NAE, and SN with the values of 0.936, 0.928, 0.923, 0.903, and 0.900, respectively. The high validity coefficients were AT with the value of 0.848 and PBC with the value of 0.824. The moderate coefficient was also FP with

the value of 0.523. For the PB construct, the high validity coefficient was PB, with a value of 0.830.

According to Hair et al. (2017), the coefficient of factor loadings is considered above 0.7. Therefore, the interval coefficients

of GDB constructs' items were between 0.751 and 0.950. The PB constructs' items were also revealed between 0.776 and 0.866, which was fit.

Table 3
Factor loadings, Cronbach's alpha, CR, AVE, and structural model fit of the behavior of recreational area variables

GDB constructs	Items	Loadings	Cronbach's Alpha	CR	AVE
AT	AT1	0.843			
	AT2	0.893	.848	0.907	0.766
	AT3	0.888			
BI	BI1	0.932			
	BI2	0.932	.928	0.949	0.823
	BI3	0.939			
	BI4	0.821			
DE	DE1	0.891			
	DE2	0.920	.923	0.945	0.812
	DE3	0.928			
	DE4	0.864			
FPB	FPB1	0.907	.523	0.798	0.667
	FPB2	0.715			
NAE	NAE1	0.871			
	NAE2	0.910	.903	0.932	0.774
	NAE3	0.874			
	NAE4	0.865			
PBC	PBC1	0.845			
	PBC2	0.863	.824	0.884	0.656
	PBC3	0.776			
	PBC4	0.751			
PAE	PAE1	0.928			
	PAE2	0.950	.936	0.959	0.886
	PAE3	0.946			

Table 3 (Continue)

GDB constructs	Items	Loadings	Cronbach's Alpha	CR	AVE
SN	SN1	0.869			
	SN2	0.906	.900	0.930	0.770
	SN3	0.886			
	SN4	0.848			
PB construct	Items	Loadings	Cronbach's Alpha	CR	AVE
PB	PB1	0.776			
	PB2	0.790	.830	0.887	0.663
	PB3	0.821			
	PB4	0.866			
Structural model fit					
SRMR (0.057)					

The correlation table was placed to show the relationship between constructs (Table 4). There was a correlation between SN and DE of 0.685. SN and PAE also

correlated with the value of 0.671. PAE and DE and PAE and PB had correlations with the value of 0.668 and 0.601, respectively.

Table 4

Correlation matrix

Constructs	AT	BI	DE	FPB	NAE	PBC	PB	PAE	SN
AT	1.0								
BI	.316	1.0							
DE	.592	.392	1.0						
FPB	.029	.265	.061	1.0					
NAE	.366	.338	.364	.087	1.0				
PBC	.368	.493	.442	.143	.113	1.0			
PB	.468	.364	.511	.066	.111	.404	1.0		
PAE	.624	.274	.668	.048	.249	.404	.601	1.0	
SN	.528	.366	.685	.099	.267	.476	.582	.671	1.0

The structural model results, the path coefficients, similarity existence by T value, and coefficient of determination by R square are shown in Table 5. The T value, which exceeded 1.96, supported the hypotheses (Hair et al., 2014). For PB construct, the present study indicated that PB positively influenced AT with a strong effect size (β = .468, p = .000), with a T value of 8.559, thus supporting H1. For GDB constructs, the study exhibited that AT positively affected DE with a strong effect size ($\beta = .174$, p = .001), with the T value of 3.215, thus supporting H2-a. The findings showed that SN negatively affected DE with a strong effect size ($\beta = .373$, p = .000), with the T value of 6.219, supporting H2-b. PAE had a positive impact on DE with a strong effect size ($\beta = .276$, p = .000), with the T value of 4.411, supporting H2-c. In addition, this

research showed that NAE had a positive impact on DE with a strong effect size (β = .132, p = .000), with the T value of 3.918, supporting H2-d. This study showed that FBP positively affected BI with a strong effect size (β = .199, p = .000), with the T value of 4.619, supporting H2-e. DE positively affected BI with a strong effect size (β = .218, p=.000), with a T value of 4.410, thus supporting H2-f. PBC positively influenced BI with a strong effect size (β = .368, p = .000), with the T value of 8.551, supporting H2-g.

The results showed that the variance of PB explained 21.9% of the variance of AT. AT, SN, PAE, and NAE variance explained 59.1% of DE. The FP, DE, and PBC variance explained 31.9% of the structural model, as shown in Figure 3.

Table 5

The structural model results, the path coefficients, T values, and the R square of the behavior of recreational area use variables

Structural Model	Path Coefficients	T Values	Results	p value
Perceived Behavior				
H1: PB->AT	0.468	8.559	SUPPORTED	0.000 (***)
AT Explained as %: (21.9)				
Goal-directed Behavior				
H2-a: AT->DS	0.174	3.215	SUPPORTED	0.001 (***)
H2-b: SN->DS	0.373	6.219	SUPPORTED	0.000 (***)
H2-c: PAE->DS	0.276	4.411	SUPPORTED	0.000 (***)
H2-d: NAE->DS	0.132	3.918	SUPPORTED	0.000 (***)

Table 5 (Continue)

Structural Model	Path Coefficients	T Values	Results	p value
DS Explained as %: (59.1)				
H2-e: FPB->BI	0.199	4.619	SUPPORTED	0.000 (***)
H2-f: DS->BI	0.218	4.410	SUPPORTED	0.000 (***)
H2-g: PBC->BI	0.368	8.551	SUPPORTED	0.000 (***)
Structural Model: BI Explained as %: (31.9)				

Note. significance at p<.10 (*), significance at p<.05 (**), significance at p<.01(***)

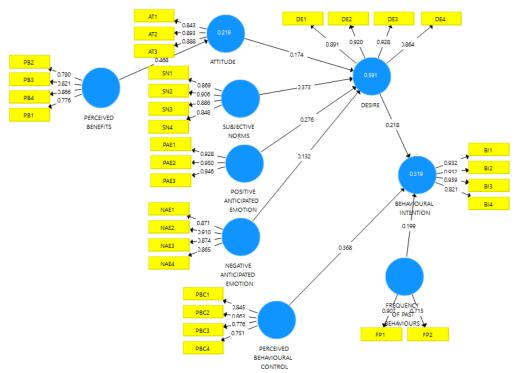


Figure 3. Structural model path diagram

DISCUSSION

COVID-19 lockdown at the weekends and on weekdays between 9 pm and 5 am affected Turkish citizens drastically as the social life of Izmir is of Mediterranean culture, whose citizens like spending time outside. Therefore, during COVID-19, the citizens of Izmir were more likely to get bored and spend their time relaxing and comforting themselves in relaxing activities, such as walking, spending time with friends, and sitting on benches or at a café, keeping the imposed social distance.

Guzel et al. (2020) stated that exploring new things with family and spending happy and quality time lessened the negative effects of being in home isolation. As shown in Table 2, the frequency of going out before COVID-19 was higher than the partial lockdown (lockdown at the weekends and lockdown after 9 pm in the week). Thus, the reason for the citizens to go out during the lockdown was not their desire and passion but necessity and efforts to sustain their quality of life. People tried to sustain their quality of life through relaxation, walking with their dogs, and shopping at the closest distance. Park et al.'s hypothesis that "perceived control behavior directly affects the desire" (2017, p. 68) was proved similar to our study that perceived control behavior directly affects the intention to go out for coastal recreation. Since free times of those who went to work and those who worked from home coincided with the lockdown hours, they were less efficient at work, and their quality of life decreased.

These recreational areas on the coastal areas of Izmir Bay, where the climate is the moderate Mediterranean, facilitate various important activities for the citizens of Izmir. Generations of Izmir have preferred coastal areas to get rest and relax. The coastal areas are preferred during the COVID-19 epidemic also confirmed that the tradition goes on within the "subjective norm" (Chiu et al., 2018, p. 335).

The hypothesis that NBE directly affects DE was confirmed by the people's anxiety about ending up COVID positive. Therefore, these negative feelings make people introverted or change their activities to more individual ones, affecting their intentions to spend time in coastal recreational areas. For positive emotions construct, COVID-19 has changed respondents' lives from being intensive and busy to nature-oriented and individualistic, causing a desire to spend time in coastal recreational areas. For the perceived benefit construct, residents were more likely to prefer physical activities (92.9% preferred walking) than social (71% friends meeting) and spiritual (5.4% yoga and Pilates) activities.

The model provides coastal recreation users' intentions for environmental policymakers. Government should especially create environmental policies for extending green areas and open spaces in coastal recreational areas. Landscape planners should also create citizen-oriented procedures for applying these policies to the coastal recreational outdoor facilities, such as local parks, playground areas, and

walking or cycling lanes. In addition, staff, who work at municipalities, should track citizens' behaviors over obeying the policies during spending time in coastal recreational areas and inform the police if any penalty is witnessed. Finally, guidelines should be well-written and concise to the citizens of all different ages to remind them of the liabilities and move them together. National Recreation and Park Association (2020) concluded that the citizens' requirements should be taken as feedback to respond to society's rapid requests and keep policies up to date by informing landscape planners to sustain well-being in society.

CONCLUSION

The present study's most important finding is that the decision-making process for using coastal recreational areas has changed drastically during the pandemic. While factors affecting the decisions are mostly due to self-desire and social needs, they become the perceived benefits and health concerns for most people. Coastal recreational visits are relaxing activities for the citizens of Izmir in general. However, these activities are not what people desire during COVID-19. They became obligatory for citizens as lockdowns brought severe pressure, transforming those visits into norms. Citizens also intend to visit coastal recreational areas because of their desires, perceived behavioral control, and the frequency of past behaviors. Their attitude has also been formed by the perceived benefits of the coastal recreational visits.

The pandemic is expected to finish soon, depending on the success of the vaccination programs. However, still, residents must spend most of their time working at home. Fun activities, self-development, deferred tasks, or procrastinated responsibilities should be a priority for them to fill the time to avoid any mental or physical breakdowns. They can register for language courses and occupational training for selfdevelopment. Although it is subjective, some people, especially introverts, but hardworking students, might benefit from online education because they can manage their time better when they have full control of their daily logs. Therefore, they could study and do their leisure activities more appropriately. Staying in for more than one need may cause pressure, but people can sometimes organize themselves better, such as eating, sleeping, and working habits. Doing light exercises and meditation at home can be a relaxing activity for residents to stay comfortable. Trying to find ways to comfort themselves is essential. However, it is strongly advised that residents should quickly adopt a new normal life with new norms—for example, social distancing, new eating habits to avoid obesity since obese people suffer more when they catch COVID-19, and quality time at home.

As the COVID-19 pandemic continues, the survey will first and periodically be conducted to monitor citizens' modifying coastal recreational areas' use in Izmir. Lastly, the survey will be operated across the cities with coastal areas worldwide to compare the people's intentions in different cultures at a separate time.

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The Effect of Semi-Occluded Vocal Tract Exercise (SOVTE) and Traditional Vocal Warm-up (TVW) on the Vocal Quality of Untrained Female Singers in Malaysia: A Comparison

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ABSTRACT

Vocal warm-up has garnered much research attention these recent years. This study compared the short-term effects of straw phonation (SP) with a traditional vocal warm-up (TVW) on the vocal quality of untrained female singers. It also determined the effect of exercise type on the vocal economy and skill acquisition. Vocal quality was measured using voice range profile (VRP), multi-parametric index, acoustic, and aerodynamic parameters. Eighty participants were randomly recruited and divided into two equal groups to perform vocal warm-ups at a frequency of two 10-minute sessions per day for three weeks. Voice data were collected using Praat and Vocalgrama software, while the statistical results were analysed using Statistical Product and Service Solution (SPSS). As a result, some parameters, i.e., fundamental frequency maximum (F0-max), maximum intensity (max Int) and area of VRP, fundamental frequency (F0), jitter, shimmer, harmonics-to-noise ratio (HNR), and dysphonia severity index (DSI), projected significant changes after three weeks of warming up exercise in TVW group. In the SP group, the participants experienced significant changes in max Int and area of VRP only. Both groups did not exert significant changes to min Int, which indirectly measures phonation threshold pressure (PTP), signifying no improvement for the vocal economy. Participants from the TVW group benefitted the most from vocal warm-ups due to notable improvement in vocal quality, technical singing skills

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(i.e., skill acquisition), and vocal efficiency. Meanwhile, the SP group only benefitted in terms of enhanced vocal efficiency.

Keywords: Acoustic parameters, aerodynamic, dysphonia severity index, semi-occluded vocal tract exercise, traditional vocal warm-up, vocal quality, voice range profile

INTRODUCTION

Singing is a highly skilled art that requires coordinated and integrated respiration, phonation, resonation, and articulation (McKinney, 2005). The muscles required for singing can be trained through planned vocal exercises and vocal training programs. Vocal exercises are integral to warming up the voice, correcting vocal faults (e.g., poor breath support can cause pitching intonation & pressed phonation issues; Risdale, 2017), extending vocal range, and acquiring vocal technique (e.g., learning to sing wide intervals, legato, staccato, rapid figurations, & control of dynamics). Vocal exercises are crucial to enhancing vocal quality (McKinney, 2005). Vocal warm-up is vital to prevent vocal fold injury and achieve optimal voice function in both untrained and professional singers (Gish et al., 2012; Milbrath & Solomon, 2003).

Technical/artistic and physiological vocal warm-ups are the two major vocal warm-up types (Behlau et al., 2010; Kang et al., 2019; Portillo et al., 2018). Singing teachers have widely applied traditional vocal warm-ups (TVW), also known as technical/artistic warm-ups, to optimise breath support, voice placement, and vocal timbre (Portillo et al., 2018). On the contrary, speech-language pathologists commonly deploy physiological vocal warm-up exercises as voice rehabilitation exercises. The physiological warm-up prepares a singer's vocal production system for adequate physiological conditions, mainly during or after a performance, to reduce vocal risks and fatigue. Semioccluded vocal tract exercises (SOVTEs) are among the most common physiological warm-ups carried out by singers. These SOVTEs are designed to improve vocal fold vibration efficiency and physiological conditions and enhance phonation efficiency to achieve resonant voice (Christmann & Cielo, 2017; Portillo et al., 2018). As a result, singers, singing teachers, and speech-language pathologists have begun acknowledging the benefits of vocal warm-ups for voice training and rehabilitation (Portillo et al., 2018).

Despite the wide variety of TVW, it encompasses the following fundamentals: (1) alignment of body position and muscles relaxation, (2) proper inhaling and exhaling techniques, (3) vowel formation, as well as (4) vocal output and placement at different registers, amplitudes, and pitches (Davids & LaTour, 2012; Kang et al., 2019; Stegman, 2003). According to Gish et al. (2012), 70 per cent of voices are highly supportive of the need for TVW sessions to attain easy phonation and flexible voice. Additionally, various acoustic variables, including jitter, pitch perturbation quotient, shimmer, harmonics-to-noise ratio (HNR), and fundamental frequency (F0), have improved following TVW (Amir et al., 2005; Moorcroft & Kenny, 2013; Onofre et al., 2017). Jitter refers to a frequency change measurement within a sample of phonation that varies with strain, stiffness, and vocal fold mass, while shimmer is affected by subglottal pressure and glottal resistance (Robieux et al., 2015).

Andrade et al. (2014) investigated several SOVTEs classified into two

categories based on vibratory sources in the vocal tract. Straw phonation (SP) and humming are instances of exercises with a single source of vibration into the vocal tract (i.e., vocal folds), while lip trills and tongue trills are examples of exercises with a secondary source of vibration that should exert a massaging effect on vocal organs (Andrade et al., 2014; Saldías et al., 2020). The effects of SP have been assessed in several studies. Higher mean airflow and spectral energy and decreased oral pressure were observed after SP (Costa et al., 2011; Guzman, Laukkanen, et al., 2013; Manternach et al., 2017). Straw phonation (SP) generates semi-occlusion in the vocal tract. Narrowing the vocal tract increases air pressure above the vocal folds, thus creating positive oral pressure, keeping the vocal folds separated during phonation, and reducing the force of the impact as they meet (Costa et al., 2011; Scearce, 2016; Titze, 2001). This narrowing of the vocal tract promotes a critical feedback mechanism for the vibration of the vocal fold, hence facilitating voice initiation and self-sustained oscillation (Conroy et al., 2014).

These vocal folds introduce a relatively high impedance to the upstream airflow originated by the lungs through the narrowing of the glottis. Increased impedance is imparted unto the vocal tract by narrowing it, which promotes the impedance matching between filter (i.e., vocal tract) and voice source (i.e., vocal folds, Rothenberg, 1981; Story et al., 2000; Titze, 1988, 2001; Titze & Laukkanen, 2007; Titze & Story, 1997). This

impedance matching results in time-delayed build-up and release of supraglottal pressure, which feeds energy back into the system by producing in-phase velocity between airflow and supraglottal pressure (Titze, 2006). As a result of the raised inertive reactance (a component of impedance) of the vocal tract, the transglottal pressure is reduced (Bele, 2005; Titze, 2001), thus lowering phonation threshold pressure (PTP). The PTP refers to the least amount of subglottal air pressure required to set the vocal folds into vibration (Titze & Story, 1997), increasing vocal economy and ease of phonation (Bele, 2005; Story et al., 2000; Titze & Story, 1997).

According to Titze (2006), in comparison to the other five progressive exercises (i.e., tongue trills, lip trills, bilabial fricatives, phonation into tubes & humming), SP is the most efficient and easiest to master (Titze, 2006). Therefore, referring to the above considerations, TVW, and SP exercises, along with other identified variables, were investigated in this present study.

LITERATURE REVIEW

This section presents the literature on TVW and SOVTEs by exploring the possible gaps for research and the research findings that can be compared against the outcomes retrieved from this present study. A few studies have reported positive results, as delineated in the following:

Guzman, Angulo, et al. (2013) compared the impact of vocal function exercise (VFE) (vocal training program that consists of SOVTE) with the impact of conventional singing exercises on the voice spectrum in 38 vocally normal pop singers. The study participants were randomly divided into an experimental group (VFE, n=20) and a control group (TVW, n=18). Each participant performed both speaking voice and singing voice tasks. After training on spectral slope declination for the VFE group in both tasks, significant improvements were observed. The singing power ratio (SPR) significantly increased singing voice analysis, while both SPR and alpha ratio significantly increased speaking voice analysis. Significant training improvement in the alpha ratio was noted in the TVW control group after training. As for voice samples, significant variances were found in alpha and SPR for both VFE and control groups (more significant prior-subsequent variance for VFE). The VFE offers a more significantly beneficial effect on the voice spectrum and a decline in speaking voice analysis on a spectral slope than TVW.

Guzman, Higueras, et al. (2013) also examined the acoustic impact of SP on dysphonic teachers using the spectral measure. After SP exercises, spectral tilt was evaluated compared to TVW vowel phonation exercises [a:]. The outcomes showed that SP exercises offered immediate acoustic benefits.

The SOVTEs have been reported to increase voice economy by reducing phonation threshold pressure (PTP) and effort while concurrently increasing or maintaining consistent acoustic output (Guzman, Laukkanen, et al., 2013). The subglottal pressure required to initiate and sustain vocal fold vibration is phonation

threshold pressure (PTP) (Fujiki & Sivasankar, 2017). The PTP is affected by several factors, including pre-phonatory glottal width, tissue damping, vocal fold thickness, and mucosal wave velocity (Titze et al., 1995). Additionally, PTP can be influenced by changing several physiological conditions, such as vocal fatigue (Chang & Karnell, 2004) and dehydration (Levendoski et al., 2014), thus, making it one of the most commonly used metrics in examining vocal health and economy. For instance, upon assessing ten male actors and ten female actresses, McHenry et al. (2009) revealed a decrease in PTP after singing TVW (McHenry et al., 2009). Meanwhile, Kang et al. (2019), who involved seven men and 19 women vocally healthy untrained singers, found a significant decrease in PTP within 10 minutes of SP. Furthermore, by employing a non-invasive approach, PTP was closely related to minimum intensity (min Int) in the voice range profile (VRP) (Echternach et al., 2020). Hence, in this present study, PTP was measured indirectly based on min Int in VRP.

Some studies found insignificant or inconclusive results: Duke et al. (2015) compared the voice spectrum effects of traditional singing exercises with SOVTE (SP) in 13 male trained singers. They found no statistically significant effects on the participants' perceived phonatory effort (PPE) or spectral characteristics between six minutes of SOVTE and nine minutes of TVW (Duke et al., 2015). Vintturi et al. (2001) and Motel et al. (2003) discovered

a significant increase in PTP after vocal warm-up exercises, while other studies reported significant variability among the participants or no effect. Milbrath and Solomon (2003) asserted that PTP is neither a specific nor sensitive metric to identify changes in vocal function following vocal training. Upon assessing 30 CCM professional singers, Portillo et al. (2018) found insignificant variations in aerodynamic measurements (PTP & electrographic [EGG]) in participants who conducted TVW and those who completed SOVTE. Kang et al. (2019) involved seven men and 19 women who were vocally healthy untrained singers and reported insignificant differences in PTP for traditional singing exercises.

Notably, the literature depicts mostly professional or trained singers, except Kang et al. (2019), who tested vocally healthy untrained singers. No study has solely assessed untrained female singers. Table 1 lists studies that examined the acoustic impact on TVW and SOVTEs.

The literature review unravels a research gap on the inconclusive evidence concerning the objective physiological effects of vocal exercises. Hence, it is crucial to determine if vocal warm-ups can enhance both vocal quality and vocal efficiency of untrained female singers - the key focus of this present study.

Second, no study has examined the potential differences between physiological and TVW involving untrained female singers using standard diagnostic measures and non-invasive approaches, such as

maximum phonation time (MPT), dysphonia severity index (DSI), VRP, and acoustic analysis measurements. Therefore, to bridge this research gap, the standard diagnostic measures mentioned above were deployed to compare the short-term effects of SP and TVW on the vocal quality of vocally normal untrained singers in Malaysia, apart from assessing if each exercise type affected the vocal economy or skill acquisition.

The following research question guided this investigation:

Among the 80 vocally normal female untrained singers, are there differences in the effect on objective vocal outcome measures of MPT, VRP, acoustic parameters (F0 [Hz], jitter [%], shimmer [%], & HNR) and DSI between the experimental group (SOVTE) and the control group (TVW) before and after three weeks of vocal warm-up training?

It was hypothesised that both physiological and TVW exercises could improve the vocal quality and the efficiency of vocally normal untrained female singers. The SOVTEs may have a significant and quantifiable effect on the vocal economy due to increased inertive reactance (Kang et al., 2019; Meerschman et al., 2017; Portillo et al., 2018), while traditional singing exercises may exert a significant and quantifiable impact on the acoustic variables that can result in better soundwave quality, thus improving technical singing skills (Kang et al., 2019; Portillo et al., 2018).

METHODOLOGY

This study employed the quantitative experimental research approach using the

Table 1
Summary of studies that investigated the effects of semi-occluded vocal tract exercise (SOVTE) and traditional vocal warm-up (TVW)

Researchers	Participants	Conditions / Training	Assessment	Results
Guzman, Angulo, et al. (2013)	N = 38 20 women, 18 men Mean age: 34 Vocally healthy, trained singers (Based on self-report and GRBAS scale)	1. Vocal function exercises (VFE) (n = 20) Duration of exercise: 15 minutes 2. Traditional vocal warm-up (n = 18) Duration of exercise: 15 minutes	1. Long-term average spectrum (LTAS) parameters: alpha ratio, L1:L0 ratio and singing power ratio (SPR) in both groups' speaking voice analysis and singing voice analysis.	VFE group: - SPR significantly increased in singing voice analysis - SPR and alpha ratio significantly increased in speaking voice analysis Control group: -The alpha ratio significantly increased The VFE group improved better than the traditional singing exercise group regarding spectral slope declination in speaking voice analysis.
Duke et al. (2015)	N = 13 13 men Age range: 19 – 42 (M= 22.615, SD = 5.785) Trained singers Singing experience: a few years – 35 years	1. no warm-up (n = 13) 2. classical warm-up (n = 13) Duration: 6 minutes of actual singing 3. semi-occluded vocal tract warm-up with a straw (n = 13) Duration: 6 minutes	Springing power ratio (SPR) Derceived phonatory effort (PPE)	No significant changes in SPR across warm-up conditions SPR was significantly different for vowels /i/ and /e/. Vowel /i/ had the most significant SPR No significant difference in PPE across warm-up conditions
Portillo et al. (2018)	N = 30 18 female, 12 male Mean age for the experimental group: 32 years (age range: 24–29) Mean age for the control group: 34 years (age range: 27–38) CCM singers	1. Semi-occluded vocal tract exercise (SOVTE)—Straw phonation (n = 15) Duration: 15 minutes 2. Traditional singing exercises using vowel /a/ (n = 15) Duration: 15 minutes	Objective measures: 1. Aerodynamic 2. Electroglottographic 3. Acoustic Subjective measures: 4. Self-assessment	No significant differences in objective or subjective measurements between the two methods of vocal warmups Better self-perceived quality in both groups Traditional vocal warm-up group: Significant reduction in sound pressure level Significant increase in glottal airflow Significant reduction in aerodynamic efficiency
Kang et al. (2019)	N = 26 7 men, 19 women Vocally healthy untrained singers	1. Physiological vocal warm-up—straw phonation exercises (n = 26) Duration: 20-min exercises that consisted of four 5-minute sessions 2. Traditional singing exercise (n = 26) Duration: 20-min exercises consist of four 5-minute sessions	1. Acoustic 2. Aerodynamic	Maximum decline in phonation threshold pressure (PTP) at 10-min straw phonation warm-up L. In the traditional vocal warm-up group, there were significant variances in shimmer and F0 from m0 to m15 and m20 No significant changes in acoustic variables after straw phonation

2 × 2 mixed-factorial analysis (ANOVA). It paired t-test to determine the significant differences in effect between the two study groups over the stipulated time.

Study Participants

A total of 80 adult untrained female singers were recruited based on purposive sampling. They were randomly assigned into an experimental group (practising SP exercise across three weeks, n=40) and a control group (practising TVW exercise across three weeks, n=40). The experimental group's mean age was 41 years (SD = 12.84, range = 18-60 years), while the average age of the control group was 38 years (SD = 14.98, range = 18-64 years). The inclusion criteria applied for this study are as follows: (1) female, age between 18 and 64 (M = 39.5, SD = 13.96), (2) self-identification as an untrained singer who neither attended any singing lesson nor received any formal vocal training, particularly never had any SOVTE before participating in this experiment, (3) non-smoking, (4) no history of major voice issues based on the participants' self-report, and (5) no history of hearing impairment based on participants' self-report. The participants were required to maintain their usual daily voice use for 24 hours prior to participation to minimise systemic and vocal fold physiological uncertainty. They were also advised to follow the regular minimum water intake to prevent dehydration. Men were excluded from this study as the mean of (F0) measure, related to the anatomical characteristics of vocal folds, is unequal between adult males and females (Schwartz et al., 2009). In order to hinder the confounding effects of prior vocal training behaviour found in trained singers, only participants without any vocal training were considered. All the participants provided written informed consent prior to study participation. All participants were required to fill in the participant questionnaire. The research ethics application was filed and approved by The University of Malaya Research Ethics Committee (UMREC; Reference Number: UM.TNC2/UMREC_1145).

Experimental Protocol

For three weeks, all the participants performed SP exercises or TVW exercises at a frequency of two 10-minute sessions per day.

The vocal warm-up exercises performed by the experimental group included phonatory exercises similar to those deployed by Kang et al. (2019). Each participant was guided by the National Center for Voice and Speech video "Ingo Titze's Tip for Tired Voices: Grab a Straw!" (NCVS456, 2010): (1) to use a natural speaking pitch and loudness to phonate a sustained vowel /u/-like sound into a straw (2) to ascend and descend glissandos into a straw using a comfortable vocal range (including falsetto), and (3) pitch and loudness accents into a straw using a respiratory support system, primarily the diaphragm. The rapid pitch and loudness fluctuations were performed at an upward F0, and (4) vocalised the song's melody "Happy Birthday" using the straw. The commercial plastic drinking straw (length: 18.5cm & inner diameter: 5mm) was used for all the phonatory exercises. In addition, the participants were instructed to feel buzzy sensations in their mouths and head. The total time for the entire exercise sequence was 10 minutes per session.

The TVW exercises using vowel /a/ were used for the control group. The method adhered to Guzman, Angulo, et al. (2013). Each participant was given the task of singing a simple melody using musical intervals of a third. Musical pitch ranges were adjusted based on the voice type of the participants. For instance, for the middle female voice, the first note was C, followed by E, G, E, and repeating the first note of C for the final note. The task was repeated across a comfortable vocal range, shifting musical tonality by ascending and descending semitones. The participants were given an audio recording of the melody for home practice tasks. The total time for the entire exercise sequence was 10 minutes per session.

The participants completed an initial start-up of a 30-minute recording-and-training session. Voice recordings for both groups were executed during this session. The experimenter guided the first training session. The contents of the exercises were described in detail prior to the experiment. The participants were encouraged to practice at home at a frequency of two 10-minute sessions per day for three weeks. They were required to record their daily practice in the exercise log provided. In order to control the correct performance of the exercises,

the participants were asked to attend a 20-minute training session per week. The weekly training sessions were guided by two research assistants who were not informed about the study hypotheses to hinder training bias.

Data Collection

Praat and Vocalgrama were used to record speech signals. The voice recordings were made in a closed room in a quiet environment (<50dB measured by a sound pressure level meter). The participants were recorded twice at their habitual intensity level (before & after vocal warm-up exercises). The microphone was calibrated with a sound pressure level meter before data collection. The sound intensity measurements in Praat were compared with the output of the sound pressure level meter, whereby the readings were recorded. The program Praat Phonanium's script Calibration v.01.01. praat was employed to calculate the calibration formula, in which the calibration factor was derived. All the measured intensities were corrected using the calibration factor. The pre and posttraining data were collected before and after the training using PRO MPA II preamplifier, UR22 mkII audio interface, and Neumann TLM102 condenser microphone with a sensitivity level of 11 mV/Pa at 1 kHz into 1 Kilohm and a frequency range of 20 Hz to 20 kHz. During the pre and postvocal training recordings, the participants were required to produce the same loudness level. The microphone was placed 30cm away from the mouth. Each participant was

asked to produce a sustained phonation at a comfortable pitch and loudness in a standing position. Data were recorded and sampled at a rate of 44.1 kHz with 16 bits/sample quantization in WAV format. The audio files were assessed for signal-to-noise ratio (SNR), which exceeded 30dB - acceptable for acoustic analyses (Deliyski et al., 2005).

Voice Evaluation

A standardized voice evaluation comprising objective vocal measures and determinations (MPT, DSI, VRP, & acoustic analysis) was performed to assess the participants' voices. The evaluation was executed before and after the three-week vocal warm-up training.

Maximum Performance Task-Maximum Phonation Time (MPT). The MPT is an objective measure of glottal competence (Lundy et al., 2004). The closer the vocal folds are, the less air is wasted, and the longer the sound is sustained. Vocally healthy adult females can sustain vowel sounds for 15-25 seconds (Costello & Sandhu, 2015; Mathieson et al., 2001). The participants were instructed to sustain the vowel /a/ as long as possible following deep inspiration, and the duration of the phonation was measured (MPT, in second). After the experimenter modelled the MPT, the participants were requested to produce the longest possible sample in a standing position at their natural pitch and loudness. Praat was applied to determine the length of a sustained vowel. The best of three attempts was selected for further evaluation.

Voice Range Profile (VRP). The VRP is an evaluation method used to measure vocal capacity and efficiency (Gökdoğan et al., 2016). The VRP was determined using Vocalgrama software (CTS Informática) and a Neumann TLM102 condenser microphone placed 30 cm from the mouth. This evaluation determined the intensity (I-low & I-high), the lowest and the highest fundamental frequencies (F-low & F-high), and the area and F0 extension. Voice samples of minimum and maximum frequencies and minimum and maximum intensity (min & max Int) were recorded for each participant. The experimenter modelled each sound production. In addition, the participants were required to utter the vowel /a/ for at least two seconds in a standing position at their natural pitch and loudness.

Acoustic Analysis. The Praat software, a speech analysis software developed by Paul Boersma and David Weenik from the University of Amsterdam, was used to calculate the HNR, jitter, F0 (Hz), and shimmer. First, the participants were instructed to sustain vowel /a/ for at least five seconds at their natural pitch and loudness in a comfortable standing position. Then, the mid-vowel segment of three seconds was selected for further analysis.

Dysphonia Severity Index (DSI). The DSI refers to an objective multi-parametric voice quality index that measures and describes the overall voice quality (Wuyts et al., 2000). The DSI is sensitive to small changes in voice quality. It is extrapolated from a few

voice parameters, such as highest frequency, jitter, lowest intensity, and MPT. The index ranges between -5 and +5. For example, a DSI of 1.6 distinguishes normal voices from dysphonic voices. A lower index denotes the poorer vocal quality, while a higher index displays improved vocal quality (Raes et al., 2002). Program Praat was applied to measure DSI.

Statistical Analysis

All statistical analyses were performed using Statistical Product and Service Solutions (SPSS) Version 25. Descriptive statistics for the variables included calculating mean values with a 95% confidence interval. In addition, the Shapiro-Wilk test was carried out to determine if the variables exhibited normal distribution at a significance level of p < .05. All the variables were normally distributed.

A 2×2 mixed-factorial ANOVA was performed on all task variables. Pre and post-training served as a within-group factor, and vocal warm-up functioned as a between-group factor. Separate ANOVA was calculated for each outcome measure. For within-group comparisons, each condition variable was analysed using a two-tailed paired t-test. The significance level for both ANOVA and t-test was set at 0.05. Regardless of the significance of the main effects or variance interactions analyses, a t-test was performed to assess the significance of mean differences in each condition. The Bonferroni correction approach was deployed, and the significance level (α) was adjusted to 0.025.

RESULTS

This section presents the experimental outcomes. Mean and standard deviation values (in parentheses) of the acoustic parameters are tabulated in Table 2. Table 3 illustrates the mixed-factorial ANOVA and paired t-tests results derived from SP and TVW groups, which involved 80 participants. As for the VRP's fundamental frequency maximum (F0-max) and min Int, shimmer, HNR, and DSI, significant time-by-group interactions were discovered, indicating significant variations in changes over time between the experimental and control groups. However, insignificant time-by-group interaction was noted for other variables, demonstrating insignificant variances between the two groups over time.

Significant time effects were observed for parameters MPT; min Int, max Int, and area of the VRP and jitter, shimmer, HNR, and DSI, which indicated that regardless of group assignment, the sample changed significantly over time. In addition, a significant group effect was discovered for F0 that signified a significant difference among groups independent of time.

In the SP group, within-group effects of time revealed a significant decrease in min Int (p <.001) but increment in max Int (p <.001) and area (p <.001) of VRP. In the TVW group, significant increase was noted for F0-max (p = .004), max Int (p = <.001), and area (p = <.001) of the VRP; F0 (p = .04), HNR (p = <.001), and DSI (p = <.001), whereas a significant drop was observed for jitter (p = <.001) and shimmer (p = <.001).

Table 2
Mean and standard deviation values (in parentheses) of the acoustic parameters

Parameters	Group	Pre-training, Mean (SD)	Post-training, Mean (SD)
MPT (s)	SP	15.28 (4.56)	16.17 (3.92)
	TVW	16.71 (4.86)	17.85 (4.63)
Voice Range Profile			
F0-min (Hz)	SP	203.73 (20.80)	196.93 (21.10)
	TVW	203.21 (24.70)	205.32 (24.69)
F0-max (Hz)	SP	590.41 (0.77)	590.09 (0.82)
	TVW	590.01 (0.98)	590.63 (0.76)
PR (Hz)	SP	386.68 (20.59)	393.16 (21.29)
	TVW	386.80 (24.60)	385.31 (24.79)
PR (St)	SP	18.51 (1.75)	19.10 (1.87)
	TVW	18.58 (2.10)	18.41 (2.09)
Min Int (dB)	SP	59.27 (0.04)	59.24 (0.02)
	TVW	59.26 (0.03)	59.26 (0.04)
Max Int (dB)	SP	90.94 (7.15)	99.96 (7.86)
	TVW	91.14 (8.71)	102.09 (5.38)
Area (%)	SP	7.04 (1.23)	8.14 (1.09)
	TVW	7.07 (1.24)	8.36 (0.82)
Acoustic Analysis			
F0 (Hz)	SP	223.91 (14.66)	224.29 (15.16)
	TVW	228.09 (24.93)	239.31 (27.22)
Jitter (%)	SP	0.30 (0.11)	0.26 (0.09)
	TVW	0.32 (0.13)	0.23 (0.09)
Shimmer (%)	SP	6.32 (3.23)	5.25 (1.91)
	TVW	8.17 (4.20)	4.58 (2.44)
HNR (dB)	SP	18.76 (6.90)	20.60 (5.39)
	TVW	16.21 (6.71)	21.47 (7.10)
Dysphonia Severity Index (I	OSI)		
DSI	SP	4.65 (1.62)	5.20 (2.11)
	TVW	4.51(1.35)	6.15 (1.06)

 $Note.\ MPT$ = maximum phonation time; F0 = fundamental frequency; HNR = harmonics-to-noise ratio; PR = pitch range; Int = intensity; DSI = dysphonia severity index; SP = straw phonation; TVW = traditional vocal warm-up

DISCUSSION

This study compared the short-term effects of SP with TVW on the vocal quality of vocally normal untrained female singers, apart from assessing if each exercise type favourably affected the vocal economy or skill acquisition measured using VRP, multi-parametric index, acoustic and aerodynamic parameters. In particular, the quantitative experimental research approach was employed in this study using the 2×2 mixed-factorial ANOVA and paired t-test

Mixed-factorial ANOVA and Paired t-Test results on straw phonation (SP) and traditional vocal warm-up (TVW) groups for 80 participants Table 3

						ANOV	ANOVA (1, 78)				Paired	Paired t-test (39)	
		Time			Group		Inter	Interaction		Straw	Straw Phonation	Traditional Vocal Warm-up	cal Warm-up
	F	d	$\eta 2p$	F	d	$\eta 2p$	F	d	η2p	t	d	t	d
MPT (s)	6.79	.01**	80.	2.81	.10	90.	0.10	.75	.001	-1.76	60.	-1.92	90.
Voice Range Profile	ofile.												
F0-min (Hz)	0.46	.50	.01	1.09	.30	.01	1.65	.20	.02	1.40	.17	-0.43	.67
F0-max (Hz)	1.16	.29	.02	0.34	.56	.004	11.41	.001**	.13	1.67	.10	-3.08	.004**
PR (Hz)	0.52	.47	.007	1.04	.31	.013	1.33	.25	.02	-1.34	.19	0.30	92.
PR (St)	0.54	.46	.007	0.87	.36	.01	1.69	.20	.02	-1.41	.17	0.41	69:
Min Int (dB)	10.86	.001**	.12	0.08	.93	000.	9.54	.003**	Π.	4.82	<.001**	0.14	68:
Max Int (dB)	139.77	<.001**	.64	89.0	.41	600.	1.31	.26	.02	-7.82	<.001**	-8.87	<.001**
Area (%)	98.69	<.001**	.47	0.42	.52	.005	0.42	.52	.005	-5.54	<.001**	-6.27	<.001**
Acoustic Analysis	sis												
F0 (Hz)	3.85	.05	.05	99.9	.012**	80.	3.36	70.	.04	-0.14	68.	-2.12	.04*
Jitter (%)	19.44	<.001**	.20	0.07	62.	.001	3.79	90.	.05	1.86	.07	4.25	<.001**
Shimmer (%)	25.02	<.001**	.24	1.37	.24	.02	7.38	.01**	60.	1.91	90.	4.81	<.001**
HNR (dB)	26.50	<.001**	.25	0.42	.52	.005	6.11	.02**	.00	-1.81	.08	-5.68	<.001**
Dysphonia Severity Index (DSI)	erity Index	ς (DSI)											
DSI	37.78	<.001**	.33	1.72	.19	.02	9.55	.003**	.11	-1.73	60.	-9.80	<.001**

Note. MPT = maximum phonation time; F0 = fundamental frequency; HNR = harmonics-to-noise ratio; PR = pitch range; Int = intensity; DSI = dysphonia severity index. Degrees of freedom for tests are provided in parentheses - (1, 78) and (39). F = variation between sample mean values. $\eta 2p = \text{partial}$ eta squared. * indicates a significant effect. p was set at .05. p < .05. ** indicates a significant correction, p was set at .025. p < .025.

to determine the significant variations in effect between the two study groups over the stipulated time. The main findings revealed that several parameters, such as F0-max, max Int, and area of VRP; F0; jitter; shimmer; HNR; and DSI, displayed significant changes after three weeks of warming up exercise in the TVW group. Meanwhile, the SP group showcased significant changes only for max Int and area of VRP. However, both groups did not portray significant changes in min Int, which indirectly measures PTP, indicating that vocal economy was not improved. Overall, it was revealed in this study that the participants in the TVW group benefitted from vocal warm-ups by improving their vocal quality, technical singing skills, and vocal efficiency. On the other hand, the SP group benefitted from vocal warm-ups only by improving their vocal efficiency.

It was hypothesised earlier that both physiological and TVW exercises could improve the vocal quality and efficiency of vocally normal untrained female singers. The SOVTEs can have a significant and quantifiable effect on the vocal economy due to increased inertive reactance (Kang et al., 2019; Meerschman et al., 2017; Portillo et al., 2018), while traditional singing exercises can have a significant and quantifiable impact on acoustic variables that result in better soundwave quality, thus improving technical singing skills (Kang et al., 2019; Portillo et al., 2018).

The hypothesis that SOVTEs might have a significant and quantifiable effect on the vocal economy due to increased

impedance in the vocal tract, specifically the inertive reactance, which can lead to an improved vocal economy (Bele, 2005; Story et al., 2000; Titze & Story, 1997) is not supported by the min Int finding recorded in this present study. Referring to Tables 2 and 3, SP resulted in a statistically significant difference in min Int (p <.001) before (M = 59.27 dB, SD = 0.04) and after (M= 59.24dB, SD = 0.02) the vocal warm-up. According to Backus (1977), a general reference is that the just noticeable difference (JND) in soft sound at 30-40 dB for the human ear is about 1 decibel. It may drop to 1/3 to 1/2 of a decibel for loud sound. Since the min Int was lowered by merely 0.03 dB, the change is negligible to be considered clinically meaningful for practical performance despite its statistical significance. A caveat is that the statistical significance outcome can be ascribed to the larger sample size that tends to transform small differences into statistically significant variance (Faber & Fonseca, 2014). Therefore, statistical tests should never constitute the sole input to inferences or decisions about associations or effects (Greenland et al., 2016). Meerschman et al. (2017) asserted that a significant reduction in min Int could be explained by a lower PTP associated with SOVTE. A low PTP denotes that relatively little respiratory effort (less subglottal pressure) is required to drive vocal fold vibration, whereby the vocal economy is achieved due to higher inertive reactance in the vocal tract (Guzman et al., 2017; Guzman, Laukkanen, et al., 2013; Guzman, Rubin, et al., 2013; Kapsner-Smith et al., 2015; Titze, 1988). Since the results of min Int appear to be clinically insignificant in this present study, the assumption that SP can increase vocal economy is not supported. The study findings are consistent with the results reported by Portillo et al. (2018), which depicted no evident variations in PTP when comparing both types of vocal warm-up. The findings refute the postulation made by Kang et al. (2019) that SP reduced PTP. It calls for more studies to validate these findings.

No statistically significant difference was observed for min Int in TVW. It is attributable to the fact that the shape of the open vocal tract (OVT) when producing the vowel [a:] is linked with increased airflow passing through the vocal folds at the glottis and lower intraglottal pressure, which reflects a higher amplitude of vocal fold vibration during phonation that can potentially heighten the risk of generating larger impact stress (Titze, 2002, 2006; Tyrmi & Laukkanen, 2017). In addition, studies have revealed that vocal warm-up exercises with OVT configuration can promote efficient vocal production but not necessarily a high vocal economy (Saldías et al., 2020).

Within-group analyses portrayed in Table 3 showed no significant difference for MPT in both groups. A possible explanation is that three weeks of practice might be too short to experience a change by the untrained singers. The results displayed no differences related to F0-min, PR (Hz) and PR (St) of VRP in both experimental and control groups. However, a statistically

significant difference was observed in max Int for both SP and TVW groups. Tilsen (2016) stated that F0 and acoustic intensity are correlated. Increment in subglottal pressure increases the transglottal pressure gradient, thus increasing both amplitude and vocal fold vibration rate (F0), resulting in higher resonances and intensity harmonics (Tilsen, 2016). Therefore, insignificant F0-min, PR (Hz), and PR (St) variations in both groups are ascribed to the changes in intensity.

The within-group analyses revealed significant max Int and area improvements in SP and TVW groups. The significantly increased max Int and area values following SP support the hypothesis of improved vocal efficiency as greater vocal output can be achieved with less vocal fold impact tension and physical effort (Croake et al., 2017; Gaskill & Quinney, 2012; Maxfield et al., 2015; Mills et al., 2017; Titze, 2006). As measured by the VRP, the maximum amplitude of differentiated transglottal airflow was expressed in the dynamic range and the max Int of voice (Gramming et al., 1988). The vocal training effect is attributed to the increased max Int and area values following TVW. Untrained singers may have developed stronger laryngeal muscles after three weeks of vocal training, thus enabling them to support higher subglottal pressures and achieve higher sound pressure level values (Ballenger & Snow, 2003; Barone, 2015).

In the TVW group, the withingroup effects of time revealed significant improvements in F0-max, F0, jitter, shimmer, HNR, and DSI. The vocal cords' mass, elongation, length, and tension determined the natural pitch (F0). Conventional singing exercises increase muscle contractility and blood circulation, resulting in more elongated and elastic vocal folds (Bishop, 2003). These physiological changes account for the significant increase in F0, thus discovering F0-max after conventional singing exercises. According to Kang et al. (2019), the optimal duration for traditional singing exercise is 20 minutes. Considering that only 10 minutes per session of TVW was applied in this present study, one can safely state that vocal fatigue was avoided. These findings align with prior studies that reported a rise in F0 following a singing voice impedance test (Mendes et al., 2003; Onofre et al., 2017).

Jitter is a frequency change measurement within a sample of phonation that varies with strain, stiffness, and vocal fold mass, while shimmer is affected by subglottal pressure and glottal resistance (Robieux et al., 2015). Improved respiratory control offers more stable voice frequencies and amplitudes, which result in less jitter and shimmer (Kang et al., 2019). Respiratory control signifies the ability of a vocalist to control subglottal pressure (Salomoni et al., 2016). Subglottal pressure and the pull of a relatively small cricothyroid muscle control the F0 of vocal fold vibration. The cricothyroid muscle must exert significantly greater force to reach a high target pitch if the subglottal pressure is too low with inadequate breath support, which may cause it to fatigue faster and affect voice stability (Parncutt & McPherson, 2002). A significant reduction in jitter and shimmer for the TVW group was observed in this study. A probable explanation is that the untrained singers might have improved their respiratory control following three weeks of TVW (Kang et al., 2019).

Harmonics-to-noise ratio (HNR) measures acoustic harmonics and noise in a voice sample (Brockmann-Bauser & Drinnan, 2011). This study's HNR seemed to increase significantly, indicating improved voice control. The sound characteristics of the sample are enhanced when voice perturbation parameters are improved, which may explain the increased HNR in the TVW group (Eskenazi et al., 1990).

After the SP exercises, most acoustic parameters (e.g., F0-max of VRP, F0, jitter, shimmer, & HNR) did not reveal as many significant variations as they did after TVW. This finding is ascribed to SP exercises that restrict lip and jaw motions; the velum, the tongue, and the orbicular muscle of the mouth are more constrained in SP than in singing (Austin, 1997). As a result, SP is less effective as an exercise to improve singing voice and ability. Furthermore, due to the limited location at various registers, pitches, and amplitude levels, and the limited range of voice production, SP adheres to a relatively monotonous pattern. Traditional singing exercises, on the contrary, are more suitable for a singer's practical, physiological, and mental preparation that affect acoustic outcomes (Kang et al., 2019).

The TVW group experienced significant improvement in DSI due to the withingroup effects of time. In the TVW group, the DSI increased by 1.64 points from

4.51 pre-training to 6.15 post-training. Upon analysing the DSI parameters, it was discovered that all of them displayed a positive trend (MPT = +1.15 s; jitter = -0.09%; min Int = -.0005dB; F0-max = +.42 Hz). This result explains the increment in DSI after TVW.

The limitations of this study are that the Acoustic Voice Quality Index (AVQI) and subjective vocal measures were omitted in this study. In addition, all the study participants were untrained female singers who had never had any formal singing experience. The exclusion of male participants in this study is deliberate in controlling for differences between the anatomical characteristics of the vocal cords of both genders. Hence, the impact of both types of vocal warm-up exercises on male participants may be explored in future studies. On the other hand, different levels of trained and untrained voices can yield different outcomes. Therefore, future studies should investigate the impact of conventional singing exercises and SP methods on acoustic and aerodynamic variables in participants at varied training levels. As portrayed in this study with untrained singers, vocal warm-up is a non-invasive, low risk, and cost-effective method to enhance both vocal quality and performance in the general population. The study findings revealed that conventional singing exercises effectively improved singing technique and vocal efficiency in untrained singers. However, whilst SP exercises effectively improved vocal efficiency, on an overall basis, they appeared

to be less effective as an exercise to enhance natural singing. As a result, the public should be encouraged to practice TVW, which results in the more effective use and healthier voice for singing.

CONCLUSION

Several parameters, such as F0-max, max Int and area of VRP; F0; jitter; shimmer; HNR; and DSI, displayed significant changes after three weeks of warming up exercise in the TVW group. Meanwhile, the SP group exhibited significant changes only in max Int and area of VRP. Furthermore, both groups did not showcase significant changes in min Int that indirectly measures PTP, thus failing to improve the vocal economy. Overall, this study revealed that the participants in the TVW group benefitted from vocal warm-ups due to improved vocal quality, technical singing skills, and vocal efficiency. On the other hand, the SP group benefitted from vocal warm-ups only with improved vocal efficiency. Hence, it would be more preferential for untrained singers to use the TVW to improve their technical singing skills.

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Demographic Strategies of the Russian Rural Population: Intersubjective Nonlinearity Versus Economic Viability

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ABSTRACT

The intersubjective demographic strategies of modern families and settlements appear to be nonlinear, negatively affecting traditional solutions' efficiency in spurring demographic growth. This study seeks to determine how external circumstances influenced the formation and changes of fundamental collective ideas. The authors present the results from a model of demographic strategies that analyzed 1,544 rural settlements in Central Russia from 1959 to 1989, which was a period of accelerated urbanization and demographic transition. A fractal model was used to reconstruct social intentions. Control factors for each settlement were estimated based on indicators that reflect rural settlements' material and technical conditions, economic, medical, and social service development levels, and the availability of attractive migration goals. More archaic communities responded to natural growth stimulation in a linear and relatively predictable fashion, but new competencies, needs, and opportunities appeared as communities developed socially and economically. Many counterintuitive effects influenced the evolution of modernized communities. In particular, the migration aspirations of rural youth led to a postponement in births and a drop in the birth rate despite an increased quality of life. An intense migratory influx into hub settlements also contributed to a decrease in the birth rate among the local population.

Keywords: Historical demography, rural population, social simulation

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INTRODUCTION

In many countries, attempts to spur population growth usually result in counterintuitive behavior. Financial incentives to boost fertility, improved healthcare quality, social support for parenting, and education—these measures are supposed to provide strong motivation and favorable conditions for

increasing fertility rates. However, hard evidence has revealed that the efficiency of such activities is exceptionally low. In modern society, the demographic strategies of households and communities have proven to be nonlinear, which poorly affects the efficacy of traditional solutions.

It is essential to consider intersubjective factors—aside from social and economic realities—to gain insight into these demographic processes: people's demographic motivation and goals, typical life projects and practices, demographic expertise, and views on living conditions. These individual factors are combined into one concept, demographic behavior strategy (Morgan, 1989; Peña & Azpilicueta, 2003; Sackmann, 2015). Such strategies were not necessarily implemented and thus featured in statistics. Nevertheless, considering them is essential for devising effective demographic policies. After all, people carry out such policies—not government agencies, institutions, or corporations.

We seek to understand how external life circumstances influenced and altered demographic behavior strategies in the recent past. Researching the historical past makes it possible to trace the genesis of the processes studied and their outcomes. We have focused on 1,544 rural settlements in the Tambov region of Russia between 1959 and 1989. In this period, the demographic transition was completed; rural life rapidly and drastically changed due to mechanized agriculture. The manufacturing sector grew in rural areas, migration occurred, and healthcare infrastructure and social services improved. We selected this period to capture

society's response to a historically rapid change in living conditions.

Tambov Oblast is a typical agricultural region in Russia's Central Black Earth Region. The demographics of Tambov settlements are similar to those of most Russian settlements in the Central Black Earth Region and Volga Region (Kanishchev, 2016), which ensures that the results of this study can be extended to a large part of European Russia. Furthermore, numerous economic, social, and infrastructure factors that influenced demographic behavior can easily be identified and calculated for settlements, so these agricultural settlements are an ideal object of study for solving the posed research problem.

Many important decisions concerning demography are currently made by family members, including when to marry, when and how many children to have, when and where to migrate, and how much money and time to spend on treatment and health maintenance. However, such decisions like many other aspects of social behavior are strongly influenced by collective representations of what is "proper" and "normal," as well as other fundamental notions inherent to the immediate social environment. For a rural population living as relatively separate groups, this social environment has been and still is their settlement community.

To reconstruct these subtle social intentions, we applied a demofractal model, which is a variation of the general fractal transition model (Zhukov & Lyamin, 2016). The results for modeling demographic strategies for rural settlements in the Tambov

Region over several periods between the mid-1800s and 1959 have been reported in several previous publications (Zhukov & Kanishchev, 2019; Zhukov et al., 2011, 2012, 2013).

The present study's objectives are critical in understanding general demographic processes in Russia and similar countries, which until recently were predominantly agrarian. First, the period under consideration is important for demographic history. From the 1950s through the 1980s, a demographic transition was completed in Russia (and several other countries), and the modern population migration and reproduction system emerged. Second, changes in migration and reproductive strategies of the rural population have largely determined the modern demographic characteristics of Russian agrarian society (and other countries). We also hope that the methodological aspects of the present study will be useful for Russian and global historical and demographic research, especially in predominantly agrarian countries.

We have proposed a model that can be adjusted for different regions and historical periods, that is, where and when different rates of demographic transition occur. Moreover, this model can simulate nonlinear effects characteristic of human behavior in any country.

MATERIALS

Initial data for the model were extracted from a various statistical, reference, and cartographic sources and the Tambov Oblast State Archive (TOSA). In particular, the primary data from two censuses were used: 1959 (TOSA, archive P-3688) and 1989 (Kamensky, 1989).

Maps of Tambov Oblast from the 1950s through the 1980s indicated the presence of industrial facilities and a transport network near certain settlements. Specific publications on the history of education and healthcare systems provided information about schools and medical facilities (Bykova & Schukin, 2004; Muravyov, 1988). Data on the settlements' economic, infrastructural, and social and cultural conditions were derived from the Tambov Regional Committee of the Communist Party of the Soviet Union (TOSA, archive P-3443) and the Encyclopedia of Tambov Oblast (Protasov, 2004). Statistical data on the material conditions of the rural population and the technical supply of agriculture were derived from our colleagues' research (Avrech, 2015).

The raw data in systematic form are available on the Center for Fractal Modeling's website: http://ineternum.ru/ demo2/. The methods of processing the raw data are described in Appendix 2. The following information was obtained for each of the 1,544 settlements: population growth between 1959 and 1989, the number of men and women, the status of the settlement (disappeared, merged, and others), the formal status of the settlement (i.e., "promising" or "not promising"), the presence of an administration, remoteness from cities, the level of production facilities' development, the level of socio-cultural infrastructure development, and the presence

of medical institutions. The data allow for a comprehensive understanding of the factors that may have influenced the population's migration and demographic strategies.

LITERATURE

Many extensive studies are dedicated to the late Soviet period in modern Russian historical demography, yet they mainly consider all-Union or all-Russian processes (Polyakov, 2011; Verbitskaya, 2009; Zhiromskaya & Isupov, 2005). These studies paid little attention to multiple possibilities for populations' development at the micro-level. Factors for the demographic development of the Central Black Earth region's rural population were analyzed in several studies, which offered insight into agricultural conditions, rural material conditions, and the migration of the region's inhabitants (Avrech, 2015; Pertsev, 2013; Piskunov, 2017).

The challenge in studying intersubjective phenomena is associated with the many nonlinear effects that disrupt proportionality between causes and effects and, specifically, between the intensity of external circumstances and people's reactions. Nonlinear effects occur in simulation models based on synergetic and related concepts, including fractal geometry (Mandelbrot, 1982). An interdisciplinary approach is thus considered promising in the literature (Alekseev et al., 2007; Borodkin, 2005, 2016, 2019; Malinetskii, 2013; Smorgunov, 2012; Zhukov et al., 2017).

Modeling is a powerful tool to devise alternatives—unrealized scenarios.

Alternatives are of interest because they reveal the hidden potential of a subject under investigation and generate hypotheses. The application of models in the social sciences and humanities has been advocated for by many classics of modeling (Ackoff & Emery, 1972; Axelrod, 2007; Meadows, 2008; Richmond, 1993).

METHODS

General Fractal Transition Model (GFTM)

The mathematical tool (GFTM; Appendix 1) is based on the procedures described by Benoit Mandelbrot to create algebraic fractals (Mandelbrot, 1982). Specifics of the GFTM are detailed in a publication (Zhukov & Lyamin, 2016) available online. The GFTM imitates system evolution as the trajectory of a representative point in a two-dimensional space. At any instant, a point's two coordinates are equal to the values of two key properties within the system. Each point's position (i.e., coordinates) can be interpreted depending on the labeling of the phase space. Figure 1 shows the way how the labeling was done.

Specific areas are distinguished in the GFTM phase space. According to the model conditions, these areas have certain symmetric qualities of the *x*- and *y*-axes. A combination of two gradations (sharp and soft) of two properties offers four types of system states: T, O, M, and H (see Figure 1). The ratio of the simulation scale and the usual growth/loss values are shown in Figure 7 in Appendix 3. Thus, a positive net migration rate characterizes the settlement

if a point (a settlement) has an *x*-coordinate range from 1 to 2 model units. On the other hand, if the same point (settlement) has a *y*-coordinate in the range from 0 to 1 model units, this implies a natural decrease. Therefore, all such settlements will be in Area O (Figure 1A).

The trajectory or evolution of a representative point depends on the initial position and magnitude of the controlling factors A, D_c , and K_c . Fractal-generating software calculates the trajectories for the simulated system with a particular combination of controlling factors specified by the user. The software generates images of attractors, given that they are within the boundaries appropriate for the system's existence. Attractors provide insight into the final states towards which the system gravitates under the influence of controlling factors. It is something of a final stage in system evolution, in which the different scenarios for the future converge. Computer experiments with the GFTM are confined to identifying the system's final states with various changes in controlling factors.

The demofractal model is a GFTM specification. A representative point in demofractal indicates the intersubjective demographic strategy of a settlement (or community). This strategy has two key characteristics: the required negative or positive net migration rate (measured along the *x*-axis) and the required rate of natural increase or decrease (measured along the *y*-axis), which is displayed in Figure 1A.

Factor A is the degree to which the external environment is favorable or unfavorable, which is also affected by

society's capacity to control the environment or resist its effects. Factor D_c represents a set of measures to control positive or negative net migration, and factor K_c is a set of measures to regulate natural increase or decrease (birth and death rates). These factors will be discussed in more detail below. By determining the value of the controlling factors for each simulated rural community, we can obtain a set of attractors for all possible initial states. In this case, the attractors specify an intersubjective strategy that each society sought to implement.

The labeling of the demofractal's phase space is shown in Figure 1. The labeling turns the model's phase space into an interpretation space so a point's trajectory can be interpreted as the system's evolution in qualitative terms. For instance, the points in the H(EpMu) area denote strategies that combine natural increase (Ep) and negative net migration (Mu). These are the strategies of migration donors.

Two diagonals divide the regions T, O, M, and H into eight types. One of the diagonals is the balance line between total population increase and total population decrease (Figure 1B). All points above this line suggest a tendency to increase the total population and those below to reduce.

The eight types presented in Figure 1B and Table 1 represent a more detailed classification of these demographic strategies. Thus, Type 1 and Type 2 belong to Area H. Therefore, all points within the framework of these types signify natural increase and negative net migration. However, any point within the framework of Type 1 means that natural increase does

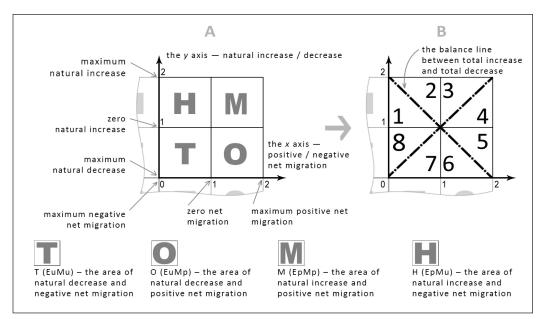


Figure 1. Demofractal phase space labeling

not compensate for negative net migration. In Type 2, natural increase is always higher than negative net migration.

During the period under consideration, many settlements disappeared. Taking this into account, we identified (Appendix 4) the desolation risk area (see Figure 2) in the phase space. The conducted experiments suggest that this area is close to the *y*-axis and is a subdivision of Type 1, which has a maximum negative net migration. Therefore, points (settlements) in this phase space area are at risk of disappearing. This effect is described in more detail in the section "Hypothetical Trajectories in the Phase Space."

Controlling Factors and Their Indicators

In the 1960s, a new round of agricultural mechanization had begun: agricultural

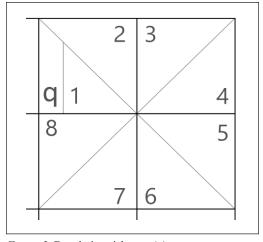


Figure 2. Desolation risk area (q)

machinery far superior to the tractors and combines of the previous period was introduced, thus eliminating the need for many rural workers. From the 1960s through the 1980s, rural living conditions improved significantly as hospitals and medical centers, new houses, schools, cinemas, and

leisure centers, among other amenities, were built in the settlements.

Despite this, cities—which needed blue-collar workers and could provide a higher standard of living—became a preferred place to work and live for rural populations. As a result, organized resettlement from villages to cities was negligible (Piskunov, 2017). However, large-scale non-state-controlled migration flows occurred. Due to external circumstances, settlements in the countryside failed to maintain the relatively good demographic indicators present at the beginning of the 1960s (i.e., birth rate over 20% and death rate below 10%).

The decline in the birth rate and increase in the death rate were a matter of concern for the state and society and required corrective measures. However, the society of that time was not sufficiently aware of the historical roots of these phenomena. In the 1960s, the demographic echo of World War II and the post-war years (i.e., the Soviet-Finnish War, the famine of 1946–1947) had begun to take effect. Moreover, the meager generation of the 1940s reached childbearing age, while the more populous generation born in the first quarter of the 20th century was passing away. Under these conditions, a natural population decline was inevitable.

The general driver of changes over the entire period was a significant increase in the value of Factor A, which is defined as the degree to which the environment is favorable. This factor is not restricted to ecological conditions but also includes society's technical and technological equipment, economic conditions, and level of medicine development, all of which fundamentally affect how deeply and in what way the environment will impact people's livelihoods.

In the period studied, K_c (a set of measures to control natural population movement) limited the "natural program" of birth rate, regulated the planned number of children, and enhanced the survival rate. On the other hand, factor D_c (a set of measures to control the population's migration movement), in general, could not prevent the outflow of people from donor settlements and encouraged their influx into large hub settlements.

Any controlling factor in a modernized society acts differently from a traditional one. In a traditional society, the impact of any factor is the blind, steady force of nature. In previous studies (Zhukov et al., 2011), we noticed that traditional societies balanced around extreme strategies, sometimes breaking into extreme scenarios (only in computational experiments), including, for example, the strategy of "populating the Universe" or "getting rid of the population."

In a modernized society, controlling factors are those forces that do not seek to impose prohibitive goals on society but rather the observance of the established norm; these are regulators. Thus, the growth of D_c requires that society focuses on regulating migration movements to solve its issues. It could mean both are encouraging a migration outflow and the efforts to contain it or even stimulate the influx, depending on how necessary it appears for a given settlement at a given time. Similarly, an increase in K_c does not imply a fight against the birth rate or the promotion of the death

rate but rather an emphasis on regulating the natural population movement – that is, in a sense, reducing the range in which births and deaths are spontaneous.

Controlling factors were calculated for all 1,544 settlements studied based on the indicators. Indicators for each settlement were collected in a database available online: http://ineternum.ru/demo2/. A description of the indicators is detailed in Appendix 2.

The following indicators were used to calculate the K_c value: the degree of demographic transition completion, the ratio of men and women, the availability of medical facilities, and the development level of production capacities. Indicators for D_c included the status of a settlement, the development level of social and cultural infrastructure, the availability of a village council, proximity to a city, and the development level of production capacities. Factor A's value was determined based on expert assessments (Appendix 3). The methods for calculating the controlling factors D_c , K_c , and A and the model calibration procedures are presented in Appendix 3.

Hypothetical Trajectories in the Phase Space

In normal development scenarios, the attractors are grouped at a single point, which means that, regardless of the initial conditions' variability, different parts of the system evolve jointly. However, when the system transcends acceptable values, it is usually accompanied by an "explosion" of

attractors. During such an explosion, the attractors disperse from the same point, forming clouds of various shapes.

In demofractal, the controlling factors K_c and D_c do not independently affect the system; instead, they form a certain unity, which is not surprising: migration strategies are developed by considering natural processes—births and deaths. However, this strong feedback seems unexpected initially: natural population movement is sensitive to D_c values. Moreover, the migration situation (e.g., an influx of migrants or their mass departure) and families' migration intentions had a significant impact on the patterns of natural reproduction.

We conducted two experiments to consider such relationships between controlling factors more thoroughly. In the first series, we traced the system's trajectory (or evolution) when D_c is altered, and other parameters were set at a medium level. The resulting trajectory was denoted as D-evolution. Similarly, in the second series of experiments, K-evolution was obtained.

D-Evolution. Figure 3 shows the displacement of the same point in the phase space of the model. These images result from many experiments during which one of the control factors increased. We were able to trace how the coordinates of the point (that is, the settlement characteristics) changed in a series of experiments.

In the period under study, society was under the increasing influence of factors that regulate migration behavior, that is, under the influence of the D_c value. An increase

in D_c with a constant K_c (for example, K_c = 1.77, Figure 3) leads to a two-phase evolution of the system. During phase one, negative net migration increases, and natural increase also grows (with some lag). In this phase, the model demonstrates linear behavior: society compensates for the outflow of population. Then (in the example under consideration at $D_c = 0.8$), an explosion occurs, followed by a minor divergence of attractors (between 0.72 and 0.91 in the D_c range). During phase two, the attractors converge again at a single point and begin to move in the opposite direction. As a result, natural growth is reduced along with the migration outflow—so much so that natural growth even becomes negative, and migration outflow is replaced by inflow. Phase two is counterintuitive.

The growth of D_c can be interpreted as a result of the increasing role of migration motives and opportunities in the demographic strategy of people and settlements. Such growth is almost inevitable with the development of communications, production capacities, educational level, and labor competencies. In relatively archaic societies, such growth caused an outflow of the population in search of a better life and, to some extent, an increase in the birth rate. A settlement used to move towards an ideal state that was unattainable in reality—a point in the phase space where many people are born, but everyone leaves. It led to a loss of population and an increased risk of desolation.

If a settlement could survive this risk and persist in its development, then the intensification of migration factors would

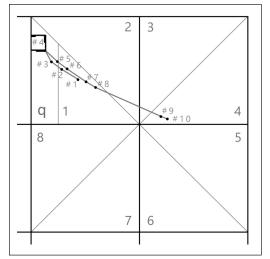


Figure 3. Trajectory of a representative point. The experiments' conditions: A = 0.3; the direction of K_c and D_c = inwards; K_c = 1.77; D_c in experiment #1 = 0.1; ...#2 = 0.3; ...#3 = 0.5; ...#4 = 0.8; ...#5 = 0.94; ...#6 = 0.95; ...#7 = 0.98; ...#8 = 1; ...#9 = 1.2; ...#10 = 1.29

later turn the migration vector around. The settlement would begin to grow due to an influx of migrants but would still have a reduced birth rate. The tendency towards the opposite ideal state would emerge, wherein the birth rate was minimal, and a migratory influx supported the population.

Thus, even a smooth change in factor D_c initiates an abrupt change in the behavior of societies: they pass a certain turning point. This point is in the area with the maximum migration outflow of the population, which is the area where settlements tend to disappear. Regardless of how great the societal ambitions for natural growth are, large-scale migration would undermine local birth rates.

If the settlements manage to pass through the turning point, they further evolve within the framework of a different pattern; they lose less population due to migration and stimulate less natural growth. Reliance on migrants and insufficient stimulation of natural growth go hand in hand and are a modernized mode of behavior. In the most extreme case, at the end of this evolution, a hub community emerges that practically does not generate natural growth but grows due to the absorption of migrants and adjoining settlements. The transition to a new mode of behavior is associated with entering the risk area. Almost all extinct settlements have attractors near the turning point. The surviving settlements have already passed this point or have not yet come close to it.

K-Evolution. Figure 4 is drawn similarly to Figure 3. Both figures show the results of a series of experiments. Again, the displacement of a point (that is, the change in the settlement characteristics) results

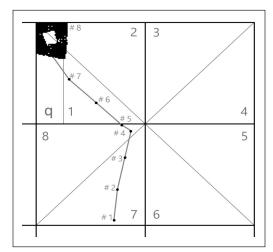


Figure 4. Trajectory of a representative point. The experiments' conditions: A = 0.3; the direction of K_c and D_c = inwards; D_c = 0.9; K_c in experiment #1 = 0.001; ...#2 = 0.5; ...#3 = 1; ...#4 = 1.4; ...#5 = 1.45; ...#6 = 1.6; ...#7 = 1.7; ...#8 = 2

from the growth of one of the control factors. However, in this case, a different factor was changing during the experiments, namely K_c .

For a fixed D_c (for example, $D_c = 0.9$, Figure 4), an increase in K_c also generates two-phase behavior in the model. However, in this case, phase two does not cancel the consistency of phase one but only corrects this consistency. In phase one, an increase in K_c leads to a rapid decrease in natural decline. Society focuses on population growth not only due to births but also due to increased life expectancy. In contrast, the magnitude of migration outflow is almost unchanged or decreases slightly. Phase one in the presented example proceeds in the K_c range from 0.001 to 1.4. At some point (in this example, $K_c = 1.45$, experiment #5), the attractors reach the area of natural growth, and phase two commences. Societal behavior is substantially corrected; negative net migration begins increasing rapidly (evident that further population growth provokes a sharp migration outflow). So, it goes on until $K_c = 1.77$. Then, an explosion of attractors occurs in the K_c range between 1.77 and 2.

Thus, the development of measures to control survival (medicine, social security, and others) had a strong effect on the communities that, until recently, had been traditional. Communities sought to increase their population and even decrease migration outflow. With further livelihood developments, however, the migration outflow would rise sharply. The overwhelming majority of the studied settlements were in phase two: it was

no longer enough for people to simply maintain their numbers, and they sought to move to other places. Thus, there was a reorientation of collective goals: it moved from the entire society's survival to a person or family searching for a better life. For archaic societies, the key to survival—both collective and individual—in maintaining their numbers by giving birth to children. Such settlements initially react strongly to material improvements in living conditions. Then, however, new needs are prioritized for progress improvement, including personal well-being (which is often associated with migration) and life extension.

In the model, phase two of *K*-evolution is associated with the continuation of natural growth. However, as it turns out, this social intention could not be fully implemented. A society's high migration aspirations were accomplished in practice, whereas aspirations for natural growth were achieved to a lesser extent. Migration largely entailed young and middle-aged people, undermining the fertile base population. A strong outflow of people changed the age and gender structure, which was a depressor for life expectancy and birth rate.

RESULTS

Simulation results for all 1,544 settlements are available on the Center for Fractal Modeling's website: http://ineternum.ru/demo2/. For almost all settlements (except for 13 cases), demographic strategy attractors converged at a single point. Figure 5 shows a combined picture of such attractors. This figure contains the results of

calculations for 1531 real settlements. Each point represents the demographic strategy of a separate settlement in the simulation phase space. Such a strategy is an ideal state towards which the local community gravitates under the influence of its intersubjective ideas and objective external circumstances. In Figure 5, each point is the most comfortable state for a given settlement. Such intersubjective strategies determine the evolution of settlements in the near future. The distribution of settlements by type is presented in Table 1.

Table 1 presents the desirable strategies that could only be implemented in the most favorable circumstances. Strictly speaking, social intentions generally do not have to be realistic.

DISCUSSION

Table 1 demonstrates the logical development of trends between 1939 and 1959. The key and apparent distinction

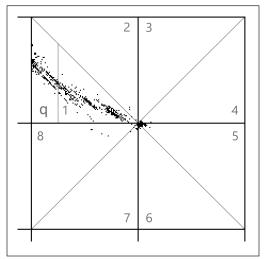


Figure 5. Particular settlements' attractors *Note.* Each point denotes a single settlement

Table 1
Comparative modeling results for the periods 1939–1959 and 1959–1989

	1939–1959		1959–1989		
	Number of settlements	%	Number of settlements	%	
TOTAL	561	100	1544	100	
H (EpMu)/1—natural increase does not compensate for negative net migration	227	40.5	1400	90.7	
including those in the risk area			975	63.1	
H (EpMu)/2—natural increase is higher than negative net migration	278	49.6	5	0.3	
M (EpMp)/3—natural increase is higher than positive net migration	2	0.4	5	0.3	
M (EpMp)/4—positive net migration is higher than natural increase	6	1.1	36	2.3	
O (EuMp)/5—positive net migration is higher than natural decrease	8	1.4	40	2.6	
O (EuMp)/6—positive net migration does not compensate for a natural decrease	36	6.4	29	1.9	
T (EuMu)/7—negative net migration is lower than natural decrease	0	0	12	0.8	
T (EuMu)/8—negative net migration is higher than natural decrease	4	0.7	17	1.1	

Note. Results for 1939–1959 were obtained from a study (Zhukov & Kanishchev, 2019) conducted according to a similar research program.

of the new results is that the settlements that once belonged to Type 2 (i.e., natural increase greater than negative net migration) have completely changed to Type 1 (i.e., natural increase does not compensate for negative net migration). Nearly half (49.6%) of the settlements between 1939 and 1959 could be considered successful demographic sources, but between 1959 and 1989, only 0.3% of such settlements remained. After the demographic transition, Type 1 endangered demographic donors—became dominant. These settlements were also focused on natural growth, which ruled out demographic collapse, but the priority for inhabitants was migration. Moreover, 63.1% of all settlements were in the risk area, where

migration aspirations were so great that they could lead to settlement extinction in the foreseeable future if demographic strategies did not change. All extinct settlements and 441 existing settlements had entered the risk area.

It should be noted that the model prediction is overly pessimistic. Of the 441 settlements mentioned, relatively successful villages showed a total decrease of over 30%. In contrast, the model indicates that these settlements were characterized by strategies that generated a minimum of 88% total decrease. Understandably, circumstances prevented people from leaving their homes and accomplishing their migration aspirations, but this is quite

an ordinary situation. Shares of Types 3, 4, 5, 6, 7, and 8 from 1959 to 1989 remained insignificant in the previous period. However, there were some interesting adjustments. The proportion of settlements in which positive net migration was greater than natural growth doubled (from 1.1% to 2.3%). At the same time, the proportion of settlements where positive net migration did not compensate for the natural decrease dropped over three times (from 6.4% to 1.9%). Both facts indicate that settlements focusing on absorbing migrants (i.e., hub settlements) began to experience fewer problems, ensuring a migratory influx. In general, the model reproduced the situation in which masses of the rural population were in motion when rural society was experiencing accelerated disintegration. Even a significant improvement in rural living conditions could not keep most villagers in their usual place of residence.

Figure 6 shows the largest attractor clusters. Some points may have the same or close coordinates. Therefore, it is difficult to assess the number of points in clusters visually. Figure 6 shows the largest clusters in some cases.

Bipolarity is visible. Two consolidated and numerically dominant groups of settlements are distinguishable: migration donors (in Area q) and migration recipients (in Areas 2, 3, and, especially, 5 and 6). The latter two are considered hub settlements, of which there were significantly fewer than donor settlements. The main cloud of attractors is extended significantly below the balance line, which equals the total increases and decreases. In the previous period, recipient societies gravitated towards the balance line and maintained their population numbers (Zhukov & Kanishchev, 2019). Although societies were still focused on natural growth in the period under study,

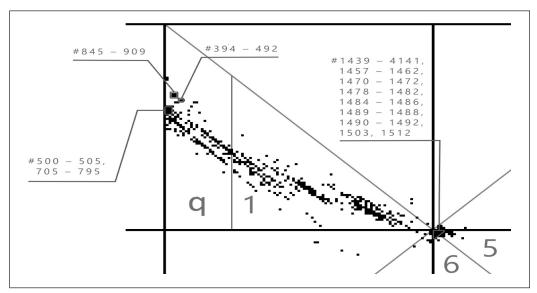


Figure 6. Attractor clusters from 1959 to 1989

Note. The callouts highlight experiment numbers that yielded attractors that are part of large clusters.

maintaining the population was not their explicit intersubjective goal.

There were no settlements where the desire for the high natural increase was coupled with a high migration influx or at least near-zero values of migration outflow. Migration limited natural growth. People waste their time on migration, which goes hand in hand with marginalization. Migration inflow reduced demand for residents of the hub settlements, and migration outflow interfered with natural reproduction in donor settlements.

The results clarify demographic patterns during the period of urbanization when the traditional peasantry began to disappear. First, the literature discusses why peasants' growing prosperity did not suppress a widespread desire to move to cities. Several researchers have drawn attention to the possibility that improvements in welfare were exaggerated by state propaganda (Avrech, 2015). Our results reveal a different picture. Living standards, medical care, and social support systems developed rapidly (Pertsev, 2013; Piskunov, 2017). However, Marshall's (1890) law of increasing needs also manifested itself in Russia in the second half of the 20th century. In rural settlements, migration intentions were unexpectedly strong when the quality of life improved.

Second, a significant finding is that migration intentions were a depressor concerning fertility. In the literature, migration and reproduction are often viewed as loosely connected. The decline in the birth rate in rural areas since the 1960s has been interpreted as the natural conclusion to the demographic transition (Zhiromskaya &

Isupov, 2005). However, it is worth noting that the completion of the demographic transition and the later demographic history of Russia was significantly complicated by urbanization and the strong migratory intersubjective intentions of the rural population. It led to a decrease in the birth rate not only in cities but also in villages.

Several of the questions posed in the present study have not been previously considered. We believe it is crucial to consider objective factors of population reproduction and intersubjective demographic strategies. We have demonstrated that many methods for demographic recovery have proven to be ineffective or even counterproductive because of the nonlinear effects inherent in human behavior and the perception of external circumstances.

CONCLUSION

Modeling the demographic strategies of 1,544 settlements in the Tambov region of Russia from 1959 to 1989 revealed that most rural communities were oriented towards natural increase. However, the effects of society's desire for natural growth were neutralized by migration intentions to a certain extent. For the desired natural growth to be converted into real overall population growth, migration movements should have been halted. Unfortunately, such a policy in the specific historical conditions could never be a reality as migration was stimulated by powerful systemic factors: people's intentions, industrial growth, and state policy, which relied on the predominant development of hub settlements—promising

villages, district centers, and "agro-cities"—where "the difference between the city and the country" would be erased.

The state's reliance on hub settlements did not produce the expected results; it had directly opposite—counterproductive effects. The hubs did not yield a significant natural increase and simultaneously "oppressed" the natural increase in the donor settlements. All hubs in the model had a minimal natural increase (or even a slight decrease), mirroring the reality of most cases. Hub communities also could not become truly attractive places to live for migrants. Hubs attracted people because they played the role of advanced airfields; they were an intermediate point on the migration path of "hamlet-village-district center-regional city-capital." Although some people, due to life circumstances, became stuck at a point along this trajectory, this is not proof that the hubs themselves had turned into intense attraction points. Indeed, some of the official "promising" settlements turned out to be endangered. Analyzing the attractors of demographic behavior in rural settlements makes it possible to correct the seemingly obvious concepts formed by a purely linear understanding of demographic processes. The socioeconomic and living conditions created in the promising settlements of late Soviet society were at the highest levels the Russian countryside had ever experienced. However, they were still insufficient to restrain many villagers from their aspirations for a different life in a non-agricultural environment.

From 1959 to 1989, controlling factors influenced demographic strategies

nonlinearly. The effect of the law of increasing needs was especially noticeable. More archaic communities responded to the stimulation of natural increase relatively predictable. However, the efficiency of such a policy would have dropped quickly: people would acquire new competencies, needs, and opportunities. The easiest way to satisfy new aspirations was migration. A disposition to migrate led to delayed births and a drop in fertility. An intense migratory influx into hub settlements also contributed to a decrease in the birth rate among the local population. The traditional link between the prosperity (and even survival) of a community and high birth rates had been severed.

In general, a modernized (as compared to traditional) society is characterized by a more complex relationship between controlling factors and the evolution of demographic strategies. Modernized society has many paradoxical regulators, and many counterintuitive effects influence the evolution of modernized microcommunities. Neither mere summation of factors nor the accentuation of any of them presents the full picture. Approaches to managing demographic behavior often remain within the framework of ordinary linear representations and, largely because of this, a demographic policy cannot achieve the required results.

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APPENDIX 1

THE GFTM MATHEMATICAL APPARATUS

Modernofractal 5.1 software was used for computer experiments with the GFTM: http://ineternum.ru/eng/software/.

The model's mathematical apparatus consists of Iterative Formula 1 and two conditions (*C*-symmetry and *A*-symmetry) that enable the identification of the geometric meaning of operations on complex numbers with the results of elementary interactions of the model's controlling factors.

$$Z_{n+1} = AZ_n^2 + C, (1)$$

where Z(x; y) and $C(D_c; K_c)$ are complex numbers.

Iteration imitates short- and long-term interactions of the factors considered in Formula 1. We have defined these factors in the broad sense as system reflexivity (Z_n^2) , self-sufficiency (A), and external influence $(D_c$ and $K_c)$.

C-symmetry (see Table 2) ensures that, in each iteration, D_c and K_c are set as either positive or negative: first, set per the user's choice of the direction for D_c and K_c and, second, per the positivity or negativity of the complex numbers $F(D_i, K_i)$ in the current iteration. Thus,

$$F = AZ_n^2 \tag{2}$$

Table 2 *C-symmetry*

		Direc	tion D_c			Direct	ion K_c	
	inw	ards	outv	vards	inw	ards	outv	vards
if D_f	_	+	_	+				
then D_c	+	_	_	+				
if K_f					_	+	_	+
then K_c					+	_	_	+

A-symmetry imitates the use of an equal amount of negative and positive values of A. The user sets the intensity of the controlling factors A, D_c , and K_c and the directions in which the factors D_c and K_c will push the system: inwards (to zero) or outwards (to infinity). The software tests a set of points on the complex plane in a specific area with a predefined increment value. The coordinates of each test point are substituted into Iterative Formula 1 as the initial value of Z_l . Iterative Formula 1 generates a series of numbers of a point's trajectory in the complex plane. The fractal-generating software, having carried out many iterations, can generate images of the system's attractors (if any are visible) and their pools.

APPENDIX 2

DESCRIPTION OF INDICATORS USED TO COMPUTE VALUES FOR CONTROLLING FACTORS

1. The indicator "place" is set as the status of a settlement at the end of the study period (Table 3).

Table 3
Indicator "place"

Marker	Description
rc	District center
p	"Incorporators" – settlements that have incorporated other settlements
SS	Surviving villages
sd	Surviving hamlets
io	"Extinct due to incorporation" – settlements that have been incorporated into other settlements
in	"Extinct due to unknown circumstances" – settlements that most likely have been incorporated into others, albeit not properly documented
i	"Extinct" – settlements that have been desolated by the end of the period but still existed for some stretch of that period; settlements with no population by the end of the period are also allocated to this group

- 2. The indicator "the availability of the village council in the settlement testifies to a fundamentally higher level of development in the administrative, social, and economic infrastructure.
- 3. The indicator "proximity to a city" (Table 4) signifies the possibility of circular labor migration. A city is considered nearby if it is within a 20 km radius.

Table 4 *Indicator "proximity to a city"*

Marker	Description
0	No nearby city
mg	Settlement located near a small city
sg	Settlement located near a medium city (Michurinsk)
bg	Settlement located near a large city (Tambov)

- 4. The indicator "development level of production capacities" indicates the availability of economic facilities of different levels and, accordingly, jobs. This indicator was established using expert estimates based on the examination results of economic facilities in each settlement. The measurement range was 0 to 1, where 1 is the maximum level (for the studied period and the group of settlements).
- 5. The indicator "level of social and cultural infrastructure development" presents the availability of schools, post offices, shops, and other facilities that directly affect the quality of life. The indicator was calculated using a method similar to indicator 4.
- 6. The indicator "degree of demographic transition completion" implies the level of development of birth control methods appropriate for the modernized settlement type. The indicator was set at the average number of children in a family: for a district center, an average of two children, while for other types of settlements (e.g., hamlet, village, small town), an average of three children.
- 7. The indicator "ratio of men and women" reflects the fact that fertility is limited as a result of imbalance (b), which can be evaluated for each settlement as follows:

$$b = |50 - v|, \tag{3}$$

where v = percentage of men. For extinct settlements, we assumed an imbalance of 12.5 percentage points.

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8. The indicator "availability of medical facilities" indicates the level and accessibility of medical services. Examining the availability of medical facilities of one type or another, an expert evaluated the quality of medical care on a scale of 0 to 1 (Table 5).

Table 5
Indicator "availability of medical facilities"

Marker	Description	Expert evaluation of medical care quality
0	No medical facilities	0
vr. amb.	Outpatient clinic	0.4
amb.	Outpatient department	0.4
m.p.	Health post	0.5
FAP	Midwife center	0.5
ouch. b-tsa	Rural district hospital	0.6
ouch.b., d/i	Rural district hospital, nursery, and kindergarten	0.6
amb. ouch.bol.	Outpatient department, rural district hospital	0.6
CRB	Central district hospital	0.8
CRB, raySES, d / i	Central district hospital, district sanitary and epidemiological service, nursery, and kindergarten	0.8

APPENDIX 3

MODEL CALIBRATION AND COMPUTATION OF CONTROLLING FACTORS

For calibration, a limit of 142% (-142%) was set for the increase and decrease values (x and y); this correlates with the boundaries of the model's phase space that were studied (see Figure 7). This limit is theoretical and can only be revealed in empirical evidence in exceptional

cases. This issue is discussed elsewhere (Zhukov et al., 2011, 2012). Figure 7 shows the ratio of model and natural units adopted to measure the phenomena in question.

The indicators' values were converted to the scales adopted in the model. It was also necessary to determine and formalize the relationship between the controlling factors and their indicators and establish weighting coefficients for each indicator.

Calibration was carried out based on several well-studied settlements (Tables 6a, 6b, and 6c). For each of these settlements, we know the development results (the values of migration and natural movement of the population namely, the position of attractors in the phase space) and the experimentally established values of the controlling factors. Tables 6a, 6b, and 6c link the actual data for the calibration settlements, and the values of indicators and controlling factors.

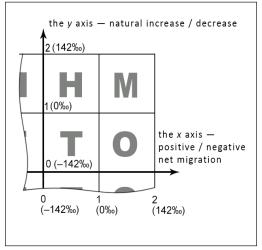


Figure 7. A sector of the demofractal phase space

Table 6a
Calibration data summary

	Iskra, Zherdevsky Dis	strict (e.p. = +11‰,	Sosnovka, Sosnovsky	District (e.p. = 0‰,	
	m.p. = -	4‰) *	m.p. = +17%		
	actual data	model data	actual data	model data	
A =	0.3	0.3	0.3	0.3	
Direction K _c	inwards	inwards	inwards	inwards	
Direction D_c	inwards	inwards	inwards	inwards	
$K_c =$	1.77	1.6081	1.69	1.69	
Indicator #6**	3	1.7921	2	1.85	
Indicator #7	1.9	0.014	2.9	0.022	
Indicator #8	0	0	0.8	0.08	
Indicator #4	0.1	0.17	1	0.2179	
$D_c =$	1.06	0.9529	1.2	1.2	
Indicator #1	SS	0.902	rc	1.018	
Indicator #5	0.3	0.15	1	0.175	
Indicator #2	1	0.008	1	0.008	
Indicator #3	0	0	0	0	
Indicator #4	0.1	0.1072	1	0.001	

^{*} Here and in Tables 6b and 6c: e.p. – natural increase; m.p. – positive net migration.

^{**} Here and in Tables 6b and 6c, the indicators numbering is according to Appendix 2 'Indicators'

Table 6b Calibration data summary, follow-up 1

	Malie Pupki (Podlesnoye), Sosnovsky		Karpovka, Tokarevsky District (total		
_	District (e.p.= +19%	$_{0}, \text{ m.p.} = -38\%$	increase = -35% , near-extinct settlement)		
	actual data	model data	actual data	model data	
A =	0.3	0.3	0.3	0.3	
Direction K_c	inwards	inwards	inwards	inwards	
Direction D_c	inwards	inwards	inwards	inwards	
$K_c =$	1.65	1.65	1.6	1.6221	
Indicator #6	3	1.7921	3	1.7921	
Indicator #7	2.9	0.022	0	0	
Indicator #8	0.5	0.05	0	0	
Indicator #4	0.1	0.17	0.1	0.17	
$D_c =$	0.97	0.97	0.88	0.7368	
Indicator #1	SS	0.902	sd	0.844	
Indicator #5	0.7	0.1672	0	0	
Indicator #2	1	0.008	0	0	
Indicator #3	0	0	0	0	
Indicator #4	0.1	0.1072	0.1	0.1072	

Table 6c *Calibration data summary, follow-up 2*

	Pervaya Malaya Semenovka, Tokarevsky District (extinct settlement)		Belomestnaya Dvoynya, Tambovsk District (e.p. =0%, m.p. = -4%)	
	actual data	model data	actual data	model data
<i>A</i> =	0.3	0.3	0.3	0.3
Direction K_c	inwards	inwards	inwards	inwards
Direction D_c	inwards	inwards	inwards	inwards
$K_c =$	1.7	1.7	1.62	1.631
Indicator #6	3	1.7921	3	1.7921
Indicator #7	12.5	0.0921	2.4	0.0178
Indicator #8	0	0	0.4	0.04
Indicator #4	0	0	0.2	0.1832
$D_c =$	0.7	0.67	0.99	0.99
Indicator #1	i	0.67	SS	0.902
Indicator #5	0	0	0.7	0.1672
Indicator #2	0	0	1	0.008
Indicator #3	0	0	bg	0.061
Indicator #4	0	0	0.2	0.0262

Factor A

Factor A is the most abstract driver in the model. Based on expert estimates, it was set to 0.3 for all investigated settlements. The average value of this factor during the preceding period (i.e., the war and post-war period) was 0.1338 (Zhukov & Kanishchev, 2019).

Factor D_c

The indicator "place" is fundamental for factor D_c ; other indicators should be considered correcting ones. The calibration Tables 6a, 6b, and 6c reveal that the indicator "development level of production capacities" is associated with factor D_c according to the power-law (Figure 8). Establishing industrial capacities in rural areas initially reduces the priority of migration intentions slightly. Afterward, though, the initial level of migration intentions is restored as the production develops.

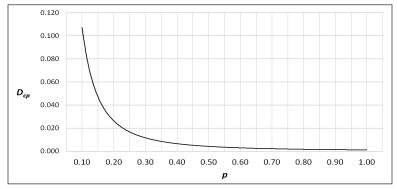


Figure 8. Relationship between indicator "development level of production capacities" and factor D_c . Note. p – indicator value in initial units; D_{cp} – the negative contribution of the indicator to the value of D_c .

According to the power-law, the indicator "level of social and cultural infrastructure development" (s) is also associated with factor D_c (see Figure 9). Factor D_c gains after the increase in s, yet this growth slows down.

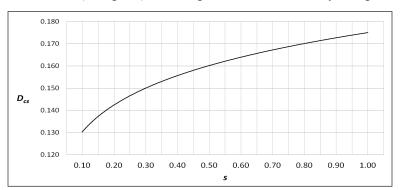


Figure 9. Relationship between indicator "level of social and cultural infrastructure development" and factor D_c . Note. s – indicator value in initial units; D_{cs} – the positive contribution of the indicator to the value of D_c .

Figures 8 and 9 demonstrate the nonlinear dependence of the value of D_c on the values of p and s. The discovered power regularity is reflected in formula (4). The values for the indicators "location" (L) are shown in Table 7, "proximity to a city" (g) presented in Table 8, and "the presence of a village council in the settlement" (presence = 0.008; absence = 0) have been calculated based on calibration Tables 6a, 6b, and 6c. It should be noted that the indicator "proximity to a city," contrary to initial expectations, reduces migration intentions, as it removes the incentive for migration among people living in the area of circular labor migration.

The above considerations made it possible to obtain the following formula for calculating factor D_c:

$$D_c = L + 0.175s^{0.128} + a - g - 0.001p^{-2.03}, (4)$$

where L is "place," s is "level of social and cultural infrastructure development," a is "the availability of the village council in the settlement," g is "proximity to a city," and p is "development level of production capacities."

Table 7
Conversion of the values for the indicator "place"

Indicator markers	L
rc	1.018
p	0.960
SS	0.902
sd	0.844
io	0.786
in	0.728
i	0.670

Table 8

Conversion of the values for the indicator "proximity to a city"

Indicator markers	g
0	0
mg	0.0203
sg	0.0407
bg	0.0610
Ug .	0.0010

Factor K_c

The indicator "degree of demographic transition completion" (T) should be considered the base for calculating factor K_c . As revealed in calibration Tables 6a, 6b, and 6c, for settlements where families had an average of three children, T = 1.7921, and for settlements with predominantly two-child families, T = 1.85.

The indicator "availability of medical facilities" also contributed to the growth of K_c through the control over the death rate and support for the birth rate.

Conversely, the indicator "development level of production capacities" significantly reduced the value of K_c because high employment (including women) alters the strategies for starting and developing a family deemed normal for the type of society being studied. A similar – negative – effect on K_c was exerted by the indicator "ratio of men and women," specifically, an imbalance of women to men.

According to the power-law, the indicator "development level of production capacities," was also associated with factor K_c (see Figure 10). Figure 10 demonstrates the nonlinear dependence of the value of K_c on the values of s and p. The discovered power regularity is reflected in formula (5).

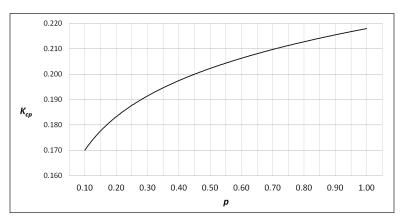


Figure 10. The relationship between the indicator "development level of production capacities" and factor K_c . Note. p – indicator value in initial original units; K_{cp} – contribution of the indicator to the value of K_c .

Based on these considerations and the analysis of calibration Tables 6a, 6b, and 6c, the formula for calculating factor K_c is as follows:

$$K_c = T - 0.007367b + 0.1m - 0.2179p^{0.1078},$$
 (5)

where T is the "degree of demographic transition completion," b is the "ratio of men and women," m is the "availability of medical facilities," and p is the "development level of production capacities."

APPENDIX 4

DESOLATION RISK AREA

Let us determine the minimum negative net migration for area q (Figure 2) within the framework of Type 1. The maximum natural increase in a successful settlement (e.g., in Podlesnoye) for the study period was about 19‰. With a hypothetical negative net migration of 107‰ (three-quarters of the model maximum), the total decrease would be about 88‰. Under such conditions, a settlement would lose more than 90% of its population during the period under study. We, therefore, consider a negative net migration of 107‰ as the value distinguishing the desolation risk area.



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Academic Stress Among Pre-University Students of the Commerce Stream: A Study in Karnataka

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ABSTRACT

Academic-related demands that exceed students' adaptive capabilities are collectively known as academic stress. High levels of academic stress are associated with an increased likelihood of depression, insomnia, substance addiction, self-harm, suicidal ideation, and subsequently, quitting education. Globally, academic stress is now a common phenomenon due to COVID-19-induced changes in the education system. Knowledge of the magnitude of academic stress and its factors can enable early recognition, intervention, and alleviation of the problem. The objective of this study was to assess the magnitude of perceived academic stress and identify the main stressors through a cross-sectional survey using the Manipal Inventory of Academic Stress scale. The study participants involved 2152 Grade 11 and 12 Commerce students enrolled in 34 pre-university colleges in coastal Karnataka. A stratified cluster sampling method was used in the study. Statistical methods, namely descriptive statistics, multiple linear regression analysis, two-sample independent t-test, and one-way ANOVA tests, were used in the study. The study observed that one in every

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four pre-university students experienced high levels of perceived academic stress. Parent expectations, academic queries from neighbours and relatives, and lack of time for revision were identified as the top three stressors. Gender, grade, and mother's education were associated with academic stress. Interventions at the individual, family, institutional, and community levels are the need of the hour to safeguard

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adolescents from negative experiences that might deprive them of wellness in their future.

Keywords: Academic stress, adolescents, commerce, COVID-19, MIAS, parental pressure, pre-university

INTRODUCTION

Seeking formal knowledge in the structured and controlled environment of the educational institution is a crucial phase in a child's life. While the gains in acquiring knowledge are numerous, the competitive technology-oriented world of today has brought forth a variety of academic stresses, a few of them resulting in tragic or traumatic incidents. Academic pressure has been eroding the early years of adolescent school life, especially in Asian countries, and has had adverse effects on the mental and physical well-being and aptitude to execute academic activities effectively. Academic issues have become a source of chronic stress among the younger population having consequential associations with depression, anxiety, and suicide (Huan et al., 2008). As per United Nations International Children's Emergency Fund (UNICEF; 2019), ensuring adolescent's safety, health, and life skills should be a priority to benefit a country's continued development socially, politically, and economically.

Stress is considered a negative emotional, cognitive, behavioural, and physiological process when individuals adjust to or deal with stressors (Bernstein et al., 2012). Academic stress may be a consequence of the interplay between

several factors. School-related elements such as higher academic burden (Rentala, Nayak, et al., 2019), academic schedules (Tang & Westwood, 2007), frustrations related to academic failure, or even fear of an eventual failure (Reddy et al., 2018), poor academic performance, criticisms from teachers/parents, a few incidents at school environment (Liu & Lu, 2012), and the presence or absence of support facilities or systems may influence the intensity of stress. The absence of pocket money, peer rivalry, lack of time management and social skills, long study hours with inadequate time for relaxation, and expectations of rote learning are all significant sources of academic stress (Agolla & Ongori, 2009; Deb et al., 2015). In addition, high parental expectations, societal demands, apprehension about social disapproval, need for peer approval, uncertainty in the job market and ever-rising aspirations make them highly vulnerable to stress or depression (Mathew et al., 2015). In India, academic achievement at the higher secondary level plays a decisive role in admission to higher education programs (Rentala, Nayak, et al., 2019). With the larger rural-urban divide, the limited or unevenly distributed public higher educational institutions across regions, and the non-affordability of higher education in the private sector by the non-elite population (Kingdon, 2007), the increasing number of seekers for the limited seats of a professional program and the nature of high stakes examinations to gain entry to the professional program, the adolescents, especially those in higher secondary education programs experience undue anxiety and pressure.

With the largest adolescent population in the world, India has over 253 million adolescents, i.e., one in every five Indians is between 10 and 19 years (UNICEF, 2019). Enrolment in higher secondary and tertiary education programs is also on the rise (Kingdon, 2007) and the educational environments across institutions (private and public) are not alike in India. Prevalence of academic stress among adolescents in higher secondary and tertiary programs is documented in the Indian literature (Deb et al., 2014; Nikitha et al., 2014; Rentala, Lau, et al., 2019; Roy et al., 2015; Venkatachalam & Chellamuthu, 2019). The association between academic pressure and various behavioural and emotional disorders such as depression, frustration, anxiety, helplessness, and suicidal tendencies among adolescents has also been established (Bhat et al., 2018; Deb et al., 2015). High levels of academic stress are also associated with an increased likelihood of depression, insomnia, substance addiction, self-harm, suicidal ideation and subsequently, quitting education (Pascoe et al., 2019). Adolescent suicides in India have been an alarming rise in recent years (Sivagurunathan et al., 2015). However, it is noteworthy that the prevalent beliefs and stigma related to mental illness and lack of or inadequate health-seeking practices, especially for issues of psychosocial origin among the Indian population, could also be a factor for the rising traumatic incidents in India as per World Health Organization (WHO; 2020) report. One way to help the Indian adolescent population would be to screen them for psycho-social issues or stressors at regular intervals and during crises if any, during their studies and make appropriate timely referrals.

The coastal region of the south Indian state of Karnataka is a hub for professional education programs and attracts learners from India and abroad. The three coastal districts, Udupi, Dakshina Kannada, and Uttara Kannada, top the higher secondary education results of the state. This crosssectional study uses a validated tool Manipal Inventory of Academic Stress, to gather baseline data on the perceived academic stress of adolescents in higher secondary education in the region. The present research serves as an enabler in understanding, planning, and implementing region-specific, effective strategies to promote adolescents' mental health. The study aims to assess the magnitude of academic stress, identify the stressors, and find associations between academic stress and the sociodemographic variables.

METHODS

The Design, Setting, and Population

The present descriptive study adopted a cross-sectional (correlational) survey design. The study population involved Grade 11 and 12 Commerce students enrolled in Pre-University Colleges of Coastal Karnataka, including Dakshina Kannada, Udupi, and Uttara Kannada. Udupi district has 114, Dakshina Kannada District has 220, and Uttara Kannada District has 101 Pre-University Colleges.

The Sample, Sampling Technique, and Sample Size

Pre-University Colleges in Coastal Karnataka, which were convenient to visit, were approached keeping in mind the budget, time constraint, and feasibility (COVID-19 pandemic). Among the 42 colleges approached, 34 responded to the request. A stratified (district-wise) cluster (colleges) sampling technique was used to identify ten colleges from Udupi and twelve colleges each from Dakshina Kannada and Uttara Kannada districts of Karnataka. The proportion of public to private institutions in the sample in each district was 50:50. Of the 2,720 parents approached, 2,152 expressed consent for their child's participation in the study.

Ethical Consideration

Institutional Ethics Committee approved the project under the registration IEC 414/2019 dated 12.06.2019. Permissions from the Deputy Director-Pre-University Colleges (DDPU) in each district and administrative heads of the Pre-University colleges were obtained. A document giving information for parents and an informed consent form were prepared to explain the objectives and importance of the survey, funding agency, project director, and institution. Respondents were assured of anonymity and confidentiality and were requested for voluntary participation. Informed assent/consent was obtained from parents/ participants.

Data Collection Tools

An unpublished validated tool, MIAS (submitted for Copyright, Diary Number: 6593/2020-CO/L), was used to obtain the data to assess the perceived academic stress. The objective of the tool development was to have a comprehensive yet straightforward assessment mechanism that caters to the pre-university student community in India.

MIAS has three parts. The first part of the MIAS included demographic variables, namely, age, gender, grade, locality (rural/ urban), type of family (nuclear/joint), number of siblings, literacy status of the mother, literacy status of the father, enrolment in the private coaching centre, type of residence (hostel/parental home), and financial assistance (parents/bank loan/ others). The second part of the tool contains 19 items on a five-point Likert-type rating scale. The response choices were no stress (1), slight stress (2), moderate stress (3), high stress (4), and extreme stress (5). Twelve experts validated MIAS. Items rated as relevant by at least 80% of the experts were retained (Ayre & Scally, 2014). As per the experts' suggestions, space was provided for the respondents to specify other academic stressors, if any. It became the third part of MIAS, consisting of an open-ended question enabling the study participants to share any other stressor not part of the original 19 items.

A pilot test was held using MIAS in two Pre-University Colleges. The participants' reported items were self-explanatory. The internal consistency coefficient, Cronbach's Alpha of the scale computed from the pilot study data (n=96), was .87. A Cronbach's

alpha of .7 or higher indicates acceptable reliability (Robinson et al., 1991). The higher the obtained score of MIAS, the more was the stress.

In the present study, Cronbach's Alpha of the MIAS (n=2,139) was .91, indicating high internal consistency. Confirmatory Factor Analysis (IBM SPSS Amos 25) was carried out to test how well the 19 items represented the unidimensional construct associated with academic stress. Based on the Chi-square goodness of fit test (x^2 (152) = 1562, p < 0.001), the observed data do not reasonably fit to the hypothesized model by using maximum likelihood estimates. However, this could be due to the large sample size, and hence, it is pertinent to consider other fit indices. Towards this, the following fit indices, namely, Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR), have also been considered in the study. It is suggested that a value of 0.90 or higher for CFI and TLI, RMSEA of 0.08 or lower, and an SRMR of 0.05 or lower were the indicators for a good fit of the observed data to the hypothesized

model (Pituch & Stevens, 2015). In the present study, the values of the indices: CFI (0.90), TLI (0.89), RMSEA (0.066, 90% CI: 0.063 to 0.069), and SRMR (0.040) provide evidence to support the hypothesized model. The factor loading for each item was above 0.60 for 18 items and 0.54 for the remaining one item.

Data Collection

Each college was visited at least two times for the data collection. During the first visit, the study was explained to the head of the institution, submitting a permission letter from the DDPU of the respective district. Two teachers assisted in distributing and collecting the document giving 'Information for Parents' and an 'Informed Consent Form' to the commerce stream's Grade 11 and 12 students. During the second visit, the questionnaire was administered in the respective institution by a trained research assistant/member of the project team/class teacher after obtaining/receiving informed consent/assent from parents/students. Table 1 presents the number of Pre-University colleges visited and the associated response rate.

Table 1
Grade-wise number of pre-university colleges visited and the response rate

	Grade 11	Grade 12	Total
Total number of Pre-University colleges visited	34	34	34
Parent consent requested	1360	1360	2720
Number of students who responded after the consent from parents*	1109	1043	2152
Response rate overall (%)	81.50	76.69	79.10
Response to all items of MIAS**	1098	1041	2139
Response rate of MIAS (%)	80.70	76.50	78.63

^{*}Few did not provide information about parents' education and left some or all the MIAS items blank.

^{**}Manipal Inventory of Academic Stress (MIAS)

Data Analysis

The data were summarized by computing frequency, percentage, mean, and Standard Deviation (SD) depending on the variable type. Scores of MIAS against various demographic variables were compared by applying a two-sample independent t-test and one-way ANOVA. Multiple regression analysis was carried out to identify the demographic variables significantly associated with academic stress scores adjusting for the influence of other variables. Response to open-end questions was pooled and listed in the order of appearance in the respondent forms.

RESULT

Characteristics of the Participants

The participants were in the age group 15-19 years, studying in grades 11 and 12. The mean (SD) age of the participants in grade 11 was 16.2 (0.56), and that of Grade 12 was 17.12 (0.52). Among the 2,152 participants of this study, 1,109 (51.5%) were of grade 11, and 1,332 (62%) were girls. Fifty-eight and 28 students did not provide information

about their father's and mother's education. Response to every item of MIAS was available for 2,139 (99.4%) participants.

Distribution of Academic Stress Score

Table 2 presents the distribution of academic stress scores. The observed score range (Maximum–Minimum) shows a good spread of scores. It is important to note that the maximum possible range of scores for MIAS is 19–95, and from Table 2, the range of scores obtained for Grade 11 respondents is 19-86 and Grade 12 respondents is 19-89. It indicates a good spread of scores.

Prevalence of Academic Stress

The stress scores were categorized as mild (19–35), moderate (36–55), high (56–65), and extreme stress (66 and above). The cutoffs for the scores were chosen based on the approximated first three quartiles and the 90th percentile values. The categorization of academic stress scores reveals that about 9% of Grade 11 and 12% of Grade 12 participants experience extreme stress. About 15% of Grade 11 and 17% of Grade 12 students experience high stress (Table 3).

Table 2
Descriptive statistics – Perceived academic stress score

	Grade 11	Grade 12	Combined Group
n	1098	1041	2139
Mean	44.23	46.18	45.18
SD	14.58	15.07	14.85
Minimum	19	19	19
Maximum	86	89	89
First Quartile (Q ₁)	33	34	33
Median	43	45	44
Third Quartile (Q ₃)	55	58	56

Table 3
Grade-wise stress category and perceived academic stress score

		Grad	de 11	Grade 12		
Stress category	Score range	Freq.	Percent	Freq.	Percent	
Mild	19–35	345	31.4	294	28.2	
Moderate	36–55	486	44.3	454	43.6	
High	56-65	168	15.3	172	16.5	
Extreme	66 and above	99	9.0	121	11.6	
Total		1 098	100.0	1 041	100.0	

Identification of Major Academic Stressors

Table 4 presents the item-wise frequency distribution of experiencing high (or extreme) stress factors sorted in the descending order

of the percentages for the 2139 study participants. From Table 4, it is pertinent to note that parents' expectations about the academic performance, academic queries from neighbours or relatives, lack of time

Table 4 *Item-wise distribution of students experiencing high or extreme stress*

Academic Stress Scale items		Grade 11 (n=1098)		Grade 12 (n=1041)		Combined Sample (n=2139)	
	Count	%	Count	%	Count	%	
Parents' expectations about the academic performance	369	33.60	393	37.80	762	35.60	
Academic queries from neighbours or relatives	323	29.40	399	38.30	722	33.80	
Lack of time for revision	272	24.80	338	32.50	610	28.50	
The exam syllabus is very vast	256	23.30	276	26.50	532	24.90	
Lack of fluency in English	251	22.90	280	26.90	531	24.80	
Too frequent class tests	232	21.10	265	25.50	497	23.20	
Lack of time for co-curricular activities or hobbies	235	21.40	218	20.90	453	21.20	
Fear of failure in exams	236	21.50	201	19.30	437	20.40	
Lack of concentration during studies	208	18.90	231	22.20	439	20.50	
Pressure from teachers for better results	194	17.70	229	22.00	423	19.80	
Discussion by friends on the extent of revision before exams	180	16.40	217	20.80	397	18.60	
Hectic school timetable	211	19.20	168	16.10	379	17.70	
Competitive learning environment	160	14.60	202	19.40	362	16.90	
Confusing study material	167	15.20	173	16.60	340	15.90	
Distractions due to social media	155	14.10	183	17.60	338	15.80	
Financial difficulties	148	13.50	178	17.10	326	15.20	
Hesitation to get help from teachers	145	13.20	160	15.40	305	14.30	
Poor interest in a few subjects	157	14.30	131	12.60	288	13.50	
Lack of guidance to prepare for the exam	139	12.70	144	13.80	283	13.20	

for revision, vast exam syllabus and lack of fluency in English are the top five stressors among Grade 11 students. Along similar lines, academic queries from neighbours or relatives, parents' expectations about the academic performance, lack of time for revision, lack of fluency in English and vast exam syllabus are the top five stressors for Grade 12 students in the same order of preference. For the combined data, Parent's expectations about performance, academic queries from neighbours or relatives, and lack of time for revision were the top three stressors. Furthermore, nearly 20-25% of the Grade 12 students felt that lack of fluency in the English language, very vast syllabus, too frequent class tests, lack of concentration during studies, pressure from teachers for better results, lack of time for co-curricular activities or hobbies, and friends discussing on the extent of revision before exams were causing stress.

In addition, based on the responses to the open-ended question, the researchers observed that most of the additional stressors were related to COVID-19 pandemic induced changes in the education system. It included fear of the COVID-19 pandemic and concerns relating to online/remote learning, technology and infrastructure deficits to online learning, increased screen time, addiction to mobile gaming, increased family pressure as the students were studying from their homes, difficulty in concentration and teacher's involvement in personal lives of the students. It is important to note that all the concerns are related to the pandemic itself.

Demographic Variables Associated with the Academic Stress

Based on the univariate analysis presented in Table 5, it is concluded that the mean perceived stress score is significantly different across gender (p<.001), Grade (p=.002), enrolment in tuition class (p=.046), and parent's level of education (father: p=.015, mother: p=.006). The researchers observe that male students have higher perceived academic stress when compared with female students. Also, Grade 12 students have higher perceived academic stress when compared with Grade 11 students. Interestingly, students enrolled for tuition have higher perceived stress when compared with their other peers. It could be due to the additional pressure from the tutors as well. It also appears that parents with

Table 5
Demographic variables associated with perceived academic stress (univariate analysis)

	n	Mean	SD	t / F value	p-value
Gender					
Male	812	46.62	14.87	3.509	<.001*
Female	1327	44.30	14.77		
Grade					
Grade 11	1098	44.23	14.58	-3.045	.002*
Grade 12	1041	46.18	15.07		

Table 5 (continue)

	n	Mean	SD	t / F value	p-value
Current Residence					
Parent's home	2033	45.16	14.93	-0.214	.830
Hostel or other	106	45.48	13.16		
Medium of Instruction (till Gra	ade 10)				
English	959	45.45	15.28	0.758	.449
Other	1180	44.96	14.49		
Whether Enrolled for Tuition					
Yes	363	46.60	16.45	2.00	.046*
No	1776	44.89	14.49		
Type of Family					
Nuclear	1631	45.03	14.73	-0.810	.418
Joint	508	45.65	15.23		
Financial Support for Education	n				
Parent financing	2093	45.2	14.86	0.354	.723
Bank loan or other	46	44.41	14.12		
Father's Education					
Grade 4 and below (Primary)	356	44.72	14.83	3.520	.015*
Grade 5–8 (Middle School)	650	44.40	14.43		
Grade 9–12 (High School)	852	46.33	14.92		
Graduation/Post-Graduation	236	43.45	15.20		
Mother's Education					
Grade 4 and below (Primary)	363	43.50	14.34	4.210	.006*
Grade 5–8 (Middle School)	690	45.30	14.91		
Grade 9–12 (High School)	864	46.20	14.79		
Graduation/Post-Graduation	211	43.19	15.40		
Number of Siblings					
Zero	226	43.93	16.55	1.001	.368
One	1039	45.18	14.86		
Two or more	874	45.50	14.35		
Type of College					
Government	777	44.64	13.58	1.267	.205
Private	1362	45.49	15.52		
Location					
Rural	1488	44.82	14.52	-1.71	.087
Urban	651	46.01	15.54		
District					
Dakshina Kannada	643	45.99	15.10	1.382	.251
Udupi	696	44.89	15.20		
Uttara Kannada	800	44.78	14.32		

^{*}significant at a 5% level of significance

lower education levels are stressors for the students. The statistical analysis was carried out using a two-sample independent t-test and one-way ANOVA in IBM SPSS 26.0.

In order to strengthen this understanding and explore the collective impact of the variables on the perceived academic stress score, a multiple linear regression analysis was carried out using IBM SPSS 26.0. The result of the analysis is presented in Table 6. Based on the results, it is concluded that gender (p<.002), grade (p=.006), and mother's level of education were found to be associated significantly with academic stress. The stress score was higher among the children of mothers with middle school (p=.039) or high school education (p<.016) when compared with primary education.

Table 6
Multiple regression analysis: Variables associated with perceived academic stress

Model	Unstandardized Coefficients			n volua	95% confidence interval for β	
	b	Std. Error	- t	p-value	Lower Bound	Upper Bound
(Constant)	40.180	2.205	18.225	<.001*	35.86	44.50
Gender (Male)	2.123	0.674	3.150	.002*	0.80	3.45
Grade (12)	1.812	0.654	2.769	.006*	0.53	3.09
Residing with parents	-0.643	1.497	-0.429	.668	-3.58	2.29
Medium of Instruction till 10th grade (English)	0.185	0.799	0.232	.817	-1.38	1.75
Enrolled for tuition (Yes)	0.955	0.925	1.032	.302	-0.86	2.77
Type of family (Nuclear)	-0.598	0.769	-0.778	.437	-2.11	0.91
Financial support for education from Bank or others	-1.032	2.312	-0.446	.655	-5.565	3.50
Father's Education						
Grade 5-8 (Middle school)	-1.037	1.002	-1.034	.301	-3.00	0.93
Grade 9–12 (High school)	0.327	1.030	0.317	.751	-1.69	2.35
Graduation or Post-graduation	-1.863	1.464	-1.272	.204	-4.73	1.01
Mother's Education						
Grade 5-8 (Middle School)	2.077	1.005	2.066	.039*	0.11	4.05
Grade 9-12 (High School)	2.537	1.052	2.412	.016*	0.474	4.60
Graduation or Post Graduation	-0.038	1.561	-0.025	.980	-3.099	3.02
Number of siblings						
One	1.508	1.120	1.346	.179	-0.689	3.71
Two or more	2.154	1.188	1.814	.070	-0.175	4.48
College type (Private)	0.921	0.769	1.198	.231	-0.586	2.43
Location (Urban)	1.024	0.759	1.349	.177	-0.464	2.51
District (Dakshina Kannada)	1.010	0.837	1.206	.228	-0.632	2.65
District (Udupi)	-0.046	0.836	-0.055	.956	-1.686	1.59

^{*}significant at a 5% level of significance

Enrolment in tuition class did not show a significant association when adjusted for the influence of other variables. The regression model accounts for 2.4% of the variability in the perceived academic stress, F(19, 2073) =2.627, p<.001, R²=.024, Adj-R² = .015. Regardless of the low value of R², the interpretation of the association between stress and demographic variables holds good.

DISCUSSION

Adolescence (10–19 years) is a formative stage, often referred to as a stage of stress and storm. The evolving changes in one's physical growth and the gradual orientation to the expectations from the social environment (may it be family, school, and other institutions) pose greater demands on psycho-social adjustments. While the context of living in adolescence is predominantly 'dependent,' moreover unique to an individual depending upon his or her situation, the adaptation to the challenges would also be unique. Therefore, promoting adolescents' psycho-social wellbeing is vital to ensure healthy development.

Adolescents' health has a detrimental effect on the family, the community, the state, or the nation. Using a locally developed, comprehensive, validated tool to screen academic stressors would help measure the level of stress and identify specific and common stressors at the individual, institutional, and regional levels. The knowledge of the prevalence and the variables affecting their health is of interest to policymakers for planning

health and related welfare services at the institutional and community levels. The present study reveals that academic stress is prevalent among adolescents, a finding similar to studies in the region (Leeshma & Colaco, 2019; Nikitha et al., 2014; Tomar et al., 2014) and in India (Deb et al., 2014; Rentala, Nayak, et al., 2019; Roy et al., 2015; Venkatachalam & Chellamuthu, 2019). The common stressors among adolescents showcased in a review (Chandan & Shivappa, 2020) were lack of competence, inability to cope with studies, disturbed family dynamics, peer pressure, and the lack of a robust support system (teachers, parents, and administrators). In the present study, three of the top-ranked stressors reported by adolescents with high stress were primarily external to the educational institution. Studies in the coastal region (Tomar et al., 2014; Verma, 2019) report that adolescents in higher secondary schools (public, private, and aided) used adaptive coping strategies, but their strategies differed. Measures specific to the individual and institutions in the region, such as awareness/education/ training programs for students, parents, and teachers, are necessary (Leeshma & Colaco, 2019). An intervention plan should involve all stakeholders and emphasize collective efforts (learners, parents, teachers, and the head of the department or the institution, local government under each district administration) to mitigate the stressors or their risk factors.

In the present study, multiple regression analysis revealed that academic stress was

higher among the male adolescents, Grade 12 students and adolescents with mothers whose education level was higher than secondary. Further, in the present study, there are two other relevant observations: the literacy level of parents, especially mothers in the region, and the number of females who participated in the study. These findings reflect the growing importance of educating the female population in coastal Karnataka. However, academic stress is more prevalent among male children in the family. Male dominance is deep-rooted in Indian societies. The gender socialization process and the roles, the interwoven religious attitudes, beliefs, and moral values (Basu et al., 2017; Gupta & Sharma, 2002) might be the factors responsible for this observation. While the rising literacy level among women might pave the way to remove the inequality soon in the coastal region, greater attention is required to reduce the stress of Grade 12 students. The pressure for best performance was more in Grade 12 as achievements obtained in the year are a criterion for admission to higher education programs (Deb et al., 2015; Rentala, Nayak, et al., 2019). However, as the competitive environment was a stressor to only about 17% in this study, the academic stress seems to be originating primarily at the family level, which requires a redressal as the students are now spending most of their time at home doing their academic engagements.

Deb et al. (2015) reported that parental pressure and parents' education level had a significant association. In their study, the father's education level was associated with

academic stress (the stress was more when the father was a non-graduate), contrary to the present study. Thus, adolescents whose parents are less educated are likely to experience more stress. A few studies report that students whose parents possessed a greater level of education performed better on standardized tests (Davis-Kean, 2005; Moon & Lee, 2009). A few studies also demonstrate positive influences on parents' education (Abd-El-Fattah, 2006; Rapheal & Paul, 2018). Counselling the parents whose education level is less than graduation might be relevant in the context of coastal Karnataka. Educational institutions and community organizations should plan activities for the students and parents of the region about career guidance, awareness programs on opportunities or alternatives available in the field of interest, and the provision of lateral entry in the chosen stream, if any, to build their self-confidence (Chandan & Shivappa, 2020; Leeshma & Colaco, 2019).

The present study's findings bring out two crucial contextual social factors that require primary focus: parents' expectations about the adolescent's academic performance and the academic queries from neighbours and relatives. In India, the overall unemployment situation, or the awareness of competition for admission to higher education institutions or jobs, pushes parents to pressure their children for academic achievements (Deb et al., 2015). The lower level of education of parents, parents comparing their child's performance with other students of class

or neighbourhood or themselves, options available for parents to arrange private tutors/tuition classes, other unique parentspecific attributes like comparing the past (their times) and the present (the avenues provided by them to the child), the parent wishing to fulfil own dreams through their children, are some of the other factors influencing parental pressure (Deb et al., 2015). Further academic queries from neighbours and relatives are often a distractor for adolescents. In India, the family and social structures are close-knit. Academic queries like the marks, tuition classes, ranks scored or other achievements from neighbours and relatives are common. The parents may even be told that their child may not make it to the next level with the marks scored, filling the adolescent and their family with a sense of insecurity, leading to tension at home. Because of such queries, the parents may employ stricter measures to make their child perform well academically, adding to the existing academic stress.

Adolescents in the present study reported a lack of time for revision and co-curricular activities or hobbies, a finding similar to previous studies (Agolla & Ongori, 2009; Alsulami et al., 2018; Deb et al., 2015; Yusoff et al., 2010). In addition, about 10% of students in the present study, in response to an open-ended item, expressed "excessive homework and no time to read", "homework is a burden", and "poor management of time in examinations", which reflect students' inability to manage time. Further findings, namely, very vast

exam syllabus, too frequent class tests, fear of failure in examinations, and hectic time schedules (Reddy et al., 2018; Tang & Westwood, 2007), reflect that elaborate study routine spanning the whole day leaves little time for relaxation or social activities. In addition, confusing study material, hesitancy to get help from teachers, and lack of guidance in preparation for the examination depict that student needs more time to learn by self-effort. While a closer look at each of these factors is essential both at individual and administrative levels, there is also a need to emphasize the meaningful involvement in extracurricular activities, training or guidance in time management skills, preparation for examinations, and overall development of the adolescents which invite collective efforts of district and the community administration.

Lack of fluency in English had an association with univariate analysis but was not a factor influencing the academic stress, as revealed in the multiple regression analysis. Government schools in India primarily use the local language in teachinglearning activities till the tenth Grade and introduce English as a subject only by 5th Grade (Tomar et al., 2014). The medium of instruction in Grades 11 and 12 in English. Students from these schools who may be compelled to study subjects in poorly mastered English in the 11th and 12th grades may face communication and comprehension issues, affecting their selfconfidence and academic performance (Deb et al., 2015).

A few other stressors also require due attention. In the Asian context, academic stress arising from adolescents' selfexpectations and expectations of others (e.g., parents and teachers) are particularly salient (Ang & Huan, 2006). Such expectations may be a source of anxiety for the child in some situations, which can harm their academic performance (Chellamuthu & Venkatachalam, 2019). Pressure from teachers and parents was reported in the present study. The coastal region is a hub of educational institutions and occupies the top position (more than 90% pass percentage in 2020) in the Pre-University Board examination results of Karnataka. The institutions might be under constant pressure to improve quality, retain/progress in rank/position, and invite the best students to the collegiate programs. This need may be reflected in the adolescents in the form of teachers' expectations, which would cause or aggravate stress.

Further, the findings of this study should be interpreted in the context of the COVID-19 pandemic, which was a major stressor as reported by the participants in response to an open-ended item. The increased access to digital learning resources has led to problematic technology use, and excessive time spent on social media and gaming, all of which may require interventions (Kar et al., 2020; Mahapatra & Sharma, 2020; Singh et al., 2020). Support from family, school, and the community plays a vital role in adolescent life, especially during the pandemic.

The present literature does not indicate if academic stress has any positive or beneficial effects on students (Putwain, 2007). The extent to which academic stress can be considered good or bad regarding the student's performance is a question arising from research and can be explored in further studies.

CONCLUSION

The study revealed that a considerable number of students of Grades 11 and 12 of the commerce streams were experiencing academic stress in the coastal Karnataka region of India. Parent expectations, academic queries from neighbours and relatives, and lack of time for revision were identified as the top three stressors among the students. Thus, it becomes imperative to identify the stressors and the students experiencing academic stress. Similar studies must regularly be carried out in different geographical locations to identify the stressors and plan interventional programs. Safeguarding adolescents from negative experiences and risk factors that may limit their ability to thrive is crucial for their well-being and physical and mental health as adults.

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The Meaning in Life and Courage of Malaysian Frontliners During COVID-19

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ABSTRACT

The COVID-19 pandemic has disrupted everyone's routines, including frontline workers, causing psychological distress and lowering their quality of life. As a result, this research was conducted to determine the meaning of life and the courage of Malaysian COVID-19 frontliners. Using purposive and snowball sampling, twenty-one frontliners from Kuala Lumpur and Selangor were recruited for this interpretative phenomenology study. The findings indicate that Malaysian frontliners derive meaning from the human connection in their professional and personal lives, which instills a feeling of dedication as they contribute to social welfare, particularly during this critical period. In addition, they engage in spiritual activities and maintain a positive attitude to achieve life satisfaction, which is regarded as a component of their life's meaning. Furthermore, frontline workers are courageous in fighting the pandemic because it is their obligation, and they have a strong family and coworkers' support system. While frontliners must maintain their psychological well-being, they are subjected to work hazards daily, contributing to their impression of courage. The findings could provide an outreach program organized by the government through webinars.

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E-mail addresses: ksyasyila@gmail.com (Kalaivanan Syasyila) ginlim17@gmail.com (Lim Lee Gin) zhooriyati@ucsiuniversity.edu.my (Zhooriyati Sehu Mohamad) *Corresponding author In that manner, it would allocate a sense of reassurance to the frontliners. Therefore, it is necessary to identify the perception of meaning in life and the courage of the Malaysian COVID-19 frontliners to rekindle their work spirit despite experiencing an overwhelming workload objectively.

Keywords: Courage, COVID-19 pandemic, frontliners, Malaysia, meaning in life

INTRODUCTION

Occupation has a significant impact on a person's life since it is a lifelong adventure that instills a sense of responsibility in individuals as they go about their daily lives. Sustaining the psychological well-being of COVID-19 frontliners is possible provided they have adequate family support, which is critical for flattening occupational stress (Gavin et al., 2020). Due to social distancing and isolation, working individuals, particularly COVID-19 frontliners who normally meet and contact their family, were unable to see and interact with their loved ones, resulting in distinctive socialization and a progressive loss of meaning in life (Williams et al., 2020).

Besides, the tremendous burden of frontliners does not do justice because the number of positive COVID-19 cases and mortality rate continue to rise with each passing day (Gavin et al., 2020). It was particularly evident in Malaysia, where 18 frontliners assisted at both Hospital Serdang (620 beds) and Hospital Universiti Putra Malaysia (HUPM; 400 beds) during the first Movement Control Order (MCO; Khor et al., 2020). These hospitals serve the Klang Valley's southern regions and the state of Negeri Sembilan, which has a population of 1.7 million people. It does not help that they have a tremendous job of swabbing probable COVID-19 persons while also caring for patients in the intensive care unit (ICU), making it difficult to put on their protective equipment (PPE). Most ICU admissions in Malaysia occur within the first five days of hospitalization, even though patients are

more likely to be admitted for more than 13 days with invasive ventilation (Sim et al., 2020). Having layers of PPE protects the frontliner, yet it contributes to the fear of contamination due to improper disposal. It, in turn, causes them to have a pessimistic attitude toward the outbreak, which reduces their courageousness. Work and personal life are often seen as fundamentally contradictory areas that must be kept apart for a stress-free living (Zhooriyati & Despois, 2022). As a result of the excessive stress, they are subjected to burnout; their physical strength is compromised, and so is their mental health. Concurrently, frontliners' psychological well-being in meaningful life diminishes as the desire to flatten the curve remains unfulfilled despite endless sacrifice.

The meaning of life for Malaysian frontline workers is unexpectedly merely shattered because they are susceptible to being infected by the virus because of fulfilling their job responsibilities (Khor et al., 2020; Sim et al., 2020). When the person to whom they transmitted the virus battles for their life, it is likely that they will lose their sense of purpose in life. As a result of the virus's proliferation and the fact that they were wearing PPEs, they began to lose the courage to enter the hospital to perform their duties (Serbulea, 2020).

Meaning in life for COVID-19 frontliners is significant during this global pandemic (Grossman, 2020). However, insomnia is a favored structure for COVID-19 frontliners due to the depression and anxiety that have eventually influenced

their work performance to fight against the virus that impacts their meaningful life (Pappa et al., 2020). Significantly, when the frontliners are bombarded with mental torment, they tend to make simple mistakes that have adverse consequences as they deal with a human subject.

It is also necessary to have the courage to fight against the virus, as it aids in developing a meaningful life for frontline workers, who should carry out their duties during the pandemic (Häyry, 2020). The citizens, to their surprise, have a mind of their own, as evidenced by the fact that they are observed loitering outside without following the standard operating procedures (SOPs) established by the authorities. Without a doubt, the COVID-19 frontliners are enraged by the fact that their efforts are not recognized, which harms their motivation to combat the virus' spread. Because the citizens who do not follow the SOPs have a diminished sense of courageousness, which has resulted in their courage being degraded.

As they fight against the virus without stopping to consider their own life, the frontliners are likely to perform an act of exceptional courageousness (Serbulea, 2020). Social support can help frontline workers, like nurses, be more courageous in the face of adversity, such as the COVID-19 outbreak, which has challenged their courage, compassion, and resiliency. However, it is mandatory to self-isolate after work, which means that family time is excluded. In contrast, peer support could not be refreshed because frontline workers

are forced to labor for nearly 36 hours straight. This phenomenon is strongly highlighted, and the Malaysian government has announced that it has been abolished immediately following the establishment of the MCO (Zhang et al., 2020).

However, even though online platforms are now accessible to substitute face-to-face communication and revitalize a long-distance relationships, they are not as effective in providing the proper social support required by frontliners. It tends to crush their courageousness because there is a chance that the other party will interpret a message incoherently, which could deviate from its intended goal.

Meaningful life for practitioners, such as healthcare workers and other professional bodies, is strongly correlated with the public, who has direct engagement with them both before and during the global pandemic, as well as during this critical period. For frontline workers, the epidemic of severe acute respiratory syndrome (SARS) in 2003 had a similar impact on their sense of meaning in life as the current COVID-19 outbreak has taken a toll on them (Sumner & Kinsella, 2021). The 2009 H1N1 swine flu pandemic has also steered the meaning in life of the frontliners worldwide (Taylor & Asmundson, 2020). In that sense, practitioners work tirelessly for the betterment of the world to recover from the COVID-19 pandemic. The public is protected due to their efforts during a global pandemic that would degrade their psychological well-being because of the excessive workload, similar to what has been observed during prior outbreaks.

As a result, this qualitative study explores the meaning of life from the perspective of Malaysian frontliners, as well as their courage in the face of a potentially lethal outbreak. By participating in this study, the frontliners may reflect on what it means to live a meaningful life, particularly when they put patients to sleep without knowing whether they would wake up the next second. Furthermore, this qualitative study provides a platform for individuals to discuss their experiences in the fight against the outbreak, allowing them to express their sorrow and endurance in a safe and confidential environment. In this way, by inviting frontline workers to share their experiences, this research has heightened their courage, as they have conquered numerous obstacles and will continue to do so in the future. Finally, without a doubt, this study encourages approaches to improve the psychological well-being of frontline workers by providing them with an opportunity to express their concerns and emotions.

Research Question and Research Objective

This research aims to discover the meaning in life of Malaysian COVID-19 frontliners throughout the pandemic. Thus, the Malaysian COVID-19 frontliners' meaning in life during the pandemic was addressed. Additionally, it is critical to investigate the courageousness among Malaysian frontliners to comprehend their perceptions during the pandemic.

METHODS

Study Design

The qualitative research method was used in this study since it was designed to investigate social phenomena like the COVID-19. This method uncovers the intangible component that distinguishes the frontliners from the rest of society (Cheung et al., 2020). The voices of the frontline workers were heard through this method, and their working experiences throughout the epidemic were revealed using openended interview questions.

The interpretative phenomenology research design was adopted in this study as it is favorable for COVID-19 studies (e.g., Fan et al., 2020; Khodabakhshi-koolaee, 2020). This study used a structured indepth interview to ascertain the perspective of COVID-19 frontliners on the ongoing pandemic that has spread over the world. In conjunction with the face-to-face in-depth interview, the online platform was utilized due to the restricted social interaction caused by the pandemic.

Participants and Locations

The researchers used the purposive and snowball sampling techniques to recruit 12 male and nine female participants ranging in age from 22 to 54 years old from Selangor and Kuala Lumpur. Participants were selected based on the inclusion criteria, which included being COVID-19 frontliners, being actively engaged in their jobs throughout the pandemic, and providing direct and indirect care and

supervision to members of the public. The study focuses on COVID-19 healthcare workers concerning physical health (i.e., doctors, nurses, physicians, pharmacists, and medical laboratory scientists) and mental health (i.e., psychiatrists and counselors). However, potential participants in high-risk states that require 14 days of self-quarantine will be excluded.

The selected population was the subject of this study because they had contributed their time and effort in high-risk work environments such as hospitals and clinics in the middle of a global pandemic for the benefit of Malaysians. Participants who agreed to participate were interviewed when researchers approached them from door to door randomly.

Selangor and Kuala Lumpur were chosen for this study because Selangor is one of the states in Malaysia with the greatest number of positive COVID-19 cases from January to April 2020 (Elengoe, 2020). In addition, Kuala Lumpur is the capital of Malaysia, and because it belongs to the medical tourism industry sector, it was decided to use Kuala Lumpur as the recruitment range for this study (Afthanorhan et al., 2017).

Procedure and Instruments

Researchers must consider the relevance and quality of the tool used in a study. In order to assure the consistency of a research study or measuring test in statistical and psychometric terms, it is essential to ensure the reliability of the instrument being used (Koo & Li, 2016).

The interview questions in this study were adapted and restructured from the quantitative form of the Wilderness Courage Scale (WCS; Prochniak, 2017) and the Meaning in Life Questionnaire (MLQ; Steger et al., 2006). On that note, altered interview questions correspond equally with the original items since it is amended directly from close-ended to open-ended questions. In addition, the initial meaning of the questions is maintained by limiting the change of word sentences. Hence, the questions would begin with interrogative words (e.g., "what," "when," "where," "which," "who," and "how").

The interview questions were understandable, and the content validity and clarity were reserved. The interview questions were assessed by a field expert appointed to the position. After receiving constructive input from the reviewer, the questions were later revised and improved. As a result, the interview questions for this study were adapted from quantitative questionnaires proven to be reliable.

After the questions had been reviewed and revised, they were submitted to the Institutional Ethics Committee (IEC) for approval before being awarded affirmation. The purpose of the submission is to ensure that the questions go through a series of evaluations before they are ready to be used in the actual research. Before the data collection process begins, the topic expert has reviewed and approved the interview questions (Connelly, 2008).

Ethics

All studies reported in this article adhered to APA ethical standards for the treatment of human subjects. Apart from that, permission from the IEC has been received. It took place prior to the beginning of the data collection process. When the frontliners agreed to participate in this study, they were given an information sheet and asked to sign an informed consent form. During the debriefing session, the participants were given the option to withdraw their participation at any point. The IEC clearance from UCSI University (Reference code: IEC-2020-FoSSLA-051) could be obtained with written consent from the IEC. All participants signed an informed consent form before taking part in the activity. It is done to secure their identities and guarantee that the sample selection procedure is transparent. It was entirely voluntary for them to engage in this study. They were under no pressure from the researchers, who informed them that they may withdraw their involvement at any moment and that their data would be treated anonymously.

Data Analysis

A thematic analysis was employed to discover the perception of meaning in life and courage of the Malaysian COVID-19 frontliners in the healthcare industry concerning physical health and mental health. The thematic analysis, which includes the six steps, is applied after the data collection (Braun & Clarke, 2006). It starts with data familiarization, in which data is transcribed from the field notes

and tape recordings. Data coding is the following step where all the participants' words are grouped systematically. Potential themes were classified right after the data coding revolving around the meaning in life and courage among COVID-19 frontliners in Malaysia. The qualitative research expert was appointed to review the integrity of construction concerning the developed themes. The themes were then defined and given a name. It follows the last step, writing up the report by utilizing the finalized data analysis.

RESULTS

Following an in-depth exploration of the Malaysian COVID-19 frontliners' perspectives on their meaning in life and courage, a delegation of 12 themes was derived. The main two sections of this research are discussed in greater detail below, concerning the meaning in life and courage of the COVID-19 frontliners.

Data from 21 Malaysian COVID-19 frontline workers involved in physical and mental health care are presented in Table 1 as collective themes. With human connection, more frontliners can eventually fathom their meaning in life during the COVID-19 pandemic, as they have one another's back during the outbreak. Their achievement gives significance to their lives, especially when they commit themselves to the betterment of society. To achieve their life purpose, the majority of the frontliners cultivate personal devotion via spiritualism (Martela & Steger, 2016). In addition, they tend to collectively reinforce

their empathetic conduct to promote social transformation, which benefits social welfare (Heylighen & Dong, 2019; Persson & Savulescu, 2017). For that reason, it gives them a sense of purpose, which contributes to life satisfaction and aids them in seeking meaning in life.

The COVID-19 frontliners' responsibility has the potential to ignite their courage. One source of motivation for them regularly is the patient's compassion or their amusement habit. The frontliners hope

to improve their psychological well-being and reduce anxiety over the deadly virus because they have a trustworthy support system (Gavin et al., 2020). However, the presence of high-risk patients, combined with a lack of appropriate equipment as a daily job hazard in the workplace, diminishes their courage (Rijamampianina, 2018). Fortunately, Malaysian frontliners are yet to build the courage from the gullible pressure to face the outbreak by perpetuating their psychological well-being.

Table 1
Summary of themes

Psychological construct	Themes			
Meaning in life of the Malaysian	Initiate human connection			
COVID-19 frontliners	Pledge of commitment			
	Indulge in spiritualism			
	Take social welfare into account			
	Progress towards life satisfaction			
Courage of the Malaysian COVID-19	Carry out given responsibility			
frontliners	Rewards as motivation			
	Trustworthy support system			
	Daily job hazard			
	Perpetuate psychological well-being			

Meaning in Life

Initiate Human Connection. The interpersonal engagement amongst Malaysian frontliners during the COVID-19 outbreak provided them with a sense of meaning in their lives. Inclusion in one's family that results from understanding compassion is the emotional support from friends or family members.

P06: A lot of my friends are in the dental field, so they are supportive because things still have to go on as long as everybody is taking high precautions; we've been supportive of each other... Also, when doing the treatment, we have high vacuum suction where it'll suck whatever is being generated because aerosol will stay in for another few hours.

Having one another's backs through insightful communication could significantly impact those on the front lines. In addition, because of the pandemic, people are more aware of what gives them meaning and purpose in their lives, whether meaningful conversation or compensatory compensation.

P20: That's why I tell with my experiences in life, kita jumpa orang, I got one friend every morning I'll call chit chat, happy. Lepastu ada orang kedua, waktu pergi kerja lah meaningful life, you know. You see, we make other people's life so meaningful.

[Translation: That's why I tell with my experiences in life. I got one friend every morning I'll call chit chat and I will be very happy. After him, I'll call another friend. It goes on and on until I reach my workplace. Meaningful life, you know. You see, we make other people's life so meaningful.]

Pledge of Commitment. As frontline workers, their responsibility is to contribute to society to benefit future generations positively. However, due to the social pressure placed on the upcoming generations, the frontliners with parental duties concerning their glooming children are brought to attention.

P15: Now the responsibility is there, must educate children hahaha, *kena bayar hutang*, after *hutang selesai* then

I can relax that's our responsibility. So, my family, my responsibility is my meaning in life *lah*. Yeah, family *lah*... Apart from medical, meaningful in my life is I want uhh, for my family to be happy and children to come up I mean in their life *lah*. Come up in their life *lah*, graduate and come up.

[Translation: Now the responsibility is there, must educate children hahaha, have to pay off my debts. When it's clear, then I can relax that's our responsibility. So, my family, my responsibility is my meaning in life lah. Yeah, family lah... Apart from medical, meaningful in my life is I want uhh, for my family to be happy and children to come up I mean in their life lah. Come up in their life lah, graduate and come up.]

The progression of life has left them feeling a strong sense of responsibility towards the people they hold close to their hearts. The concept of lifelong learning, as a result, offers the frontline workers a framework to help them find meaning in their lives during the pandemic.

P11: To me in pharmacists, it is the work that I do I enjoy *lah* because I chose this career even though there is much difficulty now is okay *lah* because you learn from it. So, all these things are just minor setbacks only *loh* as long as you overcome them. I would not say I find my meaning in life through my job, meaning of life for me is more like you

accept what is happening around you. I feel obligated to serve my patients, especially the regular ones. They are like my loved ones.

Indulge in Spiritualism. Religiosity literary is vital in seeking meaning in life for COVID-19 frontliners during a global pandemic, with the mortality rate fluctuating. When a decision of theirs ends with a fruitful outcome, it urges them to believe in God to fulfill their life purpose to contribute to society for the sake of the community.

P21: Different among psychological frontliner because we just do our best in the crisis and sometimes, I feel not competent enough. I accept my limitations and that is a bit tough because my colleague is a crisis call responder and told me why not I join them and expand myself and see if I can manage. In a sense, it's like contributing to society as well what.

With spiritual devotion, therefore, meaning in life for COVID-19 frontliners during the pandemic can be inferred.

P18: I used my religion to find my meaning in life. Sometimes I think without religion, I do not understand why so much suffering... I will be very firm when clients say that religion and belief lead them to suicide. Although counseling must not be biased but this is a crisis call and I'm definitely anti-

suicide, so I have no qualms about trying to steer the client.

Take Social Welfare into Account. Due to the social welfare consideration, the Malaysian COVID-19 frontliners have appropriated it to seek meaning in life. To give back to the community, the current research participants acknowledged that they aspire to educate and enlighten the illiterate to accomplish a collective reinforcement.

P09: Uhh as a frontliner ah. Hmm, we have to, of course, set an example for the patients also lah... they also will look up to you also to see what you are doing also so you have to make sure you do a good example loh, wear your mask, do social distancing uhh and then if patients have any questions you have to answer them truthfully lah don't try to scare them or anything lah just tell them this is actually what's happening, this is what you should do lah so a lot of patients get the wrong perception *lah*. But it's important lah you set a good example for them, do what you can for them also lah and teach them to do the right thing also.

Additionally, because of their generous heart and passion for saving lives, they carry the pressure to be a role model to their patients, which serves as their life purpose.

P05: We have to set an example for the patients also *lah*... they will look up to you to see what you are doing also so

you have to make sure you do a good example *loh*, wear your mask, do social distancing and then if patients have any questions you have to answer them truthfully *lah* don't try to scare them or anything, just tell them this is actually what's happening.

Progress Towards Life Satisfaction. When frontline workers look after themselves and make the most of their leisure time, it provides them a greater feeling of life satisfaction. In addition, the need for recognition for every individual, especially COVID-19 frontliners, is frequently associated with the pursuit of meaning in life.

P17: We are one human race; we must care for each other; my role in society is to ensure that we strive to become better people... social and individual transformation is important, so you need to focus on yourself and your community so these two things are important and it goes hand in hand because if I don't transform individually, then I cannot transform the society, so both are important.

The moment frontliners walk into the healthcare field, their life purpose revolves around contemplating the better for their patients or even themselves.

P03: I just make sure I'm healthy. Can function every day. If I'm not working, I make sure I get good rest because

the shift is quite long and tiring inside the tent, although the allowance is like peanut, and it's not worth it. That's probably the government trying to show appreciation. But most importantly, I just want to serve people and do whatever it takes to be a good doctor.

Courage

Carry Out Given Responsibility. At this instant, due to the alarming rise in COVID-19 cases and mortality rates, the frontliners are accountable for performing and being mindful in their job.

P13: Personally, I do feel like my motivation toward work affected my self-esteem affected my job because I started to question myself, am I doing a good job? Was I really a good comfort to my clients? This kind of thing started to pop out and I started to chat with my other clients, how they are doing, or I start to frequently check with those who worked with me.

They prioritized adhering to the precautions while having precise time management to fight against the virus with the extrinsic liaison's advice. The unexpected responsibility will eventually enhance their courageousness, as the COVID-19 pandemic is undistinguished after effect.

P08: But we give them [patients] reassurance, nothing to worry, we already disinfect the clinic [because

there was a positive patient] the doctors who were involved... yeah they call and find out, so we told them. The doctor who was involved is already quarantined; nurses are also quarantined.

Rewards as Motivation. The acts of kindness in the generous offering can inflate courage among the COVID-19 frontliners. Participants deliberate over the amusement habit as their reward, praising the harmony after a strenuous day at work. Possessing a custom habit has its pros and cons that are perhaps alterable. Performing physical activities reduces the stress of the frontliners. Even the consumption of tobacco and alcohol acts as compensation at the end of the day.

P14: I go hiking, trekking yeah. Sport is the main source that can release my stress, and socially also I am always out with my friends... I grew up with some of my neighbors, so we are very close.

P19: Drink and smoke when I go out with friends occasionally.

Trustworthy Support System. The COVID-19 frontliners seem to receive sufficient emotional and social support to safeguard their well-being.

P07: Pray *lah*... God is great. I am breathing now, I don't know the next minute I breathe or not... For me ah... is a blessing you know, because

saya lucky... my family sembahyang, walaupun some people touch and go. Uhh... so I think blessing lah, parent blessing, God blessing. So, when you pray, God will answer to you, so saya rasa bagus lah, see whether through COVID, oh lagi orang kuat lagi banyak sembahyang.

[Translation: Pray lah... God is great. I am breathing now, I don't know the next minute I breathe or not... For me ah... is a blessing you know, I am lucky because my family prays, unlike others who do pray for just for the sake of it. Uhh... so I think blessing lah, parent blessing, God blessing. So, when you pray, God will answer to you, so I think it's good lah. Since the pandemic, there are more and more people who are praying more than they did before.]

The relaxation that frontliners feel when they are not at work is guaranteed to be preserved. Some participants were required to be separated from their spouses in a different states. After all, they were advised to avoid interacting with others because they performed the COVID-19 swabs.

P01: Initially, during the MCO, I did not go back to my wife and kid for two months because she is in Melaka and I'm stuck in KL. I video call her every day that is all I can do. We are quite worried about each other because we do not know when we will see each other again.

Daily Job Hazard. The COVID-19 frontliners, who anticipate adversities during the pandemic, are inclined to be more courageous in the face of scarcities in medical equipment during the pandemic.

P02: My psychological well-being declining for sure, we worried what whether you were infected... whether... I was also infected with patients *lah haa* that is my fear. Yeah, that time once... they knew that one positive case was there, all patients started calling.

Under this unfortunate occurrence, the frontliners tend to get anxious about being infected by the virus to the point where it causes family tensity.

P10: My elderly parents. They always want to go out without a mask and not listen to you. Their well-being is my concern... Therefore, [I] limit my parents to go out if they don't listen then scold them. But they are quite obedient lately after seeing the news.

Perpetuate Psychological Well-Being.

Courage for COVID-19 frontliners can emanate from being accountable for themselves. With self-reflection and self-regulation, Malaysian frontliners are competent enough to procure easygoing characteristics that enhance their psychological well-being throughout the unprecedented COVID-19 pandemic.

P12: During COVID-19, it gave me some time to reflect and recover, especially the first few weeks... It was a good break and gave me some time to reflect. Life is not under my control.

The frontliners are susceptible to pressure from external circumstances, and for that alone, it has made them potentially vulnerable to danger.

P16: I am not stressed *lah*. I do not enjoy its work but just do your thing *lah*. I'm only stressed when there are too many patients, and I can't manage. The pressure is real when you have too many patients with very little manpower.

DISCUSSIONS

This study aims to ascertain the meaning of life and courage of Malaysian COVID-19 frontliners. The human connection through the family or loved ones of the COVID-19 frontliners provides them meaning in life (Williams et al., 2020). The COVID-19 frontliners' life aim is to promote family inclusion and responsibility. By gaining an insight into compassion from a career life perspective, there will be good outcomes that they will tend to look out for one another. As frontliners, they have numerous doors of opportunity to advance in various facets of their lives (Martela & Steger, 2016). One of the tasks that frontliners with multiple partnerships play is that of a parent responsible for the upbringing of future generations. They also have a career responsibility to emphasize their

contribution to society as healthcare workers.

Meaning in life is related to employee contentment, as it is a lifelong quest (Lee et al., 2017; Vohs et al., 2019). For many people, including COVID-19 frontliners, spiritualism is an enduring adventure that provides pathways to meaning in life, even though they may encounter unpleasant situations daily, such as horrific deaths. Malaysian frontliners have a personal devotion to spiritual faith or sacred belief via religiosity literary. In contrast, there is no significant connection between spiritualism and meaning in life (Keefer, 2019; Krok, 2017). Individuals will eventually discover their life purpose as long as they live a life that adds to their sense of worth and worthiness.

Under these conditions, the generous heart of Malaysian frontliners adds to their sense of meaning in life, as it is a type of social welfare. There is a collective reinforcement among the frontliners concerning social inclusivity and social transformation to attain a career life purpose. The findings exhibited that Malaysian frontliners tend to feel contended when utilizing their leisure time by performing their hobbies. Through self-motivation and self-reflection, frontliners think of carrying out something they are passionate about and looking after themselves to contemplate a better future. However, there is a need for acknowledgment among the COVID-19 frontliners since it gives them a sense of existence. Therefore, an individual with meaning in life will associate the personality

variables with their sense of direction (Costin & Vignoles, 2020; Womick et al., 2020).

On the condition of courage, it is conclusive that as long as COVID-19 frontliners are accountable for their responsibilities, courage will accompany them. According to these studies (i.e., Day, 2020; Häyry, 2020), every COVID-19 frontliner is mindful when performing their job because they have the strength to fight against the virus, as they are in close contact with both external and internal personnel. The extrinsic liaison is also highly productive. This unexceptional aftereffect of the pandemic is prompting frontline workers to consistently improve their hospital services, which is one of the obligations that the COVID-19 frontline workers must carry out as a result of the pandemic. Unfortunately, the considerable number of patients results in a scarcity of hospital equipment, negatively impacting their ability to execute their jobs.

When it comes to rewards, it provides motivation and courage to COVID-19 frontline workers, especially during a pandemic. In recognition of their substantial contributions to society, they are more likely to receive complimentary words from their patients. In addition, being compassionate in helping others has fostered empathic courage, as illustrated by empathyhelping (Persson & Savulescu, 2017; Sassenrath et al., 2016). As a result, their moral courage ultimately grows, allowing them to contribute their full potential.

One unexpected discovery was that the Malaysian frontliners were compensated through recreational practice. The COVID-19 frontliners receive rewards such as kindness from others or delightful attitude in exchange for their efforts. It allows them to maintain a harmonious appraisal system. Vulnerable individuals will contend with life satisfaction (Gin et al., 2021), but it is only applicable if they can maintain a healthy work-life balance. The COVID-19 frontliners proclaimed that future preservation would provide them with a guardian to ensure their well-being in both their personal and professional lives. It is complex to explain this result, but it might be related to COVID-19 frontliners. A possible interpretation for this might be that an individual will perform the courageous action because it facilitates the endurance of moral courage (Comer & Sekerka, 2018; Martinez et al., 2016).

The COVID-19 frontliners benefit from leisure activities such as playing musical instruments or reading. The outbreak has compelled the frontliners to begin cultivating their religious beliefs, which has caused them to be courageous because of the pressures they have encountered, which has resulted in their realization of their spirituality (Kassymova et al., 2019). They insinuated that the impact of stressors from the human resource could generate a sense of fearlessness, particularly during a time of crisis or difficulty.

Undoubtedly, scarcity in the workplace causes frontliners to experience adversity. Unfortunate events, such as confronting dishonest patients or even an unempathetic high authority, will limit their courageousness. Furthermore, frontliners will eventually confront family tensity due to their stress. This study provided data that corroborates the conclusions of many earlier studies (e.g., Bockorny & Youssef-Morgan, 2019; Rijamampianina, 2018) on courageousness. It appears conceivable that this outcome is a result of the difficult circumstance. It influences the courageous decision-making capacity of COVID-19 frontliners, preventing them from obtaining the desired goal despite their self-confidence in fighting the virus.

Individuals with the empathic attribute are less susceptible to being misled by external influences inclined to eradicate their courageousness (Heylighen & Dong, 2019). On the other hand, being easygoing is critical for a COVID-19 frontliner. It is because they are held accountable for maintaining their psychological well-being. As a result, emotional expressiveness must be preserved. The findings contradict an earlier study (e.g., Cheng & Huang, 2016) on Chinese individuals' courageousness. Working under pressure in Asian countries, particularly among the Chinese, enhances success. Therefore, they would be fearless and commit to a worthy cause while the COVID-19 frontliners fight the virus.

Limitations

Despite its contributions, this research has several limitations that suggest fascinating perspectives for future research. As for the research limitation, the deficiency lies in the sampling techniques used in this study (i.e., purposive and snowballing sampling techniques). This combination of sampling techniques reduced the effectiveness of the recruitment process. Recruited participants were required to recommend potential participants that fit this research requirement, yet they faced difficulties executing it.

CONCLUSION

Before and after encountering the COVID-19 pandemic, the public frequently interacts with the frontliners, or the healthcare workers, which impacts their meaning in life. Chiefly, the development of targeted interventions serves as an aspiration to authorities. In addition, the government can be vocal about the COVID-19 outbreak awareness by conducting webinars for the public to cultivate proper social distancing. However, unless they adopt current research implications, there are possibilities that the citizens will not adhere to the SOPs. For instance, the MCO declaration has caused a limitation in traveling that disputed the tolerance among citizens for being domesticated.

Frontliners who exhibit beneficent behavior are gullible to pressure, particularly at work, making them vulnerable to danger. A key policy priority should be developing long-term care plans for COVID-19 frontliners, as their well-being will deteriorate if the public does not adopt appropriate social distancing. Due to the diminutive action from the illiterate public, the frontliners' courage tends to wane during a pandemic. As a result, it is necessary to

turn a blind eye to their meaning in life in light of the current research's practical implications.

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Factors Affecting Poverty in Nepal - A Binary Logistic Regression Model Study

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ABSTRACT

One of the key factors in reducing monetary poverty is the identification of its determinants. Using a logistic regression model and considering household poverty status (poor/non-poor) as the response variable, this paper attempts to identify the most promising factors associated with monetary poverty based on nationally representative data of 5,988 households from the Nepal Living Standard Survey (2010/11). The goodness of fit, classification, discrimination, and diagnostics of the fitted model is performed. Six factors, namely illiteracy of household head (OR: 2.20; 95% CI: 1.86–2.61), households receiving no remittance (OR: 1.90; 95% CI: 1.64–2.20), households with no landholdings (OR: 1.53; 95% CI: 1.31–1.78), households with poor access to market centers (OR: 1.77; 95% CI: 1.52–2.07), households having more than two children under the age of 15 (OR: 4.69; 95% CI: 4.06–5.42) and households having no literate persons of working age (OR: 1.29; 95% CI: 1.07–1.56) are significantly associated with the likelihood of poverty. Male-headed households are not better positioned than female-headed households concerning poverty level. The developed regression model has satisfied the test of goodness of fit of the model

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E-mail addresses: acharyakrishna20@gmail.com (Krishna Prasad Acharya) drshankarcds@gmail.com (Shankar Prasad Khanal) chhetrydevendra@gmail.com (Devendra Chhetry) *Corresponding author and reasonably satisfied the regression diagnostics through visual assessment. As several risk factors associated with poverty increase, the likelihood of a household being poor increases substantially. This analysis is expected to be helpful for the concerned authority to reframe the policy.

Keywords: Covariate pattern, diagnostics, goodness of fit, logistic regression, Nepal, poverty

INTRODUCTION

Poverty reduction in developing countries like Nepal is a central issue. One of the key factors in reducing monetary poverty, poverty conceptualized and measured in economic dimensions (in terms of income or consumption), is the identification of its determinants. Based on empirical studies in several countries, it can be inferred that poverty is partially determined by internal household characteristics and partially by external factors. Internal household characteristics include gender and education level of the household head, number of dependents, household size, place of residence, human capital, remittance, and area of landholdings. The effects of these characteristics on poverty have been researched by many scholars, including Abrar ul Haq et al. (2019), Teka et al. (2019), Imam et al. (2018), R. E. A. Khan et al. (2015), Spaho (2014), Leekoi et al. (2014), Thapa et al. (2013), Omoregbee et al. (2013), Osowole et al. (2012), Achia et al. (2010). In addition, external factors such as access to health care facilities (M. M. Khan et al., 2006; Peters et al., 2008), access to market centers (Obi et al., 2012), access to micro-credit (Chowdhury et al., 2005), access to infrastructure (John & Scott, 2002), economic growth (Adams, 2003), are also reported to be associated with poverty.

Nepal made remarkable progress in the reduction of monetary poverty in very unfavorable situations from 1996 to 2011, a period characterized by a decade long (1996–2006) violent, armed conflict between the State and the Maoist. The conflict was formally ended by signing the Comprehensive Peace Agreement in November 2006 between the State and the then Communist Party of Nepal-Maoist. The prolonged political instability manifested by frequent changes in government, which lasted till a single political party came into power through a general election that took place under the Constitution of Nepal 2015. There was a sluggish economic growth of around 4.0% per annum (Ministry of Finance [MoF], 2013). However, the percentage of the population below the poverty line at the national level declined from 41.8 in 1996 to 30.9 in 2004 and further declined to 25.2 in 2011 (Central Bureau of Statistics [CBS], 2011a), which is still 4 in 1 person remained as poor due to several factors which are not yet known.

The main objective of this paper is to identify the most promising factors influencing household-level poverty using binary logistic regression on the nationally representative sample survey data of the Nepal Living Standard Survey III (NLSS-III) conducted by the Central Bureau of Statistics (CBS) in the fiscal year 2010/11, since to the best of our knowledge, no rigorous work on said data has yet to be done. Since 2010/11, the NLSS has not yet been conducted again for several reasons, such as the devastating twin earthquakes of 2015 and COVID-19. As a result, the NLSS-III conducted in 2010/11 is the latest estimate of poverty based on nationally representative survey data.

In order to identify the potential factors affecting poverty, a review of relevant literature is essential, and it is done in the next section.

LITERATURE REVIEW

A brief review of the literature is made below to identify policy-driven factors affecting household-level poverty in Nepal.

Several drivers were responsible for the amazing progress in the reduction of poverty. The three main drivers identified by the World Bank are a drastic increase in personal remittances received from abroad, a rise in labor incomes, and an improvement in household demographics. These factors contributed to a 27, 52, and 15% reduction in poverty from 1996 to 2011 (Uematsu et al., 2016).

A large volume of Nepalese laborers migrated abroad for employment during the 1996–2011 period. As a result, the absent population reported in 2011 was 1,921,494, a big jump from the number of 762,181 reported in the census of 2001 (CBS, 2014). The outmigration brought many changes in Nepal's socio-economic and demographic sectors.

The two visible economic impacts of remittances are as follows. First, at the micro-level, the nominal average amount of remittance per recipient household in Nepali currency increased from 15,160 in 1996 to 80,436 in 2011 (CBS, 2011b). At the macro level, the percentage share of remittances in GDP increased from 1.8 in 1996 (MoF, 2005) to 18.5 in 2011 (MoF, 2012).

The average annual population growth rate had sharply declined from 2.25% during the census period of 1991–2001 to 1.35% during the census period of 2001 to 2011 (CBS, 2014); the total fertility rate had decreased from 4.6 births per woman in 1996 to 2.6 births per woman in 2011, (Ministry of Health, 2011); the percentage of female-headed households had increased from 13.6 in 1996 to 26.6 in 2011; the percentage of children under 15 had declined from 42.4 in 1996 to 36.7 in 2011 (CBS, 2011c).

Such demographic changes and many more others had several intertwined implications on the socio-economic life of millions of Nepali peoples. First, the outmigration of millions of literate youths had created a shortage of productive labor (or loss of human capital) within Nepal. The other positive and negative impacts of the outmigration of labor are discussed elsewhere (International Organization of Migration, 2019; Kunwar, 2015; Uematsu et al., 2016).

In addition to households directly benefitting from remittances sent by migrant members, non-migrant households also benefitted from the spillover effects of migration (Uematsu et al., 2016). As a result, household income increased by almost fivefold over a decade and a half: the nominal average household income in Nepali currency increased from 43,732 in 1996 to 202,374 in 2011 (CBS, 2011c).

Correlates of poverty are also reported in CBS (2005, 2011a). For example, the poverty rate increases with an increase

in household size, such as increasing the number of children. Conversely, the poverty rate decreases with an increase in the level of education of the household head. Households headed by someone working in the agricultural sector, self-employed persons, or wage workers are poorer than those headed by people in other sectors or professions.

The land has multidimensional roles: key factors in production, collateral in credit markets, security against natural disasters or shocks, and symbol of social, economic, and political prestige (Kousar et al., 2015). This statement also holds in the context of Nepal. Further, the computation based on the NLSS-III data showed that 28.8% of households have no land. The problems of the landless are discussed elsewhere (Wickeri, 2011).

Without good access to markets, a poor household cannot market its products, obtain inputs, sell labor, obtain credit, learn about, or adopt new technologies, insure against risks, obtain consumption goods at low prices, or use its scarce resources like land and labor efficiently (Taylor et al., 2009). For example, CBS (2011a) shows the link between poverty and access to facilities, including a market center in Nepal, where the percentage of poor living within 30 minutes of the market center is 16.3, while the remaining 83.7% live beyond 30 minutes of a market center.

Using multinomial logit regression on 962 household-level panel data between NLSS-I and NLSS-II, Bhatta and Sharma (2006) identified factors affecting chronic

and transient poor households under three scenarios. The relative risk ratio (base category non-poor [= 0]) of each of the two factors—household size and % of individuals under 15 or over 59 years of age—was significantly greater than 1 for the chronic poor. On the other hand, the relative risk ratio for a percentage of the household adults who can read and write and the value of livestock owned each was significantly less than 1 for the chronic poor.

Thapa et al. (2013), using a binary logistic regression model on data obtained from 279 households from six districts of western Nepal, reported that the literacy of the household head, family size, family occupation, size of landholding, females' involvement in service, occupation of household head and social involvement was significantly associated with the rural poverty.

R. E. A. Khan et al. (2015) studied the factors affecting rural household poverty in one district of Pakistan based on 600 households' data. The probability of poverty decreases considerably in households with members having only an agricultural occupation, households with higher socio-economic empowerment indexes, and remittance-receiving households. In contrast, the probability of poverty increases significantly with an increase in the female to male ratio and the number of household members.

Abrar ul Haq et al. (2018a) assessed the role of household empowerment (developed by Abar ul Haq in his Ph. D. dissertation) in alleviating participatory poverty of

600 rural households in Pakistan. Their assessment suggested that participatory poverty can be reduced by improving household empowerment in the studied area. Abrar ul Haq et al. (2018b) provided a detailed framework for measuring the household empowerment index (HEMI) and measured the index using the data of 42 variables collected from 600 rural households in Pakistan. Abrar ul Haq et al. (2019) found that household empowerment has a significant positive impact on monetary poverty in the studied area. This series of studies open a new window in poverty analysis in a developing country like Nepal and the monitoring and spatial comparison of household empowerment. In the present study, the 42 variables selected in constructing HEMI are useful in justifying the reason for the selected covariates in our study.

After an extensive literature review, seven factors were tentatively identified, and the rationale for their selection in the context of Nepal is elaborated in the next section.

Selection of Factors

The factors selected in this paper are directly or indirectly related to some of the items Abrar ul Haq et al. (2019) used to develop the household empowerment index (HEMI). For example, the two items 'status of landholding' and 'sex of household head' selected in this study correspond to the variables 'land owned' and 'gender of household head' selected in the development of HEMI. The other three factors 'literacy status of household head,' 'number of

literate members of working age' and 'number of children under 15' selected in this study are modified versions of the items 'education of household head,' 'average education of the household' and 'size of the house' selected in the development of HEMI. These modifications are necessary due to the unavailability of data and need in the context of Nepal, as described below.

The NLSS-III data showed that the average number of children under 15 among poor households is almost two times higher than among non-poor households (2.81 versus 1.43). Likewise, the average working age population (15-64) among poor households is slightly higher than among non-poor households (2.95 versus 2.79). On the contrary, the average number of elders (65+) among poor and non-poor households in the same (0.24). These results indicate that instead of investigating the effect of household size on household poverty, it is more realistic from a policy perspective to investigate the effect of 'number of children' and 'number of literate working age members (or human capital)' separately. Investigating the effect of human capital on poverty is essential since a huge number of skilled or semiskilled individuals have out-migrated. Likewise, investigating the effect of children on poverty is essential since it is a perennial problem in Nepal.

Considering the contribution of remittance to Nepal's GDP and the source of income of most households in Nepal, the factor, 'status of remittance recipient,' has been included in this paper. Moreover, many scholars in contemporary studies have

included it as a covariate; for example, see Abrar ul Haq et al. (2018b), R. E. A. Khan et al. (2015).

Considering over 50% of Nepal's population were reported to dwell beyond a 30 minutes reach of the nearest market centers (CBS, 2011a), and realizing the direct/indirect role of market centers (Joshi & Joshi, 2016; Shively & Thapa, 2017; Taylor et al., 2009) in reducing poverty, the factor 'access to nearest market' has been included in this paper.

In summary, based on the extensive review of the literature and empirical evidence, the present study identified seven factors, each of which is related to two pillars—economic empowerment and social empowerment—of household empowerment, formulating the hypothesis that each of these factors will have a significant effect in reducing poverty in Nepal.

The source of data, the process of dichotomization of four tentatively identified quantitative factors, the appropriate statistical model with its goodness-of-fit test, the diagnostic criteria of the fitted model, and the risk assessments of the identified factors are discussed in the next section.

METHODS

The main data source for this study is NLSS-III which provides household-level data on several variables of 5,988 households and individual-level data on several variables of 28,670 individuals. The available data on the variable "household poverty status" (poor/non-poor) was taken as the response variable

by assigning code values 1 for poor and 0 for non-poor. In this study, a household is defined as poor (non-poor) if the per capita expenditure of the household members falls below (above) the poverty line of Nepali currency, 19,261. The unweighted and weighted proportions of poor households were correspondingly 18.5% and 20.0%.

The available data on three household level dichotomous variables—sex (male/female) and literacy status (literate/illiterate) of household head and the remittance-receiving status (yes/no)— were used as one set of covariates in this study. Also, the available household level numeric data on two variables—area of landholding measured in hectares and access to the nearest market center measured in walking distance time in minutes to reach the nearest market was also used as covariates after converting them into dichotomous variables.

The available data on the variables "age" and "literacy status" of individuals were used to construct the two householdlevel numeric variables—the number of children under 15 and the number of literate members of working age (15–64 years) within each household. These two numeric variables were also used as covariates after converting them into dichotomous variables. The main reason for dichotomizing each of the four numeric variables is to make a meaningful comparison between the two mutually exclusive and exhaustive households, namely the disadvantaged and advantaged groups. The process of dichotomizing, particularly choosing the demarcating value for each of the four quantitative variables, is described below.

Households Dichotomized by Area of Land Holding

Considering the importance of land possession in households in Nepal, the demarcating value for the area of landholdings (numeric variable) was chosen to be 0, which demarcates households into two groups—one group of households in which each had no land (disadvantaged group) and the other group of households in which each had land (advantaged group).

Households Dichotomized by Access to Nearest Market

Realizing the importance of access to markets in poverty reduction, the demarcating value of this numeric variable was chosen to be 30 minutes of walking distance, which demarcates the households into two groups—one group of households in which each was beyond 30 minutes reach of the nearest market (disadvantaged group) and the other group of households in which each was within 30 minutes reach of the nearest market (advantaged).

Households Dichotomized by the Number of Children Under 15

Children under 15 are considered dependents. Therefore, even if families desire to have multiple children, many children in a household create an economic burden that aggravates household poverty. In order to determine the demarcating value for dichotomizing households by the number of children under 15, a little exercise was carried out. The results (Table 1) show that for each group of households with less than or equal to two children, the poverty incidence falls below the national level of 25.2%. On the contrary, the poverty incidence exceeds the national level for each group of households with more than two children. Therefore, the demarcating value was chosen as two, which demarcates the households into two groups—one group of households in which each had more than two children (disadvantaged group) and the other group of households in which each had less than or equal to two children (advantaged group). The poverty incidence of the former group is estimated at 41.4%, and for the latter group is estimated at 13.5%.

Table 1

The rationale for choosing two children as demarcating value

Group of households with several children	0	1	2	3	4	5+
Within-group incidence of poverty (%)	5.9	11.6	19.6	33.5	42.3	55.7

Source: Computed from data of NLSS III

Households Dichotomized by the Number of Literate Members of Working-Age

In order to investigate the impact of the loss of human capital due to outmigration on household poverty, the household level numeric variable "number of literate members of working age" was selected. They are converted into a dichotomous variable by grouping the households into two groups: no literate members of working age (disadvantaged group) and at least one literate member of working age (advantaged group). The rationale behind choosing a demarcating value of 0 is as follows: a household with no literate member of working age is in a more difficult position than a household with at least one literate member of working age in fighting against poverty.

The Statistical Model and its Goodness of Fit

The seven household level dichotomous variables, namely sex of household head (female vs. male), literacy status of household head (illiterate vs. literate), remittance-receiving status (no vs. yes), market access (poor vs. better), landholding status (no vs. yes), number of children (more than two vs. at most two), number of literate members of working age (none vs. at least one) were identified as potential covariates in this study. The Chi-square test of independence assessed the association of each potential covariate with the response variable. The binary logistic regression analysis included only the covariates significantly associated (at a 5% significance level) with the response variable. The usual binary logistic regression model with a p-number of covariates (yet to be determined) is expressed below. The model is estimated with the aid of a statistical software package.

$$\ln\left(odds\left(\pi\left(x\right)\right)\right) = \ln\left[\frac{\pi\left(x\right)}{1-\pi\left(x\right)}\right] = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p \tag{1}$$

The model adequacy was assessed by Pseudo R² proposed by McFadden (1974), Omnibus test, and Wald χ^2 test. The goodness-of-fit test was carried out by the Hosmer and Lemeshow (H-L) χ^2 test.

Classification, Discrimination, and Diagnostics of the Model

The classification of the fitted binary

logistic regression model was examined by sensitivity, specificity, and accuracy. Furthermore, the ability of the fitted model to discriminate between the poor and nonpoor was assessed through the area under the Receiver Operating Characteristics (ROC) curve.

Among the different diagnostics approaches reported in the statistics

literature, mainly two scatter plots were used for the fitted logistic regression model. Firstly, as an influential statistic suggested by Pregibon (1981), the delta beta statistic $(\Delta \hat{\beta})$ was computed, which measures the changes in estimated regression coefficients for each covariate pattern if we were to exclude that pattern, where (Δ) stands for the difference. A scatter plot was prepared, keeping the values of $(\Delta \hat{\beta})$ in the vertical axis and predicted probabilities based on the fitted logistic regression model on the horizontal axis to identify the large influence on the estimated coefficients. Secondly, the delta Chi-square $(\Delta \chi^2)$ based on Pearson's residuals was computed, which measures the effects of patterns on the model's fit in general. A scatter plot keeping delta Chisquare in the vertical axis and predicted probability in the horizontal axis to examine the influence of pattern on overall fit with symbol size proportional to delta beta was also prepared. Besides these two, the model specification test was attempted to examine whether the fitted model needs independent covariates or not by regressing the original response variable on the model predicted variable (\hat{y}) and (\hat{y}^2) with the null hypothesis that there is no specification of error at a 5% level of significance.

Risk Assessment based on Presence of Factors

Finally, after fitting the model and assessing the model diagnostics, the risk assessment of the factors by quantifying their effects presented in the model was attempted by regressing the same response variable used in the finally developed model with the newly generated indicator variable, $(x_i, \text{ for } i = 0, 1, 2, 3, ...)$, where 0 stands for no factors present, and 1,2,3,...,p stand for the presence of any one or two factors, and finally all factors in the final model respectively. Finally, statistical analysis was performed by using statistical software IBM SPSS version 20 and STATA 13 Stata Corp LP, College Station, Texas, USA.

The empirical results regarding the screening of the tentatively identified factors, the estimated binary logistic regression model with discussion, the classification and discriminating power of the fitted model, the diagnostic outcomes of the fitted model, and the risk assessments of the finally selected factors are discussed in the next section.

RESULTS AND DISCUSSION

The following sub-sections deal with the results and discussions of the association of covariates with the response variable, fitted binary logistic regression model, classification and discrimination, diagnostics of the fitted model, and risk assessment.

Association of Covariates with the Response Variable

Descriptions of the seven covariates, such as their categories, coding schemes, distributions of households over two categories of each proposed covariate, an association of each proposed covariate with the response variable assessed by the Chisquare test, and the effect size of each Chisquare test measured by the phi-coefficient are presented in Table 2.

Table 2
Association of covariates with the response variable

Description of household-level	Percentage distribution	Assoc	Association of covariates with poverty			
dichotomous covariates	of households	% of poor households within a category	Chi-square value	p-value	-	
Sex of household head: Male (0) Female (1)	73.3 26.7	18.9 17.4	1.7	.193	-0.02	
Literacy status of household head: Literate (0) Illiterate (1)	60.2 39.8	12.2 28.1	240.7	<.001	0.20	
Status of remittance recipient: Yes (0) No (1)	53.1 46.9	15.7 21.7	35.7	<.001	0.08	
Status of land holdings: Yes (0) No (1)	71.2 28.8	15.1 27.0	114.9	<.001	0.14	
Access to nearest market: Better (0) Poor (1)	52.0 48.0	11.6 26.0	206.7	<.001	0.19	
Number of children under 15: At most two (0) More than two (1)	73.8 26.2	10.9 40.1	653.0	<.001	0.33	
Number of literate members of working age: At least one (0) None (1)	80.7 19.3	15.6 30.8	142.0	<.001	0.15	

Note. Figures within parentheses are binary codes; Sample size (n) = 5,988. *Source:* Computed from data of NLSS-III

All covariates except the sex of the household head are significantly associated with poverty. Male-headed households were not better positioned than female-headed households concerning poverty level. This finding contradicts the findings of other studies (Kona et al., 2018; Omoregbee et al., 2013). Nonetheless, our finding is analogous to the findings reported by some studies (Bhatta & Sharma, 2006; Edoumiekumo et al., 2014; Spaho, 2014). In order to explore this issue, a chi-square test of independence was also performed to determine whether there is an association between the sex of the household head and the status of the remittance receiver. A significant association was found ($\chi^2(1) = 491.5$, p < .001). Among the female-headed households, 76.8% were remittance receivers, while only 44.4% were remittance receivers among the maleheaded households. This result partially explains why male-headed households were not in a better position than femaleheaded households regarding the poverty measurement.

Among the significantly associated covariates, the effect size of remittance is the smallest, and the number of children is the highest. Therefore, the smallest effect size of remittance indicates that remittance alone is not responsible for reducing poverty, which is consistent with the result of the World Bank (Uematsu et al., 2016).

The effect size of the number of children being the highest is due to several socio-demographic factors, including the varying fertility levels among different social groups of women educationally disadvantaged groups of women, since the adult literacy rate of women is 44.5% (CBS, 2011c). In the context of Nepal, the level of fertility is inversely related to women's educational attainment, decreasing rapidly from 3.7 births among women with no education to 1.7 births among women with a School Leaving Certificate (SLC) or above (Ministry of Health, 2011). As a result, it will take more years to see the benefits of improvement in household demographics.

Results of Binary Logistic Regression

The six significant covariates obtained from the previous analysis are candidates for the binary logistic regression model. The estimated binary logistic regression model results are presented in Table 3. The estimated model is statistically significant, as shown by the omnibus Chi-square test ($\chi^2(6) = 938.97$, p < .001). In addition, each beta coefficient is significant at a level <0.001.

The regression model is fitted well as assessed by Hosmer-Lemeshow Chisquare test (χ^2 (8) = 7.24, p = .51). A little exercise shows no severe problem of multicollinearity assessed through Variance Inflation Factor (VIF) as it varies from 1.01 to 1.47. Sixteen percent of the variation of the outcome variable (McFadden pseudo R² = 0.16) has been explained by the variations of independent covariates in terms of log-likelihood.

Table 3

Results of estimated binary logistic regression model

Characteristics	Beta	OR	S.E.	P-value	95% C.I. for OR
Literacy status of					
household head:		1.00		0.04	(4.05.2.51)
Literate	0.79	1.00	0.09	<.001	(1.86, 2.61)
Illiterate		2.20			
Status of remittance					
recipient:					
Yes	0.64	1.00	0.08	<.001	(1.64, 2.20)
No		1.90			
Status of land holdings:					
Yes		1.00			
No	0.43	1.53	0.08	<.001	(1.31, 1.78)
Access to nearest market:					
Better		1.00			
Poor	0.57	1.77	0.08	<.001	(1.52, 2.07)
Number of children					
under 15:					
At most two	1.55	1.00	0.07	<.001	(4.06, 5.42)
More than two		4.69			, , ,
Number of literate members					
of working age:					
At least one	0.25	1.00	0.10	<.001	(1.07, 1.56)
None	0.20	1.29	0.10	.001	(1.07, 1.50)
	-3.27	0.04	0.09	<.001	
Constant	-3.21	0.04	0.09	<.UU1	

Source: Computed from data of NLSS III

The sign of each regression coefficient is positive, which indicates that each disadvantaged group identified in this study is more likely to be poorer than the corresponding advantaged group. This fact is elaborated on below.

The head of the household in Nepal is considered the household leader and is responsible for the entire household resource management. If the household head is illiterate, he/she is likely to get a low-paying job, have less bargaining power, and

not be engaged in other economic activities. Consequently, the household income will be less, and the households' poverty level will be increased. In our study, the households headed by illiterate heads are 2.2 times more likely to be poorer than those headed by literate heads (OR: 2.20; 95% CI: 1.86 – 2.61), keeping the effects of all other covariates fixed. Our finding is supported by the findings of Teka et al. (2019), Imam et al. (2018), and Botha (2010).

The households not receiving remittance are 1.9 times more likely to be poorer than those receiving remittance (OR: 1.90; 95% CI: 1.64–2.20), keeping the effects of all other covariates fixed. Similar findings were found in the study carried out in Pakistan. Majeed and Malik (2015) reported that the risk of poor households was 43% less (OR = 0.57) among remittance-receiving households compared to households receiving no remittance. The findings of our study also aligned with the findings of Abrar ul Haq et al. (2019) and R. E. A. Khan et al. (2015). In this study, the remittance

association with each remaining covariate is examined using the Chi-square test, and the results are presented in Table 4. Interestingly, the percentage of households receiving remittance is significantly higher among the five disadvantaged groups than their corresponding counterparts, except for the group of households having more than two children. Despite this fact, the odds ratio for the likelihood of households being poor among the disadvantaged groups continues to be greater than one compared to their counterparts.

Table 4
Role of remittance

		% of households receiving remittance	Chi-square value	p-value
Literacy status of	Literate	49.0	50.0	< 001
household head	Illiterate	59.2	59.8	< .001
Status of land	Yes	49.8	(2.9	< 001
holdings	No	61.1	62.8	< .001
Access to the	Better	49.3	27.5	. 001
nearest market	Poor	57.2	37.5	< .001
Number of	At most 2	53.2	0.1	720
children under 15	More than 2	52.7	0.1	.739
Number of literate	At least one	51.2		
members of working age	None	60.8	34.5	< .001

Source: Computed from data of NLSS III

In order to escape from rural poverty, in the context of Nepal, the availability and access to different resources such as job opportunities, availability of land, and access to loans are very important. A person

having (not having) land is directly related to social prestige. A household not having a single piece of land generally has very limited access to getting loans, starting businesses, and getting land on rent, which brings constraints on the economic activities of such households, and ultimately the household poverty level increases. Our study has indicated that households with no land are 1.5 times more likely to be poorer than those with land (OR: 1.53; 95% CI: 1.31–1.78), keeping the effects of all other covariates fixed. Other studies corroborate this finding (Farah, 2015; Imam et al., 2018; Kousar et al., 2015).

In rural parts of Nepal, if the market center is far away and roads and feeder roads are not developed, it is very difficult for farmers and smallholders to sell their products and have access to credit. Postharvest food loss due to lack of cold storage centers and inadequate infrastructure significantly affects household poverty (Shively & Thapa, 2017). Our estimates have shown that the households with poor access to the nearest market are 1.8 times more likely to be poorer than households with better market access (OR: 1.77; 95% CI: 1.52 - 2.07), keeping the effects of all other covariates fixed. This finding is similar to the finding reported by Mamo and Abiso (2018).

Children are dependents, and households with more children require more income for education, health, food, and clothing. Because of this, the household poverty level will increase. Regarding this issue, our study has identified that households with more than two children are 4.7 times more likely to be poorer than households with less than or equal to two children (OR: 4.69; 95% CI: 4.06–5.42), keeping the effects of all other covariates constant. This finding is similar

to the findings of Myftaraj et al. (2014), who indicated that households that had two children decreased the possibility of being poor by 20% (OR = 0.8) but increasing one more dependent child increased the risk of becoming poor (OR = 1.03) for three children.

Supposed all members of working age in a household are illiterate. In that case, they are likely to get fewer opportunities for good jobs, be less aware of the opportunities provided by the government and market demand and be less familiar with the latest information and technology; consequently, they lag in social and economic activities. In this context, our study has found that households having no literate members of working age are 1.3 times more likely to be poorer than those with at least one literate member of working age (OR: 1.29; 95% CI: 1.07-1.56) keeping the effects of all other covariates constant. A comparable result was reported by Mamo and Abiso (2018) in rural residencies of Ethiopia (OR =1.4). Omoregbee et al. (2013) also found that the odds of less-educated farmers were 1.3 times more likely to be poorer than more educated farmers in Nigeria. Another study conducted in Pakistan concluded that an increase of one educated earner of any level in the household significantly reduces the risk of the household being poor by 11% (OR = 0.89) compared to the households having uneducated earners (Majeed & Malik, 2015).

Results of Classification and Discrimination of the Model

The sensitivity, specificity, and correct

model classification values are presented in Table 5 for two cutoff points, 0.5 and 0.16. The later cutoff point, 0.16, was identified by plotting the sensitivity/specificity in the

vertical axis against various probability cutoffs in the horizontal axis, as presented in Figure 1.

Table 5
Sensitivity, specificity, and correct classification value

Cutoff	Sensitivity	Specificity	Correct classification
0.50	20.80%	97.00%	82.50%
0.16	74.12%	65.57%	67.15%

Source: Computed from data of NLSS III

The percentage of poor cases correctly predicted by the model is 20.80 when the cutoff point is 0.50, whereas it is 74.12 when the cutoff point is 0.16. The overall correct

classification of the model considering a cutoff value of 0.50 is 82.50%, and it reduces to 67.15% when considering a cutoff value of 0.16.

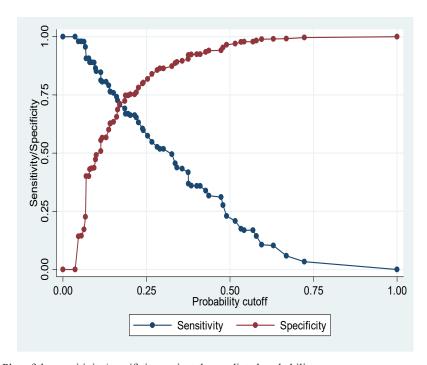


Figure 1. Plot of the sensitivity/specificity against the predicted probability

The ROC curve in Figure 2 shows that the area under the curve (AUC) is 0.78, which can be considered acceptable

discrimination of the developed model (Hosmer & Lemeshow, 2000).

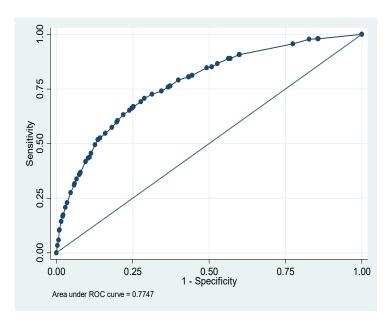


Figure 2. Plot of sensitivity versus 1- specificity

Diagnostics of the Fitted Model

In order to assess the diagnostics of the model, two plots are used. The plot of delta beta $(\Delta\beta)$ versus estimated probability and the plot of delta chi-square $(\Delta\chi^2)$ versus estimated probability with a symbol size proportional to delta beta $(\Delta\beta)$ and the model specification test results are presented below.

Plot of Delta Beta $(\Delta \beta)$ versus Estimated Probability

The influential statistic $(\Delta \beta)$ was plotted with estimated probability based on the fitted logistic regression model with 60 covariate patterns, as shown in Figure 3.

It can be seen clearly that only two data points are falling somewhat far away from the rest of the data. In the scatter plot of delta beta and the estimated probability, if the values of delta beta are greater than 1, there is an indication for an individual covariate pattern to influence the estimated regression coefficients (Hosmer & Lemeshow, 2000). Hence, this curve has indicated that overall, there is not much influence of the individual covariate pattern on the estimated regression coefficients except for two covariate patterns based on visual assessment.

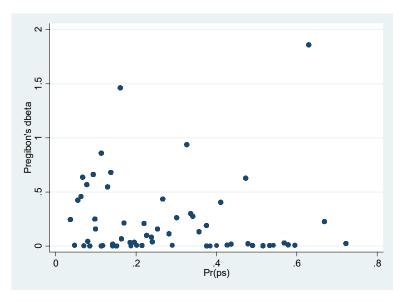


Figure 3. Plot of Pregibon's dbeta $(\Delta \beta)$ versus estimated probability

Plot of Delta Chi-square (Δx^2) versus Estimated Probability with Symbol Size Proportional to Delta Beta $(\Delta \beta)$

A scatter diagram of (Δx^2) versus estimated probability based on the fitted logistic

regression model with the size of the symbol proportional to $(\Delta\beta)$ is presented in Figure 4. This measure is used to assess the influence of pattern on the overall fit with symbol size proportional to delta beta.

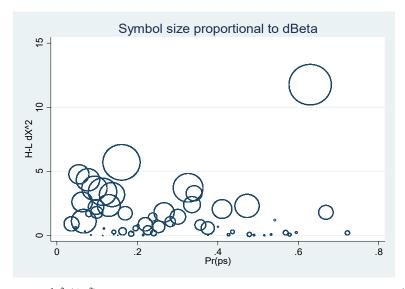


Figure 4. Plot of H-Ld x^2 (Δx^2) versus estimated probability with symbol size proportional to ($\Delta \beta$)

It can be observed clearly in Figure 4 that a few extremely large circles differently appearing are noted in the plot, and for all these circles except one, the value of $(\Delta \chi^2)$ is small. It indicates an influence of the individual covariate pattern on the delta chi-square and the regression coefficients but only for one covariate pattern.

Both figures (3 and 4) show very few (one or two) covariates outlying patterns. Further, the value of $(\Delta \chi^2)$ is not much higher, and only two covariate patterns have a $(\Delta \beta)$ value of more than 1. So, it can be concluded that the overall fit of the

developed model based on the considerable data size is not violated in diagnostic prospects.

Model Specification

In order to assess whether the final fitted model may need other independent covariates or not, a new regression model was run considering the model predicted value (\hat{y}) and the square of the predicted value (\hat{y}^2) as the independent variable with the original outcome variable. The results are presented in Table 6.

Table 6

Model predicted value and the square of the predicted value

	Coefficient	S. E.	Z	p-value	95% C. I.
ŷ	0.97	0.09	11.26	<.001	(0.80, 1.14)
$\hat{\mathcal{Y}}^2$	-0.01	0.03	-0.39	.696	(-0.08, 0.05)
Constant	-0.01	0.06	-0.10	.923	(-0.12, 0.11)

Source: Computed from data of NLSS III

The non-significant result of the regression coefficient of \hat{y}^2 indicates that the model is correctly specified.

Risk Assessment based on Factors Present in the Model

The risk of a household being poor (in terms of odds ratio) was computed based on several factors identified in the model, shown in Figure 5.

The risk of poor households increases continuously as the number of factors increases. The risk of poor households is six times more for households even only presenting any two factors than households not presenting any factor (reference category). This risk is likely to increase by ten times for households presenting any three factors. The conclusions and recommendations based on the empirical results obtained are presented in the next section.

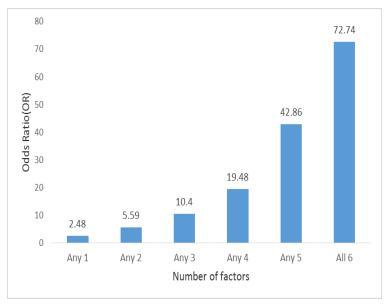


Figure 5. Risk of the household being poor in the presence of several factors

CONCLUSIONS AND RECOMMENDATIONS

This study identified six factors affecting household level poverty by developing a binary logistic regression model on nationally representative sample data of Nepal. The developed logistic regression model with these six covariates has satisfied the test of goodness of fit of the model and reasonably satisfied the regression diagnostics.

The identified factors are related to a broader construct of socio-economic empowerment of households. Moreover, the selected factors being household-level and policy-driven, the concerned authorities can easily implement poverty alleviation programs. Therefore, it can be considered a practical contribution of this study.

The study concludes that even a single literate member of working age in

household assists in reducing poverty as much as having a literate household head. It is an indication that many households are suffering from the problem of human capital shortage. Therefore, policies and poverty alleviation programs are to be directed toward building human capital, particularly in those households with inadequate human capital.

It can also be deduced that remittance is an important factor in reducing poverty. The household income increases as the number of remittance recipients increases and reduces poverty. Therefore, the government of Nepal must create a conducive environment where remittance recipients can utilize their money, and foreign-employment returnees can employ their skills in productive areas.

The results further infer that more than two children in a household aggravates household poverty. If the children of poor households are not given a proper education, then those households may get into the vicious cycle of poverty characterized by an intergeneration poverty cycle. Therefore, the government of Nepal must invest in providing proper education to children of poor households, particularly focusing on those households having more than two children.

In addition, the study identifies a household being landless as a factor that increases household poverty. Therefore, the government of Nepal must address the problems of landless households, either through official government documents or other reliable sources, formulate policies and prepare programs for reducing their problems. We anticipate that these measures will reduce the poverty of landless households.

The results also indicate that poor access to the nearest market center increases the likelihood of household poverty. Therefore, the government of Nepal needs to take the initiative to improve access to markets by developing infrastructure such as road networks, transport networks, cold storage, and electricity, particularly in the rural areas of the country. These measures will increase the connectivity between rural and urban areas and eventually reduce poverty.

This study might have missed incorporating some internal household characteristics (such as the occupation of the household head) and external factors (such as distance to health center) associated with poverty. Future research can be planned with the upcoming NLSS IV data, incorporating

other relevant variables. Different composite indices such as the household empowerment index may also be incorporated. The subgroup analysis for different provinces may also be attempted within the same statistical analysis framework based on these indices. Moreover, new studies can also be recommended to capture other community variables associated with poverty and the variables identified in this study in a wider domain using advanced statistical modeling such as multilevel modeling.

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Emotional Intelligence Online Learning and its Impact on University Students' Mental Health: A Quasi-Experimental Investigation

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ABSTRACT

This study has two aims: first, to compare the effectiveness of emotional intelligence intervention through online learning versus face-to-face (traditional) learning methods among undergraduate students at a local university in Malaysia. Second, it assesses the impact of emotional intelligence learning on students' mental health improvement. It is a 2 x 3 factorial quasi-experimental (online learning) using an equivalent control group (face-to-face learning) pre-post-test. Both experimental and control groups comprised 40 students, respectively. The study is set in a classroom and several computer labs in the designated university e-learning facilities. Mixed ANOVA repeated measures analysis results indicate that the online learning group shows no difference from the face-to-face learning group in emotional intelligence learning. Despite that, this study significantly

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impacts the growth of emotional intelligence skills on students' mental health among online learning groups. In addition, there is improvement in students with depression over seven weeks of pre-post-test. We propose online learning to be as effective as face-to-face learning in teaching emotional intelligence in light of these findings. We further argue that online learning is more accessible and meaningful to undergraduate

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students' emotional intelligence. This study suggests that emotional intelligence is a crucial skill for students to maintain optimal mental health during their studies. Nevertheless, further investigation is needed to develop a feasible and cost-effective online learning medium accessible to students of all backgrounds.

Keywords: Emotional intelligence, mental health, online learning, undergraduates

INTRODUCTION

Emotional intelligence (EI) is one of the crucial factors contributing to personal and professional success and perseverance in life (Hamdzah et al., 2016). EI is an integration of personal and social competencies, collectively known as soft skills (Daniel, 2007). There is adequate evidence that shows a significant correlation between high levels of EI with strong academic achievement and an excellent future (Rai & Khanal, 2017), high competency in problem-solving (Goleman, 1998), and soft skills including self-awareness, self-management, and maintaining effective relationships (Goleman et al., 2013).

Adjustment to the demands of university life can be hard for some university students due to academic pressures and workloads and other physical, social, and emotional challenges (Dev & Rahman, 2016). Students may manifest psychological and physiological stress symptoms during this adjustment process through mood disturbance, destructive behaviors, depression, anxiety, and eating disorders

(Cooley et al., 2007). For instance, a longitudinal study conducted in Malaysia by Khraisat et al. (2015) that assessed EI among undergraduate medical students reported a significant decrease in EI scores throughout their five years of study. This decrease in EI scores among medical students is related to poor mental health and well-being caused by coping with difficult academic expectations and the breakdown in personal and social interactions. Similarly, other studies on Malaysian university students suggest that negative EI is correlated with frequent symptoms of negative psychological health, such as low self-esteem, social anxiety, suicidal ideation, and depression (Abdollahi & Abu Talib, 2016; Vishal et al., 2017). Interestingly, another health behavior study among university students also suggests a strong relationship between low EI and risk behaviors among university students. In addition, the study reported that several components in EI, such as appraisal and optimism, significantly predicted a person's consumption of alcohol and tobacco. Thus, this indicates that cultivating EI can be a potential intervention for better mental health adjustment among Malaysian university students (Malinauskas et al., 2018).

EI can positively influence students' mental health adjustment in their education, which may benefit their future career development. For instance, studies by Naz et al. (2019) and Davis (2018) illustrate a significant positive relationship between EI learning and students' career achievement and satisfaction. EI learning

improves a person's soft skills by enhancing cognitive skills, coping adjustment, and mood regulation. Furthermore, a study by Saklofske et al. (2007) also suggests that undergraduates with a positive EI also demonstrate positive life satisfaction and happiness. Consequently, EI constitutes an important factor in supporting students psychologically in university. Soft skills in EI can also potentially promote career growth, as they are increasingly in demand by employers today.

Some meta-analysis studies have concluded that emotional capabilities can be improved through an EI training program using either a pre-post or treatment-control design (Hodzic et al., 2017; Mattingly & Kraiger, 2019). However, despite significant evidence on the importance of EI, there is still a limited number of studies conducted on the effects of EI among undergraduate students enrolled in various university programs (Alexander, 2014; Conley, 2015; Jensen et al., 2007; Lin et al., 2011; Pool & Qualter, 2014; Salami, 2010). Since EI is not explicitly included in university syllabi, it has not been taught adequately, particularly among undergraduates (Beard & Schwieger, 2008). Online learning is thus an innovative way of teaching and learning in education, where information and communication technologies are increasingly crucial (Amhag et al., 2019). E-learning has been suggested to reduce costs and enhance learning technologies, particularly in university-level education (Ali, 2017). It is illustrated by higher exam passing rates, especially among students enrolled in online learning platforms (Scarabottolo, 2019). However, there are still insufficient evidence-based studies on the effects of EI that predict online-learning behavior (Kruger & Blignaut, 2013) and how online learning as a mode of instruction may improve EI among university students (Cotler et al., 2017).

A study by Peluso et al. (2011) shows that psychologists are among the most common professionals to report mental health problems and low levels of life satisfaction. It is thus important to equip students studying psychology with the proper skills to promote mental and emotional well-being during their academic and professional training to prevent potential future pressure while providing consultation in the future (Dunn et al., 2008). However, according to de Vibe et al. (2013), there is a scarcity of properly designed and efficient intervention studies to address mental health concerns among the students. Hence, this study attempts to be the first intervention studying EI through online learning in psychology undergraduate programs. It also examines whether EI is better taught through online or face-to-face learning.

In line with the evidence offered by literature, we can generally hypothesize that the types of teaching strategies used are responsible for the student's emotional intelligence learning, particularly for students studying psychology. Accordingly, the following hypothesis is formulated:

 The online learning group's emotional intelligence will achieve a higher score than the control

- group who took the face-to-face learning group.
- The following section discusses the details of the research methods followed in the study.

METHODOLOGY

Study Design

It is a quasi-experimental study using a parallel control group pre–post-test design to compare the effectiveness of teaching emotional intelligence through online learning or in-class teaching. The study design model is represented in Table 1.

Table 1
Intervention study design

Group	Pre-test	Intervention	Post-test
Experimental Group	OE1	X	OE2
Control Group	OC1		OC2

Note. OE (Outcome Experiment), OC (Outcome Control), and X (EI Learning methods)

Participant Recruitment and Procedure

The experimental and control groups were recruited with the collaboration of the Psychology and Counselling Department, Sultan Idris Education University (UPSI), located in Malaysia. The recruitment of respondents for this study is funded by a university research grant intended only to include UPSI's students. To standardize participant background, the experimental and control groups comprised third-year students from the same batch; however, they were later divided into two groups of equal size. In addition, both groups were enrolled in the same theoretical psychology course for two consecutive semesters. However, they rarely intermingled due to the different course schedules set by the university administration. Furthermore, a pre-test was conducted to ensure the level of EI is the same before imposing a learning strategy.

When the participants were recruited, the aims and details of the study were explained to both experimental and control groups. All students who participated in this study have been granted their consent. This study was conducted using the G^* power soft program 3.1 to determine the minimum sample size as suggested by Choi et al. (2015). The level of power was set at 0.8, with an α level of .05, an effect size of .50, and the minimum sample size was determined to be 21. Thus, an equal number of 40 participants each in the experimental group and control group met the appropriate sample size.

Research Data Collection

Data were collected from February 2018 through May 2018 over seven weeks, with one session running each week as part of an undergraduate psychology course at UPSI.

The course consists of two-hour lectures and a one-hour tutorial weekly. Both groups received EI learning sessions during their 1-hour tutorial class, either through online or in-person instruction. Both pre-, midand post-tests were applied to both the experimental and the control groups. Pretesting was conducted in the first week, mid-testing after the third week of the EI learning session, and post-assessment was performed during the final session of EI learning (Table 2).

Research Procedure: Learning Emotional Intelligence Online vs. Face-To-Face

Both groups participated in seven sessions of the experiment over seven weeks, during which EI learning was taught through two different learning methods: online and faceto-face. Each participant was randomly assigned to either the experiment group (individual online computer-mediated learning) or the control group (face-toface instructional learning) for the whole series. Each session is based on different EI themes such as self-awareness, selfesteem, emotional expression, empathy, communication, and accepting differences, as conducted by Cotler et al.'s (2017) study. The EI themes were taught using standardized learning material developed by Cotler et al. (2017). Choi et al. (2015) served as a rich resource for this study's design by offering useful descriptions of each EI theme and providing relevant reality scenarios based on these themes in a short video or vignette format. These short videos

are related to the conflict between family and friends in daily life and the context of community mental health issues. After each EI learning session, students were requested to complete a self-reflection check—a list of open-ended questions designed to get the participants to reflect upon what EI skills they have learned. The self-reflection open-ended questions were developed based on the EI training and coaching manual by Hughes and Terrell (2012), which aims to stimulate the immediate outcomes of the EI learning on EI skills.

Each standardized EI learning session took approximately 15 minutes for each student in the computer lab. In contrast, the control group was taught the same session in the classroom through face-toface instruction. In addition, the online intervention group was required to complete EI learning tasks in an asynchronous format using a Google classroom learning medium. In contrast, the control group received full face-to-face instructions using PowerPoint and a video media player. A similar instructor taught all the face-to-face EI learning sessions to achieve consistency in the control group. EI learning in the classroom was also designed with limited instructor communication to minimize the impact of the instructor on the difference between online and face-to-face interventions. The detailed EI main contents that were adopted based on Cotler et al. (2017), Choi et al. (2015) and Hughes and Terrell (2012) for both the experimental and control groups are described in Table 2.

Table 2
EI learning for experimental (online learning) and control group (face-to-face)

Session & theme	Description
The first assessment (Baselin	ne)
1 st Module: Self-Awareness	Designed to encourage participants to understand different emotions and feelings, why a person might feel a certain way, and how well they may recognize and respond to their emotions. Students were then given a few questions to reflect on their self-awareness.
2 nd Module: Self-Esteem	Defined as confidence and satisfaction in oneself. Upon completion, students were given a few questions to reflect on self-respect.
3 rd Module: Emotional Expression	Explained how a person can accurately and effectively express their feelings to others. A diverse emotional vocabulary was also included for students to allow them to communicate their experiences by translating emotion and sensory data into verbal expression.
Second assessment (Mid-tes	t)
4 th Module: Empathy	Refers to how a person can be aware of, sensitive to, and vicariously experience the feelings, thoughts, and experiences of another.
5 th Module: Communication	Communication is the foundation of emotional intelligence, important in maintaining an effective interpersonal relationship. Communication skills were stressed in the session as crucial in social and emotional interactions between families and friends living and working together. Effective communication can enhance positive feelings deriving from establishing a strong human connection.
6 th Module: Accepting Differences	It entails recognizing and accepting differences without judgment for the well-being of the larger group and other individuals in the community. In addition, students were taught critical values such as respect and the importance of establishing and maintaining a reciprocal relationship between the members and the group.
7 th Module: Summary of Modules 1 – 6	All six EI themes were summarized in one short video in this session. In the end, they were required to reflect on EI learning in the preceding sessions.
Third assessment: Post-test	

Instruments

Respondent's emotional intelligence represents a global score using the short form of the Trait Emotional Intelligence Questionnaire (TEIQue) known as TEIQue-SF by Cooper and Petrides (2010), and mental health was assessed using the Stress, Anxiety and Depression scale (DASS-21) by Lovibond and Lovibond (1995).

Trait Emotional Intelligence **Questionnaire-Short Form (TEIQue-SF;** Cooper & Petrides, 2010). The TEIQue-SF questionnaire was divided into 15 distinct aspects of EI grouped into four main categories (well-being, emotionality, sociability, and self-control). TEIQue-SF consists of 30 items with the scoring responses ranging from 1 ("Strongly disagree") to 7 ("Strongly agree"). The higher the score was, the higher the level of EI trait. This measure has been studied through Item Response Theory and has demonstrated satisfactory psychometric properties (Cooper & Petrides, 2010). The Cronbach's Alpha on our study was .914, indicating excellent internal consistencies.

Depression, Anxiety and Stress Scale – 21 (DASS-21; Lovibond & Lovibond, 1995).

DASS-21 is derived from the full form of the DASS-42 scales designed to measure depression, anxiety, and stress with enhanced psychometric properties. There are seven items per scale, and each item is scored on a 4-point Likert scale. DASS-21 served as a severity measurement but not as a diagnostic tool. Its Cronbach's alpha indicated good reliability for the depression scale (α = .91), anxiety scale (α = .84) and stress scale (α = .90) in the normative sample (Lovibond & Lovibond, 1995). DASS-21 has also been translated into various languages and validated in different populations, including Malaysia (Ramli et al., 2012). The Cronbach's Alpha on our sample was .924, indicating excellent internal consistency.

Ethical Consideration

The ethics committee of Sultan Idris Education University (UPSI) approved the study prior to the data collection (Code: 2019-0009-01). Participants were informed of their rights, privacy, the confidentiality of survey data recorded, and the publication of the findings from this study. Participants were also allowed to withdraw during the study without explanation and without worrying that this would affect their performance in the course. Each administered questionnaire was coded as anonymous without identifying participants by name; the survey data was stored in a secure computer with an encrypted password.

Statistical Analysis

Research data in this study were analyzed using quantitative statistical analysis software SPSS 22.0. The characteristics of the participants were calculated by real number and percentage. A mixed analysis of variance was applied to assess the effects of different learning methods of EI on students' mental health. The 2 (EI learning

methods—online or face-to-face) X 3 (pre-, mid-and post-assessment: time 1[M1], time 2[M2], time 3[M3]) mixed analysis of variance (ANOVA) repeated measures, which evaluated students' EI and their mental health at three consecutive stages of the experiment. Therefore, four separate 2 X 3 mixed ANOVA was performed to compare the effects of online and face-to-face EI learning methods on emotional intelligence, stress, anxiety, and depression between the experimental and control groups pre-and post-the six-session EI module training as in Table 2. The assumptions of mixed ANOVA were independence, normality, and sphericity. Independence was assumed. The normality of EI, stress, anxiety and depression through online and face-toface learning was assessed. After deleting outliers, normality in all variables except depression was met satisfactorily. Since the sample was non-clinical, no severe or moderate depression scores were screened during the pre-testing (baseline). As a result, the distribution of the depression variable was skewed to the left. The negatively skewed depression variable was retained without modification for further analysis. Sphericity assumption for emotional intelligence, stress, anxiety, and depression was met with a Greenhouse-Geisser Epsilon of .90. According to the general rule of thumb by Tabachnick and Fidell (2019), the null hypothesis must be rejected if the Greenhouse-Geisser Epsilon figure exceeds 0.70.

RESULTS

Sample

Out of 80 undergraduate students recruited in this study, more than three quarter (83.1%) of the sample were female. It reflects the actual gender make-up of the population of psychology students in UPSI, which consists of female students in the majority. The distribution of ethnic groups in the sample was found to be disproportionate. Most of the sample were Malay (72.0%), followed by Indian (10.7%), Chinese (9.3%), and other (8.0%) ethnicities. Most of the respondents (67.1%) resided in urban areas, while the rest (32.9%) were rural.

Emotional Intelligence Learning

Results showed that the main (assessment time, EI learning methods) and interaction effects pre-assessment (M1), mid-assessment (M2), and post-assessment (M3; assessment time x EI learning methods) were not significant for the EI variable (Table 3). In addition, the EI scores of the students appeared unchanged throughout module implementation. Findings suggests that both experiment and control EI learning methods do not influence students' EI scores.

The Mental Health Scores (Stress, Anxiety, and Depression)

However, despite insignificant findings on EI learning, notable changes were found in students' mental health scores. Results of mixed ANOVA for stress, anxiety, and depression are reported in the following sections.

Table 3

Results of the influence of EI learning on EI variable and mental health by using mixed ANOVA

Variable	F ratio	p-value	Effect size
	Emotional Intellige	nce	
Time	1.89	.156	.03
EI learning methods	3.15	.081	.05
Time X EI learning methods	0.375	.675	.01
	Stress		
Time	6.61	.002	.09
EI learning methods	0.80	.131	.03
Time X EI learning methods	2.09	.375	.01
Anxiety			
Time	5.49	.006	.08
EI learning methods	0.10	.756	.00
Time X EI learning methods	4.19	.020	.06
	Depression		
Assessment Time	4.03	.024	.06
EI learning methods	1.71	.196	.03
Time X EI learning methods	0.22	.780	.00

Note. EI (Emotional intelligence); EI learning methods (Online and Face-to-Face), Time (Assessment Time)

Findings reveal a significant effect of assessment time on students' stress scores. The students' stress scores gradually decreased when attending the EI learning at pre-, mid-, and post-assessment time (M1 = 15.16, M2 = 15.80, M3 = 13.19). The follow-up pairwise comparison indicates that the stress scores were significantly different between the first and the third EI assessment. Stress scores were lower in the third assessment compared to the first assessment. However, the main (EI learning methods) and interaction effects (EI learning methods x assessment time) were insignificant. Findings suggest that

both experiment and control of EI learning methods have no significant difference in students' stress scores.

The anxiety variable's interaction effect (assessment time x EI learning methods) was significant. As a result, a follow-up analysis was performed. Two repeated-measures ANOVA was performed by EI learning methods. It was found that the anxiety scores of participants who participated in EI online learning were lower than those who received face-to-face instruction. Anxiety scores of students in EI online learning appeared to be decreasing as the experiment progressed (F(2, 62) = 6.72, p = .005, ES = .18). There

was a significant difference in the anxiety scores between the second (mid-) and third-time assessment of EI online learning (M1 = 14.94, M2 = 15.31, M3 = 11.38). However, no significant changes were reported on the anxiety scores of students who received face-to-face learning (F (2, 70) = 1.24, p = .297, ES = .034). Findings suggest a significant discrepancy between experiment and control groups of EI learning methods in students' anxiety scores.

For depression, the main effect (EI learning methods) and interaction effect (assessment time x EI learning methods) were reported insignificant. However, there was a significant main effect of time on depression scores (Table 2). Results found a decrease in the depression scores over the three stages of the experiment at pre-, mid-, and post-assessment (M1 = 9.18, M2= 8.33, M3 = 6.98). Depression scores were significantly lower at assessment time 3 of EI than assessment time 1 of the EI learning. Furthermore, the study suggests significant differences in both experiment and control groups of EI learning that influence students' depression scores.

Although EI learning positively influenced the student's mental health, the reported effect sizes were relatively small. For example, effect sizes for significant main effects for stress (at 9%), anxiety (8%), depression (6%), and interaction effect (anxiety X EI learning, at 6%) were all less than 10%, respectively. Small effect size indicates assessment time, and assessment time x EI learning methods only explained a small contribution to the overall variances in mental health variables.

DISCUSSION

The main goal of this study is to compare the effectiveness of online-based versus face-toface teaching in emotional intelligence to determine which pedagogical method could make emotional intelligence (EI) learning more effective in improving the mental health of undergraduate students (EI). This study suggest that both experimental and control groups show no significant differences in the effectiveness of learning EI in using either method. Thus conclusively, online learning may not necessarily be more effective for teaching EI than faceto-face in-class teaching. Furthermore, it is supported by other comparative studies (Kotsou et al., 2019; Scarabottolo, 2019) that suggest that there is no significant difference between online and traditional learning. Nevertheless, the significant effect of EI online learning on mental health outcomes may suggest that providing EI online learning skills can act as a better intervention for students with mental illnesses such as anxiety and depression.

Theoretically, several meta-analyses suggest that performance-based training on EI skills is suitable for a person with stress and depression symptoms, particularly for the individual's well-being (Sánchez-Álvarez et al., 2016). For instance, people with higher EI skills show a lower apprehension of stress (Zhang et al., 2016), are better able to sustain higher self-esteem and self-efficacy (Salguero et al., 2015), and experience higher levels of happiness and gratification (Ruiz-Aranda et al., 2014). They are moreover able to promote

positive emotions and well-being (Zeidner et al., 2012), highly possible to create and maintain relationships (Lopes et al., 2005), and experience less emotional distress when facing a stressful situation (Gohm et al., 2005).

Furthermore, a recent systematic review of fifteen studies that assessed the effects of EI training on psychological health and wellbeing shows a strong correlation between the two (Kotsou et al., 2019). As in this study, the decrement in mental health measurement among the group participating in EI online learning constitutes strong evidence that EI online learning may not directly change the trait of EI as measured but is nevertheless effective in decreasing students' anxiety and depression. These promising findings prove that there is great potential for future research to explore the effectiveness of teaching EI through online learning as a feasible and cost-effective alternative to traditional class teaching. Moreover, the practical implication of this study would be the integration of EI online learning with the main syllabus by using a blended approach. It could be offered as psychological support for the university students besides the formal psychological intervention in university counseling services, particularly during uncertain circumstances such as the recent COVID-19 pandemic that is significantly associated with an increased risk of mental health disorders among the university students (Barros & Sacau-Fontenla, 2021).

By integrating what is known from the literature with new insights found in this study, EI online learning could be recommended as an additional way to promote the positive psychological well-being of undergraduate students. Interestingly, in a study among nursing students, Fernandaz et al. (2012) stated that EI training should be included in the academic program because nurses' job involves human interactions that expose them to various negative changes in EI. Corresponding to this suggestion, integrating EI online learning in the current academic curriculum is another way for future studies to examine the effects of similar EI online learning on a larger scale, with more participants from various academic programs across multiple higher education institutions. Furthermore, the significant effect of EI learning on mental health may provide insight on how to support and care for undergraduate students with EI traits who are struggling with negative emotional experiences during the COVID-19 pandemic outbreak (Moroń & Biolik-Moroń, 2021). Thus, a comprehensive study would serve as a concerted effort to teach EI skills to help undergraduate students enhance their EI to cope with any mental health issues and achieve their educational goals and aspirations.

This current study shows that EI training consisting only of short online learning sessions (10-15 minutes) over seven weeks may not be adequate to promote a strong learning impact. It justifies the negative correlation between the learning method and EI measurements in current findings. Referring to the duration of EI learning, Kotsou et al. (2019) have

conducted a systematic review comparing the effectiveness of 46 studies on EI training methods, which suggests that EI increases with long-term training. Thus, future research should also consider basic EI skills such as the emotional perception that suits the training duration (short or long-term effects of intervention; Geßler et al., 2020).

Similar to many previous EI training studies, such as those conducted by Cotler et al. (2017), the EI learning in this study was focused on enhancing the overall EI component rather than differentiating the components of EI. It makes it complicated to understand how EI training works. Therefore, future research should focus on learning specific EI components rather than all EI components, as Schutte et al. (2013) suggested. Furthermore, as suggested by Geßler et al. (2020), future research should consider the EI measures used, as both performance-based and self-report measures of EI must be considered in EI training outcomes. Both measurements involve different mental processes and outcomes; performance-based measures examine how well individuals can solve emotion-related problems, while self-report measures track a person's typical behavior. Future experimental studies should be conducted in a controlled environment for respondents that exclude certain possibly disruptive variables (such as several major concurrent exams). It may help test the effectiveness of the online teaching method or identify aspects of traditional EI faceto-face teaching that should be maintained. Finally, scholars have yet to agree on

whether face-to-face or online would best ensure continuous EI learning—a topic that may require further investigation.

CONCLUSION

This study which serves as a pilot study on the influence of EI on mental health among Malaysian undergraduate students is subject to limitations, such as a small number of participants in the experimental and control group. For this reason, the study's sample size should be enlarged, and it should be done in different university settings across Malaysia to generalize the findings further. However, before researching broaderscale EI online training, prior studies confirming the fundamental factors affecting EI variables not observed in the current study must be conducted first. A future study is recommended to conduct the pretest measures to standardize the recruited participant to reduce the intervention biases. Many other studies of EI interventions have similarly used various types of analysis of variance (e.g., repeated measures ANOVA and MANOVA) to examine the effects of EI interventions. These methods may have serious limitations, such as assuming measurement invariance across groups and time (Crayen et al., 2011). Besides that, in the current study, EI psychometric measures utilized were on trait-based EI. The metaanalysis study on EI training effectiveness by Hodzic et al. (2017) confirms that it is easier to develop ability-based EI and related explicit knowledge than traitbased EI. Thus, it is recommended for future research to look at ability-based EI psychometric measures.

This study compared emotional intelligence (EI) learning effectiveness between online and traditional methods. The results concur with previous research that suggests no difference in EI growth between the online and face-to-face groups. Nevertheless, interestingly, teaching emotional intelligence influenced another critical area significantly: students' mental health and well-being. Therefore, this model is appropriate in higher education and organizational settings as it promotes general EI skills in online platforms, thus making its implementation in bigger institutions feasible.

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Eurocentrism Reconsidered: (Re)writing the History of the 'Other' in Tariq Ali's *Shadows of the Pomegranate Tree* and *The Book of Saladin*

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ABSTRACT

This article examines the reconstruction of Eurocentric representations of religious minorities of post-Reconquista Spain and Jerusalem through Tariq Ali's novels, *Shadows of the Pomegranate Tree* (1992) and *The Book of Saladin* (1998). These novels suggest that the reconfiguration of history and the analysis of the traumatic experiences of characters such as Zuhayr and Saladin challenge the essentialist notion of Eurocentrism. The paper explores the narrative approaches and procedures employed in the novels to articulate the sufferings caused by the sidelining and elimination of Muslim and Jewish minorities. The study relies on concepts formulated and explicated by postcolonial critics like Fanon, Said, and Spivak in their critical works as its theoretical premise. We argue that the postcolonial outlook has the potential to challenge Eurocentric historical accounts,

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E-mail addresses: Zakalhaidary786@gmail.com (Zakir Hussain) Mishra.binod@gmail.com (Binod Mishra) *Corresponding author "Other" and intertwines these memories to form new compatibility across ethnocultural and religious polarization. This study demonstrates that revealing the brutality implicit in the reasonable practices of nation-building conditions causes a crisis in Eurocentric historiography.

as it revives the forgotten memories of the

Keywords: Culture, Eurocentrism, historiography, marginalization, other, postcolonial theory

INTRODUCTION

Tariq Ali's The Islam Quintet¹, written during the last two decades, has been his main intellectual project. The first novel of the quintet, Shadows of the Pomegranate Tree (SPT) (1992), narrates the struggles of Muslim and Jewish minorities trying to preserve their culture and material wellbeing. SPT tells the saga of a Moorish family, Banu Hudayl, following the Spanish Reconquista² and the ultimate fall of Muslim Granada to Christendom. The title refers to a grove of trees in the family's courtyard and the Muslim civilization's legacy of turning Andalusia into a garden and making it productive through Arab irrigation techniques. This tale is narrated through the voices of multiple characters, both Muslims (such as Umar and his family members) and a Jewish character (Juan the Carpenter), who undoubtedly find themselves in a challenging position. Ali (1992), in this narrative, presents authentically the everyday aspects of Jewish and Moorish life, customs, and culture, as well as carefully structured conversations regarding the eventual fate of their religion. It also depicts the dilemmas

of a community's willingness to live in a space (Granada) they believed to be their homeland. However, according to Saman Ashfaq, they "ended up as victims of the politics of men and ideologies" (2018, p. 373). The Inquisition caused drastic changes in the lives of the Moors and the Jews, who were reluctant to become conversos. They were oppressed and exposed to innumerable forms of prejudice and violence.

The next novel, The Book of Saladin (BS) (1998), depicts the life of Salah al-Din Ayyubi, a twelfth-century Kurdish Muslim fighter, and his interactions with people of various faiths to emphasize the necessity of religious cohesiveness. Ibn Yakub, a Jewish scribe, records the life history of Saladin. Ali's fictional characters like Shadhi, Ibn Yakub, and Jamila give a different perspective on the documented history. Saladin is concerned about Jerusalem, or al-Kuds (Arabic name for Jerusalem), at the center of religious conflicts throughout the novel. The Christian crusaders are depicted as rapacious, ruthless, and intolerant. Ali (1998) highlights the ferocity of the Franj (Western Crusaders), who fight Muslims and Jews like barbarians, but Saladin allows his Christian subjects to practice their faith even after capturing Jerusalem. BS is set in three separate transcultural locations; the first is in Cairo, which portrays Sultan's family background and youthful memories. Many of Sultan's anecdotes and combatready preparations for capturing Jerusalem are reported in Damascus. Jerusalem gives a vibrant picture of the camps, soldiers, battles, and the Sultan's efforts to recapture Jerusalem.

¹ A series of five historical novels which comprises: Shadows of the Pomegranate Tree (1992); The Book of Saladin (1998); The Stone Woman (2000); A Sultan in Palermo (2005) & Night of the Golden Butterfly (2010).

The time after the collapse of the Nasrid Kingdom of Granada in 1492 to the Christian Kingdoms in the history of the Iberian Peninsula. This period witnessed the forceful conversion of Muslims to Christianity, forbidden from observing their traditions; their culture was completely suppressed.

The Book of Saladin refers to an earlier history than the period depicted in Shadows of the Pomegranate Tree, which in the present paper is argued as Ali's deliberate strategy to challenge the Eurocentric representations of Muslims and Jewish minorities. These fictional works highlight the subjugation of religious minorities by the monarchs—Isabella and Ferdinand. Their "intolerant principle of autonomous ethnic or cultural homogeneity and difference" sees minorities as a "problem to be resolved or eliminated" (Young, 2012, p. 31).

These novels rewrite the Eurocentric history of Muslim and Jewish minorities on the margins of Europe through a postcolonial perspective. The narratives comprise flashbacks about their critical transcultural encounters recounting memories of Muslims in Spain, the Crusades, and European colonialism, forming multi-directional connections across different histories. Ali, through these works, is "capable of examining Islam from an insider's perspective in a variety of subtle ways, while sometimes also voicing criticism of religious practice and cultural accretions" (C. Chambers et al., 2019, p. 76).

These novels foreground the uncertainty of survival and call into question the emotive and mental aspects of the relegation and segregation of minorities. In this regard, this paper attempts to study the representation of marginal religious groups of Post-Reconquista Spain and Jerusalem on the periphery of Europe to foreground their situation. These marginal groups have been barely referred to in Eurocentric historical sources, such as Madden (2004), Nerval

(1872/2012), Chateaubriand (1814/1822), and Ehrenkreutz (1972). If these groups are documented, they have been depicted as brutal and oppressing. Famous Western Orientalists like Louis Bertrand and Charles Petrie have praised the brutal extermination of Moorish Muslims in pronouncements like, "one of those bastard countries which live only by letting themselves be shared and exploited by foreigners, and have no art, or thought or civilization proper to themselves" (1934, p. 228). Carr, instead, sees this expulsion as "a powerful majority seeking to remake or define its own cultural identity through the physical elimination of supposedly incompatible minorities" (2009, p. 8). However, postcolonial critic Young presents a different view of the situation. He opines that al-Andalus under Islamic rule "involved a thriving commercial as well as intellectual culture, one in which Muslims, Jews, and Christians lived together in a relative equanimity that would be unparalleled in Christian Europe until the last decades of the twentieth century" (2012, p. 32). He further argues that "the history of the practices of toleration in Islamic societies" is such where "otherness is included rather than excluded" (p. 22).

Therefore, it is crucial to examine Eurocentrism³, which mediates all other histories throughout the history of Europe. Eurocentric representations

³ Eurocentrism emphasizes European concerns, culture, and values at the expense of those of other cultures. It assumes permanent superiority over all other cultures. Revisionist historiography looks at the longer duration, where the interactions between other cultures are traced. Scholarly works critical of Eurocentrism advocate deconstructing Eurocentric biases and call for a paradigm shift.

need to be demystified, rewritten, and challenged because it imposes "its cultural tastes, aesthetic preferences and criteria for judgment on the colonized" (Young, 2013, p. 687). This research examines how these novels portray a complex, multifaceted vision of Muslim cultures and histories and how different cultural expressions create opposing cultural identities to revolt against Christian totalitarianism through postcolonial agency and determinism. The postcolonial theory aims at comprehending the dynamics of colonialism and anticolonialist ideologies on political, social, and cultural levels.

METHODOLOGY

Postcolonialism as a theory "attempts to reform the intellectual and epistemological exclusions of [the Western] academy, and enables non-Western critics located in the West to present their cultural inheritance as knowledge" (Gandhi, 1998, p. ix). The postcolonial approach examines the devices of colonial supremacy to recuperate excluded or marginalized voices and theorizes the intricacies of colonial and postcolonial identity. Postcolonial literature plays a significant role in re-establishing native expressions, cultural heritage, local histories, and geographies of marginalized communities. Indeed, such re-articulation of marginalized sensibilities and experiences is crucial because the legacies of these victims are prey to Eurocentric textual appropriation. Frantz Fanon elaborates on the point of natives as the passive subject of Western historiography. Colonialism is

not satiate with simply enslaving individuals and stripping the native's mind of any shape or content. He states that "by a kind of perverted logic, it turns the past of the oppressed people and distorts, disfigures and destroys it" (Fanon, 1961/1963, p. 161).

Following Said's Orientalism (1978), postcolonial critics have examined how Eurocentric representations of the Muslim world serve the political welfares of the West. Eurocentric discourse plays a significant role in promoting the colonial authorities of the West to govern and fashion "the Orient politically, sociologically, militarily, ideologically, scientifically, and imaginably during the post-Enlightenment period" (Said, 1978/2003, p. 3). So, the reversal of stereotypical colonial appropriation is a crucial strategy in recovering the peripheral cultures of Western civilization. Postcolonial critic Spivak describes such subversive strategies as "a careful deconstructive method, displacing rather than only reversing oppositions" (1999, p. 244). Ali, in these novels, transfigures the imperial artifact of the "Other" by evoking and obliterating Eurocentric stereotypes at the same time. Such a strategy shifts the representation of identity from the Eurocentric view to the writing space.

The paper critically examines the first two novels, namely, *Shadows of the Pomegranate Tree and The Book of Saladin*, which expose the discriminatory attitude of Christian Spain and Jerusalem, during the Spanish Inquisition and the King's Crusade, towards the native Muslims and Jews by engaging them into a series of historical

events. Native minorities are persecuted and discriminated against by Anglo-Spanish Catholics because of their differing religious practices. The critical parameters of the study emerge from an investigation of the postcolonial context to rewrite Eurocentric discourses. In postcolonial theory, "Othering" refers to how colonial discourse generates its subject matters. It is "a dialectical process because the colonizing Other is established at the same time as its colonized others are produced as subjects" (Ashcroft et al., 2007, p. 168). "Othering" is the act of judging everyone different as being less than completely human, and "it divides the world between 'Us' (the 'Civilized') and 'Them' (the 'Others' or 'Savages')" (Tyson, 2006, p. 420). Besides, the paper explores the ideological othering of the native Muslims and Jews by using the critical formulations of postcolonial critics, such as Frantz Fanon's concept of "the Other." Fanon instancing the "Other" in his book, The Wretched of the Earth, states that the governing race is first and foremost those who come from elsewhere, those who are unlike the original inhabitants, "the Others" (1961/1963, p. 40). The colonized subject is described as "Other" through discourses that construct binary division to demonstrate the colonizing culture's naturalness and superiority. In colonial discourse, the subjectivity of the colonized is continually located in the colonizer's gaze. We shall examine in the next section how the Self/ Other dichotomy is discursively formed by power structures aimed at projecting minorities as inferior. Further, the section will also emphasize the "Other" capacity to overcome recurrent Othering processes implicit in Eurocentric discourses.

RESULTS AND DISCUSSIONS

Central and Peripheral Culture

Eurocentrism has created a center/periphery polarization in which European culture is at the center, and this cultural center silences minorities and pushes other cultural groups to the periphery. The notion of center and periphery depends on the outlook of the observers. Concerning colonialism, the imperialistic stance of any country motivates it to proclaim itself as the center—a strong, controlling, dominant, oppressive, and imposing body of governance. Against this background, the occupied territory, oppressed, ruled, marginalized, remains obedient and submissive to the center. Eurocentrism constitutes an authentic paradigm of Western ideology, which, as Thomas Kuhn observes, "is internalized to the point that it most often operates without anyone noticing it" (1970, p. 61). If we adopt William Egginton's notion of "the major" and "the minor," the center henceforth becomes "the major," and the periphery becomes "the minor strategy" (2010, pp. 4-6). The center attempts to persuade us that what is presented is true when it is only a representation and framework for something that does not exist. Such a representation contradicts reality. Because of the center/ periphery conflict, the peripheral culture either surrenders to the mode of the new center, thus, pushing their habits, customs, traditions, and opinions, or shows resistance towards the socio-cultural politics of the presumed dominance, intending to reject it.

SPT begins with Banu Hudayl—a Muslim family living in the al-Hudayl village, along with the Jews, Muslims, and other marginalized societies. These societies are under the direct control of the Christian culture. In reversing the gaze of Eurocentric historiography, the central/peripheral contrast is defined in terms of ideological expressions. On one end is the dominating, suppressive societies; on the other are the marginalized, suppressed societies. The historians, in their representations, leave out these peripheralized societies in their consideration of "real events and processes in the past" (White, 2005, p. 150). Thus, the central culture is responsible for the relegated status of peripheral societies. The marginalized societies attempt to shatter the oppressive social power with the artillery of ideology and exercise their ideology and cultural expressions. History shows that peripheral societies have experienced difficulties promoting themselves above their marginal strata. The more significant constraint of less advanced societies seems central to unequal development.

Scholars such as Malik et al. (2013) and Gamal (2017) have celebrated Ali's attempt to interweave the life stories of Muslims from diverse topographies and historical eras through multidimensional narrations. The promotion of a complex and vivid interpretation of society by integrating fiction with the application of fragments and recollections and the practices of mirroring and redoubling is an integral element of

Ali's novels. Mahjoub Jamal stresses the importance of literary works as a means of thoughtful expression and communication. Regarding the influence of the past on the present, he mentions in his lecture The Writer and Globalism that literature "can link the diverse cultures which are now. for better or worse, stuck with one another, and whose encounter now defines the world we live in" (quoted in Mohammad, 2017, p. 319). Certainly, set in different spaces within Europe and the Middle East, the novel's multicultural characters and multifaceted experiences throughout centuries portray their subversive skirmishes with identity politics. These narratives delve into the historical interactions and deal with the Middle Eastern and European cultures. A significant strength of the novels is that the marginalized people in Europe "become the subjects rather than the mere objects of European history" (p. 319). Ali's unique narratives invoke imaginings from bygone ages. These novels hold a momentous significance since they symbolize superimposed memories of the ancestors of Umar, their former workers, as representational palimpsests. They revive memories of European colonialism, ethnic superiority, Umar's detestation of the imposed culture, and his nuanced experiences in Banu Hudayl's family. The multilinguistic and multicultural structure of al-Hudayl in Gharnata "immediately invokes the movement of peoples, histories, and cultures that underlines the continual sense of historical transformation and cultural translation, making it a site of perpetual transit" (I. Chambers, 2008, p. 32).

In SPT, a pivotal moment occurs when Zuhayr and his companions are found in political discussion in the public bath, discussing how the recent sequence of atrocities had "subjected and annihilated them through the force of their oppression" (Ali, 1992, p. 13). Muslims and Jews were compelled to convert because of oppression. The death of the *faqihs* (religious scholars) was the immediate result, leading to despair and fatalism. One of Zuhayr's friends, Ibn Daud, shares information that he had heard in Balansiya (Valencia) about how the inquisitors were preparing to deliver the deadly blow. He adds that "Arabic will be banned on pain of death. They will not let us wear our clothes. There is a talk that they will destroy every public bath in the country. They will prohibit our music, our wedding feasts, our religion" (p. 79). The conversation between Zuhayr and his friends suggests that the European Christians of this region were adamant about creating a homogeneous society. According to their expectations, this society could be unified in language, culture, and religion to provide an objective base for the expanse of the Western state. This collective consciousness was attributed to adapting the Muslim culture described in SPT as a peripheral society to their demands. Saladin's great revolution in BS shatters this notion of Western collective consciousness. With this revolution, "things that are long forgotten remain hidden in dark corners, suddenly emerge into the light" (Ali, 1998, p. 3).

Saladin's accession to power follows the incongruous portrayal of the fall of Muslims in Spain in SPT in BS. In conversation with his scribe, Saladin says, "Yet the real day is not so far away, Ibn Yakub. Our people soon will return to al-Kuds. The city of Tyre and Acre, of Antioch and Tripoli, will once again belong to us" (p. 33). As the story unfolds, Saladin reclaims lost territories and subverts the notions of center/periphery and Europeanization imposed by external forces. In BS, Saladin achieves absolute power in the Islamic World, where "Islam constitutes not only a cardinal component of Muslims' identity but also becomes a prominent feature in the identity of non-Muslims who happens to live in Muslim communities" (Malak, 2004, p. 124).

The comparison shows the fluctuating nature of Muslim revolts, oscillating between the poles of Muslim identity and Western colonization or the debilitating fragmentation volunteered by religious conflicts and ethnic affiliations. These two novels contrast the Christian civilization of Europe with its periphery Muslims, favoring the latter by portraying them positively while exposing the former's hegemonic ambitions. Both the works decentralize Europe and build up an alternative center occupied via different geo/cultural localization. Further, Ali (1992) reveals the agency and determinism of his characters through artistic creation as a form of resistance.

The Problem of Agency and Determinism

SPT emphasizes the problems of agency and determinism that these groups suffer because of unjustified subjugation. On the one hand, Ximenes de Cisneros, who symbolizes Christian power, is a religious zealot who wishes to unleash God's vengeance upon the unbelievers. He believes that the "heathens, if they cannot be drawn towards Christianity voluntarily, should be driven in the direction" (Ali, 1992, p. 66). On the other, Umar bin Abdullah's elder son Zuhayr al Fahl is portrayed as a young man embodying great zeal and valor who tries to initiate a physical battle against the Christian forces to defend his family and community. He consults with the villagers to discuss how they would live following the reconquest of Gharnata. Zuhayr raises a volunteer army to counteract their marginalization and adopts overt and covert strategies to fight existential instability, resulting in frivolity. Despite his outward display of bravery, his plot to ambush Ximenes is uncertain. This ambiguity is related to the seriousness with which he must consider the necessity of subsistence. This decision was based on logic rather than fear:

Once again, he was racked by doubts. Perhaps he should ride out of the city and link his fate to that of the al-Ma'aris. Perhaps he should just go home and warn his father of the catastrophe that threatened them all. Or, and this thought shocked him greatly, should he flee to Qurtuba and ask Great-Uncle Miguel to baptize him? (Ali, 1992, p. 183)

Zuhayr's hesitation in carrying out the ambush is due to his encounter with the al-Ma'aris.⁴ Abu Zaid, the group commander, prevents Zuhayr from assassinating Cisneros. Umar also denounces Zuhayr's plan and criticizes, "history is full of young fools getting drunk on religion and rushing to battle with the infidels. Far easier to drink poison underneath a tree by the river and die peacefully" (Ali, 1992, p. 146).

When Jews are subjected to barbarism and fanaticism and are viewed as the enemy, they express their agency through artistic endeavors. Juan, the carpenter, a Jewish character in the novel whose family has been in the service of the Banu Hudayl for ages, has been assigned to carve a chess set. Some six years ago, Juan's father was "charged with apostasy and died in prison during torture where his fingers had been snapped off each hand" (Ali, 1992, p. 3). Umar had commissioned Juan to carve a chess set for his younger son Yazid's tenth birthday. Juan adopts artistic creation to take revenge, and "the design of the chess-set was only a beginning" (p. 3). The chessboard is divided into opposing cultures, with historical personalities from Islamic and Christian cultures caricatured as deformed chess statuettes. Ferdinand is chiseled with a portable crown that could easily be lifted. In case this symbolism was not adequate, the iconoclastic carpenter

⁴ A group of bandits who follow the teachings of Abu al-Ala al-Ma'ari (973-1057). A blind Arab philosopher, poet, and the author of *Resalat Al-Ghufran* (The Epistle of Forgiveness). He is considered one of the greatest classical poets of the Arab world.

provides Ferdinand with a "tiny pair of horns," and Isabella's "lips were painted the color of blood" a ring on her finger displayed a "painted skull" (p. 2). Such semiotic transformation of Christian historical figures extended to knights and inquisition monks signifies disobedience to an imposed culture. The Moors had been assigned a white color. These romantic pieces, such as the queen was 'a noble beauty with a mantilla', and the Moorish knights were "representations of Yazid's great-grandfather, the warrior Ibn Farid, whose legendary adventures in love and war dominated the culture of this particular family" (p. 2). The chess pieces carved as Muslims are depicted as beautiful and white. The pieces representing the Christians are grotesque figures that emphasize the opposition between the colonizer and the colonized.

Ali's presentation of artistic creativity as a form of resistance is not limited to male characters; females also use such tactics to combat the imposed culture. The female characters are depicted as powerful and assertive, such as Ibn Farid's daughter Zahra. She is presented as an influential Muslim woman who views religion as purely conventional and emotional rather than spiritual. Zahra, in the Maristan (asylum) of Gharnata (Granada), has "concentrated on the three or four good years of her life—these she would relieve and even put down on paper" (Ali, 1992, p. 157). Nevertheless, before returning to al-Hudayl, she destroys her diary, which was the written account of the experiences of the colonizers' torture in the Maristan. Zahra does transform herself into the fictive "Other" and enables a narcissistic reflection of the 'Self,' which resonates with the burning of the books at the beginning of the novel. This testimony, in the form of diaries, "articulates the in-articulatable" and appears as a counter-narrative carrying to the front the "inexplicable, ambivalent and paradoxical horrors of violence" (Saint, 2010, p. 23). Zahra's memoir of her life written in the Maristan opens the ground to counter-strategic potentials that do not contribute to the official Eurocentric history. Nevertheless, it reminisces the histories that are forgotten. Such a strategy supplementarily helps to highlight the alternative historiography of the marginal, the exiled, and the outcast.

SPT lays bare an intricate understanding of Eurocentric historiography by uncovering the gloomy legacies of the Western colonization of Moorish Spain. Jopi Nyman states that "to understand Europe is to understand the intertwined histories between it and its others and recognize the various cultural and historical layers of Europe that are often forgotten and to see it as a transcultural construct" (2013, p. 235). Ali's emphasis on diverse historical events of the societal problems of agency and determinism applies to all the novels in Islam Quintet. According to Robyn Creswell, "Each of Ali's novels recounts a turning point in Muslim history, when a cosmopolitan but predominantly Islamic culture is on the verge of collapse or defeat" (2010, para. 8). In SPT, Wajid al-Zindiq is portrayed as the leading advocate of rationality who

lives in a cave on the outskirts of al-Hudayl. The role of the basic reporter played by al-Zindiq highlights the significance of the common people in Ali's alternative histories. He plays the postcolonial trickster, an iconoclast who offers the most scathing satire on the basic frailties of al-Andalus: "Our defeats are as a result of our failure to preserve the unity of Al-Andalus. We let the caliphate collapse and, in its place, we let poisonous weeds grow, till they had covered each of our garden" (Ali, 1992, p. 142). Another character, Ama, an older wet nurse in Umar's family, is a uniting figure who is familiar with the predicament of the Andalusians and manages the troubles logically. The novel begins with her critical statement: "If things go on like this, nothing would be left of us fragrant memories" (p. 1). On another occasion, Ama condenses all these shortcomings, frustrations, and lack of solidarity in one person, Zubayda, Umar's wife:

She regarded the lady of the manor as over-indulgent to her daughters, over generous to the peasants who worked on the estate, over-lenient to the servants and their vices, and indifferent to the practices of their faith ... Zubayda was equally entertained by the thought that the frailties of al-Andalusian Islam were symbolized in her person. (Ali, 1992, p. 13)

As a result of the factionalism and divided politics in Andalusian culture, the notion of a single monolithic Muslim community has become a myth. It happens "because the self-styled defenders of the faith quarreled among themselves,

killed each other, and proved incapable of uniting against the Christians" (p. 34), which eventually led to the alienation and powerlessness of the community. The victimized communities felt estranged and perplexed, unaware of how to resist the ways of oppression in which they were oppressed by innumerable practices of discrimination and fundamentalism-driven violence through countless "cycles of hatred" (Mander, 2002, p. 104) from Ferdinand and Isabella's unification of Catholic Spain.

Western defenders of the faith programmed the dominance of European culture and created hierarchies between the Muslim and Jewish minorities. Cisneros plays a vital role in propagating Western colonization. Cisneros, through his honeyed words, propagates aggression, gives justification for pillage, attempts "to wipe out their traditions," and shows keen interest "to destroy their culture without giving them ours" (Fanon, 1961/1963, p. 15). Miguel, a converso, is adamant about converting his relatives to Christianity. This power projection leads colonial subjects to lose agency and become weak. Ali (1992) reconstructs the "Other" history to restructure the multiple performing experiences of the marginalized. He keeps them together in a dissident confrontational setting so that "others must be recognized in the fullness of their traditions and indigenous subjectivities, which are denied in the discourse of imperialism and oppression" (Dirlik, 1999, p. 22). The mass struggle in Ali's novels embodies the future agency of Muslim and Jewish minorities in response to imperialist desires for consumerism and mercantilism. These societies are often associated with the unitary assumption of collectivity; in the novels, they are reimagined as cognizant human subjectagents capable of "purposeful action" and "self-determination" (O'Hanlon, 2000, p. 80). These marginalized and oppressed classes struggle to articulate their cultural past stifled in colonial history and trigger a crisis in Eurocentric historiography.

The Crisis of Eurocentric History as a Representation

The question of representation plays a prominent role in postcolonial literature and the possible potential of the postcolonial agency. Agency, in postcolonial theory, refers to the "ability of postcolonial subjects to initiate action in engaging or resisting imperial power" (Ashcroft et al., 2007, p. 9). The postcolonial agency is concerned with offering a voice to individuals who have been excluded from historical representation and are subject to violence, prejudice, and exploitation. Eurocentric representations are either distorting or manipulative or favoring their political establishment. Such representations of the Muslim and Jewish minorities by their colonial masters should be entirely rejected since they are based on bigotry and European supremacy principles. BS examines how these marginalized communities received those representations and their circulation. These individuals confront such orientalized representations, bringing them to a situational and political crisis. According to Heinrich Pierer, a crisis is "a rapid change from one condition to another, change in someone's circumstances: critical moment or critical case" (quoted in Reinhart & Richter, 2006, p. 366). We use the term 'crisis' to record critical situations that indicate a historically immanent transitional phase in which decisions have momentous consequences. Ali's portrayal of the agency of oppressed minorities catapults the Eurocentric representation into a state of crisis through "the collective practical activity of the people who struggle against their reduction to objectified commodities" (Memos, 2017, p. 122). Ali, a non-Western author located in the West, is acquainted with how "Western representations might have been received, accepted, modified, challenged, overthrown or reproduced by the intelligentsia of the colonized countries" (Ahmad, 1994, p. 172). Ali (1992) addresses resistance within the West and opens to counter-hegemonic thought, thus making every Eurocentric representation imperialist, racist, and monolithically ethnocentric.

BS portrays the victory of Muslims through the conquest of Jerusalem. Saladin, the protagonist, is the liberator of Jerusalem, which was invaded and forcibly held by Christians during the First Crusade in 1099, resulting in the horrible massacre of Muslims and Jews. Saladin makes his scribe remember how the crusaders "wished to wipe out the past and to rewrite the future of al-Kuds" (Ali, 1998, p. 33). He ensures that his "people will soon return to al-Kuds" (p. 33). After a century, Saladin rises to power "to create a landscape of

perfect visibility" (Anderson, 2006, pp. 184-185) with a historical overview of his Battle to recapture Jerusalem from the *Franj* (Western Crusaders) soldiers. Ali rewrites Eurocentric history by emphasizing Salah al-Din and showing the Crusade from an insider's perspective by providing a Jewish narrator who observes and experiences all the events from Cairo to Damascus to Palestine.

Ali's new dimension in postcolonial writing is to highlight the historical context of the conquest of Jerusalem. This contextual particularity helps reaffirm postcolonial agency to recreate the lost history and identity "which have been discursively articulated in history" (Prakash, 1990, p. 384). Ali's rewriting of the Muslim/ Christian encounter in Moorish Spain and Jerusalem can be regarded as an agenda to challenge both the imperial and religious extremism of the Christian West by building "a space in the world of Islam and the West in which freedom of thought and imagination can be defended without fear of persecution or death" (Ali, 2003, p. ix). Ali's historical narratives are rewritten accounts of Eurocentric history, which depict the tolerant coexistence of Muslims and Jews in Jerusalem and Moorish Spain. These narratives can also be read against the background of the current conflict between Israel and the rest of the countries in the Middle East region.

In contrast to their Eurocentric misrepresentations, Ali (1998) portrays Islamic civilization as the most advanced socio-political culture. He portrays

Muslims as more sophisticated, openminded, and sexually nonconformist than Christians, whom he portrays as aggressive, discriminatory, and intellectually inferior. One of the famous historians, Paul Cobb, recounts that "to medieval Muslim eyes, Western Europe was superficially impoverished, one might even say 'developing' region on the margins of the world. It was inhabited by a fanatical, warlike people, adherents of a backward creed" (2014, p. 19). Ali makes Saladin dictate to his scribe, "if we did not succeed in civilizing the lands of the *Franj*, the fault is ours alone. It was a human error that prevented us from educating and circumcising the Franj" (Ali, 1998, p. 34). Such anti-Eurocentric statements serve as a strategy to counter the self-appointed paternalistic duty of colonizers to a crisis. He rewrites colonial history and problematizes the Eurocentric discourse on Islamophobia. He, therefore, deliberately presents a peaceful relationship between Muslims and Jews and tries to strengthen the Judo-Islamic tradition.

Methodologically, Ali adopts reiterative textual responses as a fundamental and oppositional strategy that "involves the figurative invocation of colonialist notions of history ... and the juxtaposition of the imperialist pretext with a dis/placive historical narrative" (Slemon, 1990, p. 4). Eurocentrism canonizes history as a linear account. However, Ali engages in a heterogeneous non-linear, and repetitive structure. As a scribe, Ibn Yakub not only writes the life events of Saladin but also interviews other members of his family,

including his friend Shadhi and wife, Jamila, thus retains a referential relationship to minor characters. Claire Chambers observes that the scribe portrays other successful characters such as "Halima and Jamila, intelligent, skeptical women who meet and begin a sexual relationship in Salah al-Din's harem" (2011, p. 38). Saladin is not only portrayed as the strongest hero and liberator but also as the novel's imperfect protagonist, who has his flaws and strengths. We have the picture of a cynical man about his wives and workers. Ali even exposes certain libidinal encounters of Saladin through Shadi, which is evident from the following lines, "that sorceress mounted our boy and taught him what it was like to be a man ... There underneath the clear blue sky, under the gaze of Allah in his heaven, they were behaving like animals" (1998, p. 50). Later, Saladin confesses this relation to his scribe and says that "she was a woman some ten years older than me, possibly more. She gave me great pleasure and taught me how to enjoy a woman's body" (p. 71). Through the multiple voices in the novel, the public and private life of Saladin ultimately appears as a well-balanced and more believable character in the novel.

The plot of *SPT* centers on the challenges of the agency of the inhabitants of al-Hudayl, who are victims of Cisneros' violence and injustice. It begins with the barbarous burning of the books in which "everything written in Arabic was confiscated" (Ali, 1992, p. x). In *SPT*, whether to convert to Christianity or to leave the Iberian Peninsula compels Zahra

to burn her autobiography. By doing so, she remains outside history or the process of writing history. Unlike Zahra, Jamila in BS, whose radical thoughts to are inscribed by Ibn Yakub alongside the history of Saladin, contends not to destroy her writings. She says, "I wish to die where I was born. Till that day arrives, I will continue to transfer my thoughts to paper. I have no intention of destroying this manuscript" (Ali, 1998, p. 362). Ali implicitly describes Muslims as upholding values about gender equality and sexual harmony. The powerful Orientalists' myths about the Arab and Muslim world are a hotbed of repressed sexuality, which Ali contravenes and counters by depictions of happy and sexually liberated Muslims. The author rebuts the popular image of a monolithic Islam in which Muslim women are viewed as victims of male oppression and brings such representations to a crisis. These narratives highlight the predicament of minority figures to create alternative spaces to mirror, interrogate and challenge the subversive strategies of Eurocentrism. Thus, literary writing takes on the dimensions of history by providing a fictitious chance to the "Other" and calls for a world free of hatred and violence.

Ali (1992) identifies himself with the forgotten or silenced histories to unfold the oppositional alternative histories and bring dominant Eurocentric historiography to a crisis. Zuhayr, familiar with the tragic stories of his ancestors and other minority communities, draws a meaningful connection between their experiences and the institutionalized hostility towards

Muslims and Jews. Indeed, to resolve the isolation and perceptual distortions (due to colonialism and religious prejudices), he tackles the past and distorts composite Western cultural memory. He frequently visits the cave of al-Zindig, where he connects with the past and the wisdom of lesser-known Muslim scholars such as Ibn Quzman, Ibn Rushd, and Ibn Khaldun.⁵ The memories, such as the genocide of the Jews and Muslims during the crusades, and their expulsion from Spain, followed by European conquests, are disturbing and relate to racial violence. Such experiences foreground marginal perspectives and "create a rupture in the linear and progressive time of modernity" (Mohammad, 2017, p. 322). The communal agency of minorities has been stressed in both novels by portraying collective opposition. In SPT, the mass struggle of al-Hudayl, in which "weavers and rhetoricians, true believers and false prophets, men and women, they had fought together" (Ali, 1992, p. 264) against the imposing colonial authority. Such resistance represents the postcolonial agency of Muslim and Jewish minorities to maintain their local culture. In this regard, Ahmed Gamal rightly opines that "the rewriting of colonial historical discourse is a fundamental feature of postcolonial

metafictions" (2017, p. 47). Thus, the description of the collapse of Islam in Spain in SPT is followed by the rise of Saladin and the taking of Jerusalem from the Crusaders. Their return to Jerusalem impedes the expulsion of Muslim and Jewish minorities in Andalusia. When we relate the events in Islam Quintet to the current situation in different places in the Middle East, we see how history repeats itself. It is apt to quote Reed Dasenbrock, who says:

We view religious tolerance as a feature of our Western culture, not of Islamic culture, so the (accurate) assertion that our tradition of tolerance was better exemplified in the Middle Ages by Islam than by Christianity displaces our received fault lines a little. (Dasenbrock, 2008, p. 15)

However, this depiction of a tradition of tolerance is one of the most critical aspects of Ali's agency and the act of rewriting the "Other." It goes against the well-established scheme of colonialism based on the model of European supremacy. Ali employs a thorough deconstructive approach, reversing the oppositions and displacing them completely.

CONCLUSION

To conclude, we find that Tariq Ali's novels deconstruct the Eurocentric representation of Muslim and Jewish minorities through the postcolonial agency. Postcolonial inversions of imperial formations in these novels are deliberately subjective. They reverse the less dominant to become the dominant order and question the mythic foundation of the ontological and epistemological systems

⁵ Ibn Khaldun (1332-1406), the Arab Social scientist, historian, philosopher, and writer of *The Muqadimmab* (An Introduction to History); Muhammad Ibn Ahmad Ibn Rushd (1129–1198), one of the greatest Muslim thinkers, whom the Christians of Europe known as Averroes. He was the author of *Al-Kashf'an Manahij al-Adillah* (Exposition of the Methods of Proof) 1179; Ibn Quzman (1087–1160) was one of the most prominent poets in the history of al-Andalus.

of the West. Rewriting the Eurocentric rhetoric regarding the Muslim world as "Other" interrupts the presumption of an irreducible deviation between the West and Islam or the "Self" and the "Other." As responses to threats posed to the survival of minorities (Jews and Muslims), these works emerge as counter-narratives at two levels. First, these novels unravel and resist the politics of silence embedded in Eurocentric discourses. This silence speaks of suppression, a sense of evasion, an absence of guilt, or a lack of repentance. Secondly, by highlighting the predicament of the minorities, these narratives create alternative spaces to mirror, interrogate and challenge Eurocentric representations. Ali's ability to write the history of other societies and cultures depicts them differently, revealing that only the Eurocentric representation makes them seem violent. He is successful at compassionately portraying the troubled psyche of those who have been universally demonized. Literary writing takes on the dimensions of historiography by offering the "Other" a fictitious opportunity. That being so, this analysis of Ali's Shadows of the Pomegranate Tree and The Book of Saladin as multicultural novels delineates the effects of only one-sided Eurocentric historiography.

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Tourists' Intentions During COVID-19: Push and Pull Factors in Extended Theory of Planned Behaviour

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ABSTRACT

The way people travel has been entirely altered by COVID-19. Additionally, past studies reported that tourist behaviour has shifted because of the pandemic. Therefore, tourism management must identify the variables that impact tourists' decisions to travel during COVID-19. However, the problem arises since research into tourist motivation, behaviour, and intention to travel in Southeast Asia is still scarce. In light of this issue, this study aims to bridge the gap by analysing tourists' travel intentions during COVID-19 using the theory of planned behaviour broadened with push and pull factors. An online survey among Indonesians was employed to acquire data using judgment sampling. Three hundred sixty-one surveys were completed, and the data were analysed using the PLS-SEM technique. Based on the findings, only one variable had no significant effect on the intention to travel during COVID-19. Besides that, attitude towards a behaviour was the most potent variable affecting a tourist's decision to travel. Thus, this study contributes both theoretically and practically.

Keywords: Behavioural intention, COVID-19, pull factor, push factor, theory of planned behaviour, tourist

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INTRODUCTION

The novel coronavirus disease 2019 (COVID-19) has affected the global economy, notably tourism, in a substantial manner (Abbas et al., 2021; Neuburger & Egger, 2020). The United Nations World Tourism Organization (UNWTO) has declared that as of April 2020, all tourist destinations worldwide have enforced

a travel ban to prevent the spread of the COVID-19 pandemic (UNWTO, 2020). In addition, numerous nations implemented further precautionary measures such as quarantine, physical distancing, and other travel restrictions (Humagain & Singleton, 2021), as these were believed to be the most effective ways to prevent virus transmission between humans (Rahmafitria et al., 2021). Unfortunately, these restrictions had a significant impact on the tourism industry. For instance, once the pandemic hit, people had to cancel or postpone their tourism plans (Ivanova et al., 2020). COVID-19 altered how people travel (Bhrammanachote & Sawangdee, 2021); they started restricting their travels and travelling only when necessary. This new trend made tourist behaviour the primary issue faced by the tourism industry (Pahrudin et al., 2021).

Tourism has struggled with a broad range of tourist behaviours as well as internal and external influences (Yousaf et al., 2018). Ivanova et al. (2020) believed that analysing travel intentions amid COVID-19 would enable the tourism sector to adapt its services to suit shifting market demand. Tourists are initially motivated by their interests (push factors) and, after that, by the tourism destination's attractions (pull factors) (Monoarfa et al., 2022; Soliman, 2019). Therefore, by studying tourists' push and pull motivation, the tourism industry can identify the destination attributes, features, and resources that could be promoted to influence tourists' decision-making process (Bogari et al., 2003; Lam & Hsu, 2006). To appropriately manage the repercussions of COVID-19 and satisfy the tourism market, tourism stakeholders need to determine tourist push and pull motivation and intentions.

Scholars have extensively discussed tourist behaviour during COVID-19. For instance, Han et al. (2020), Liu et al. (2020), and Rahmafitria et al. (2021) extended the theory of planned behaviour (TPB) model with perceived risk variables to capture post-pandemic tourist intentions. Similarly, Pahrudin et al. (2021) studied non-pharmaceutical intervention, public perception of COVID-19, and public health awareness to deduce the tourists' intentions to visit domestic destinations. Several scholars also investigated tourist behaviour amid COVID-19 through tourists' perceived risk (i.e., Joo et al., 2021; Luo & Lam, 2020; Neuburger & Egger, 2020; Perić et al., 2021; Qiu et al., 2020). Li et al. (2020) studied intra-pandemic behaviour to understand Chinese tourists' intentions. Through meta-analysis, Yang et al. (2021) confirmed that most COVID-19 studies emphasised how people perceive and respond to risk, the consequences of tourist behaviour, and the pandemic's effect on tourism. According to those studies, many focus on tourists' perceptions of the risks of travelling during the pandemic and their consequent behavioural responses (Humagain & Singleton, 2021). However, they failed to examine the internal and external motives that drive tourists to travel during COVID-19. It is crucial to get a clear picture of why people travel so that the tourism industry can take measures to improve tourists' levels of satisfaction (Monoarfa et al., 2022). However, past studies leave a gap in the literature in this regard. Tourist motivation during the pandemic remains underexplored and unclear (Roy & Sharma, 2020).

Given the scarcity of studies investigating the association between motivational factors and the behavioural intention of tourists (Yousaf et al., 2018), this study will use a novel approach of extended TPB with push and pull factors as one of the accepted motivation theories to investigate tourists' intention during COVID-19. Extended TPB is employed since this model is widely used to study tourist behaviour during pandemics (i.e., Han et al., 2020; Lee et al., 2012; Li et al., 2020; Liu et al., 2020; Pahrudin et al., 2021; Rahmafitria et al., 2021). Push and pull factors study how individuals are driven and drawn to a destination by internal and external variables (Dann, 1977). Based on this study, the main reasons people travel amid the pandemic can be identified. However, although the TPB model can identify the variables that affect people's travel decisions, it cannot determine the main objective and motives that drive them towards the decision. The original TPB model does not gather requisite details on how tourists' attitudes and motivations impact their decision-making process concerning their vacation (Hsu & Huang, 2012). Therefore, it is necessary to incorporate push and pull factors in the TPB model to investigate people's motives to travel amid COVID-19. The application of the TPB model in Southeast Asia is likely to be limited, especially in the context of pandemics (Rahmafitria et al., 2021). Therefore, Indonesia, which serves as Southeast Asia's most prominent tourist destination, has been chosen as the ideal research location for this study.

This study is intended to investigate the push and pull variables impacting Indonesian tourist decisions during COVID-19, using extended TPB considering the above analysis. Given the dynamic nature of the pandemic times, an empirical study on tourist motivation and intentions is required to assist the tourism industry in developing strategies to attract and satisfy tourists. Therefore, the following research questions have been identified to achieve the study objective: (1) What factors determine tourists' travel intentions amid COVID-19? (2) How does the role of push and pull factors in extended TPB influence tourists' behaviour during COVID-19?

This study assists tourism stakeholders by suggesting ideas and best practices for dealing with pandemic-related tourist behaviour. It identifies destination characteristics and resources that influence tourist motivation and intentions during the pandemic. The study uses extended TPB to examine pandemic-related tourist intentions. It enhances the predictive and explanatory power of the TPB framework by integrating new factors and thereby intends to make a valuable contribution to literature.

LITERATURE REVIEW

The Theory of Planned Behaviour (TPB)

The TPB model was proposed for forecasting and describing human behaviour (Ajzen, 1991). Ajzen (1991) defined the TPB model as an advancement of the Theory of Reasoned Action (TRA) that incorporated perceived behavioural control variables. According to the TPB, attitudes and subjective norms cannot adequately reflect behavioural intention; rather, it is impacted by perceived behavioural control (Ajzen, 1991; Ulker-Demirel & Ciftci, 2020). Therefore, the TPB serves as an adequate theoretical model for studying the complexity of human social behaviour (Ajzen, 1991). Furthermore, it has been recognized as a model that can determine the essential components of actual behaviour (Ulker-Demirel & Ciftci, 2020). When people have an intense tendency to do something, the chance of that behaviour being carried out is also high.

Principally, TPB explains the intention of an individual to execute a particular behaviour according to their belief, norms, and self-control (Madden et al., 1992). As illustrated in Figure 1, the TPB framework was constructed from three antecedent variables of behavioural intention—attitude, subjective norm, and perceived behavioural control (Ajzen, 1991). Attitude describes how pleasant or unpleasant an individual's behaviour is. The consequences of a person's actions are reflected through positive or negative attitudes in the receiver's behaviour. In the tourism context, attitude

is a reaction or emotion towards tourist destinations or services depending on perceived product characteristics (Lam & Hsu, 2006). Subjective norm defines how individuals deal with pressure from society in deciding whether to be involved in a particular behaviour or not. It is associated with considering the thoughts or judgments of others while carrying out the behaviour (Ulker-Demirel & Ciftci, 2020). Finally, perceived behavioural control is the degree of ease or complexity with which an individual executes behaviour. It can be assumed that people will have a low intention to engage in a behaviour if they feel that they have little or no control over it due to a lack of various conditions. Therefore, the relevance of these factors in influencing behavioural intentions differs depending on the context (Ajzen, 1991).

The TPB framework has been facilitating the broad study of human behaviour for over a decade now (Ulker-Demirel & Ciftci, 2020). Furthermore, this framework was exclusively used in the literature on the hospitality and tourism sectors (i.e., Bianchi et al., 2017; Chien et al., 2012; Han et al., 2017; Juschten et al., 2019; Kuo & Dai, 2012; Meng et al., 2020; Ong & Musa, 2011; Soliman, 2019). During global health crises, especially COVID-19, some studies used TPB to reveal the tourist intentions amidst the pandemic (i.e., Han et al., 2020; Li et al., 2020; Seong & Hong, 2021). TPB is an efficient framework for studying people's destination preferences and behaviours (Han et al., 2020). The more enthusiastic someone is to travel, the more likely they will travel.

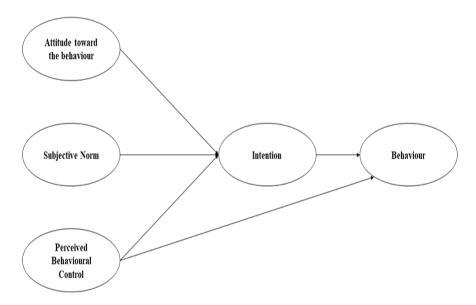


Figure 1. The model of the theory of planned behaviour (Ajzen, 1991)

Therefore, TPB was confirmed as a practical framework that can be used for describing the decision-making process of tourist travel during a pandemic.

Push and Pull Factors

The two types of tourist motivations are referred to as "push" and "pull" factors (Monoarfa et al., 2022). It is yet another generally acknowledged theoretical framework in a tourism-related study (Yousaf et al., 2018). Dann (1977) initiated the discussion of the constructs of push and pulled in the tourism context. The different situations in which an individual would travel are outlined in the push and pull factors. Giddy (2018) defines the push factor as certain internal elements of an individual desiring a tourist experience and the pull factor as an external aspect that motivates the individual to choose that experience.

X. Wang et al. (2020) explain that push factors are internal desires embodied by socio-psychological motives representing a person's wishes that push them towards certain goal-driven behaviours. Therefore, it can be concluded that, while push factors explain people's drive to travel, pull factors influence their choice of the actual destination (Bayih & Singh, 2020; Lam & Hsu, 2006; Yousaf et al., 2018).

Tourism studies have thoroughly explored push and pull factors (Allan, 2014; Bayih & Singh, 2020; Dann, 1981; Urbonavicius et al., 2017; Wijaya et al., 2018; Yousaf et al., 2018). Analysing push and pull factors can provide valuable insights into the internal and external elements that motivate people to visit a tourist attraction. It can help tourism management segment their market, plan advertising programmes or packages, and offer destination services

that would appeal to tourists (Bogari et al., 2003; Yousaf et al., 2018). Therefore, it is necessary to scientifically evaluate tourists' push and pull factors to assist tourism management in identifying the destination attributes, features, and resources that need to be promoted to attract tourists to the destinations (Lam & Hsu, 2006). Tourism management can identify tourists' needs and expectations of tourist destinations, especially during a pandemic. In this manner, if tourist satisfaction is achieved, they will share their experience with others and desire to revisit the destination (Bayih & Singh, 2020). However, studies exploring the push and pull factors that influence tourists during COVID-19 are still limited (Roy & Sharma, 2020). Tourism management does not have sufficient scientific information on "why people want to travel during a pandemic?" Therefore, the current study examines the push and pull factors that influence tourists' travel decisions during COVID-19.

The Proposed Extended Theory of Planned Behaviour

The extended TPB model was developed to address the study's primary objective. TPB has been widely extended with other constructs in tourism and hospitality literature to examine people's tourism intentions and behaviour (Ulker-Demirel & Ciftci, 2020). Other antecedents that substantially impact tourists' intentions in choosing tourism destinations were also discovered (Meng et al., 2020). Tourist motivation has long been a focus of tourism study, as it is the first step of travel behaviour

analysis (Monoarfa et al., 2022; Soliman, 2019). However, very few studies have examined the relationship between tourist motivation and attitude (Hsu & Huang, 2012; Soliman, 2019; Ulker-Demirel & Ciftci, 2020; Yang et al., 2021). Studying motivational factors can help tourism marketers segment their markets (Bogari et al., 2003) and satisfy the tourists (Seyitoğlu & Davras, 2022). Therefore, this study analyses push and pull motivation factors and their role in influencing the attitude and behaviour intention of tourists in the TPB model, as studies that reveal the role of intrinsic (push) and extrinsic (pull) motivation in consumer behaviour are not well-documented thus far (Chi & Phuong, 2021).

An individual's attitude towards a behaviour reflects the individual's cognitive reaction to perform the particular behaviour (Ajzen, 1991; Fishbein & Ajzen, 1975). Therefore, attitude considers human behaviour a critical factor in the TPB model (Song et al., 2017). Huang et al. (2019) and Soliman (2019) report that attitude significantly impacts behavioural intention to revisit tourism destinations. Similarly, future behavioural intentions of tourists in the post-pandemic period were also influenced by attitude (Han et al., 2020; Pahrudin et al., 2021; Rahmafitria et al., 2021). Studies have shown that people still have a positive attitude to travel amid the pandemic. Based on this understanding, we have generated the hypothesis related to attitude and behavioural intention as follows:

H₁. Attitude is positively related to behavioural intention for tourism during COVID-19.

Subjective norm is another significant determinant of human behaviour. In TPB, the subjective norm is hypothesised to affect behavioural intention (Ajzen, 1991). However, while some studies indicate that there is no association between subjective norm and behaviour intention (Huang et al., 2019; Meng et al., 2020; Pahrudin et al., 2021), few others assert that subjective norm positively influences tourist intention during COVID-19 (Han et al., 2020; Li et al., 2020; Rahmafitria et al., 2021). Hence, we postulate that people will consider the opinions of others when deciding to travel amid COVID-19 and present our hypothesis of the correlation between subjective norm and behaviour intention as follows:

H₂. Subjective norm is positively related to behavioural intention for tourism during COVID-19.

Perceived behavioural control implies how far a person believes they can influence themselves to execute a behaviour (Conner & Abraham, 2001). People are more likely to act when they have the money, time, chance, or opportunities to execute that behaviour. For example, behavioural control was observed to have substantially affected tourists' environmental responsibility behaviour (C. Wang et al., 2019). Similarly, an association between perceived behavioural control and behaviour intention was observed in creative

tourism (Huang et al., 2019), choosing beach-based destinations (Chien et al., 2012), and during the COVID-19 pandemic (Han et al., 2020; Li et al., 2020; Pahrudin et al., 2021; Rahmafitria et al., 2021). Based on these studies, we infer that if people have sufficient resources to travel amid pandemics, they are more likely to do so. We thereby posit the hypothesis as follows:

H_{3.} Perceived behavioural control is positively related to behavioural intention for tourism during COVID-19.

Push and pull factors are proposed as additional constructs in the current extended TPB model. Earlier studies have reported that motivation significantly affects attitude and behavioural intention (Chien et al., 2012; Soliman, 2019). Also, some scholars have successfully used push and pull-off dimensions to describe the purpose of travelling (Chi & Phuong, 2021; Hsu & Huang, 2012; Lam & Hsu, 2006; Seyitoğlu & Davras, 2022). For example, Lam and Hsu (2006) reported that push and pull factors were positively associated with attitudes towards selecting tourism destinations in Hong Kong. Similarly, Taiwanese push factors (i.e., knowledge, relaxation, novelty, and shopping) were significantly positively associated with the tourists' attitude towards selecting a tourist destination (Hsu & Huang, 2012). In contrast, only the shopping factor statistically influenced behavioural intention (Hsu & Huang, 2012).

On the other hand, Bayih and Singh (2020) found that both push and pull factors

statistically influenced the revisit intention of tourists concerning tourism destinations in Ethiopia. These studies indicate that push and pull factors have a role in driving and influencing people's cognitive behaviour to travel or visit a tourism destination. They can enhance the likelihood of an individual taking up a tour. Based on this inference, we developed our hypotheses for push and pulled factors in TPB as follows:

 H_{4a} . Push factors are positively related to behavioural intention for tourism during COVID-19.

H_{4b}. Attitude significantly mediates the relationship between push factors and behavioural intention for tourism during COVID-19.

 H_{5a} . Pull factors are positively related to behavioural intention for tourism during COVID-19.

H_{5b}. Attitude significantly mediates the relationship between pull factors and behavioural intention for tourism during COVID-19.

The proposed extended TPB of the current study is illustrated in Figure 2. This model was developed to increase the explanatory power of TPB in predicting tourist intentions to travel amid COVID-19. The additional constructs of push and pull factors are expected to enhance people's likelihood of taking up tourism during a pandemic. The push factors examined in this study are an escape from routine life and relaxation. Facilities, cleanliness, and tourism activities are the pull factors examined in this study. These factors were chosen as they were the most significant dimensions analysed in previous studies.

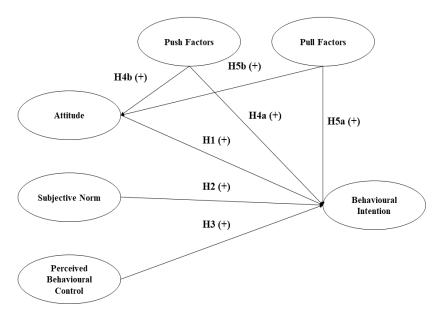


Figure 2. The proposed extended theory of planned behaviour

METHODS

A quantitative approach was used to examine the association among the constructs in the proposed model. Cross-sectional data were collected to investigate tourists' intentions amid COVID-19. A survey was used to collect the primary data for the study.

Sampling and Data Collection Procedure

The target population of the current study is Indonesians who are spread all over Indonesia and willing to travel amid COVID-19. The sample was chosen through judgment sampling. This technique was chosen because it allows us to employ our judgment to select the best possible sample that would help attain this study's aim (Saunders et al., 2009). Another reason why this sampling method was chosen is that the current study requires the sample to fit several criteria. First, the study participants must be Indonesians who reside in Indonesia and are over 18 years. We presume that people over 18 can make travel decisions independently. Moreover, we wanted to select travel enthusiasts for this study, as they would be the most likely people who would want to travel despite the pandemic.

Due to the pandemic, researchers could not interact personally with the respondents. Therefore, an online survey was conducted in April 2021 to collect the primary data. A self-administered questionnaire was created using Google Forms and sent out to the target population over social media through various channels such as WhatsApp, Facebook, and Instagram. The introduction statement of the questionnaire detailed the eligibility criteria

for participation in the study. We invited people who met the eligibility criteria to fulfil the questionnaire voluntarily. A total of 366 responses were collected. Out of these, five had to be discarded as they were unfinished. Finally, the study data comprised 361 valid questionnaires. According to the inverse square root method for the Partial Least Square-Structural Equation Model (PLS-SEM) proposed by Kock and Hadaya (2018), the minimum sample size required for a 5% significance level and 0.2 path coefficient is 155 (Hair et al., 2021). Our study data met this condition, as we got 361 responses, which is more than the minimum required number of 155.

Questionnaire and Measurement Instrument Development

The objective of the research questionnaire was to measure the behavioural intention of tourists to travel during COVID-19. It consisted of an introduction, a socialdemographic section, and a section to measure the observed variables. In the introduction part, the survey's aim was conveyed, after which the respondents were asked to fulfil the questionnaire voluntarily, without any coercion. The social-demographic section requested information about the participants' gender, age, educational background, and travel companion. Following the technique of Brislin (1970) to ensure equivalence between original and translated measures, the measurement items were provided to the respondents in bilingual (Bahasa Indonesia and English) terms, and a pre-test was conducted to assess the respondents' equivalence in responses.

The questionnaire consisted of 25 items (see Appendix A). Five of these items evaluated push motivation factors (i.e., escape from daily routine, the work and life pressure, relaxation, recharge of mental and physical states, and enjoying time with family or friends). These items were adapted from past studies (Allan, 2014; Bayih & Singh, 2020; Urbonavicius et al., 2017; Wijaya et al., 2018). The pull factors were evaluated using six items adapted from Allan (2014) and Bayih and Singh (2020). These items were about the dimensions of hygiene standards, CHSE (Clean, Health, Safety, and Environment Sustainability) certificate ownership, destination affordability, the comfort of the place, and availability of culinary variety. The measurement items related to TPB variables were adapted from Lee et al. (2012) and Das and Tiwari (2020). This section consisted of four items related to attitude (ATT), three items related to subjective norms (SN), three items related to perceived behavioural control (PBC), and four items related to behavioural intention (BI). A five-point Likert scale assessed all the observed variables (1 = strongly)disagree, 5 = strongly agree). All the items were constructed bearing in mind the COVID-19 considerations.

A pilot study involving 20 respondents was done to evaluate the reliability and validity of the measurement items (Saunders et al., 2009; Srinivasan & Lohith, 2017; Whitehead et al., 2016). Master's Students were selected as the respondents for the

pilot study, as they were expected to be qualified to give useful feedback and input on the measurement items. This selected group fits the target population criteria as they mostly like to travel, and their average age is between 21-25 years, which is above the set criteria of 18 years. Moreover, they represent most Indonesian tourist characteristics during COVID-19 (BPS-Statistics Indonesia, 2020). After respondents completed the questionnaire, they were asked about their experience filling out the questionnaire and whether there were any ambiguous statements. In addition, expert judgement from academicians and practitioners in management and tourism was conducted to get feedback regarding the relevance of measurement items. According to the reliability test, three pull factor items were identified to have reliability values under 0.3. These items were eliminated following De Vaus' (2002) recommendation to remove items that had recorded a reliability value of less than 0.3 in the pilot study (Hazzi & Maaldaon, 2015). The study data was collected using the remaining 22 measurement items.

Data Analysis

The primary data was analysed and evaluated quantitatively using PLS-SEM with SmartPLS 3.0 (Ringle et al., 2015). The purpose of PLS-SEM is to explore or extend the existing theoretical framework (Hair et al., 2014). Therefore, this method was considered appropriate as the present study aims to employ extended TPB to investigate the factors affecting tourists'

travel behaviour during COVID-19. Moreover, PLS-SEM is recommended for non-normal data distribution (Hair et al., 2021).

As the first step of the analysis, the responses related to the socio-demographic items were explored using descriptive statistics. Next, the measurement model test was used to evaluate the validity and reliability of the research instruments. The test evaluated outer loading, composite reliability (CR), average variance extracted (AVE), coefficient of determination (R²), and discriminant validity (the heterotraitmonotrait [HTMT] ratio) (Ab Hamid et al., 2017; Hair et al., 2014). Finally, the structural model test was used to assess whether the hypotheses were to be accepted or rejected (Hair et al., 2014).

RESULTS

Profile of Respondents

Table 1 contains the respondents' profile information. Females dominated the respondent population at 68%, while the males were 42%. More than half (n=227, 63%) of the respondents were below or equal to 25 years old. According to the Statistics Indonesia report released in 2020, 41.91% of the nation's domestic tourists during COVID-19 were less than 25 years old (BPS-Statistics Indonesia, 2020). Based on this statistic, we can infer that the sample population was representative of the target population, as most of the members in the sample population were under 25 years old. In addition, 71% of the respondents hold a bachelor's degree. During COVID-19, many respondents reported that they preferred to travel with their family (53%) and friends (39%). The rest of the respondents expressed that they intended to travel alone or with another companion.

Table 1

Profile of respondents

Demographic Profiles	Total	Percentage
Gender		
Male	117	32%
Female	244	68%
Age Range		
18–20	11	3%
21–25	217	60%
26–30	82	23%
31–35	25	7%
36–40	15	4%
>41	11	3%

Table 1 (Continue)

Demographic Profiles	Total	Percentage
Education Background		
High School	22	6%
Diploma	34	9%
Bachelor's degree	257	71%
Post Graduated	46	13%
Others	2	1%
Travel Companion		
Alone	24	6%
Family	191	53%
Friends	140	39%
Others	6	2%

Note. N=361

Measurement Model

The reliability and validity of the observed variables were evaluated using the measurement model. It revealed that one instrument of pull factor (PULL3), which is the availability of culinary variety, had an outer loading value under 0.50. So, it was dropped from the analysis following the guideline given by Hair et al. (2014), which says that items with outer loading of less than 0.50 could be removed to preserve the Cronbach alpha value criterion. It implies that the availability of culinary variety was not reliable in explaining the pull factors. The given data (see Table 2) confirms that all other measurement items' outer loading (λ)

was more than 0.50 and met the minimum loading factor criterion. In other words, all latent variables can be adequately explained by their observed variable.

The Cronbach's Alpha (α) values for all items ranged from .620 to .935, higher than the .60 threshold recommended by Hair et al. (2014). All CR values were also above 0.70. These results prove that the model's internal consistency is reliable (Hair et al., 2014; Sekaran & Bougie, 2016). In addition, the AVE value of the latent variables was higher than 0.50, indicating that the variables were significantly convergent-valid (Hair et al., 2014).

Table 2

The results of the measurement model

Code	λ	α	CR	AVE
PUSH 1	0.820	9.65	0.006	0.611
PUSH 2	0.798	.865	0.886	0.611

Table 2 (Continue)

Code	λ	α	CR	AVE
PUSH 3	0.828			
PUSH 4	0.767			
PUSH 5	0.684			
PULL 1	0.876	901	0.007	0.820
PULL 2	0.835	.801	0.907	0.830
ATT 1	0.864			
ATT 2	0.867	.896	0.027	0.762
ATT 3	0.865	.890	0.927	0.762
ATT 4	0.895			
SN 1	0.891			
SN 2	0.935	.896	0.935	0.828
SN 3	0.904			
PBC 1	0.805			
PBC 2	0.763	.620	0.796	0.566
PBC 3	0.683			
BI 1	0.930			
BI 2	0.934	025	0.054	0.929
BI 3	0.921	.935	0.954	0.838
BI 4	0.876			

Note. λ=Outer Loading, α=Cronbach's Alpha, CR=Composite Reliability, AVE=Average Variance Extracted

The discriminant validity results determined using the HTMT correlation ratio are presented in Table 3. According to Ab Hamid et al. (2017), this technique is recommended because its sensitivity rate is higher than other discriminant validation approaches (e.g., cross-loading and Fornell

& Larcker criterion). Furthermore, the HTMT value of each construct was under 0.85, which implies that each construct's discriminant validity was acceptable (Ab Hamid et al., 2017). Hence, the actual relationship between the two variable constructs was error-free.

Table 3

The results of discriminant validity (Heterotrait-monotrait ratio)

	PUSH	PULL	ATT	SN	PBC	BI
PUSH						
PULL	0.491					
ATT	0.558	0.359				
SN	0.403	0.359	0.763			
PBC	0.434	0.422	0.728	0.668		
BI	0.557	0.308	0.685	0.569	0.615	

Note. ATT=Attention, BI=Behavioural Intention, PBC=Perceived Behavioural Control, SN=Subjective Norm

Later, each latent variable's variance inflation factor (VIF) was assessed to check the collinearity. Collinearity is said to be present if the VIF values are equal to or more than 5 (Hair et al., 2021). As provided in Table 4, all latent variables had VIF

values less than 5, indicating collinearity-free. This evaluation also proved that the model was free of common method bias, as the full collinearity VIF was below 3.3 (Kock, 2015).

Table 4

The Variance Inflation Factor (VIF)

	ATT	SN	PBC	PUSH	PULL
ATT				1.194	1.194
BI	2.363	2.004	1.574	1.458	1.271

Note. ATT=Attention, BI=Behavioural Intention, PBC=Perceived Behavioural Control, SN=Subjective Norm

The R² of the behavioural intention for travelling during COVID-19 was 0.470. The antecedents' variables of behavioural intention in the current extended TPB model have moderate power (47%; Hair et al., 2014) to predict tourists' intention to travel amidst COVID-19. Other factors not studied in the current study can support the remaining predictions.

Structural Model

The hypothesis testing of the proposed model was done using the structural model. The significance level (p-value) and confidence interval (CI) were considered to evaluate the hypotheses. As reported in Table 5, six hypotheses (i.e., H_1 , H_2 , H_3 , H_{4a} , H_{4b} , and H_{5b}) were accepted, while

one (H_{5a}) was rejected. Attitude and travel intention had the most salient correlation compared to the other variables, followed by the relationship between push and behavioural intention. Additionally, the push factor was significantly associated with intention over attitude towards behaviour. In this manner, attitude successfully mediated the push factor and travel intention amidst COVID-19. However, there was an insignificant correlation between the pull factor and behavioural intention since the p-value was greater than 0.05. Besides

this, the attitude was observed to mediate between the pull factor and tourist intention statistically. Next, the control variables were tested to assess the correlation between age, gender, and education with tourists' intentions. As reported in Table 5, there was no correlation between these control variables and the intention to travel amid COVID-19. In other words, the sociodemographic profile did not affect travel intentions during COVID-19.

Table 5

The results of the structural model and hypothesis testing

Paths	R	T Statistics	P-value	Confidence Interval (95%)		Decisions
		Statistics		Lower	Upper	
ATT→BI	0.341	5.581	.000***	0.218	0.439	H ₁ Accepted
SN→BI	0.140	2.265	.012*	0.042	0.248	H ₂ Accepted
PBC→BI	0.133	2.533	.006*	0.050	0.226	H ₃ Accepted
PUSH→BI	0.248	4.838	.000***	0.163	0.333	H _{4a} Accepted
$PUSH \rightarrow ATT \rightarrow BI$	0.150	4.418	.000***	0.090	0.203	H _{4b} Accepted
PULL→BI	-0.019	0.414	$.339^{\rm ns}$	-0.100	0.056	H _{5a} Rejected
$PULL \rightarrow ATT \rightarrow BI$	0.046	2.177	.015*	0.012	0.086	H _{5b} Accepted
Control Variable Test						
Age→BI	-0.053	1.392	$.082^{\rm ns}$	-	-	-
Gender→BI	-0.000	0.011	$.496^{\rm ns}$	-	-	-
Education → BI	0.034	0.977	$.164^{\rm ns}$	-	-	-

Note. nsp-value>.05, *p-value<.05, **p-value<.005, ***p-value<.001

Lam and Hsu (2006) reported that pull factors are correlated with behavioural intention, while attitude failed to mediate pull factors and the intention to travel among Taiwanese. As per the current study, the attitude seems to play a critical role in influencing people to travel amid COVID-19. Although tourist destinations' attributes and resources may not influence people's decision to visit a destination directly, they will impact people's attitude in deciding whether to travel or not during COVID-19.

Theoretical Contribution

Following Ajzen's (1991) and Ulker-Demirel and Ciftci's (2020) suggestions to extend the TPB model using other constructs, this study confirms that the extended TPB model with push and pull motivation factors is useful in predicting tourist intentions during a pandemic. Furthermore, apart from the significant role of push and pull factors in affecting tourists' decision-making process, the additional constructs considered in this study also played a major role in providing more variance for predicting people's behavioural intention. Overall, the proposed extended model and results of the current empirical study contribute strongly to the extended TPB body of knowledge. However, very few studies have demonstrated the role of motivation theory in TPB.

Practical Contributions

Tourism management must design and create a positive image to encourage tourists

by emphasising the necessity and value of travelling during COVID-19, considering the fundamental role of attitude in the travel decision-making process during a pandemic. Furthermore, tourism management and the government must ensure tourists' safety and comfort by implementing strict health protocols and other COVID-19 mitigation measures.

Another finding reports that people with sufficient funds and time will invest those resources to travel during the pandemic. Moreover, around 80% of the study sample were aged 21-30 years. It shows that this age range is more likely to become tourists. For this reason, tourism management should segment its markets based on this age range and attempt to understand their characteristics. Then, tourism can effectively adjust its attributes and resources to encourage people to visit their destinations.

Opinions from other communities were also observed to play a role in tourists' decision-making process regarding their travel. More than half of the study population indicated that they preferred to travel with their family and friends. Therefore, if the tourism industry provides excellent service to satisfy its visitors, it can generate a positive word of mouth (WoM) to encourage others to travel. Next, tourism management should consider incorporating exciting activities that can be done individually or in groups to keep tourists entertained and help them break out of their daily routine. The most valuable push factors that drove people to travel during the COVID-19 pandemic were getting away from the daily routine and relaxing in tourist destinations. Moreover, it is also necessary for tourism to build an atmosphere wherein people can relax and enjoy quality time with their family or friends to recharge their mental and physical state. A staycation package for a family or group in a hotel and a private travel package to visit some destinations within the city with strict health protocols are some strategies that tourism management can adopt to attract more visitors.

Limitations and Recommendations for Further Research

The current study has certain limitations and recommendations for future studies. First, considering the moderate power of the proposed model in predicting tourist behaviour, adding a new construct to this model is suggested to enhance the predictive power of the study. In addition, it is necessary to explore variables that can influence subjective norms and perceived behavioural control and improve their capability to affect tourists' decision-making process concerning travel. Second, the actual behaviour of tourists was not yet revealed in the current study. Therefore, the researchers suggest that future studies include an actual behaviour variable and confirm if the actual behaviour conforms to previous tourist behaviour intention studies using a longitudinal study. Third, given the scarce study of push and pull factors in extended TPB, assessing the current proposed model for other consumer behaviour studies is recommended.

CONCLUSION

The primary objective of this study was to use extended TPB to investigate push and pull factors that determine Indonesian tourists' decision to travel during COVID-19. Overall, the study's findings successfully addressed the research questions and achieved the study objective. Six of the seven hypotheses were found to be acceptable. Statistical results reveal that all the antecedent variables in the original TPB considerably affected tourists' intention to travel during COVID-19. The travel decision-making process among Indonesians is influenced by attitude, subjective norms, perceived behavioural control, and push factors; the push and pull factors were observed to affect tourists' attitudes substantially. Compared to perceived behavioural control and subjective norm, attitude is the most salient predictor. The more people believe that travelling during the pandemic is beneficial and essential, the greater their likelihood of travelling. Besides, external factors such as opinions of others and sufficient resources for travelling also play a role in the travel decision-making process of tourists amid pandemics. In terms of extended variables of push and pull factors, these constructs enhance tourist intention for tourism during a pandemic. There is a strong correlation between push factors, attitude, and travelling intention. Even though pull factors fail to influence behaviour intention, attitude successfully mediates the pull factors and travel intention. In other words, the intrinsic motive seems to have more power to influence people's decisionmaking process regarding travel.

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APPENDIX A

Measurement Items

Code	Statement
PUSH 1	I'm traveling during COVID-19 to escape from my daily routine
PUSH 2	I'm traveling during COVID-19 to escape from the pressure of work and life
PUSH 3	I'm traveling during COVID-19 to relax and rest at the destination
PUSH 4	I'm traveling during COVID-19 to recharge my mental health and physical state
PUSH 5	I'm traveling COVID-19 to enjoy a happy time with family or friends
PULL 1	I'm visiting a place for tourism during COVID-19 because of its standards of hygiene and cleanliness
PULL 2	I'm visiting a place for tourism during COVID-19 because it implements hygiene and health protocols
PULL 3	I'm visiting a place for tourism during COVID-19 because it provides a variety of culinary*
PULL 4	I'm visiting a place for tourism during COVID-19 because it is affordable*
PULL 5	I'm visiting a place for tourism during COVID-19 because it has CHSE (Cleanliness, Health, Safety & Environment Sustainability) certification from the government*
PULL 6	I'm visiting a place for tourism during COVID-19 because it offers a comfortable place to stay*
ATT 1	I think tourism during COVID-19 is positive
ATT 2	I think tourism during COVID-19 is valuable
ATT 3	I think tourism during COVID-19 is attractive
ATT 4	I think tourism during COVID-19 is beneficial
SN 1	My family and friends think it is okay for me to tourism during COVID-19
SN 2	My family and friends support me in tourism during COVID-19
SN 3	My family and friends understand me for tourism during COVID-19
PBC 1	If I want for tourism, I can do it during COVID-19
PBC 2	I have enough money for tourism during COVID-19
PBC 3	I have enough time for tourism during COVID-19
BI 1	I intend for tourism during COVID-19 soon
BI 2	I'm planning for tourism during COVID-19 soon
BI 3	I will make an effort for tourism during COVID-19 soon
BI 4	I will certainly invest time and money in tourism during COVID-19 soon

Note: *Item was dropped from further analyses due to outer loading value < 0.5





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The Skylark: A Symbol of Poetic Inspiration for Generations with Special Reference to Shelley and Hughes

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ABSTRACT

The skylark is a tiny brown bird with a small crest on its head. It is slightly larger than a sparrow and is popularly known for its uninterrupted song during its upward flight. The bird is found in most parts of England and many European countries. A closer examination of English poetic tradition reveals that several English poets have anthologised this tiny bird, including famous poets such as Wordsworth, Shelley, Hopkins, Meredith, Rossetti, Rosenberg, and C Day-Lewis. The late poet laureate Ted Hughes also wrote about the skylark in our times. Even Shakespeare and Goethe have eulogised the skylark in their plays. Since Thomas Hardy has written a poem about 'Shelley's skylark,' it is evident that traditionally 'To a Skylark' by Shelley is the most popular of all 'Skylark' poems. However, Hughes's poem on skylark merits our attention because it is entirely different from the general trend of all other skylark poems written until his time. Therefore, this study explores how the skylark became a symbol of poetic inspiration for different generations of poets by analysing the two famous poems on skylark written by Shelley (1792–1822) and

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Hughes (1930–1998). While Shelley depicts the skylark as a pure spirit of joy, Hughes considers it an embodiment of cosmic energy resulting from the bird's struggle for flight against the earth's gravitational pull. Therefore, the different perceptions of Shelley and Hughes about the skylark constitute the essence of this discourse.

Keywords: Cosmic energy, pure joy, semiotics, Shelley, Skylark, symbol, transcendence, Ted Hughes

INTRODUCTION

The objective of this study is to figure out the significance of the bird 'Skylark' as a symbol of poetic inspiration for generations through a semiotic analysis of two famous poems on 'Skylark' separated by the gap of more than a century. In other words, this paper is a comparative analysis of Shelley's (1792–1822) poem 'To a Skylark' and the contemporary poem 'Skylarks' by Ted Hughes (1930-1998). A critical examination of the history of English poetry from Shakespeare to the modern age shows that more than twenty prominent poets have anthologised the skylark in various ways. Wordsworth wrote two poems on skylark, and Shakespeare wrote about the bird in many of his plays. However, Shelley's poetic rendering of 'skylark' has captured the English cultural consciousness and transformed the bird into a symbol of 'pure delight' or an 'unbodied joy.' The impact of this tiny bird on English cultural fabric was so great that several poets had anthologized the bird in several different ways based on their particular poetic vision. However, all the poets except Hughes considered the bird a symbol of divine perfection and a source of pure delight because of its uninterrupted melodious song. Thomas Hardy went to the extent of writing a poem about Shelley's skylark. He claims that the skylark achieved immortality because Shelley heard the lark's song and immortalized the bird through his powerful poetic creativity.

Similarly, in our times, the poem 'Skylarks' by Ted Hughes exerted a seminal influence on contemporary poetry because

of the originality of his perception of the skylark, which is completely different from the traditional view held by other English poets for centuries. Hughes believed that the skylarks are indestructible, and they originated much before the existence of this earth. According to Stuart Hirschberg (1981), there was a myth among the ancient people that the skylark was created before any other animals, and it came into being before the existence of the earth and even before the origin of powerful gods such as Kronos and Zeus. Moreover, the myth further explains that the skylark buried the dead body of its father in its head because there was no earth to bury him. This author published a book on Hughes's poetry and established that the poetry of Hughes was built upon the concept of indestructible cosmic energy, which was scientifically formulated as (E=mc2) by Einstein (Baby, 2022). Since Einstein proved that energy is the only imperishable reality in this world, Hughes laid the foundation of his poetry on this solid basis. However, this is often misunderstood as violence in his poetry. According to Hughes, the animals that live in perfect harmony with Nature are the best examples of pure cosmic energy. In the poem 'Skylarks,' Hughes establishes that the struggle and resistance of the skylark in its upward flight eventually transform the bird into currents of pure cosmic energy. In other words, the bird's specificity is annihilated through the excruciating process of its laborious upward flight, which ultimately transfigures the bird into a 'floating sacrifice' or a semiotic expression of pure cosmic

energy. In order to explore the different perceptions of Shelley and Hughes about the skylark and establish that the skylark has been a source of inspiration for generations of poets down the ages, a chronological survey of the skylark poems has been undertaken in the literature review.

LITERATURE REVIEW

The theoretical foundation of this study is derived from the fact that the skylark has been a symbol of poetic inspiration for generations of poets down the ages. However, until now, there has not been any comprehensive or focused research on why so many poets have written about the bird skylark as a symbol of perfection and a source of divine joy. Among all skylark poems, Shelley's poem on skylark is a supreme poetic achievement that represents the best traditional view of the bird as an embodiment of perfection and a source of divine joy. However, Ted Hughes's recent poem, 'Skylarks,' offered a completely different perspective of the bird from the general trend of all other skylark poems written until his time. Therefore, the research question that is addressed in this study can be summarised in the following words:

What qualities marked out the skylark as a symbol of poetic inspiration for generations of poets ideally represented by Shelley's poem, and what is unique about Ted Hughes's poem that departs from the general trend of all other skylark poems written before his time?

In order to address the above research question, a comparative analysis of Shelley's and Hughes's poems is necessary because Shelley represents the bird as an icon of perfection and a symbol of pure joy in line with the traditional concept of skylark down the ages. On the other hand, Hughes's skylark marks a significant departure from the traditional concept of the bird ingrained in English cultural consciousness. Although both these poems explore divergent and sometimes mutually contradictory aspects of the bird, they offer valid revelations for overcoming human limitations through powerful expressions of poetic creativity. In this sense, the skylark in Shelley and Hughes gradually emerges as a symbol of transcendence for the readers of both poems through different routes. In Shelley, the bird achieves transcendence by keeping away from the earthly surroundings and pouring out celestial music from ethereal regions. However, in Hughes, the bird achieves transcendence through its struggle and resistance against the earth's gravitational pull during its upward flight. This struggle ultimately causes the transcendence of the bird into currents of indestructible cosmic energy, which is a central concept in Hughes's poetry, as already explained. Shelley's skylark is a pure spirit of joy or a divine messenger. In contrast, Hughes' skylark is a floating sacrifice of pure cosmic energy or a symbol of struggle and resistance in a hostile world.

In order to establish that the skylark has been a symbol of poetic inspiration for generations of poets down the ages, it is necessary to examine English literary history from the time of Shakespeare. A chronological survey from Shakespeare reveals that more than 20 English writers have anthologised the skylark down the ages. For example, Shakespeare has eulogised the bird in many of his plays, such as Troilus and Cressida, Love's Labour Lost, Venus & Adonis, Cymbeline, and Romeo & Juliet. Shakespeare addresses the skylark variously as the "the morning lark," or "the herald of the morn" to depict the bird's heavenly origin by associating it with the radiant beauty of the dawn:

"Lo, here the gentle lark, weary of rest,

From his moist cabinet mounts up on high,

And wakes the morning, from whose silver breast

The sun ariseth in his majesty;"

[Venus and Adonis]

The merry song of the skylark singing melodiously from celestial height is celebrated by Shakespeare in the following lines:

I'll say yon grey is not the morning's eye, 'Tis but the pale reflex of Cynthia's brow; Nor that is not the lark, whose notes do beat The vaulty heaven so high above our heads: [Romeo and Juliet: III,5]

Next to Shakespeare, Goethe, a prominent contemporary of Shakespeare, wrote about the skylark. He mentions specifically the celestial quality of the skylark's song in his famous work Faust: But 'tis our inborn impulse, deep and strong,

Upwards and onwards still to urge our flight,

When above us pours its thrilling song The skylark, lost in azure light,

[Faust: Lines 1093-1096]

In continuation to Shakespeare and Goethe, several other poets such as Wordsworth, Shelley, Hopkins, Meredith, Rossetti, Rosenberg, and C Day-Lewis have written about the skylark in different periods. The poets invariably consider the skylark a symbol of transcendence primarily because of the bird's singular ability to sing melodiously and fly vertically at high speed simultaneously. It is the obvious reason why the skylark has become a symbol of poetic inspiration for generations starting from Shakespeare to Ted Hughes, as evident from the poetic rendering of the bird by numerous other poets. For example, Shakespeare begins his poem with the invocation: Hark, hark! The lark at heaven's gate sings, and Goethe glorifies the skylark's song by saying that it pours out its thrilling song from far above us and is lost in azure light. Similarly, Cecil Dey-Lewis says the skylark is a singing star whose wings and voice are in heaven's abode. For Isaac Rosenberg, there is a strange joy in listening to the showering music of the unseen larks from the heavens above. Wordsworth, the father of English Romantic poetry, declared emphatically that the skylark is a symbol of poetic inspiration because of its melodious song and swift vertical flight through his opening lines:

ETHEREAL minstrel! pilgrim of the sky

Dost thou despise the earth where cares abound? (*Skylark poems*, n.d., p. 28).

In short, a chronological survey of the skylark poems written by various poets establishes that the skylark has become a symbol of poetic inspiration for generations of poets primarily because of the bird's singular ability to sing melodiously and fly vertically at high speed simultaneously. Moreover, most poets consider the bird a symbol of transcendence and an icon of perfection in this imperfect world. As a result, this study has indicated that the skylark is a symbol of poetic inspiration for generations of poets by pointing out that all the poets invariably speak of the heavenly music the bird can produce. In addition, most poets unanimously agree that the bird dwells mostly in ethereal regions or is invisible most of the time. The detailed analysis of two famous poems on skylark by Shelley and Hughes further elaborates on the bird's singular quality of transcendence through its vertical upward flight. The above chronological survey has established that the skylark has become a symbol of poetic inspiration for generations of poets primarily due to the bird's singular ability to sing melodiously and fly vertically at high speed simultaneously. Therefore, the next section will examine the descriptive-analytic method of comparison and contrast for analysing the skylark poems of Shelley and Hughes to vindicate the research question further.

METHOD

A descriptive-analytic method of comparison and contrast is employed for analysing two famous poems on skylarks by Shelley and Hughes to address the specific research question about the qualities that marked out the skylark as a symbol of poetic inspiration for generations of poets ideally represented by Shelley's poem in contrast to the radical nature of Ted Hughes's poem that departs from the general trend of all other skylark poems written before his time.

The first part of the research question has already been answered through a chronological survey of some of the famous skylark poems in the literature review by establishing that the skylark has become a symbol of poetic inspiration for generations of poets primarily due to the bird's singular ability to sing melodiously and fly vertically at high speed simultaneously. Moreover, most poets consider the bird a symbol of transcendence and an icon of perfection in this imperfect world, as the bird is invisible when it sings. Shelley's poem can be considered the culmination of this traditional line of thought that depicts the skylark as a blithe spirit pouring out celestial melodies from the heavens. However, Hughes' skylark radically departs from this conventional view by becoming a symbol of struggle and resistance by laboriously trying to extricate itself from the earth's gravitational pull. Shakespeare's concept of the skylark's celestial melody and its proximity to heaven are the basic concepts on which Shelley builds up his poetic artefact, replete with exquisite verbal music.

For example, Shelley addresses the bird as a blithe spirit that pours out full-hearted melodies in strains of unpremeditated art.

As a result, Shelley's direct invocation of the bird as a 'blithe spirit' at the beginning of the poem completely obliterates the physical reality of the bird and its specificity. On the other hand, the skylark of Hughes is firmly rooted in the world of physical reality. Shelley's skylark is a natural metaphor for a harmonious life on this earth. The bird is untouched by any traces of sorrow or misery. However, the Skylark of Hughes is a symbol of struggle and resistance in a hostile world. Ultimately, the bird becomes a floating sacrifice and transfigures into indestructible cosmic energy. These opposed perceptions of the skylark offered by Shelley and Hughes constitute the essence of this research. While Shelley and Hughes agree that the bird is a symbol of transcendence, several other distinguishing features warrant a comparison and contrast of both the poems, such as the content, style and poetic vision. Moreover, it is important to understand the concept of transcendence which the bird achieves through different routes in both the poems. Therefore, the next two sections will take up the individual analysis of both poems separately to reveal their linguistic peculiarities and the poets' contradictory perceptions about the skylark. (See Appendix for the text of the poems)

'To A Skylark' By Shelley

Shelley's poem consists of 105 lines divided into 21 stanzas of five lines, each with a regular metrical pattern with the repeated

rhyme scheme of ABABB. Shelley employs flowery imagery and melodious diction and uses almost all poetic devices to make the poem a perfect artistic creation. The secret of the poem's appeal lies in the harmonious fusion of Shelley's poetic creativity with numerous poetic devices. Shawa (2015), who undertook a stylistic analysis of the poem, says that in addition to the usual phonological, graphological, morphological and syntactic analysis, even punctuations and capitalisations have special significance in Shelley's poem. For example, he elaborates on capitalising on the words 'Heaven' and 'Spirit'. Shelley creates slant rhyme in the poem by skilfully manipulating consonant sounds such as /s/ /p//r//t/. The poem's musical quality is heightened by the application of trochaic trimeter throughout the poem and iambic hexameter for the long line with which each stanza ends. Poetic devices such as alliteration, apostrophe, paradox, and anaphora are used with consummate skill by Shelley in the poem (To a skylark poem summary, n.d.).

For example, in Lines 46 and 47, we find examples of

Alliteration:

Like a **gl**ow-worm **g**olden In a **d**ell of **d**ew.

Line 1 is an example of **Apostrophe:** Hail to thee, blithe Spirit!

Line 103 offers an example of Paradox:/ harmonious madness/.

The repetition of the word 'What' in lines 71–75 gives us a beautiful example of **Anaphora:**

What objects are the fountains

Of thy happy strain?

What fields, or waves, or mountains?

What shapes of sky or plain?

What love of thine own kind? what ignorance of pain? (*To a Skylark by Percy*, n.d., p. 4)

The poem's structural perfection is further enhanced using certain imagery and figures of speech. The imagery of light and brightness dominates the poem. The continuous use of the imagery of brightness and reference to light in the first part of the poem makes the reader believe that the skylark is a divine messenger like Christ, who is the light of the world. The uninterrupted flow of the imagery of light such as fire, lightning, sun, brightening, star, daylight, beams, bright, light and glow (lines 8–47) elevates the bird into a symbol of divine messenger (To a Skylark. A poem, n.d.). The skylark is a spirit of joy that cannot be perceived through our sensory experience alone because the bird is invisible most of the time, as the divine presence of God in this world. Zaiter (2018) says that Shelley's Skylark is observed on a flight to Heaven. The bird is there, but it stands for the highest point that the poet's imagination can reach. The corporeal existence of the bird is eclipsed by describing the bird's flight along with its melodious music. The bird

sings and soars while pouring out its heart in ceaseless divine melody from the lofty heights of the heavens. The poet employs an array of vivid images to enhance the divine nature and the heavenly melody of the skylark.

In short, Shelley's 'skylark' is an exceptional poem both structurally and linguistically because of its unique stanzaic form consisting of four uniform lines and a lengthy line at the end. The continuous repetition of this five-line structure and its exceptional diction produced by the poet appear naturally like 'profuse strains of unpremeditated art' ("To a Skylark": Critical Appreciation, n.d.). Like a wizard of vocal music, Shelley transforms the poem into divine worship through his incomparable selection and arrangement of words. In short, the skylark's song gradually becomes a divine melody of prophetic utterance as the bird is endowed with a penetrating insight into the mystery of life and death. Consequently, no song of man can ever come near the joyous melody of the bird. As a result, the poet yearns for this divine spirit of the skylark to inspire humanity into a fearless, hopeful, and happy existence. The song of the invisible skylark finally culminates into a "harmonious madness," symbolising the height of happiness.

Finally, the skylark's ecstatic song surpasses the beauty and glory of any created object in this world. The inspiring metaphors in the poem transform the bird into an immortal spirit. The poet compares the skylark to several exquisite objects in this world, such as a radiant glow-worm, a beautiful rose flower, or a twinkling grass in the sunshine. According to Shelley, the ideal world of the skylark should be the ultimate goal of every human being. In short, Shelley's skylark inhabits an ideal world far removed from the mundane miseries of ordinary mortals. In contrast, Hughes' skylark struggles to fly higher and higher with its heart drumming like a motor, and it ultimately becomes a floating sacrifice in its attempt to transcend the harsh realities of this world. The following section will analyse Hughes's poem in detail to understand how it is different from all the skylark poems written by generations of poets before his time, especially in comparison to Shelley's poem.

'Skylarks' by Hughes

Hughes's poem consists of 102 lines divided into eight sections with a varying number of lines in each section. The lines are highly irregular in length, and certain lines contain only a single word. The irregular stanzaic structure reminds us of the tortuous vertical flight of the skylark. However, even the poem's structure is completely different from Shelley's skylark, whose flight is a flawless, ecstatic activity realized in regular stanzaic structure. The structure, diction and the poetic images in Hughes are all oriented towards an energetic struggle for transcendence through a sort of excruciating purgatorial ritual similar to that of a shaman:

The skylark's flight can be considered a symbolic re-enactment of the shamanic rites of purgation, flight and transcendence. The bird's struggle for flight finally culminates in a ritualistic primitivism through its mimetic recreation of the dynamics of the shamanic technique of transference. (Baby, 2022, p. 82)

The skylark's flight in Hughes is materialised through several descriptive metaphors that declare the poet's superior craftsmanship. On a perceptive analysis, the skylark's flight can be regarded as a semiotic expression of Hughes's theory of poetry. The skylark's flight process can be considered an explication of the "Chora," a keyword in understanding the semiotic concept of Kristeva and Moi. According to Kristeva and Moi (2002), the "Chora" is the cosmic energy that activates a living organism's basic instincts. On critical analysis of the poem, the Skylark's struggle for flight ultimately transforms into the Chora or a sort of pure energy. According to Kristeva and Moi (2002), the Chora is "a non-expressive totality formed by the drives and their stasis in a motility that is as full of movement as it is regulated" In other words, the elements of intertextuality in Hughes's poem skylark explicates its affinity to the Chora which is another form of cosmic energy as propounded by Julia Kristeva.

The first part of the poem, skylarks instantly transports a discerning reader into the realm of energy. For example, the metaphorical descriptions of the skylark, such as barrel-chested, whippethead and hunting arrow, are powerful images of struggle and resistance. The sign "skylark" signifies the condition of a struggle which ultimately becomes a semiotic expression of pure cosmic energy as the bird tries to extricate itself from the earth's centre to be free of its gravitational pull. (Baby, 2022, p. 79)

In short, the cosmic energy or the Chora helps the skylark transform the earth's centre into the essence of the skylark's life's centre. As a result, the bird finally becomes a symbol of struggle and resistance. In the second section, the flight of the skylark emanates from "an irresistible biological necessity, and the entire process of the lark's flight is a virtual experience of death by the ritualistic annihilation of life and everything that binds the bird to the gravitational centre of the earth" (Baby, 2022, p. 80). In order to be released from the gravitational forces of the earth, the bird has to be "obedient as to death a dead thing. The pitch of the lark's struggle is so intense that the fine thread of distinction between joy and struggle is lost in the experience" (p. 81).

The skylark sheds its specificity in the fourth section of the poem and assumes several metaphorical significations to become pure cosmic energy. According to Baby (2022), all the images in this section explicate the cultural milieu of the poet, as evident from the following lines:

My idleness curdles
Seeing the lark labour near its cloud.
(Skylarks by Ted Hughes, n.d., p. 4)

The laborious flight of the lark with 'its heart drumming like a motor' is a replica of the contemporary industrial environment filled with the drumming sound of machines that the poet experienced during his time.

The concluding section of the poem virtually depicts the process of transfiguration caused by the laborious flight of the bird. Baby offers an excellent semiotic analysis of the poem by establishing that the skylark's struggle for flight finally culminates in the total annihilation of its body or its physical identity by becoming a floating sacrifice:

The whirling currents of a consumeristic society wiping out the identity of the man is captured metaphorically in the image of the lark dithering in ether and evaporating in the whirling sun. The speaking persona in the poem finally becomes indistinguishable from the lark and the process of its physical struggle for flight. The possibility of a flight from the earth that is a folded clod entails the annihilation of the self. When the larks achieve perfection by transcending their physical limitations through their struggle, they become floating sacrifices, the missionaries of mad earth. The transcendence of the lark through the process of their physical struggle makes them semiotics of energy realized in their mortal bodies. The larks virtually exemplify the human condition through a process of struggle and their ultimate triumph like a shaman (2022, p. 81).

The descriptive-analytic analysis method has presented the difference in perception of the skylark in Shelley and Hughes. As a result, the following section will critically evaluate the study's findings.

RESULTS AND DISCUSSION

The semiotic analysis of the poems of Shelley and Hughes revealed that Shelley's perception of the skylark aligns with the traditional concept of the bird from the time of Shakespeare until Ted Hughes. It upholds the idea that the bird is of celestial origin, singing out heavenly melodies. Therefore, Shelley calls it an "unbodied joy" or an "ethereal spirit" dwelling blissfully in ethereal regions. In other words, Shelley's skylark is a sign that gives rise to unlimited semiosis generating metaphorical images of transcendence conditioned by the poet's cultural context. On the other hand, Hughes radically departs from the traditional view and makes the bird a symbol of struggle and resistance. In short, Shelley's skylark is a pure spirit of joy or an unbodied delight that signifies the semiotics of transcendence. However, in Hughes, the skylark symbolises struggle and resistance with its heart drumming like a motor. However, Hughes' skylark achieves transcendence by becoming a floating sacrifice recharged with pure cosmic energy.

The mutually contradictory views regarding the skylark held by Shelley and Hughes can be justified by applying Umberto Eco's theory of Semiotics. According to Umberto Eco (1997), a real object is a sign or a code that signifies a physical or living

object. However, the real image or the meaning of a word is completely detached or independent of the real object signified by the code. In this sense,

when someone does something in response to a particular sign vehicle, it merely gives us information about the cultural units in question. Therefore, the skylark is not equivalent to any particular skylark (real object), but it is a pure sign encoded within a specific cultural context. (Baby, 2022, p. 77)

As a result, the skylark of Shelley can signify a completely different set of meanings or significations from that of Hughes because the social and cultural contexts of both the poets are different. Other famous semioticians like Roland Barthes (1977) also supported this view.

In short, the sign that signifies the skylark in Shelley and Hughes generates diverse metaphorical significations reflecting the social and cultural milieu specific to each of them. In Hughes, the bird's struggle for the flight can be considered "a semiotic expression of contemporary life which is a series of struggles against the inimical forces that threaten man's integrity" (Baby, 2022, p. 81). On the contrary, in Shelley's poem, the skylark symbolises transcendence signifying pure delight. K. M. Sagar has analysed this difference brilliantly:

Shelley assumes the skylark's song to be an expression of careless rapture and feeling that no creature of earth could know such pure delight and ignorance of pain is driven to call his skylark an 'unbodied joy', a 'blithe spirit'. Hughes, on the contrary, starts from the bird of muscle, blood and bone, feathers thrashing, lungs gasping, heart drumming like a motor, voice-box grinding like a concrete mixer and cannot believe that such climbing can be done for joy (1978, p. 89).

While Sagar illustrates the contrast of perceptions in Shelley and Hughes, Thomas West (1985) goes a step further and establishes that the skylark is essentially an embodiment of energy in Hughes because the bird is a sign 'encoded within the poet's social and cultural context.' Therefore, according to West, the skylark is an exact counter or equivalent of energy itself:

The energetic bird, Hughes would say, is ultimately the exact count of the word skylark. Stated the other way round, a skylark is the adequate figure of speech for the energetic animal, as long as that figure of speech is as it was experienced rather than understood. (1985, p. 44)

It can be said that the skylark in Hughes undergoes a total transformation from a physical bird into the semiotics of pure cosmic energy for an observing persona. According to Baby (2022), the specific details of the bird and its laborious flight gradually transform into an abstract internal struggle in the reader's mind. The excruciating process of the lark's flight

is a symbolic expression of the primitive shamanic rites of flight and purgation. Life in contemporary society can be considered a virtual enactment of the purgatorial flight of the lark. However, at the culminating phase of the lark's laborious flight, it is recharged with pure cosmic energy and begins to drift and float not like sacrifices but with changed notes of perfect conscience like the risen Christ. The excruciating process of the lark's flight and the intervention of the speaking persona at the end of the poem amplifies human life as a condition of struggle and resistance against the inimical forces present in this world.

Ultimately, the intervention of the speaking persona in the poem can also be viewed from another angle. According to Panecka (2018), the shamans invariably transfer their anguish and sufferings onto animal totems during their shamanic initiation rites. Analysing the lark's excruciating experience from any angle or perception reflects modern man's existential agony of going through the meaningless activities of his daily life. In short, the critical analysis of the skylark given above is based on the perceptions of several poets in the past and specifically Shelley and Hughes. Undoubtedly, the skylark symbolises poetic inspiration for generations of poets because of the bird's singular ability to sing melodiously and simultaneously fly vertically at high speed. While Shelley upholds the conventional view of the bird as a 'blithe spirit' singing divine melodies, Hughes departs radically from this conventional concept and depicts

his skylark as a symbol of struggle and resistance resulting from its laborious upward flight. However, Hughes's lark achieves transcendence just before the final plummeting dead drop by becoming a 'floating sacrifice' recharged with currents of pure cosmic energy. It can be concluded that Shelley and Hughes hold opposing views and mutually contradictory semiotic functions in their representations of the skylark, as Lechte (1994) claims. However, both agree that the bird is undoubtedly a symbol of transcendence for all human beings in this miserable world.

CONCLUSION

In conclusion, it can be said that despite the contradictory perceptions of Shelley and Hughes about the flight and song of the skylark, there is a converging agreement between them about the skylark as a symbol of transcendence. However, in both, the final goal of transcendence achieved by the skylark is through mutually contradictory experiences. In Hughes, this is made possible through an excruciating struggle of upward flight, which is reflected in the line which says that the whole agony was for this plummeting dead drop. The poet further says that the recharged energy of the bird is typified in long cutting screams, which are buckling like razors that transform the struggle and flight of the skylark into pure currents of cosmic energy signifying the bird's final liberation from all its limitations.

On the other hand, Shelley's skylark enjoys a blissful existence aspired by every

human being in this miserable world. As a result, Shelley makes a fervent prayer to the skylark to give him at least half the gladness of the bird so that he could at least understand the essence of the "harmonious madness" or the unalloyed joy experienced by the bird. On the other hand, the skylark of Ted Hughes is a symbol of struggle "manacled with blood battering their last sparks" in their laborious flight. However, at the penultimate moments of the flight, the skylark becomes a floating sacrifice recharged with pure cosmic energy that enables the bird to transcend its limitations before its final plummeting drop. Therefore, the purgatorial struggle of the skylark transforms the bird into an alert spirit with a perfect conscience, similar to the risen Christ or a shaman. In Short, the skylark has inspired generations of poets and writers diversely throughout the history of English literature.

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APPENDIX

TO A SKYLARK: BY PERCY BYSSHE SHELLEY

Hail to thee, blithe Spirit!
Bird thou never wert,
That from Heaven, or near it,
Pourest thy full heart
In profuse strains of unpremeditated art.

Higher still and higher
From the earth thou springest
Like a cloud of fire;
The blue deep thou wingest,
And singing still dost soar, and soaring ever singest.

In the golden lightning
Of the sunken sun,
O'er which clouds are bright'ning,
Thou dost float and run;
Like an unbodied joy whose race is just begun.

The pale purple even
Melts around thy flight;
Like a star of Heaven,
In the broad day-light
Thou art unseen, but yet I hear thy shrill delight,

Keen as are the arrows
Of that silver sphere,
Whose intense lamp narrows
In the white dawn clear
Until we hardly see, we feel that it is there.

All the earth and air
With thy voice is loud,
As, when night is bare,
From one lonely cloud
The moon rains out her beams, and Heaven is overflow'd.
What thou art we know not;

What is most like thee?
From rainbow clouds there flow not
Drops so bright to see
As from thy presence showers a rain of melody.

Like a Poet hidden
In the light of thought,
Singing hymns unbidden,
Till the world is wrought
To sympathy with hopes and fears it heeded not:

Like a high-born maiden
In a palace-tower,
Soothing her love-laden
Soul in secret hour
With music sweet as love, which overflows her bower:

Like a glow-worm golden
In a dell of dew,
Scattering unbeholden
Its aëreal hue
Among the flowers and grass, which screen it from the view:

Like a rose embower'd
In its own green leaves,
By warm winds deflower'd,
Till the scent it gives
Makes faint with too much sweet those heavy-winged thieves:

Sound of vernal showers
On the twinkling grass,
Rain-awaken'd flowers,
All that ever was
Joyous, and clear, and fresh, thy music doth surpass.

Teach us, Sprite or Bird,
What sweet thoughts are thine:
I have never heard
Praise of love or wine
That panted forth a flood of rapture so divine.
Chorus Hymeneal,
Or triumphal chant,
Match'd with thine would be all

But an empty vaunt, A thing wherein we feel there is some hidden want.

What objects are the fountains
Of thy happy strain?
What fields, or waves, or mountains?
What shapes of sky or plain?
What love of thine own kind? what ignorance of pain?

With thy clear keen joyance Languor cannot be: Shadow of annoyance Never came near thee: Thou lovest: but ne'er knew love's sad satiety.

Waking or asleep,
Thou of death must deem
Things more true and deep
Than we mortals dream,
Or how could thy notes flow in such a crystal stream?

We look before and after,
And pine for what is not:
Our sincerest laughter
With some pain is fraught;
Our sweetest songs are those that tell of saddest thought.

Yet if we could scorn
Hate, and pride, and fear;
If we were things born
Not to shed a tear,
I know not how thy joy we ever should come near.

Better than all measures
Of delightful sound,
Better than all treasures
That in books are found,
Thy skill to poet were, thou scorner of the ground!
Teach me half the gladness
That thy brain must know,
Such harmonious madness
From my lips would flow
The world should listen then, as I am listening now.

Lines taken from: To a Skylark by Percy Bysshe Shelley | Poetry Foundation

SKYLARKS: BY TED HUGHES

Ι

The lark begins to go up

Like a warning

As if the globe were uneasy –

Barrel-chested for heights

Like an Indian of the high Andes,

A whippet head, barbed like a hunting arrow,

But leaden

With muscle

For the struggle

Against

Earth's centre

And leaden

For ballast

In the rocketing storms of the breath.

Leaden

Like a bullet

To supplant

Life from its centre.

II

Crueller than owl or eagle

A towered bird, shot through the crested head

With the command,

Not die

But climb

Climb

Sing

Obedient as to death a dead thing.

III

I suppose you just gape and let your gaspings Rip in and out through your voicebox

O lark

And sing inwards as well as outwards

Like a breaker of ocean rolling the shingle

O lark

O song, incomprehensibly both ways –Joy! Help! Joy! Help!
O lark

IV

You stop to rest, far up, you teeter
Over the drop.
But not stopping singing
Resting only for a second
Dropping just a little
Then up and up and up
Like a mouse with drowning fur
Bobbing and bobbing at the well-wall
Lamenting, mounting a little —
But the sun will not take notice
And the earth's centre smiles.

V

My idleness curdles
Seeing the lark labour near its cloud
Scrambling
In a nightmare difficulty
Up through the nothing
Its feathers thrash, its heart must be drumming like a motor,
As if it were too late, too late.
Dithering in ether
Its song whirls faster and faster
And the sun whirls
The lark is evaporating
Till my eye's gossamer snaps
and my hearing floats back widely to earth.

After which the sky lies blank open

Without wings, and the earth is a folded clod.

Only the sun goes silently and endlessly on with the lark's song.

VI

All the dreary Sunday morning
Heaven is a madhouse
With the voices and frenzies of the larks,
Squealing and gibbering and cursing
Heads flung back, as I see them,
Wings almost torn off backwards – far up
Like sacrifices set floating
The cruel earth's offerings
The mad earth's missionaries.

VII

Like those flailing flames The lift from the fling of a bonfire Claws dangling full of what they feed on The larks carry their tongues to the last atom Battering and battering their last sparks out at the limit – So it's a relief, a cool breeze When they've had enough, when they're burned out And the sun's sucked them empty And the earth gives them the O.K. And they relax, drifting with changed notes Dip and float, not quite sure if they may Then they are sure and they stoop And maybe the whole agony was for this The plummeting dead drop With long cutting screams buckling like razors But just before they plunge into the earth They flare and glide off low over grass, then up To land on a wall-top, crest up,

Kappalumakkel Thomas Baby

Weightless,
Paid-up,
Alert,
Conscience perfect.

VIII

Manacled with blood,
Cuchulain listened bowed,
Strapped to his pillar (not to die prone)
Hearing the far crow
Guiding the near lark nearer
With its blind song
"That some sorry little wight more feeble and misguided than thyself
Take thy head
Thine ear
And thy life's career from thee."

Lines taken from: https://lyrics.lol/artist/21050-ted-hughes/lyrics/3746304-skylarks



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Kesalahan Bacaan dalam Bahasa Melayu oleh Murid Disleksia Berdasarkan Perspektif Teori Levinson

Vijayaletchumy Subramaniam^{1*}, Puteri Roslina Abd Wahid², Normaliza Abd Rahim³ dan Kavenia Kunasegran¹

ABSTRAK

Kajian ini dijalankan untuk mengkaji kesalahan bacaan bahasa Melayu dalam kalangan murid disleksia. Sampel kajian terdiri daripada 100 kanak-kanak disleksia yang dipilih daripada 10 cawangan Persatuan Disleksia Malaysia. Kajian ini bersandarkan Teori Levinson (1994) yang bertunjangkan tujuh jenis mekanisme kesalahan bacaan, iaitu pengguguran, pemindahan, penyisipan, penggantian, pembalikan, pemeluwapan, penambahan atau agakan/suka-suka. Data kajian dikumpulkan melalui kaedah pemerhatian dan pengujian. Pengkaji menggunakan teks bacaan bahasa Melayu mengikut kesesuaian tahap pembelajaran sebagai alat kajian dalam meneliti kesalahan bacaan murid disleksia. Hasil kajian membuktikan murid disleksia menunjukkan kesukaran dalam beberapa aspek bacaan, iaitu jenis

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pengguguran, pembalikan, penggantian, penyisipan dan agak-agakan. Kelima-lima jenis kesalahan bacaan tersebut didapati menyokong Teori Levinson Disleksia (1994), manakala hasil kajian juga telah membuktikan beberapa kesalahan bacaan dalam kalangan murid disleksia di luar jangkaan teori tersebut.

Kata kunci: Aspek bacaan, bahasa Melayu, disleksia, Teori Levinson

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Reading Errors in the Malay Language by Dyslexic Students from the Perspective of Levinson Theory

ABSTRACT

This study was conducted to examine the reading errors in the Malay language among dyslexic students. The study sample consisted of 100 dyslexic children selected from 10 branches of the Malaysian Dyslexia Association. This study is based on Levinson's Theory (1994) which underlines seven types of reading error mechanisms: elimination, transfer, insertion, substitution, reversal, condensation, addition or guessing. The study data were collected through observation and testing methods. The researcher used reading texts according to the appropriate level of learning to examine the reading errors of dyslexic students. The study results proved that dyslexic students showed difficulty in several aspects of reading, namely elimination, reversal, substitution, insertion and guessing. These five types of reading errors were found to support Levinson's Theory (1994), while the study results have also proven some reading errors among dyslexic students beyond the expectations of the theory.

Keywords: Dyslexia, Malay language, Levinson Theory, reading aspects

PENGENALAN

Dalam aspek bacaan bahasa Melayu, pengetahuan huruf-bunyi telah terbukti menjadi petunjuk utama yang sangat baik dalam menilai kebolehan membaca dan mengeja murid. Pengetahuan huruf menyumbang kepada kemahiran penyahkodan dalam pembelajaran bahasa kanak-kanak dari aspek kesedaran fonemik. Pengetahuan huruf dan bunyi ialah prasyarat asas yang penting untuk kanak-kanak menguasai bacaan. Dalam persekitaran pendidikan, kanak-kanak berkeperluan khas digambarkan sebagai luar biasa berbanding dengan kanak-kanak normal. Antaranya ialah kanak-kanak disleksia yang mempunyai suatu masalah pembelajaran yang spesifik (Lyon et al., 2003). Kecelaruan pembelajaran ini terdiri daripada masalah disleksia, disgrafia, dan diskalkulia. Walau bagaimanapun, disleksia merupakan kecelaruan pembelajaran yang paling lazim dalam kalangan kanak-kanak di Malaysia berbanding masalah disgrafia ataupun diskalkulia. Kanak-kanak disleksia mempunyai pelbagai jenis cabaran dan halangan dalam proses pembelajaran mereka. Secara umumnya, masalah pembelajaran dikaitkan dengan pembangunan neurologi yang mempengaruhi keupayaan individu memproses, menyimpan, dan menghasilkan semula maklumat (Ugwu, 2015). Oleh sebab itu, kecelaruan pembelajaran memberi impak kepada proses kognitif kanak-kanak disleksia.

Persatuan Disleksia Antarabangsa (*The International Dyslexia Association*, IDA) menganggarkan bahawa hampir 15–20%

penduduk dunia mengalami sekurangkurangnya satu atau lebih simptom disleksia. Masalah pembelajaran spesifik telah wujud sejak lama. Walau bagaimanapun, kesedaran dan pengiktirafan yang diberikan kepada masalah pembelajaran disleksia sebagai masalah yang mempunyai pengaruh yang besar dalam sistem pendidikan baru-baru ini disebarluaskan (Adubasim & Nganji, 2017). Terdapat banyak perbezaan dalam proses pembelajaran yang dialami oleh kanak-kanak disleksia sepanjang proses pembelajaran mereka. Snowling (2000a) mendefinisikan disleksia sebagai masalah pembelajaran dalam pemerolehan dan pemprosesan bahasa yang dimanifestasikan oleh kekurangan kecekapan dalam proses membaca, mengeja dan menulis (Snowling, 2000b). Ini bermaksud kanak-kanak disleksia mempunyai masalah melakukan tugas atau kerja tertentu sekiranya melibatkan tiga aspek tersebut, iaitu membaca, mengeja dan menulis. Secara ringkas, kanak-kanak disleksia perlu disesuaikan dengan keadah pembelajaran yang mungkin berbeza untuk setiap individu. Hal ini demikian kerana kanak-kanak disleksia mempunyai tahap pembelajaran yang berbeza.

Ikediashi (2012) berpendapat masalah pembelajaran disleksia sebagai sesuatu gangguan yang dikaitkan dengan proses membaca, menulis dan mengeja. Definisi ini mengkategorikan disleksia bukan hanya sebagai satu masalah yang mempengaruhi keupayaan membaca, mendengar, dan menulis tetapi sebagai satu masalah pembelajaran yang spesifik, dari segi domain operasi dan koherensi dalam kecelaruan

membaca. Definisi disleksia yang diutarakan oleh IDA telah mendapat penerimaan dan pengiktirafan yang lebih luas sebagai badan penyelidikan profesional terkemuka dalam bidang disleksia. Menurut IDA, disleksia merupakan masalah pembelajaran spesifik yang dikaitkan dengan sifat neurologi. IDA membuktikan bahawa terdapat perbezaan struktur otak yang signifikan dalam kalangan kanak-kanak disleksia berbanding kanak-kanak normal. Disleksia mungkin disebabkan oleh perkembangan otak yang lambat atau kekurangan dalam domain fonologikal bahasa. Dalam pada itu, kemampuan kognitif individu disleksia juga mempunyai perkaitan dengan kekurangan tersebut.

PERNYATAAN MASALAH

Kanak-kanak disleksia mempunyai masalah membaca dalam proses pembelajaran mereka (International Dyslexia Association, 2020). Secara umumnya, kemahiran membaca sangat penting dan menjadi tunjang utama dalam proses pembelajaran. Kanak-kanak yang didiagnosis dengan disleksia mempunyai kesukaran dalam bahasa, khususnya bacaan. Hal ini kerana mereka menghadapi cabaran dalam diskriminasi huruf secara visual dan auditori. Kecelaruan huruf ini disebabkan oleh pengunaan otak sebelah kanan secara dominan (Davis, 1994). Mereka mempunyai masalah dalam mengenal pasti dan mendiskriminasi huruf.

Masalah yang paling signifikan dalam aspek bacaan murid disleksia ialah keupayaan mengenal pasti huruf dan menyesuaikan huruf dengan bunyi (Sariah Amirin, 2020). Maka, situasi ini memberikan lompang kepada pengkaji untuk memfokuskan kajian dalam aspek bacaan murid disleksia. Penguasaan bahasa seseorang bergantung kepada pemahaman mereka dalam aspek fonemik, fonetik dan fonologikal bahasa. Sekiranya masalah ini tidak ditangani, murid disleksia tidak dapat menyesuaikan bentuk huruf dengan bunyi huruf dengan betul. Bukan itu sahaja, halangan ini menyebabkan mereka mempunyai penguasaan perbendaharaan kata yang kurang memuaskan. Justeru, tahap berbahasa kanak-kanak disleksia tidak sejajar dengan tahap bahasa kanak-kanak normal.

Kajian-kajian lepas membuktikan bahawa terdapat beberapa penentu yang dominan dalam masalah bacaan murid disleksia seperti kajian yang dijalankan oleh Lee dan Wheldall (2011), Vijayaletchumy dan Nadia (2020). Lee dan Wheldall (2011) berpendapat bacaan, ejaan dan penyahkodan dapat menilai kesukaran literasi disleksia. Kajian tersebut menunjukkan murid disleksia tidak mempunyai pengetahuan dan kebolehan yang cukup dalam aspek segmentasi huruf dan bunyi. Selain itu, Kavenia dan Vijayaletchumy (2018) mempunyai kajian yang hampir sama dengan kajian Lee dan Wheldall (2011) iaitu murid disleksia menunjukkan masalah membaca secara berterusan jika tidak dibendung di peringkat awal. Malah, Kavenia dan Vijayaletchumy (2018) memberikan saranan supaya pelbagai aktiviti pembelajaran yang menarik harus diperkenalkan supaya murid dapat membaca dan mencapai literasi awal.

Permasalahan ini dapat dikukuhkan lagi melalui kajian rintis yang telah dijalankan di Pusat Disleksia Ampang (Sariah Amirin, 2020). Kajian rintis ini melibatkan 15 orang murid disleksia yang telah didiagnosis secara klinikal. Antara jumlah 15 orang murid disleksia tersebut, 12 orang murid mempunyai masalah dalam mengenal pasti huruf dengan betul. Pengkaji telah menguji penguasaan diskriminasi huruf mereka dengan menggunakan senarai semak yang mengandungi lapan huruf yang disesuaikan dengan gambar. Dapatan kajian rintis memaparkan bahawa 80% murid mempunyai masalah dalam aspek diskriminasi huruf yang merupakan kemahiran signifikan dalam penguasaan bacaan. Masalah ini memberikan lompang kepada pengkaji untuk memfokuskan masalah bacaan yang dihadapi oleh murid disleksia mengikut Teori Levinson dalam aspek bacaan bahasa Melayu. Kajian oleh Abdul Aziz Busri dan Wan Muna Ruzanna Wan Mohammad (2021) didapati hampir sama dengan kajian ini iaitu murid disleksia didapati menghadapi masalah dalam aspek bacaan bahasa Melayu. Hal ini didapati penting dalam pembelajaran murid yang memerlukan bacaan asas supaya pembelajaran dapat berjalan dengan lancar. Malah, kajian oleh Abdul Aziz Busri dan Wan Muna Ruzanna Wan Mohammad (2021) mendapati bahawa pembelajaran tidak berlaku dengan baik kerana murid keliru apabila diarahkan untuk membaca. Hasil kajian ini mendapati bahawa penguasaan simbol, kaunseling orientasi dan latihan membaca perlu dilakukan supaya murid dapat menikmati bahan bacaan tersebut.

Bertitik tolak daripada kajian-kajian tentang disleksia yang dibincangkan, dapat dijelaskan bahawa masalah pembelajaran murid disleksia masih lagi perlu diteliti supaya murid belajar membaca dengan baik. Malah, kajian-kajian tersebut mempunyai jurang tentang masalah membaca dalam kalangan murid disleksia. Tambahan pula, di Malaysia, kira-kira 500,000 kanakkanak menghadapi disleksia pada 2020 dan mungkin, angkanya meningkat. Melalui data yang diperoleh, terdapat jurang dalam kajian-kajian di atas. Malah, lebih banyak lagi kajian perlu dilakukan supaya masalah ini dapat diselesaikan. Justeru, kajian ini akan mengenal pasti dan membincangkan mekanisme kesalahan bacaan dalam kalangan murid disleksia. Daripada lompang kajian lepas, pengkaji akan menganalisis kesalahan bacaan murid disleksia mengikut tahap pembelajaran mereka, iaitu permulaan, pertengahan dan lanjutan mengikut Teori Levinson.

METODOLOGI

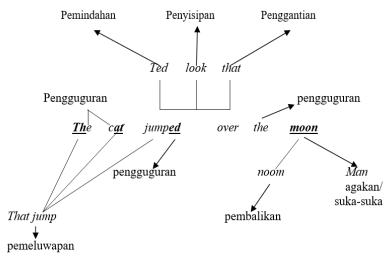
Pengkaji telah mengadaptasikan reka bentuk penyelidikan kualitatif dalam mengumpul dan menganalisis data kajian ini. Kajian berbentuk kualitatif lebih sesuai digunakan untuk kajian pemerhatian subjek kajian dan untuk meneliti secara terperinci subjek kajian yang dikaji (Creswell, 2014). Kajian ini bersandarkan Teori Levinson (1994) yang menjelaskan kesalahan bacaan dalam kalangan murid disleksia. Menurut Levinson (1994), terdapat tujuh jenis mekanisme

kesalahan bacaan dalam kalangan murid disleksia, iaitu pengguguran, pemindahan, penyisipan, penggantian, pembalikan, pemeluwapan, penambahan atau agakan/ suka-suka. Dalam kajian ini, sampel kajian terdiri daripada 100 orang murid disleksia yang telah disahkan mempunyai disleksia setelah menjalani ujian diagnostik oleh pakar di Pusat Disleksia Malaysia. Pengkaji telah memilih 100 orang murid disleksia tersebut secara rawak daripada tempat kajian. Daripada jumlah tersebut, pengkaji seterusnya mengenal pasti hanya 10 orang murid disleksia yang menunjukkan kesalahan bacaan secara dominan mengikut Teori Levinson Disleksia. Semua sampel kajian yang dipilih mewakili ketiga-tiga tahap pembelajaran di tempat kajian, iaitu beginner, intermediate dan advanced. Pengkaji telah menjalankan kajian ini di 10 sekolah disleksia Persatuan Disleksia Malaysia. Justifikasi pemilihan 10 tempat kajian ini adalah kerana pengkaji ingin mengkaji sama ada masalah bacaan mengikut Teori Levinson ini umumnya dipaparkan oleh semua murid disleksia. Dalam tempoh kajian lapangan tersebut, pengkaji menjalankan pemerhatian dalam kelas untuk mengenal pasti kesalahan bacaan dalam kalangan murid disleksia. Kesalahan bacaan diukur berdasarkan teks bacaan yang digunakan oleh guru di sekolah disleksia. Data yang diperoleh dianalisis secara deskriptif untuk mengenal pasti kesalahan bacaan mengikut Teori Levinson (1994) dalam kalangan murid disleksia.

DAPATAN DAN PERBINCANGAN

Kesalahan Bacaan Mengikut Teori Levinson (1993)

Menurut Levinson, terdapat tujuh jenis mekanisme kesalahan bacaan dalam kalangan murid disleksia seperti yang digambarkan dalam Rajah 1, iaitu pengguguran, pemindahan, penyisipan, penggantian, pembalikan, pemeluwapan, penambahan atau agakan/suka-suka. Pengkaji akan menganalisis kesalahan bacaan murid disleksia mengikut tahap pembelajaran mereka, iaitu permulaan, pertengahan dan lanjutan mengikut Teori Levinson.



Rajah 1. Kerangka konsep Teori Levinson dalam bahasa Melayu

Tahap Pembelajaran: Permulaan/ Beginner (i). Subjek kajian dalam tahap pembelajaran permulaan ini lebih banyak melakukan kesalahan bacaan jenis pengguguran dan pembalikan seperti yang diutarakan dalam Teori Levinson (1994).

Jadual 1 Jenis kesalahan bacaan (Pengguguran)

Jenis Kesalahan Bacaan	Subjek	Perkataan	Kesalahan	S1: S2/4:	Ini kera. <i>(asal)</i> Ini kea. <i>(kesalahan)</i> Ini kera <i>(asal)</i> Ni kea. <i>(kesalahan)</i>	
Pengguguran	S1	kera	kea	S3/5:	Ini kera saya. (asal)	
	S2/4	ini	ni	S4:	Ini kera say. <i>(kesalahan)</i> Saya beri kera tebu. <i>(asal)</i>	
	S3/5	saya	say	S5:	Saya beri kera tbu. <i>(kesalahan)</i> Saya beri kera tebu madu. <i>(asal)</i> Saya beri kera tebu mad.	
	S4	tebu	tbu			
	S5	madu	mad		(kesalahan)	

Teori Levinson (1993) membahagikan kesalahan bacaan jenis pengguguran kepada dua aspek, iaitu pengguguran huruf dan pengguguran perkataan dalam ayat. Walau bagaimanapun, dalam kajian ini subjek hanya melakukan kesalahan bacaan dari aspek pengguguran huruf. Hasil dapatan mendapati kebanyakan kesalahan pengguguran bertitik tolak daripada masalah mengenali dan menggabungkan huruf dengan bunyi tersebut.

Berdasarkan ayat yang diberikan, terdapat beberapa kesalahan bacaan jenis pengguguran yang dilakukan oleh subjek kajian. Seperti yang dipaparkan dalam Jadual 1, S1 telah membaca <kera> sebagai <kea>. S1 telah menggugurkan huruf /r/ apabila membaca perkataan kera. S2 dan S4 telah melakukan kesalahan yang sama apabila membaca perkataan <ini> sebagai <ni>. S2 dan S4 tidak menyebut bunyi /i/ di permulaan. Berdasarkan ayat ketiga

dalam teks bacaan yang diberikan, S3 dan S5 menggugurkan huruf /a/ dalam perkataan <saya>. S4 telah membaca <tebu> sebagai <tbu>. S1 telah menggugurkan huruf /e/ apabila membaca perkataan tebu dalam ayat tersebut. Manakala S5 tidak menyebut bunyi /u/ di akhir perkataan <madu>. Berdasarkan ayat keenam dalam teks bacaan yang diberikan, S5 menggugurkan huruf /u/.

Dalam pemerhatian pengkaji, subjek kajian menghadapi kesusahan dalam menggabungkan bunyi dengan huruf yang disebut. Cabaran tersebut menjadi faktor utama murid disleksia menggugurkan huruf dalam perkataan yang dibaca. Penggabungan huruf bersama bunyi tersebut merupakan kemahiran asas dalam membaca. Kesalahan bacaan jenis pengguguran merupakan kesalahan yang signifikan dalam kalangan murid tahap permulaan.

Jadual 2

Jenis kesalahan bacaan (Pembalikan)

Jenis Kesalahan Bacaan	Subjek	Perkataan	Kesalahan
Pembalikan	S1	ini	iui
	S2	bela	bale
	S3	bela	dela
	S4	beri	deri
	S5	tebu	bute
	S6	madu	mabu
	S7	madu	mapu
	S9	madu	wadu

S1:	Ini kera. (asal)	S6:	Saya beri kera tebu madu. (asal)
	Iui kera. (kesalahan)		Saya beri kera tebu mabu.
S2:	Saya bela kera. (asal)		(kesalahan)
	Saya bale kera. (kesalahan)	S7:	Saya beri kera tebu madu. (asal)
S3:	Saya bela kera. (asal)		Saya beri kera tebu mapu.
	Saya dela kera. (kesalahan)		(kesalahan)
S4:	Saya beri kera tebu. (asal)	S7:	Saya beri kera tebu madu. (asal)
	Saya deri kera tebu. (kesalahan)		Saya beri kera tebu wadu.
S5:	Saya beri kera tebu. (asal)		(kesalahan)
	Saya beri kera bute. (kesalahan)		

Sepadan dengan kesalahan bacaan jenis pengguguran, Teori Levinson (1993) membahagikan kesalahan bacaan jenis pembalikan kepada dua aspek, iaitu pembalikan huruf dan pembalikan suku kata dalam ayat. Dalam konteks kajian ini, hasil dapatan menunjukkan murid disleksia melakukan kesalahan pengguguran dalam kedua-dua aspek tersebut, iaitu pembalikan huruf dan pembalikan suku kata dalam ayat.

Berdasarkan Jadual 2, terdapat beberapa kesalahan bacaan jenis pembalikan yang dilakukan oleh subjek kajian. S1 telah membaca <ini> sebagai <iui>. S1 telah membalikkan huruf /n/ menjadi /u/ apabila membaca perkataan tersebut. Manakala dalam kesalahan bacaan jenis pembalikan suku kata pula, S2 membaca perkataan <bela> sebagai <bela>. S2 telah membalikkan susunan suku kata dalam perkataan <bela>. S3 telah membaca

bela> sebagai <dela>, dengan melakukan kesalahan pembalikan huruf /b/ kepada /d/. Kesalahan yang sama dilakukan oleh S4 iaitu, kesalahan bacaan pembalikan huruf /b/ kepada /d/ untuk perkataan <beri>. Berdasarkan ayat kelima dalam teks bacaan yang diberikan, S5 telah membalikkan suku kata <tebu> menjadi <bute> apabila

membaca perkataan tersebut. S6 dan S7 telah membuat kesalahan pembalikan huruf /d/ kepada huruf /b/ dan /p/ untuk perkataan <madu>. S8 pula melakukan kesalahan pembalikan huruf /m/ kepada /w/ untuk perkataan yang sama seperti S6 dan S7.

Berdasarkan kajian-kajian lepas dalam masalah bacaan, pembalikan huruf merupakan masalah yang signifikan dalam kalangan murid disleksia. Kajian yang dijalankan oleh Wan Muna Ruzanna Wan Mohammad (2011) telah mengkaji kesalahan bacaan dan tulisan, terutamanya dari sudut kesalahan ejaan dalam penulisan. Hasil dapatan mendapati bahawa murid disleksia mempunyai kesukaran mengenal pasti fonem dan pertukaran huruf dalam proses ejaan. Hasil kajian juga menunjukkan bahawa pelajar sering membuat kesalahan huruf seperti 'b d', 'u-n', 'm-w', 'g-q', 'pq', dan 'b-p'. Kajian-kajian lepas juga telah membuktikan kesukaran bacaan dari segi pembalikan huruf, penamaan huruf abjad yang tidak tepat dan tidak membunyikan ejaan dengan tepat. Rajah 2 merupakan teks yang digunakan untuk menguji bacaan murid disleksia pada peringkat permulaan.

TEKS PETIKAN

Kera

Kera. Ini kera. Ini kera saya. Saya bela kera. Saya beri kera tebu. Saya beri kera tebu madu.

Rajah 2. Teks petikan tahap pembelajaran permulaan

Tahap Pembelajaran: Pertengahan/ Intermediate (ii). Subjek kajian dalam tahap pembelajaran pertengahan lebih banyak melakukan kesalahan bacaan jenis penggantian dan pengguguran.

Berdasarkan Jadual 3, terdapat beberapa kesalahan bacaan jenis penggantian yang dilakukan oleh subjek kajian. Subjek menggantikan huruf dengan vokal atau konsonan yang berbeza. S1 telah

Jadual 3

Jenis kesalahan bacaan (Penggantian)

Jeni	s Kesalahan Subjek Bacaan	Perkataan	Kesalahan
Pe	enggantian S1	sekolah	sakolah
	S2	rendah	randah
	S3	baru	bara
	S4/S8/S9	dicat	dikat
	S5	warna	warni
	S6	tepi	tipi
	S7	cantik	kantik
	S8	bersih	birsih
	S9	selesa	salesa
	S10	belajar	bilijar
S1: S2:	Ini sekolah. (asal) Ini sakolah. (kesalahan) Ini sekolah rendah. (asal) Ini sekolah randah. (kesalahan)	S7:	Sekolah baru ini bersih dan cantik <i>(asal)</i> Sekolah baru ini bersih dan kantik. <i>(kesalahan)</i>
S3:	Ini sekolah rendah baru. <i>(asal)</i> Ini sekolah rendah bara <i>(kesalahan)</i>	S8:	Sekolah baru ini bersih dan cantik (asal) Sekolah baru ini birsih dan cantik
S4: S5:	Sekolah baru dicat warna oren. (asal) Sekolah baru dikat warna oren. (kesalahan) Sekolah baru dicat warna oren.	S9:	(kesalahan) Pelajar sekolah selesa belajar. (asal) Pelajar sekolah salesa belajar. (kesalahan)
	(asal) Sekolah baru dicat warni oren. (kesalahan)	S10:	Pelajar sekolah selesa belajar. (asal) Pelajar sekolah selesa bilijar.
S6: Sekolah baru ini di tepi pawagam. (asal) Sekolah baru ini di tipi pawagam. (kesalahan)			(kesalahan)

menggantikan vokal /e/ kepada /a/ dalam perkataan <sekolah>. Penggantian huruf vokal juga dilakukan oleh S2 dan S3 untuk perkataan <rendah> dan <baru>. S2 telah membaca <rendah> sebagai <randah> manakala S3 membaca perkataan

baru> sebagai

bara>. Selain itu, S4 telah menggantikan konsonan /c/ kepada /k/ dalam perkataan <dicat>. Tambahan pula, dua subjek lain telah menunjukkan kesalahan bacaan yang sama apabila menggantikan konsonan semasa membaca, iaitu S8 dan S9. S5 telah membaca <warna> sebagai <warni> manakala S6 membaca <tepi> sebagai <tipi>. Kedua-dua subjek ini menggantikan vokal /a/ dan /e/ kepada vokal /i/ apabila membaca perkataan tersebut. S7 telah menggantikan konsonan /c/ kepada /k/ dalam perkataan <cantik>. Ketiga-tiga subjek yang terakhir, iaitu S8, S9 dan S10 melakukan kesalahan bacaan jenis penggantian vokal. S8 telah membaca

bersih> sebagai

birsih> dan S9 telah membaca <selesa> sebagai <salesa>. S10 pula telah menggantikan vokal /e/ dan /a/ menjadi /i/ dalam perkataan <belajar> yang dibaca sebagai <bilijar>.

Masalah penggantian dalam aspek bacaan ini berlaku kerana pengkaji mendapat murid disleksia tidak dapat mendiskrimininasi huruf dan bunyi secara fonologikal. Dalam aspek fonologikal bahasa, kajian yang dijalankan oleh Ezleena Mustafa Kamal (2020) mengenal pasti kesalahan fonologikal, khususnya fonem dan suku kata dalam bahasa Inggeris. Hasil kajian ini mendedahkan bahawa murid disleksia melakukan kesalahan dalam aspek fonem, suku kata dan perkataan daripada pemprosesan fonologi seperti ketinggalan fonem, pemisahan suku kata, gabungan suku kata, dan bacaan bukan perkataan. Walau bagaimanapun, hasil dapatan kajian ini tidak menjurus kepada masalah penggantian dalam aspek bacaan murid disleksia. Kesalahan subjek kajian dalam meninggalkan, memisahkan dan menggabungkan fonem dan suku kata dibuktikan sebagai masalah fonologikal dalam bahasa dan masalah penggantian juga merupakan satu kesalahan yang menjejaskan kemahiran membaca murid. Dalam fungsi persepsi dan kognitif mereka, terutamanya berkaitan pembacaan dan pemprosesan ortografik, kemahiran ini mempengaruhi proses pembelajaran bahasa murid disleksia.

Jadual 4

Jenis kesalahan bacaan (Pengguguran)

	00 0 /		
Jenis Kesalahan	Subjek	Perkataan	Kesalahan
Bacaan			
Pengguguran	S1	sekolah	selah
	S2/S4	ini	ni
	S3	rendah	redah
	S4	oren	ren
	S5	di tepi	tepi
	S6	cantik	canti
	S7	selesa	sesa

S1:	Sekolah. (asal)		Sekolah baru ini di tepi pawagam.
	Selah. (kesalahan)		(kesalahan)
S2:	Ini sekolah. (asal)	S6:	Sekolah baru ini bersih dan cantik.
	Ni sekolah. (kesalahan)		(asal)
S3:	Ini sekolah rendah. (asal)		Sekolah baru ini bersih dan canti.
	Ini sekolah redah. (kesalahan)		(kesalahan)
S4:	Sekolah baru dicat warna oren.	S7:	Pelajar sekolah selesa belajar.
	(asal)		(asal)
	Sekolah baru dicat warna ren.		Pelajar sekolah sesa belajar.
	(kesalahan)		(kesalahan)
S5:	Sekolah baru ini di tepi pawagam.		
	(asal)		

Sepadan dengan subjek kajian dalam tahap pembelajaran permulaan, kesalahan bacaan jenis pengguguran ini juga diperhatikan dalam tahap pembelajaran pertengahan. Berdasarkan Teori Levinson (1993), kesalahan bacaan jenis pengguguran dibahagikan kepada dua aspek kesalahan bacaan, iaitu pengguguran huruf dan pengguguran perkataan dalam ayat. Seperti yang dirincikan untuk subjek kajian tahap pembelajaran permulaan, mereka melakukan kesalahan bacaan dari aspek pengguguran huruf sahaja. Walau bagaimanapun, hasil dapatan mendapati subjek kajian dalam tahap pembelajaran pertengahan melakukan kesalahan dari segi kedua-dua jenis pengguguran ini, iaitu pengguguran huruf dan pengguguran perkataan dalam ayat.

Berdasarkan Jadual 4, terdapat beberapa kesalahan bacaan jenis pengguguran yang dilakukan oleh subjek kajian. S1 telah membaca <sekolah> sebagai <selah>. S1 telah menggugurkan suku kata /ko/ apabila membaca perkataan tersebut. S2 dan S4 telah melakukan kesalahan yang sama apabila membaca perkataan <ini> sebagai

<ni>S2 dan S4 tidak menyebut bunyi /i/ pada permulaan perkataan. Berdasarkan ayat ketiga dalam teks bacaan yang diberikan, S3 menggugurkan huruf /n/ dalam perkataan <rendah>. S4 telah membaca <oren> sebagai <ren>. Berdasarkan pemerhatian pengkaji, seorang murid disleksia sahaja yang telah membaca perkataan <di tepi> sebagai <tepi>. S5 telah menggugurkan perkataan <di> apabila membaca ayat tersebut secara sepenuhnya. S6 pula telah menggugurkan huruf /k/ apabila membaca perkataan <cantik> dalam ayat tersebut. Dalam bacaan suku kata, S7 tidak menyebut suku kata /le/ dalam perkataan <selesa>. Berdasarkan ayat kelapan dalam teks bacaan yang diberikan, S7 telah menggugurkan suku kata/le/.

Pengkaji mendapati hasil kajian luar jangka Teori Levinson (1993) yang mengutarakan bahawa hanya terdapat dua jenis kesalahan bacaan pengguguran iaitu pengguguran huruf dan pengguguran perkataan dalam ayat. Teori Levinson tidak merincikan pengguguran suku kata dalam perkataan yang dibaca. Walau bagaimanapun, kajian ini membuktikan murid disleksia,

iaitu S1 dan S7 menggugurkan suku kata dalam bacaan mereka. Situasi ini dapat diklasifikasikan sebagai keberangkalian dan tidak boleh mewakili populasi murid disleksia tetapi pengkaji mendapati bahawa kesalahan ini juga dilakukan oleh murid disleksia dalam bacaan.

Dalam meneliti pengetahuan suku kata murid disleksia, kajian yang dijalankan oleh Lee dan Wheldall (2011) mengkaji pengetahuan suku kata dan penggabungan fonem dalam pemerolehan kosa kata. Dapatan menunjukkan keduadua suku kata dan fonem tidak sepenuhnya dikuasai oleh murid disleksia. Walau bagaimanapun, kedua-dua penguasaan ini penting dalam pemerolehan kosa kata atau pembelajaran bahasa. Penyelidik juga membuktikan bahawa kesalahan bacaan banyak dilakukan oleh kanak-kanak disleksia kerana mereka tidak mempunyai pengetahuan dan kebolehan yang cukup dalam aspek segmentasi huruf dan bunyi. Dalam konteks kajian ini, dapatan kajian Lee dan Wheldall (2011) menyokong permasalahan yang didapati dalam kajian ini. Walau bagaimanapun, subjek kajian ini diperhatikan mempunyai masalah khusus dalam bacaan, seperti pengguguran huruf, suku kata dan perkataan. Dalam kemahiran mengeja, murid perlu menguasai bunyi dan huruf. Pengetahuan tentang hubungan antara bunyi dengan huruf memerlukan pembelajaran fonologi dalam bahasa (Jamieson & Simpson, 2006). Rajah 3 merupakan teks yang digunakan untuk menguji bacaan murid disleksia pada peringkat pertengahan.

TEKS PETIKAN

Sekolah saya

Sekolah.
Ini sekolah.
Ini sekolah rendah.
Ini sekolah rendah baru.
Sekolah baru dicat warna oren.
Sekolah baru ini di tepi pawagam.
Sekolah baru ini bersih dan cantik.
Pelajar sekolah selesa belajar.

Rajah 3. Teks petikan tahap pembelajaran pertengahan

Tahap Pembelajaran: Lanjutan/Advanced (iii). Hasil dapatan kajian ini mendapati bahawa subjek kajian dalam tahap pembelajaran lanjutan lebih melakukan kesalahan bacaan jenis penyisipan dan agakagakan sahaja. Subjek kajian dalam tahap ini tidak lagi melakukan kesalahan pembalikan dan pengguguran dalam bacaan.

Berdasarkan Jadual 5, terdapat beberapa kesalahan bacaan jenis penyisipan yang dilakukan oleh subjek kajian. Kesalahan ini jelas diperhatikan apabila subjek kajian menyisipkan huruf vokal atau konsonan yang tidak ada dalam perkataan tersebut. S1 telah menyisipkan vokal /a/ perkataan <pulang> menjadi perkataan <pula-lang>. Penyisipan huruf vokal juga dilakukan oleh S2 dan S3 untuk perkataan < kampung > dan <melawat>. S2 telah membaca <kampung> sebagai <kama-pung> manakala S3 membaca perkataan <melawat> sebagai <mela-lawat>. Selain itu, S4 telah menyisipkan vokal /a/ selepas vokal /i/ menjadi vokal berganding dalam perkataan <tidak>. Manakala, S5 telah menyisipkan konsonan /g/ dalam perkataan <bunga>. S5

Jadual 5 *Jenis kesalahan bacaan (Penyisipan)*

Jenis Kesalahan Bacaan	Subjek	Perkataan	Kesalahan
Penyisipan	S1	pulang	pula-lang
	S2	kampung	kama-pung
	S3/S4	melawat	mela-lawat
	S4	tidak	tia-dak
	S5	bunga	bung-ga

- S1: Pada cuti sekolah yang lepas, Fatimah pulang ke kampung ibu dan ayahnya. *(asal)*Pada cuti sekolah yang lepas, Fatimah pula-lang ke kampung ibu dan ayahnya. *(kesalahan)*
- S2: Pada cuti sekolah yang lepas, Fatimah pulang ke kampung ibu dan ayahnya. *(asal)*Pada cuti sekolah yang lepas, Fatimah pulang ke kama-pung ibu dan ayahnya. *(kesalahan)*
- S3: Mereka ingin melawat datuk dan nenek di kampung. (asal) Mereka ingin mela-lawat datuk dan nenek di kampung. (kesalahan)
- S4: Fatimah memakai baju lengan panjang supaya tidak digigit oleh nyamuk. (asal)
 Fatimah memakai baju lengan panjang supaya tia-dak digigit oleh nyamuk. (kesalahan)
- S5: Ada bunga ros, bunga matahari, bunga kemboja, bunga kenanga, bunga orkid dan lain-lain. (asal)
 Ada bung-ga ros, bung-ga matahari, bung-ga kemboja, bung-ga kenanga, bung-ga orkid dan lain-lain. (kesalahan)

telah membaca
bunga> sebagai
bungga> dengan mengulang bunyi /g/ apabila membaca perkataan tersebut.

Dalam aspek bacaan, murid disleksia menghadapi cabaran kerana keupayaan menyimpan dan memproses bunyi pertuturan dikaitkan dengan pembacaan abjad dan pembelajaran fonem, Sekiranya murid disleksia tidak menguasai sistem huruf dan fonem, pemerolehan dan penyesuaian bunyi pertuturan menjadi susah untuk dikuasai dalam bacaan (Brady & Shankweiler, 1991). Pernyataan ini dibuktikan dengan kesalahan bacaan yang dilakukan oleh subjek kajian ini. Murid disleksia yang belum menguasai sistem huruf dan bunyi pertuturan huruf tersebut kurang mahir dalam kemahiran mengeja dan membaca.

Berdasarkan Jadual 6, terdapat beberapa kesalahan bacaan jenis agak-agakan yang dilakukan oleh subjek kajian. S1 telah membaca perkataan <dan> sebagai <di>. S2 membaca perkataan <setelah> sebagai <kete> manakala S3 membaca perkataan <yang> menjadi <sayang>. Sama seperti S3, S4 juga telah suka-suka membaca perkataan <memakai> sebagai <memakan>. S5 telah membaca <lengan> sebagai <dengan> dengan menyebut perkataan yang dikenali.

Berdasarkan pemerhatian pengkaji, murid disleksia melakukan kesalahan bacaan jenis agak-agakan kerana mereka tidak menumpukan fokus kepada petikan apabila membaca. Mereka tidak menunjukkan keyakinan dalam bacaan. Kajian-kajian lepas telah membuktikan murid disleksia

Jadual 6

Jenis kesalahan bacaan (Agak-agakan)

Jenis Kesalahan Bacaan	Subjek	Perkataan	Kesalahan
Agak-agakan	S1	dan	di
	S2	setelah	kete
	S3	yang	sayang
	S4	memakai	memakan
	S5	lengan	dengan

- S1: Pada cuti sekolah yang lepas, Fatimah pulang ke kampung ibu dan ayahnya. (asal)
 Pada cuti sekolah yang lepas, Fatimah pulang ke kampung ibu di ayahnya. (kesalahan)
- S2: Setelah tiba, nenek membawa Fatimah ke kebun bunganya yang terletak di tepi rumah. (asal) Kete tiba, nenek membawa Fatimah ke kebun bunganya yang terletak di tepi rumah. (kesalahan)
- S3: Setelah tiba, nenek membawa Fatimah ke kebun bunganya yang terletak di tepi rumah. (asal)
 Setelah tiba, nenek membawa Fatimah ke kebun bunganya sayang terletak di tepi rumah. (kesalahan)
- S4: Fatimah memakai baju lengan panjang supaya tidak digigit oleh nyamuk. (asal) Fatimah memakan baju lengan panjang supaya tidak digigit oleh nyamuk. (kesalahan)
- S5: Fatimah memakai baju lengan panjang supaya tidak digigit oleh nyamuk. (asal)
 Fatimah memakai baju dengan panjang supaya tidak digigit oleh nyamuk. (kesalahan)

mempunyai masalah dari segi daya tumpuan dan memori jangka masa panjang mereka. Mereka sukar mengingati susunan huruf, nombor, urutan dan sebagainya. Dalam konteks bacaan, kajian yang dijalankan oleh Walda et al. (2022) mengkaji peranan daya perhatian (attention span) dalam bacaan kanak-kanak disleksia. Kajian mendapati daya tumpuan mereka

menjejaskan kemahiran bacaan. Dapatan ini disokong dengan pemerhatian pengkaji dalam kelas yang mendapati murid tidak dapat membaca ayat secara sepenuhnya tanpa berhenti ataupun kehilangan fokus. Rajah 4 merupakan teks yang digunakan untuk menguji bacaan murid disleksia pada peringkat lanjutan.

TEKS PETIKAN

Kampung Halaman

Pada cuti sekolah yang lepas, Fatimah pulang ke kampung ibu dan ayahnya.

Mereka ingin melawat datuk dan nenek di kampung.

Setelah tiba, nenek membawa Fatimah ke kebun bunganya yang terletak di tepi rumah.

Fatimah memakai baju lengan panjang supaya tidak digigit oleh nyamuk.

Ada bunga ros, bunga matahari, bunga kemboja, bunga kenanga, bunga orkid dan lain-lain.

Rajah 4. Teks petikan tahap pembelajaran lanjutan

Perbincangan

Daripada kajian yang dijalankan ini, pengkaji juga mendapati beberapa dapatan kajian di luar jangkaan Teori Levinson (1993). Hasil kajian ini mendapati murid disleksia tidak melakukan kesalahan "pemeluwapan" (condensation) yang diperincikan dalam Teori Levinson (1993). Hal ini demikian kerana jenis kesalahan ini tidak berlaku dalam bacaan bahasa Melayu. Walau bagaimanapun, terdapat beberapa kesalahan dan masalah bacaan luar jangka Teori Levinson (1993). Antaranya ialah murid disleksia sering mengeja secara fonik apabila membaca. Mereka membunyikan setiap huruf tersebut secara berasingan sebelum menggabungkan bunyi tersebut dalam sesuatu suku kata. Situasi ini kerap kali ditunjukkan oleh subjek kajian dan pengkaji mendapati kesukaran ini melambatkan lagi proses bacaan mereka.

Bukan itu sahaja, murid disleksia sering melangkau perkataan apabila membaca sesuatu petikan. Sekiranya petikan ini mempunyai terlalu banyak perkataan dalam sesuatu ayat, mereka akan melangkau beberapa perkataan. Dapatan ini sejajar dengan kajian yang dijalankan oleh Kavenia dan Vijayaletchumy (2018) dan Wan Muna Ruzanna Wan Mohammad (2011) yang telah mengkaji kesalahan bacaan dalam kalangan murid disleksia di Malaysia. Kajian tersebut mendapati murid disleksia menunjukkan kesalahan bacaan seperti langkau apabila membaca, tidak mengikut urutan perkataan dalam ayat, mengulang-ulang perkataan dan sebagainya.

Pengaruh bacaan fonik bahasa Inggeris juga menjejaskan kemahiran membaca murid disleksia dalam bahasa Melayu. Mereka sering keliru dengan sebutan fonik bahasa Inggeris yang sememangnya berbeza dengan sebutan bahasa Melayu. Misalnya, subjek kajian yang dirincikan dalam tahap pembelajaran pertengahan membaca perkataan <dicat> sebagai <dikat>. Kesalahan bacaan ini berlaku disebabkan oleh pengaruh fonik bahasa Inggeris. Setakat ini, tiada kajian di Malaysia yang mengkaji pengaruh sebutan fonik bahasa asing dalam bacaan bahasa Melayu dalam kalangan murid disleksia.

KESIMPULAN

Secara keseluruhan, subjek kajian daripada tiga tahap pembelajaran menunjukkan kesalahan bacaan jenis pengguguran, pembalikan, penggantian, penyisipan dan agak-agakan. Kelima-lima jenis kesalahan bacaan tersebut menyokong Teori Levinson Disleksia manakala dapatan kajian juga telah membuktikan beberapa kesalahan bacaan dalam kalangan murid disleksia luar jangka teori tersebut dalam kalangan murid disleksia. Antaranya ialah jenis kesalahan pemewulupan tidak wujud dalam bacaan bahasa Melayu, murid disleksia sering melangkau perkataan apabila membaca ayat dan pengaruh sebutan fonik bahasa Inggeris yang berbeza dengan sebutan bahasa Melayu. Seterusnya, dapatan kajian memberikan kesedaran kepada guru-guru disleksia agar intervensi yang efektif perlu digunakan dalam memastikan murid-murid disleksia menguasai aspek bacaan yang asas.

Justeru, penyelidikan yang lebih rinci dalam bidang ini diperlukan untuk membangunkan landasan yang lebih mengukuhkan domain bahasa dan bacaan murid-murid disleksia.

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The Preliminary Results on the Push Factors for the Elderly to Move to Retirement Villages in Malaysia

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ABSTRACT

Many countries are witnessing a rise in the ageing population, which has become a global phenomenon that all nations must address. As the population of greying people is expected to increase in Malaysia, the demand for senior citizen accommodation is predicted to have experienced a major rise by 2030. However, although studies related to retirement villages (RV) are highly important to understand how to provide a better ambience for the elderly, research on the development of retirement villages in Malaysia is yet to gather pace fully. Thus, this paper aims to explore the potential of the retirement village in Malaysia by focusing on the push factors for the elderly to move to retirement

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ISSN: 0128-7702 e-ISSN: 2231-8534 villages in the local Malaysian context. The outcome of this paper presents the initial findings derived from a literature review and pilot survey. Eight potential push factors were identified after questions were posed to potential respondents through a pilot survey questionnaire. The research revealed that the main potential reason why the elderly relocate to retirement villages was related to social factors, with the elderly preferring better access to healthcare and support due to their unique requirements. The findings of this study are relevant to

Chapter 11, as underlined in the Sustainable Development Goals (SDGs), which call on all governments to offer access to a secure, green environment for everyone, especially the elderly. Theoretically, this research provides the first findings on the elements that encourage the elderly to relocate to an RV when they retire in Malaysia.

Keywords: Elderly, Malaysia, push factors, retirement village

INTRODUCTION

Many developed countries are experiencing an increase in the ageing population. In Australia, the demand for retirement villages grows (Zuo et al., 2014) as the population expands. The greying population of the future is expected to be more open to accepting retirement villages as an accommodation option that could cater to the needs of the elderly. It aligns with the sustainable development goals that aim to ensure healthy lives and promote wellbeing. The Sustainable Development Goals (SDG) of Economic and Nation Chapter 11.7 urges all countries to provide access to safe, green spaces for all, including older persons.

In Malaysia, the Ministry of Women, Family, and Community Development expects the greying population to rise by 2030, resulting in higher demand for senior citizen accommodation (Meikeng, 2017). The population over the age of 65 in Malaysia is projected to have increased by more than 15% by 2030 (Lim et al.,

2019), so senior homes will need to be tailored to baby boomers as they age. In 2020, the Department of Statistics, Malaysia highlighted that the population aged over 65 had increased from 2.2 million to 2.3 million in just one year. Thus, Malaysia's demand to accommodate or facilitate this ageing society will significantly increase. The housing options for senior citizens have now expanded beyond the usual choice of remaining in their own homes. Flexible and suitable options have emerged, such as going into specialist or residential care facilities, which promote independence and well-being (Robinson et al., 2020).

In the last decade, the acceptance of and demand for retirement villages have become popularised among the ageing population (Bernard et al., 2012). With the significant rise in the ageing population, it is necessary to find ways to assist these elderly citizens to live their golden years in good health and comfort (Lim et al., 2019). According to Grant (2006), the environment for the retirees of the baby boomer and future generations is expected to change as they regard themselves as more than just grandparents who stay at home. The baby boomer and future generations expect an active lifestyle in their retirement years. Meanwhile, poor health and deteriorating physical function may contribute to the intention to move into a retirement home. Crisp et al. (2013) asserted that senior citizens who foresee an increased need for service as they age, based on their current health, are more likely to need the support provided by a retirement village.

The retirement village is a new housing concept generally established in developed countries (Hayward, 2012). For example, Australia (Hu et al., 2017), New Zealand (Nielson et al., 2019), and the United Kingdom (Lim et al., 2019) have been adopting this concept to provide a better living ambience for the elderly. However, in Malaysia, the retirement village concept is in its infancy compared to the situation in many developed countries (Ng et al., 2020). As in other developing neighbours, for instance, Thailand (Leartbuasin & Potisarattana, 2015), the RV concept is still in the introductory phase. The development of retirement villages in Malaysia is limited to only four established facilities, namely Green Acres, The Green Leaf, Ara Greens Residence, and Eden-on-the-Park (Begum, 2017). However, Malaysia must confront the reality of the increasing older population in the coming years (Lim et al., 2019). Furthermore, each week sees alarming incidents of older adults being abandoned by their families and ending up in old folks' homes (Lim et al., 2014).

It can be concluded that providing a retirement village is necessary to offer a better post-pension life option; however, there has been little response from stakeholders such as end-users, public and private investors, and legal practitioners. Therefore, understanding how to develop interest among these stakeholders, especially the end-users (the elderly), is critical so that the retirement village concept in Malaysia

can develop effectively. Therefore, this paper will elaborate on the push factors for the elderly to move to retirement villages.

LITERATURE REVIEW

Definitions of Retirement Villages

A retirement village is a customised property for a certain age group. In the literature, this age group is referred to as retired people (Broad et al., 2020), the age-segregated community (Hu et al., 2018), older people (Hu et al., 2019), and the growing ageing population (Xia et al., 2014). In other words, a retirement village is a new form of a home designed for people of a certain age group. The retirement village is an improved shelter for the elderly that reflects the facilities and services required by the elderly. A retirement village provides diverse services and facilities (Hu et al., 2018); ergonomic needs, amenities, and services based on older adults' unique requirements (Lim et al., 2020); accommodation, services, and facilities for older people (Hu et al., 2019); and accommodation and cares for the growing ageing population (Xia et al., 2014). It offers an option for greying people to live the later phase of their life in comfort and with the necessary care. The improved design of these villages' social, economic, and environmentally sustainable features (Hu et al., 2018) can be adapted to match the current goal of the ageing population to maintain a healthier lifestyle.

Table 1
Summary of the definitions of retirement village by various authors

Authors	Definition
Hu et al. (2018)	A retirement village is "an age-segregated community that provides diverse services and facilities to meet the residents' unique needs in later life."
Lim et al. (2020)	A retirement village represents "a novel living option where spaces, services, activities, and facilities are tailored to meet the ergonomic needs of the elderly."
Barker et al. (2012)	A retirement village is "designed with diverse amenities and services based on the elderly's unique requirements."
Hu et al. (2019)	A retirement village comprises "a residential environment that is specifically designed to provide older people with accommodation, services, and facilities in order to meet their requirements."
Xia et al. (2014)	The retirement village is "one of the viable housing options that can accommodate and care for the growing ageing population."
Hu et al. (2018)	Retirement villages are suggested, "to embrace social, economic, and environmental sustainability features to deliver a sustainable living environment."

A retirement village can be defined as an optional housing scheme for the elderly to live in during their retirement years. Several definitions have been summarised from the literature review and are tabulated in Table 1. However, it is useful to explain further the difference between the new concept of a retirement village and the existing concept of an aged care home. As previously identified, they are based on two different types of funding: the latter is funded by donors, that is, donations from charitable bodies or government contributions; meanwhile, the former is resident-funded, whereby fees are obtained from the residents. Retirement villages are private operations managed by private developers, with the village solely funded by the residents. A retirement village

is also profit-oriented since the ability to pay applies to the residents (Leartbuasin & Potisarattana, 2015). However, aged care homes normally receive government funding or public donations to help those elderly in need. According to Sulaiman et al. (2006), an aged care home in Malaysia is provided for by three main parties, i.e., the government or public sector, nongovernmental organisations (NGOs), and the private sector.

Retirement Villages as an Option After Retirement and the Challenges Involved

The development of retirement villages has been accepted worldwide since the importance of implementing elderly-friendly community features has started to become a

crucial element in developing such villages. It is due to the unique characteristics of the aged population. In Asia and some other countries, the cultural practice is that children are obliged to take care of their parents (Mao & Chi, 2011). Nonetheless, the elderly are expected to be more active in the community rather than staying at home and looking after their grandchildren in the future. After retirement, it has been argued that the elderly should enjoy life and live comfortably after their long service and hard work for the country and society. In addition, the younger generation is becoming preoccupied with multiple work commitments, making it challenging for them to care for and provide companionship for their elderly parents (Ng et al., 2019).

In the modern world, the country and society must prepare for the change and adaptation in the lifestyles of ageing people, which may affect not only the country's demographic features but also its economy. Therefore, as Lim et al. (2020) mentioned, it is now necessary for the country's policymakers to explore the housing options for the future greying generation. As a new form of housing for the elderly (Ng et al., 2020), the retirement village has been widely accepted in developed countries. For example, in New Zealand, the first retirement village concept emerged in the 1990s (Hayward et al., 2012), and the current number of retirement villages has reached about 29,801 units (Nielson et al., 2019). Similarly, studies from the United Kingdom have shown that over 30% of the country's ageing population has seriously considered moving into a retirement village (Lim et al., 2019).

According to Judd et al. (2010), almost 63% of Australians would prefer to move to a retirement village after their retirement. As in the United Kingdom, more than 30% of the elderly population would consider living in a retirement village after their retirement to enhance their quality of life (Holland et al., 2017). Notably, the acceptance rate in other developed countries (Bernard et al., 2007), as in Australia, is higher. It is due firstly to the proper planning of the retirement village scheme, which has been a well-defined concept for over 30 years under the States Act (Hu et al., 2017), as well as the higher awareness (Xia et al., 2015b) of the people in these countries. The norm is that retirement village residents plan to meet facility costs through retirement funds and other financial schemes. Therefore, without a clear retirement village concept, the number of potential residents of an RV will be reduced significantly due to the limited understanding of the provision of such services and their essential features.

However, the notion of retirement villages in Malaysia is slowly developing. The elderly population has expressed resistance to the concept since the norm in Malaysia is that older adults will be taken care of directly by their children and extended family. It is considered a positive cultural element: the sense of responsibility to take care of the older generation. However, there are situations where elderly couples and individuals are childless or unmarried, and their extended family finds it difficult

to take care of them due to their other commitments. As a result, the elderly will be left to survive alone without physical and mental support. Therefore, it strengthens the need to establish RVs in Malaysia.

Furthermore, negative perceptions exist of the concept of the existing aged care home in terms of their physical facilities and the community's beliefs. These have blinded society to the importance of providing housing mainly designed for older people. Another major challenge is the financial factor. Commonly, retired people have reduced financial capability after retirement (Zuo et al., 2014), while an RV involves considerable costs. Therefore, planning before retirement is needed to make the financial arrangements to allow the elderly to move into retirement villages. Thus, the high costs of accessing RV facilities will remain a key drawback that might prevent the elderly from enjoying their retirement in a retirement village (Osei-Kyei et al., 2020).

The establishment of retirement villages has been slow to emerge due to the challenges and resistance from Malaysian society but examining the promotion of RVs must be undertaken as such facilities would provide a better housing ambience for the elderly. Thus, this paper will further explore the push factors that would encourage the elderly to move to an RV after retirement.

Push Factors for the Elderly to Move to Retirement Villages

Retirement villages are considered an important aspect of the social and physical development of the elderly. The theory

of an ecological ageing model connects residential environments and health (Oswald et al., 2007). The ecological ageing model suggests that demographic factors such as age, gender, and race directly influence the ageing pattern, as does the dynamic interplay between biological and behavioural elements (Satariano, 2006). In Lawton and Nahemow's Ecological Theory of Ageing (ETA) (1973), the overall framework of the theory encompasses various types and levels of personal skills and environmental characteristics, such as housing standards, neighbourhood conditions, and public transportation (Wahl et al., 2012). The theory suggests that the competencies and needs associated with individuals vary in different environments and may lead to different outcomes. The research conducted by Oswald et al. (2007) found that participants living in more accessible homes perceived their residences as meaningful and valuable; they also felt responsible for the external influences on their living conditions. Thus, they were more independent in their daily activities and better sense of well-being. The theory reinforces the importance of the residential conditions and the lives of the elderly.

Meanwhile, Hu et al. (2015b) identified three main characteristics of a retirement village: social factors, economic factors, and environmental factors, as illustrated in Figure 1 and explained in Table 2. Research conducted in Australia has proposed advanced features for a retirement village. Hu et al. (2015b) stated that a retirement village considers sustainability, which

should be enabled to meet its residents' social, financial, and environmental requirements, besides their basic needs as older people (Hu et al., 2015b). Moreover, RVs should be affordable for the elderly to purchase and remain in, as this population experiences reduced financial capabilities

during their retirement (Lim et al., 2020). A well-designed village will encourage the elderly to be actively and healthily involved in their community, which will indirectly prevent issues such as social isolation, loneliness, and depression.

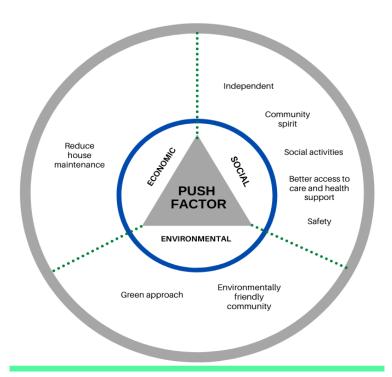


Figure 1. Potential push factors for the elderly to move to retirement villages

Social Aspects. Under social factors, nine items have been identified. Ageing healthily is the main aspiration under social factors. Ageing healthily means preserving one's physical and mental capacity as one age. Maintaining a less stressful lifestyle, more security, and a community spirit requires changes to older adults' environment, including their housing, daily activities,

support system, and community. The elderly will physically deteriorate as they age, but the factor of remaining independent could encourage them to move to a retirement village. Meanwhile, resident-centred villages with better access to healthcare assistance will add value to the decision to move to such a facility. Research in Australia found that the desire for more free

time, more time to spend with other people, and a lifestyle change pushed older people to move to retirement villages (Judd et al., 2015).

Economics Aspects. Under the second cluster, economic factors, two important items have been identified: the need for downsizing and affordability. Financial affordability is an important expectation among both baby boomers and other generations. The financial capacity of the elderly declines after their retirement, so some will rely on their pension allowance,

savings, investment returns, and other funding, such as from their children. Meanwhile, downsizing includes a reduction in the size of their property, a reduction in the home's financial value, and/or a tenure transition from homeownership to renting (Banks et al., 2007). Some might define downsizing as reducing the external area (such as that of a garden) yet keeping the internal space unchanged (Judd et al., 2014). The decision to downsize is complex due to the various backgrounds and diverse preferences of the people involved.

Table 2
Summary of push factors for the elderly to move to a retirement village

Cluster	Motivation factors	Push Factors Identified	References
Social	To ensure independent living	Wanted by others, such as family members	Ng et al. (2019)
		Remain independent	Hu et al. (2015a)
Social	Community spirit in a retirement village	Find friendship and community spirit	Hu et al. (2015a)
		Sense of belonging	Hu et al. (2017)
Social	Enjoy social activities in a	Lifetime learning & improvement	Hu et al. (2015)
	retirement village	Less stressful lifestyle	Hu et al. (2017)
Social	Better access to assistance with care and health support	Better access to assistance with healthcare issues	Xia et al. (2014)
Social	Safety	Privacy	Hu et al. (2015a)
		Find security	Hu et al. (2015a)
Environmental	Enjoy the facilities in a retirement village	Environmentally friendly community	Barker et al. (2012)
Economic	Reduce house maintenance	Downsizing/Reduce home maintenance	Xia et al. (2015a)
		Use of environmentally friendly materials, technologies, and energy	Zuo et al. (2014)
		Affordability	Hu et al. (2020)

Environmentally Friendly Aspects.

The third cluster is the environment; the retirement village industry should take responsibility for environmental sustainability (Kronenberg, 2008). In terms of sustainable retirement villages, environmental sustainability refers to energy and resource efficiency, materials efficiency, and the enhanced quality of the indoor environment. In addition, sustainability aims to reduce the negative impacts of a village's development and enhance its environment by offering a natural residential setting.

METHODOLOGY

The study used a quantitative approach to the current situation in Malaysia concerning the establishment and development of the retirement village concept. A survey was conducted and distributed to the respondents.

In line with the objectives of this paper, a literature review was undertaken to identify the potential push factors for introducing retirement villages in Sarawak. The purpose of the review was to discover and accumulate the current push factors to generate an extensive list that might vary in terms of industries, organisations, parties, and countries. For the systematic review of this paper, the central question posed was, "What are the push factors to introduce retirement villages in Sarawak?" The keywords were 'Sustainable', 'Retirement Village', 'Push Factors', 'Driver', and 'Motivation'; these were used with the Scopus and Web of Science websites. All the articles were in English, and fifteen

main articles were selected to be reviewed as pilot articles; these were limited to work published since 2014. Accordingly, the snowball technique was adopted to obtain more evidence to support the main findings, where it is suitable to be used when the population of interest is hard to reach (Etikan et al., 2016). According to the discussion from the literature review, approximately 13 potential push factors were categorised under three main clusters, i.e., economic, social, and environmental.

The pilot survey was conducted to measure the respondents' patterns and make the necessary changes to the survey instrument for this research. The pilot survey ensured that the survey worked in the way the researchers had planned (Blair et al., 2013). The researchers also indicated the time needed to finish the questionnaires. Purposive sampling was used; the samples came from selected targeted groups with similar purposes and characteristics. The main criteria were that the respondents should reside in Sarawak and fall under generation X. Generation X are those aged between 42 and 56 years old. The pilot sample size was determined using an estimation by Viechtbauer et al. (2015) with a confidence level of 95%, and the minimum probability of detecting a problem was 10%. Therefore, a value between 5% to 10% was acceptable. Thus, the required sample size was 28 respondents. In total, 36 respondents were collected, which was more than sufficient. The questionnaire was distributed to the relevant potential respondents through email and social media.

RESULTS AND DISCUSSION

Respondents' Demographics

Thirty-six respondents (61% male and 39% female) participated in this study (see Table 3). An overview of the respondents' profiling was assessed through SPSS software. The two demographics that were taken into consideration were religion and race. Based on the literature, religion and race play important roles in determining preferences for and perceptions of being

relocated to a retirement village. In addition, the idea is often influenced considerably by the value of filial piety (Ng et al., 2020). Most respondents were Islam (72%) and Malay (67%) and had between three and four children (28.4%). In terms of occupation, 34.1% of them worked in the private sector, and 21.8% were from the public sector. Retirees comprised 20.6% of the total respondents.

Table 3

Demographic characteristics

Den	nographic profile	Frequency (No)	Percentage (%)
Gender	Female	14	39
	Male	22	61
Religion	Islam	26	72
	Christian	8	22
	Other	2	6
Race	Malay	24	67
	Chinese	2	5
	Iban	6	17
	Melanau	2	5
	Prefer not to say	1	3
	Other	1	3

Financial Capacity and Preferences

This survey also examined the financial capacity of the respondents and their willingness to spend if they intended to move to a retirement village (Refer to Figure 2). More than 60% of the respondents preferred a retirement property valued below RM300,000, with 36% preferring a value

less than RM150,000. Meanwhile, 34% preferred a value of less than RM300,000 but more than RM150,000. Regarding preferences to rent a property instead of buying, about 64% opted for the minimum expenditure offered, which was lower than RM1,500 per month.





Figure 2. Financial capacity

Push Factor Perceptions of the Respondents

Regarding motivation for relocating (B_Q7A to B_Q7G), the scale reliability was excellent. In this case, the standardised alpha was 0.969. Table 4 shows the values of the mean and standard deviation (SD). The

mean values of the motivation factors were skewed towards the agreement. Respondents generally agreed that the factors provided were the push factors for the elderly to move into a retirement village. B_Q7E ranked the highest of the push factors, with a mean score of 4.111. The high mean score

Table 4

Mean and standard deviations for push factors to move to the retirement village

Question	Motivation	Mean	SD
B_Q7A	Ensure independent living	3.666	1.041
B_Q7B	Community spirit in Retirement Village	3.944	1.012
B_Q7C	Enjoy social activities in Retirement Village	3.805	0.980
B_Q7D	Enjoy the facilities in Retirement Village	3.944	1.012
B_Q7E	Better access to assistance with care and health support	4.111	1.063
B_Q7F	Reduce house maintenance	3.916	0.996
B_Q7G	Safety	4.083	1.079

was due to older adults' need for healthcare and support, as their health will deteriorate over time. Zuo et al. (2014) stated that older people experience reduced physical capabilities and have particular ergonomic requirements. Therefore, increasing age means that attentive care—the physical and emotional care given by others—is necessary. However, today's younger generation leads hectic lifestyles and is preoccupied with life's obligations, making it difficult to care for their old parents. Hence, the older tradition is shifting to new ways of ageing and the retirement village (Lim et al., 2020).

B_Q7G ranked second-highest, with a mean of 4.083. The elderly need to feel secure and find their privacy in the retirement village. Feeling secure refers to living comfortably and without fear. A feeling of security exists because residents usually inhabit a retirement village with mutual objectives (Osei-Kyei et al., 2020). A retirement village is also usually a gated residence with security. The retirement village gives the residents privacy compared

to the more open concept of old folks' homes. For example, a resident can choose an apartment or a house for himself and still receive healthcare services and support from the developers.

Next, B_Q7B and B_Q7D ranked third-highest, with similar means of 3.944. These refer to the social factors of finding a community spirit and enjoying the facilities available in a retirement village. These two factors enhance active post-retirement lifestyles and promote longevity. Gardner (2005) mentioned that the anticipation of leading a more active life and the life span transitions of failing health are the key motivations for living in a retirement village.

Finance is another key factor that motivates the elderly to move into a retirement village. B_Q7F ranked fifth-highest, with a mean score of 3.916. Retirement villages are said to be able to reduce home maintenance. A retirement village offers the appropriate support and services to enable older people to maximise their benefits without exceeding their

financial capabilities (Hu et al., 2015). The second-lowest ranked item was B_Q7C, with a mean score of 3.805. The older adult will be able to enjoy the activities available in a retirement village. This type of village is equipped with facilities that accommodate their physical limits while incorporating social and friendly facilities (Xia et al., 2014). The lowest rank, with a mean score of 3.666, was gained by B_Q7A, whereby independent living was the least-important concern for the elderly when considering moving to a retirement village.

Cross-Tab on the Influence of Demographic

In comparing gender, all indications were that no items were weakly significant (p-value >

0.10); therefore, the k = population (gender) medians were equal. No major difference in opinions was identified. However, when comparing race, B Q7C and B Q7D were weakly significant, with Kruskal-Wallis chi-squared (KW) = 10.156, df = 5, and p-value < 0.01, and KW = 10.581, df = 5, and p-value < 0.10, respectively. Tables 5 and 6 show the differences in percentage. B Q7A was statistically significant in terms of religion, with Kruskal-Wallis chi-squared = 6.017, df = 2, and p-value < 0.05. Table 7 illustrates the differences in percentage. Therefore, some motivations for relocating were potentially related to the respondents' religious affiliations.

Table 5

Crosstab between B Q7C versus race

Rank	Malay (%)	Iban (%)	Melanau (%)	Prefer not to say (%)	Others (%)
1	8.33	0	0	0	0
2	0	16.67	0	0	0
3	12.50	16.67	0	100	100
4	62.50	66.67	50	0	0
5	16.67	0	50	0	0

Table 6

Crosstab between B Q7D versus race

Rank	Malay (%)	Iban (%)	Melanau (%)	Prefer not to say (%)	Others (%)
1	8.33	0	0	0	0
2	0	16.67	0	0	0
3	12.50	16.67	0	0	0
4	58.33	66.67	50	0	0
5	20.83	0	50	100	100

Table 7

Crosstab between B Q7A versus religions

Rank	Islam (%)	Christian (%)	Buddhist (%)
1	7.69	0	0
2	0	25	0
3	26.92	25	0
4	46.15	50	0
5	19.23	0	100

This pilot study was conducted to understand the optimum way to progress the main study and ensure a higher accuracy level would be achieved when it was conducted. This study postulates that demographic criteria play important roles in one's life direction in terms of preferences, which might affect the potential introduction of the RV in Malaysia. The demographic criteria regarding personal characteristics like race and religion will influence one's daily activities (Ng et al., 2020). The Ecological Theory of Ageing has also indicated that older adults' environments influence their ageing patterns (Satariano, 2006). The results revealed that the Pearson's Chi-squared test failed to be calculated for certain questions due to the small sample size used to measure race and religion. It suggested a need for further research with more respondents.

The objectives of the analysis were to identify and validate the push factors that influence older adults' choices when deciding to move to a retirement village. Firstly, the results prove that better access to assistance in care and health support was the most crucial factor in attracting the population to move into an RV, irrespective of their affiliations. It relates to the suggestion in the literature that the RV's primary function is to provide care to the elderly (Barker et al., 2012; Xia et al., 2015). Secondly, the seven push factors listed in Table 4 indicated a mean score of more than 3.00, an outcome that indicated the relevant items as push factors. Thus, all these factors were relevant as the push factors for the elderly to move to retirement villages. In addition, the acceptability of the retirement village in Malaysia can be justified by many respondents' willingness to spend money to access a retirement village. All the respondents in this study indicated a willingness to rent retirement villages, while 78% indicated a willingness to invest in a retirement village property. As a result of this data, it is obvious that retirement villages are gaining traction in Malaysia.

CONCLUSION

In conclusion, this study has highlighted the current push factors of the future elder generation's wishes and needs to move into retirement villages. From the literature review, retirement villages have been accepted and acknowledged by the community as they are regarded as viable options for living. The outcomes of this research support the Sustainable Development Goals (SDG) outlined in Economy and Nation Chapter 11, which explicitly urge that all countries provide access to safe, green spaces for all, including older people. Theoretically, the outcomes from this paper provide initial findings on the push factors for the elderly to relocate to RVs when they retire in the Malaysian context. The outcomes provide new insights based on the local perspective. However, further exploration must be conducted with a significantly higher number of respondents to ensure the reliability of the results. This paper also offers two contributions to the industry practices: i) identifying push factors for the elderly to move to a retirement village, and ii) raising awareness among the industry practitioners regarding the potential of green procurement to pave the way for sustainability. These findings will help local authorities and developers to understand and plan the future establishment of retirement villages based on knowledge of the local context.

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Pengalaman Pelajar (LX) Pelbagai Peringkat Umur Terhadap Penggunaan Teknologi Tutor Hologram

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ABSTRAK

Teknologi hologram kini semakin banyak digunakan dalam pelbagai bidang termasuk bidang pendidikan. Penggunaan hologram dilihat sangat berpotensi untuk dijadikan sebagai perwakilan tenaga pengajar sebenar di dalam kelas. Penggunaan tutor hologram juga dikatakan mampu menarik minat serta meningkatkan motivasi pelajar terhadap proses pembelajaran. Dengan pelbagai kelebihan yang ditawarkan, aspek pengalaman pelajar (LX) terhadap penggunaan tutor hologram ini tetap menjadi persoalan. Terutamanya, dari sudut pengalaman dan penerimaan pelajar dari pelbagai peringkat umur. Hal ini kerana, pengalaman dan penerimaan seseorang terhadap sesuatu teknologi baharu dilihat berbeza berdasarkan umur mereka. Sehubungan itu, kajian ini bertujuan membangunkan tutor hologram karakter manusia sebenar serta melihat kesannya terhadap pengalaman pelajar (LX) yang terdiri dari pelbagai peringkat umur. Secara khusus, responden bagi kajian ini terdiri daripada empat kumpulan yang berbeza peringkat umur yang dipilih dari sekolah rendah hingga ke peringkat tertiari. Soal selidik *User Experience Questionnaire* (UEQ) telah digunakan untuk mendapatkan maklum balas pelajar sebaik selesai sesi pembelajaran dengan tutor hologram. Secara kesimpulan, terdapat perbezaan yang

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signifikan bagi pengalaman pelajar (LX) pelbagai kategori umur terhadap tutor hologram karakter manusia sebenar. Namun, skor min pengalaman pelajar (LX) tetap berada pada tahap yang positif dan neutral bagi setiap kumpulan.

Kata kunci: Animasi, pengalaman pelajar, reka bentuk karakter, teknologi baharu, tutor hologram, umur

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Learning Experiences (LX) of Different Age Students Towards the Use of Hologram Tutor Technology

ABSTRACT

Hologram technology is increasingly being used in various fields, including education. Among them, the use of a 3D hologram is considered great potential to represent the actual teaching staff in the classroom. It is also said that hologram tutors can attract students' interest and increase motivation towards the learning process. However, with the various benefits offered, the aspect of a learning experience (LX) towards using a hologram tutor is still questionable. Above all, it is about the experience and acceptance of students of all ages. Indeed, a person's experience and acceptance of new technology are different depending on their age. Accordingly, this study aims to develop a real human character hologram tutor to examine its impact on the learning experience (LX) of children of various ages students. Specifically, the respondents to this study included four different age groups selected from primary school to higher education. The User Experience Questionnaire (UEQ) was used to collect feedback from students at the end of a session with a hologram tutor. In conclusion, it was found that there was a significant difference in the learning experience (LX) in the different age groups of students. However, the mean score of the learning experience (LX) remained positive and neutral for each group.

Keywords: Age, animation, character design, hologram, learning experience, new technology

PENDAHULUAN

Teknologi yang semakin berkembang maju terutamanya dalam bidang animasi digital menjadikan elemen multimedia lebih mudah dihasilkan. Penggunaannya juga telah berkembang ke pelbagai bidang termasuklah pendidikan (Chan, 2013; Kainz et al., 2013). Oleh itu, inovasi berterusan terhadap bahan pengajaran dan pembelajaran dikatakan perlu bagi mempertingkatkan keberkesanan penggunaannya (Chan, 2013; Chiang & Tu, 2016). Hal ini kerana, aplikasi bahan multimedia dalam proses pembelajaran mempunyai banyak kelebihan sekiranya digunakan secara betul (Ghuloum, 2010; Taylor et al., 2007), terutama dalam

menarik perhatian pelajar di dalam kelas (Barkhaya & Abd Halim, 2016). Antara inovasi persembahan animasi yang mula digunakan dalam bidang pendidikan pada masa kini ialah teknologi tutor hologram (Kelion, 2018). Penggunaan tutor hologram sebagai perwakilan tenaga pengajar mampu merubah suasana persekitaran serta memberi dorongan kepada pelajar untuk kekal fokus di dalam kelas (Ghuloum, 2010; Walker, 2013). Walau bagaimanapun, beberapa aspek perlu diberi perhatian bagi penggunaan teknologi ini dalam sesi pengajaran dan pembelajaran, seperti keberkesanannya membina pengalaman penerimaan maklumat secara berkesan

dalam kalangan pelajar. Oleh itu, fokus utama kajian ini ialah menganalisis keberkesanan penggunaan tutor hologram dan kesannya terhadap pengalaman pelajar (LX) yang terdiri dari pelbagai peringkat umur. Hal ini penting kerana pengalaman pelajar (LX) perlu berada pada tahap positif sepanjang sesi pengkuliahan berlangsung untuk memastikan maklumat yang disampaikan diterima secara berkesan. Malahan, penggunaan tutor hologram dalam kalangan pelajar pelbagai peringkat umur mungkin memberi kesan pengalaman pelajar (LX) yang berbeza. Hal ini kerana pengalaman dan penerimaan pelajar terhadap teknologi baharu dilihat berbeza antara generasi baharu dengan generasi yang lebih tua (Prensky, 2001; Wójcik, 2018).

Definisi Hologram

Perkataan hologram berasal daripada gabungan dua perkataan yang berasal daripada istilah Yunani iaitu 'holos' yang bermaksud pandangan keseluruhan dan 'gram' yang bermaksud mesej, menjadikan gabungan perkataan bermaksud 'pandangan keseluruhan mesej' (Pyeongho et al., 2019). Selain itu, hologram juga bermaksud sebagai 'pandangan keseluruhan' (Ghuloum, 2010). Pada asalnya, hologram dikenali sebagai Pepper's ghost yang berfungsi mewujudkan ilusi penonton di panggung wayang dan pentas persembahan (Elmorshidy, 2010). Walau bagaimanapun, dengan bantuan alat teknologi dan kaedah terkini, istilah pepper's ghost kini telah diganti dengan istilah hologram. Malahan penggunaan alat teknologi baharu seperti projektor dan

skrin lutsinar telah mampu menghasilkan paparan berdefinisi tinggi dan menepati ciriciri hologram yang diperlukan. Bagi kajian semasa juga, banyak istilah yang digunakan bagi mewakili paparan hologram ini seperti holographic (Park et al., 2019), holography (Zhang et al., 2017), dan hologram (Kim et al., 2018). Dengan itu, bagi tujuan kajian ini penyelidik juga menggunakan istilah hologram.

Penggunaan Teknologi Hologram

Penggunaan teknologi hologram merupakan peralihan paradigma teknologi baharu, yang memberi peluang untuk menjadi lebih kreatif dan inovatif. Oleh itu, pelbagai usaha telah dilakukan bagi mendapatkan hasil paparan hologram 3D terbaik. Sehingga kini, teknologi hologram telah digunakan secara meluas dalam pelbagai bidang termasuk pengiklanan, hiburan, pendidikan, perubatan, dan sebagainya (Chaudhari et al., 2015). Penggunaan teknologi baharu seperti hologram bukan sahaja memberi kelebihan kepada bidang tertentu, tetapi juga memberi kelebihan kepada industri dan syarikat-syarikat besar (Elmorshidy, 2010). Selain itu, kelebihannya yang mampu menarik perhatian dan menyampaikan mesej secara lebih berkesan juga menjadikan penggunaan hologram terus diterima oleh khalayak ramai, terutamanya apabila ia dilihat sebagai suatu teknologi yang kreatif dan berinovasi tinggi (Ramlie et al., 2020). Oleh sebab penggunaan hologram semakin giat dikembangkan, banyak teknik diterokai untuk memaparkan imej hologram yang terbaik sesuai dengan tujuan penggunaannya.

Beberapa teknik yang dihasilkan untuk paparan hologram adalah seperti *pseudo-3D hologram*, *Volumetric hologram*, dan *Holographic projection* (Yang et al., 2015).

Selain yang disenaraikan, terdapat banyak lagi teknik yang digunakan untuk menghasilkan paparan hologram. Walau bagaimanapun, secara amnya yang dapat dilihat, teknik hologram pandangan satu sisi atau dipanggil sebagai on stage hologram (Figueiredo et al., 2014; Luévano et al., 2019), dan hologram berbentuk piramid (Zeng et al., 2017) merupakan teknik yang paling banyak digunakan. Bagi penggunaan teknik hologram satu sisi, ia sering digunakan untuk persembahan di atas pentas seperti persembahan konsert hiburan dan pengucapan syarahan berikutan ukuran paparannya yang besar dan penonton yang tertumpu. Manakala bagi hologram yang berbentuk piramid pula, ia mampu memaparkan imej secara 360° (Chaudhari et al., 2015). Namun, pada kebiasaannya ia datang dalam ukuran kecil dan sesuai digunakan untuk kumpulan sasaran penonton yang berjalan secara rawak.



Rajah 1. Hologram secara paparan dari projektor khas ke atas skrin lutsinar khas Sumber: Marsh (2016)

Hologram dalam Pendidikan

Secara umumnya, terdapat beberapa jenis hologram yang sering digunakan dalam industri pendidikan. Penggunaan jenis hologram yang berbeza ini pada kebiasaannya bergantung kepada maklumat yang hendak disampaikan dan kesesuaian persekitarannya. Menurut Awad dan Kharbat (2018), jenis hologram yang sering digunakan adalah seperti reflect hologram, transmission hologram, dan hololens. Namun, jika dibandingkan dengan kajian lain sebenarnya cermin mata khas sepatutnya tidak dikira sebagai paparan hologram. Cermin mata khas lebih sesuai di klasifikasikan sebagai paparan stereoscopic kerana penghasilan paparannya yang memerlukan pengguna memakai cermin mata khas.

Seterusnya, penggunaan hologram dalam bidang pendidikan dilihat mampu menarik minat pelajar dan mampu menyampaikan maklumat pembelajaran dengan lebih berkesan (Barkhaya & Abd Halim, 2016). Contohnya, hologram digunakan untuk menyampaikan maklumat

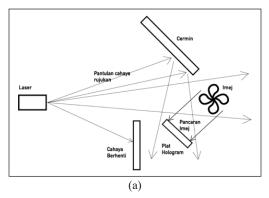


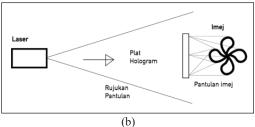
Rajah 2. Hologram berbentuk piramid dari projektor ke atas skrin lutsinar khas empat sisi Sumber: McLean (2015)

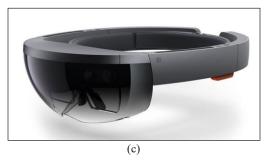
pembelajaran yang sukar dan memerlukan paparan secara 3D seperti pembelajaran dalam bidang perubatan, geografi, pembinaan, dan sebagainya (Chaudhari et al., 2015) termasuklah penggunaannya sebagai perwakilan tenaga pengajar di dalam kelas (Ghuloum, 2010; Kelion, 2018; Walker, 2013). Penggunaan hologram dalam bidang pendidikan dilihat sebagai satu strategi yang baik bagi meningkatkan kefahaman pelajar selain mampu menarik perhatian mereka. Penggunaan hologram juga dilihat mampu meningkatkan motivasi pelajar terutamanya pelajar dalam kalangan generasi baharu yang dikatakan semakin kurang berminat dengan cara penyampaian tradisional (Wójcik, 2018).

Hologram kini ada juga telah digunakan sebagai pengganti manusia sebenar di dalam kelas (Walker, 2013). Penggunaan hologram sebagai perwakilan tenaga pengajar di dalam kelas memungkinkan pelajar berasa seolah-olah seperti berhadapan dengan tutor sebenar (Ghulom, 2010). Sebenarnya, tutor hologram ini telah mula digunakan sejak tahun 2000 (BBC News, 2000), namun dengan keadaan sokongan alat teknologi yang terbatas, perkembangan penggunaannya dilihat agak perlahan. Sehingga pada tahun 2018, penggunaannya telah mula kembali diterokai dengan penggunaannya sebagai perwakilan tenaga pengajar di dalam kelas (Kelion, 2018).

Walaupun penggunaan tutor hologram sebagai perwakilan tenaga pengajar di dalam kelas yang biasanya menggunakan karakter manusia sebenar ini dilihat mempunyai beberapa kelebihan, aspek penerimaan dan pengalaman pelajar (LX) ketika melalui sesi







Rajah 3. Jenis hologram dalam pendidikan: (a) Transmission hologram; (b) Reflection hologram; dan (c) Cermin mata khas

Sumber: Awad and Kharbat (2018)

pengkuliahan dengan tutor hologram masih menjadi persoalan. Hal ini kerana, masih amat kurang kajian yang menitikberatkan pengalaman pelajar (LX) ketika melalui sesi pengkuliahan dengan tutor hologram. Aspek pengalaman pelajar (LX) yang menggunakan tutor hologram juga dilihat penting berikutan penggunaannya dalam bidang pendidikan yang merangkumi pelbagai peringkat umur. Kesan pengalaman

pelajar (LX) dikatakan berbeza terhadap penggunaan teknologi baharu berdasarkan peringkat umur seseorang (Prensky, 2001; Wójcik, 2018).

Umur dan Penerimaan Teknologi Baharu

Melalui kajian-kajian lampau yang telah dijalankan, pengalaman dan penerimaan pelajar terhadap penggunaan alat teknologi baharu dilihat mempunyai perbezaan yang signifikan berdasarkan umur seseorang (Hauk et al., 2018; Prensky, 2001; Wójcik, 2018). Perbezaan ini dapat dilihat terutamanya antara generasi muda dengan generasi yang lebih tua (Sari et al., 2018). Generasi baharu dikatakan lebih mudah tertarik dan cenderung menggunakan alat teknologi baharu dan mengelak untuk menjalani sesi pembelajaran secara tradisional (Wójcik, 2018). Kecenderungan generasi muda dalam penggunaan teknologi baharu juga dikatakan kerana generasi ini lahir pada zaman yang serba canggih (Sanner-Stiehr, 2017), walaupun sebenarnya generasi muda ini biasanya hanya mempunyai pengetahuan secara am mengenai sesuatu teknologi baharu itu (Kirschner & De Bruyckere, 2017).

Manakala, bagi golongan generasi yang lebih tua, penggunaan teknologi baharu dikatakan lebih merumitkan (Mannheim et al., 2019), dan generasi lama sering mengekalkan stereotaip mereka yang tidak mahu menerima dan belajar tentang teknologi baharu malahan berasa sukar untuk menggunakannya (Githens, 2007). Perbezaan ini dikatakan berlaku

akibat daripada peredaran zaman yang mewujudkan dua kategori umur berbeza. Menurut Prensky (2001), terdapat dua golongan yang berbeza tahap penerimaan penggunaan teknologi baharu iaitu digital native dan digital immigrant. Digital immigrant disifatkan sebagai seseorang yang mengalami zaman perubahan teknologi yang lahir sebelum tahun 1980, manakala digital native merupakan seseorang yang lahir pada era kemajuan teknologi iaitu selepas tahun 1980 (Prensky, 2001). Walau bagaimanapun, generasi lama dikatakan masih menerima sesuatu alat teknologi itu sekiranya alat teknologi itu mampu mengekalkan kualiti hidup seharian mereka dan mampu memberi faedah kepada kerjaya mereka (Heart & Kalderon, 2013; Heinz et al., 2012). Golongan generasi lama juga dikatakan lebih berhati-hati dalam mengadaptasi sesuatu teknologi baharu dalam kehidupan (Fausset et al., 2013) menyebabkan penerimaan mereka agak perlahan berbanding golongan generasi baharu.

Berdasarkan kajian-kajian lampau, jelas dapat dilihat bahawa faktor umur berpotensi mempengaruhi pengalaman pelajar (LX) yang berbeza terhadap penggunaan teknologi baharu. Oleh yang demikian, kajian terhadap pengalaman pelajar (LX) yang menggunakan tutor hologram karakter manusia sebenar ini sangat penting untuk dijalankan, iaitu bagi melihat sama ada penggunaan tutor hologram karakter manusia sebenar mempunyai kesan yang signifikan terhadap pengalaman pelajar (LX) yang terdiri dari pelbagai peringkat umur. Selain itu, oleh sebab penggunaan tutor hologram

merangkumi pelajar dari pelbagai peringkat umur yang terdiri dari sekolah rendah ke peringkat tertiari, pengalaman pelajar dari setiap peringkat umur perlu dikenal pasti untuk melihat kesesuaian penggunaannya secara menyeluruh.

METODOLOGI

Reka bentuk kajian yang dijalankan ini adalah kuasi-eksperimen. Hal ini kerana, populasi yang besar menjadikan proses persampelan secara rawak adalah kurang sesuai. Oleh itu, sampel kajian yang ditetapkan ialah seramai 120 orang pelajar yang dibahagikan kepada empat peringkat umur yang berbeza. Secara terperinci, sampel kajian terdiri daripada pelajar sekolah rendah berumur 11 tahun seramai 30 orang, pelajar sekolah menengah berumur 16 tahun seramai 30 orang, pelajar institut pengajian tinggi berumur 21 tahun seramai 30 orang, dan pelajar institut pengajian tinggi berumur 35 tahun dan ke atas seramai 30 orang. Setiap kumpulan ditetapkan dengan ID tersendiri bagi memudahkan urusan pengumpulan dan penganalisis data. Empat kumpulan pelajar ini seterusnya melalui sesi pengkuliahan bersama tutor hologram karakter manusia sebenar selama 30 minit.

Persoalan Kajian

Melalui rujukan-rujukan yang telah diperoleh dan dibincangkan, kajian ini bertujuan menganalisis kesan penggunaan tutor hologram karakter manusia sebenar terhadap pengalaman pelajar (LX) pelbagai peringkat umur. Secara khususnya, persoalan kajian yang akan dijawab adalah seperti berikut: Adakah wujud sebarang perbezaan signifikan terhadap pengalaman pelajar (LX) pelbagai peringkat umur akibat penggunaan tutor hologram karakter manusia sebenar?

Pembangunan Tutor Hologram

Bagi tujuan membangun prototaip tutor hologram karakter manusia sebenar, model reka bentuk instruksi ADDIE telah dijadikan sebagai panduan sepanjang proses pembangunan tutor hologram. ADDIE merupakan akronim untuk lima fasa iaitu Analyze (Analisis), Design (Reka Bentuk), Developement (Pembangunan), Implementation (Perlaksanaan), dan Evaluation (Penilaian).

Analisis (*Analyze*). Dalam fasa analisis ini, beberapa aspek ditetapkan seperti kaedah, menetapkan kandungan, sasaran pengguna, menetapkan objektif kursus, menetapkan perisian dan seterusnya menetapkan

Jadual 1
Pembahagian empat kumpulan responden mengikut peringkat umur

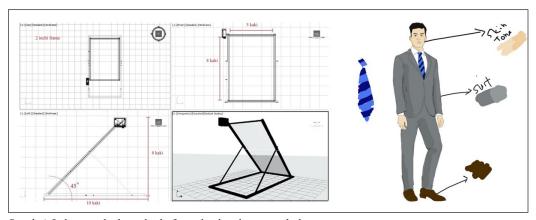
Kumpulan responden	ID	Bilangan Responden	Peratusan
Sekolah Rendah Darjah 5 (11 tahun)	SK	30	25%
Sekolah Menengah Tingkatan 4 (16 tahun)	SMK	30	25%
IPTA berumur (21 tahun)	IPTN	30	25%
IPTA berumur (35 tahun ke atas)	IPTI	30	25%
JUMLAH		120	100%

platform (Ali, 2018). Tutor hologram karakter manusia sebenar menyampaikan pengajaran berkaitan subjek moral yang bertajuk 'Kebaikan dan Keburukan Penggunaan Media Sosial.' Subjek dan topik ini dipilih kerana kesesuaiannya untuk semua peringkat umur. Topik ini juga boleh disampaikan secara santai dan mudah difahami. Hal ini untuk mengelakkan aspek pengalaman pelajar terganggu oleh aspek kesukaran kandungan. Sehubungan itu, objektif khusus bagi tutor hologram karakter manusia sebenar ini ialah, pelajar akan memahami topik berkenaan kebaikan dan keburukan penggunaan media sosial secara jelas selepas mendengar syarahan tutor hologram selama 30 minit. Oleh sebab tutor hologram tidak memiliki sebarang fitur interaksi pintar, maka pelajar dibenarkan meminta supaya paparan diulang tayang secara keseluruhan atau daripada bahagian tertentu untuk pemahaman yang lebih baik. Sasaran pengguna tutor hologram ini merupakan pelajar yang terdiri dari pelbagai peringkat umur iaitu pelajar sekolah rendah, pelajar sekolah menengah, dan pelajar institut pengajian tinggi. Seterusnya, karakter manusia sebenar yang realistik digunakan bagi paparan utama tutor hologram untuk kajian ini. Oleh itu, rakaman layar hijau (green screen) dijalankan dan perisian Adobe Premiere Pro digunakan untuk proses suntingan hasil video akhir. Rakaman layar hijau dijalankan supaya latar belakang video asal boleh dibuang sepenuhnya bagi paparan sebagai hologram. Proses rakaman ini termasuklah rakaman video dan audio syarahan. Platform

yang digunakan pula ialah pemain video digital dari komputer untuk paparan melalui projektor LCD beresolusi tinggi.

Reka Bentuk (Design). Proses menterjemahkan maklumat yang ditetapkan dari fasa analisis ke lakaran fizikal dilakukan dalam fasa reka bentuk ini. Tujuannya adalah untuk rujukan semasa proses pembangunan dijalankan (Ali, 2018). Terdapat dua komponen tugasan utama dalam proses reka bentuk tutor hologram ini iaitu i) reka bentuk platform paparan tutor hologram dan ii) reka bentuk karakter tutor hologram. Beberapa lakaran awal platform tutor hologram dibuat sebelum lakaran akhir dimuktamadkan. Beberapa sumber rujukan telah dijadikan panduan bagi penghasilan platform tutor hologram satu sisi di atas pentas (Hong et al., 2014; O'connell & Rock, 2012). Antara perkara utama yang perlu dipertimbangkan dalam proses pembinaan platform tutor hologram ini adalah reka bentuk struktur yang mudah alih, skrin lutsinar yang mudah diuruskan dan tahan lasak, pemancar projektor beresolusi tinggi dengan fungsi short-throw, sistem audio dan pengurusan elektronik yang sistematik.

Dalam sub tugasan kedua untuk fasa reka bentuk pula merupakan proses mereka bentuk karakter tutor hologram. Karakter manusia sebenar yang realistik dipilih sebagai pendekatan reka bentuk tutor hologram yang dibangunkan. Bersandarkan teori fenomena *Uncanny Valley*, reka bentuk karakter manusia sebenar yang realistik ini terbukti memberikan kesan yang positif kepada keselesaan penonton (Mori, 2012).



Rajah 4: Lakaran reka bentuk platform dan karakter tutor hologram

Berdasarkan hal ini, beberapa lakaran awal berpandukan karakter yang disenangi oleh pelajar dilakukan. Seterusnya, karakter dipilih dalam kalangan tenaga pengajar berdasarkan gambaran awal yang disetujui oleh pelajar. Selain itu, karakter yang dipilih juga adalah dalam kalangan tenaga pengajar yang mempunyai pencapaian baik dalam bidang pengajaran dan pembelajaran. Karakter akhir juga dimuktamadkan setelah melalui proses penilaian oleh pelajar dan pakar. Seterusnya, rakaman syarahan dijalankan berasaskan kandungan maklumat pengajaran yang telah disediakan dan disahkan kandungan maklumatnya. Rakaman dijalankan secara santai agar hasil akhir syarahan tidak membebankan pelajar bagi mengelakkan wujud emosi yang kurang disenangi oleh pelajar.

Pembangunan (*Development*). Fasa ketiga iaitu fasa pembangunan melibatkan aktiviti menterjemahkan perkara yang telah ditetapkan dalam fasa analisis dan fasa reka bentuk kepada produk akhir. Dua komponen utama dibangunkan iaitu pembinaan

platform tutor hologram dan rakaman karakter tutor hologram. Bagi pembangunan platform tutor hologram, struktur yang bersesuaian sebagai paparan tutor hologram dan beberapa sistem sokongan ditentukan. Platform tutor hologram ini memerlukan penggunaan projektor yang dipancarkan ke permukaan khas dan memantulkan kembali cahaya ke skrin lutsinar yang condong 45° ke hadapan agar pantulan yang terhasil dalam posisi 90° secara tegak. Oleh sebab platform perlu memaparkan karakter manusia sebenar dengan ukuran sebenar, makan ukuran platform tutor hologram dibina lima kaki lebar dan sepuluh kaki tinggi untuk mendapatkan paparan sebesar empat kaki lebar dan tujuh kaki tinggi. Dari segi sistem sokongan, platform tutor hologram dibangunkan lengkap dengan tempat sambungan elektrik yang mencukupi, tempat pemasangan audio, dan projektor.

Seterusnya, komponen kedua iaitu sesi rakaman karakter tutor hologram iaitu karakter manusia sebenar. Beberapa tugas dijalankan sepanjang proses penghasilan reka bentuk manusia sebenar ini seperti sesi rakaman, penyuntingan video awal, dan penyuntingan video akhir. Bagi proses rakaman, tenaga pengajar dipilih dari institut pengajian tinggi dan disyorkan oleh institut berkenaan. Pakaian karakter ditetapkan dengan warna cerah bagi mengelakkan gangguan paparan hologram (Luévano et al., 2019; O'connell & Rock, 2012). Perisian Adobe Priemere Pro digunakan untuk melakukan tugas-tugas suntingan video dan memasukkan teks selang sesi. Hasil akhir rakaman ditetapkan dengan paparan resolusi tinggi (video mode 1080i, frame size 1920x1080, 30fps).

Perlaksanaan dan Penilaian (Implementation and Evaluation). Sepanjang proses reka bentuk dan pembangunan tutor hologram, penilaian formatif dan penilaian sumatif telah dilakukan. Penilaian formatif merupakan penilaian yang dilakukan sepanjang proses reka bentuk dan pembangunan yang melibatkan penilaian daripada pakar dan para pelajar. Seorang pakar teknologi instruksi, seramai dua orang pakar kandungan, dan beberapa orang pelajar terlibat dalam proses penilaian ini. Penilaian dijalankan secara temu duga tidak berstruktur. Seterusnya, penambahbaikan secara berkala dilakukan berdasarkan maklum balas yang diberikan. Penilaian sumatif dalam bentuk soal selidik penerimaan telah dilakukan dalam kalangan 30 orang pelajar setelah tutor hologram siap sepenuhnya. Secara keseluruhan, tutor hologram berfungsi dengan sempurna dan diterima baik oleh pelajar.

Prosedur Kajian. Sesi pengkuliahan bersama tutor hologram ini merupakan interaksi satu hala tanpa melibatkan sebarang kemahiran penggunaan interaksi pintar. Malahan kelas yang digunakan tidak mempunyai alat tambahan seperti projektor dan bahan bantu mengajar yang lain. Kesemua pelajar daripada empat kumpulan berbeza tahap umur ini seterusnya diberikan masa selama lima minit untuk menjawab soal selidik UEQ (user experience questionnaire) yang mengandungi 26 item.

Instrumen Kajian. Set soal selidik UEQ digunakan bagi mengukur tahap pengalaman pelajar (LX) pelbagai peringkat umur. Kesemua item yang disediakan ini mampu mengukur lima hingga enam dimensi berbeza iaitu Daya Tarikan yang mewakili dimensi valensi tulen. Kualiti pragmatik mengandungi item-item kecekapan, kejelasan, dan kebergantungan. Manakala bagi kualiti hedonik mengandungi item Stimulasi dan kebaharuan (Schrepp et al., 2014). Setiap data yang dikumpulkan seterusnya dianalisis dengan menggunakan teknik analisis ANOVA dan Post Hoc Test Tukey.

ANALISIS DATA

Perisian SPSS digunakan untuk menganalisis data yang diperoleh secara kuantitatif. Nilai *Cronbach Alpha* bagi keseluruhan 26 item soal selidik UEQ bagi kajian ini ialah 0.72. Nilai ini menunjukkan kebolehpercayaan yang tinggi bagi item-item dalam soal selidik UEQ. Seterusnya skor min dikira bagi setiap item individu pelajar yang berpengalaman

menggunakan tutor hologram karakter manusia sebenar. Skor min antara -0.8 hingga 0.8 dianggap neutral manakala nilai yang lebih tinggi daripada 0.8 adalah positif dan lebih rendah daripada -0.8 adalah negatif (Santoso et al., 2016). Analisis secara terperinci dilakukan dengan melihat nilai min (M) dan sisihan piawai (SP) untuk setiap enam aspek maklum balas pelajar.

Dalam Jadual 2, keputusan analisis menunjukkan wujud perbezaan yang signifikan dari sudut skor min pengalaman pelajar (LX) antara kumpulan berbeza peringkat umur F(3,116)=5.80, p<0.05, manakala partial eta squared= 0.13 iaitu effect size besar mengikut Cohen (1988). Skala effect size yang dinyatakan oleh Cohen (1988) ialah 0.01=kecil, 0.06=sederhana, dan 0.14=besar.

Maklumat terperinci mengenai statistik deskriptif dalam Jadual 3 menunjukkan bahawa pelajar IPTN berusia 21 tahun mempunyai skor purata terendah (M=0.59, SP=0.95, n=30) diikuti oleh pelajar SMK tingkatan empat berumur 16 tahun (M=0.95, SP=0.86, n=30), pelajar SK darjah lima

berumur 11 tahun (M=1.23, SP=0.77, n=30), dan yang memperoleh nilai min paling tinggi adalah pelajar IPTI berumur min 38 tahun (M=1.40, SP=0.62, n=30). Walau bagaimanapun, kesemua pengalaman pelajar (LX) terhadap penggunaan tutor hologram karakter manusia sebenar berada pada tahap yang positif dengan pelajar IPTN dan SMK berada pada tahap neutral. Seterusnya, bagi melihat pasangan kumpulan yang berbeza secara signifikan, ujian post-hoc Tukey dijalankan.

Merujuk kepada Jadual 4, keputusan ujian berpasangan *post-hoc* Tukey menunjukkan perbezaan secara signifikan berlaku antara pelajar IPTI dengan pelajar IPTN. Perbezaan yang signifikan juga boleh dilihat antara pelajar IPTN dengan pelajar

Jadual 3
Statistik deskriptif

UMUR	Min	Sisihan Piawai	N
SK	1.23	0.77	30
SMK	0.95	0.86	30
IPTN	0.59	0.95	30
IPTI	1.40	0.62	30
Jumlah	1.04	0.86	120

Jadual 2 Keputusan ujian ANOVA sehala bagi skor min pengalaman pelajar (LX) pelbagai peringkat umur berbeza akibat penggunaan tutor hologram karakter manusia sebenar

Sumber	Jumlah Kuasa Dua Jenis III	df	Min Kuasa Dua	F	Sig.	Eta Kuasa Dua Separa
Corrected Model	11.40 ^a	3	3.80	5.80	0.00	0.13
Intercept	130.77	1	130.77	199.60	0.00	0.63
UMUR	11.40	3	3.80	5.80	0.00	0.13
Error	75.99	116	0.70			
Jumlah	218.16	120				
Corrected Total	87.39	119				

Nota. a. R Kuasa Dua = 0.13 (R Kuasa Dua Selepas Pelarasan = 0.11)

Jadual 4

Dapatan ujian post-hoc Tukey untuk skor UEO mengikut kumpulan pasangan

(I) II	(I) II	Darbagaan Min (I. I)	Sisihan Dalat	C:a	95% Aras Keyakinan		
(I) Umur	(J) Umur	Perbezaan Min (I-J)	Sisihan Ralat	Sig.	Had Bawah	Had Atas	
SK	SMK	0.28	0.21	0.54	-0.26	0.83	
	IPTN	0.65*	0.21	0.01	0.10	1.20	
	IPTI	-0.17	0.21	0.90	-0.71	0.38	
SMK	SK	-0.28	0.21	0.54	-0.83	0.27	
	IPTN	0.37	0.21	0.30	-0.18	0.91	
	IPTI	-0.45	0.21	0.15	-1.00	0.10	
IPTN	SK	-0.65*	0.21	0.01	-1.20	-0.10	
	SMK	-0.37	0.21	0.30	-0.91	0.18	
	IPTI	-0.81*	0.21	0.00	-1.36	-0.27	
IPTI	SK	0.17	0.21	0.90	-0.38	0.71	
	SMK	0.45	0.21	0.15	-0.10	1.00	
	IPTN	0.81*	0.21	0.00	0.27	1.36	

SK. Walau bagaimanapun, hanya sedikit perbezaan yang berlaku antara pelajar SK dengan SMK. Kesemua peringkat umur dilihat mempunyai perbezaan melalui ujian berpasangan post-hoc Tukey ini. Pelajar IPTN merupakan kumpulan pelajar yang memperoleh nilai min paling rendah berbanding kumpulan lain. Manakala kumpulan pelajar IPTI memperoleh nilai min yang paling tinggi. Sehubungan itu, secara kesimpulannya kumpulan pelajar IPTI yang berumur min 38 tahun mempunyai pengalaman pelajar (LX) yang paling positif hasil penggunaan tutor hologram karakter manusia sebenar sebagai perwakilan tenaga pengajar di dalam kelas. Kumpulan pelajar yang memperoleh nilai setara dan merupakan kedua tertinggi pula ialah kumpulan pelajar SK dan SMK. Manakala kumpulan pelajar yang mempunyai pengalaman pelajar (LX) paling rendah ialah pelajar kumpulan IPTN yang berumur 21 tahun.

PERBINCANGAN

Secara keseluruhan, hasil dapatan analisis menunjukkan bahawa skor min pengalaman pelajar (LX) pelbagai peringkat umur akibat penggunaan tutor hologram manusia sebenar berada dalam tahap positif dan neutral. Tiada kumpulan pelajar yang berada dalam tahap pengalaman negatif. Walau bagaimanapun, perbezaan signifikan secara statistik dilihat berlaku berikutan terdapat satu kumpulan pelajar yang memperoleh skor min pengalaman neutral, iaitu kumpulan pelajar institut pengajian tinggi berumur min 21 tahun. Dapatan keseluruhan ini jelas menunjukkan bahawa teknologi tutor hologram diterima baik oleh pelajar pelbagai peringkat umur.

Penggunaan tutor hologram sebagai perwakilan tenaga pengajar dilihat mampu merubah suasana sesi pembelajaran biasa ke arah persekitaran yang lebih menarik, baik bagi generasi muda daripada pelajar



Rajah 5. Sesi pembelajaran bersama tutor hologram

di peringkat sekolah rendah sehinggalah generasi berumur seperti pelajar separuh masa di peringkat tertiari. Tutor hologram berupaya mencetuskan perasaan teruja dan seronok pelajar terhadap sesi pembelajaran. Pelajar kebiasaannya telah memiliki pengetahuan sedia ada mengenai hologram melalui filem fiksyen yang ditonton. Oleh yang demikian, sesi pembelajaran dengan tutor hologram akan memberikan mereka suatu pengalaman sebenar terhadap teknologi tersebut yang mungkin menjadi faktor penyumbang terhadap penerimaan secara positif.

Namun demikian, selama mana perasaan teruja yang menyumbang kepada penerimaan positif ini akan dapat dikekalkan tetap menjadi persoalan. Memandangkan suasana kelas dengan guru sebenar dan kelas dengan tutor hologram adalah hampir sama. Cuma satu perbezaan yang ketara adalah bagi kelas dengan guru sebenar, aspek interaktiviti antara guru dengan pelajar berlaku. Hal ini tidak berupaya berlaku sekiranya kelas dikendalikan oleh tutor hologram. Sehubungan itu, sekiranya dalam suatu tempoh yang lama atau untuk aktiviti pembelajaran yang berkala, ada

kemungkinan penerimaan positif seperti di peringkat awal ini akan berubah. Ada juga kemungkinan, sekiranya aspek interaktiviti melalui teknologi kepintaran buatan ditambah pada tutor hologram, penerimaan positif akan dapat dikekalkan. Sebenarnya terdapat banyak fitur interaksi pintar boleh ditambah dalam sistem tutor hologram seperti teknologi penjanaan bahasa semula jadi (NLG), pengenal suara (speech recognition), pengecaman imej (image recognition) dan sebagainya. Kajian lanjutan berdasarkan bidang berkaitan yang melihat aspek-aspek ini boleh dilakukan bagi menjawab persoalan yang timbul.

Selain dari aspek keterujaaan terhadap hologram, aspek kemudahgunaan juga merupakan faktor yang menyumbang kepada penerimaan positif pelajar terhadap teknologi baharu ini. Pelajar hanya perlu duduk dan mendengar tanpa keperluan mengendalikan teknologi tersebut dengan fitur-fitur rumit. Hal ini jelas menggambarkan bahawa tanpa kerumitan, sesuatu teknologi baharu akan tetap diterima secara baik oleh pelajar pelbagai peringkat umur. Seterusnya, penerapan prinsip-prinsip reka bentuk yang bertepatan, seperti penggunaan karakter yang mampu menarik perhatian pelajar, kandungan pembelajaran yang tidak rumit dalam menyampaikan maklumat, kaedah penyampaian yang bersahaja dan santai, tempoh masa yang tidak terlalu lama, dan keadaan sekeliling yang memberi keselesaan yang baik juga mungkin menjadi penyumbang terhadap penerimaan positif pelajar. Sehubungan itu, untuk memastikan keberkesanan optimum, segala prinsipprinsip yang digariskan ini boleh dijadikan sebagai panduan dalam pembangunan sistem pembelajaran tutor hologram.

Walaupun kesemua kumpulan pelajar memperoleh skor min pengalaman pelajar (LX) positif, kumpulan pelajar sepenuh masa institut pengajian tinggi dengan umur 21 tahun dilihat memperoleh skor min neutral serta paling rendah berbanding kumpulan lain. Kumpulan pelajar ini sebenarnya boleh dikategorikan sebagai remaja iaitu dalam kalangan generasi baharu. Golongan remaja kebiasaannya telah terdedah kepada aplikasi teknologi baharu melebihi golongan kanak-kanak di sekolah yang didapati menerima baik pembelajaran dengan tutor hologram. Sehubungan itu, golongan remaja didapati lebih bersikap neutral terhadap tutor hologram karakter manusia sebenar. Mereka mungkin tidak merasakan apa-apa perbezaan dengan suasana guru sebenar sekiranya karakter manusia sebenar digunakan sebagai tutor hologram. Reka bentuk karakter sebenarnya ada memberi kesan terhadap aspek penerimaan seseorang, terutamanya golongan remaja (Liu & Elms, 2019; Martha & Santoso, 2019). Sehubungan itu, dengan penggunaan karakter-karakter selain manusia sebenar berkemungkinan dapat meningkatkan lagi penerimaan golongan remaja.

Seterusnya, pelajar separuh masa institut pengajian tinggi dengan umur min 38 tahun yang boleh dikategorikan sebagai golongan dewasa iaitu dalam kalangan generasi lama, menerima baik tutor hologram karakter manusia sebenar. Ini mungkin disebabkan mereka akur dengan sebarang pendekatan

pembelajaran asalkan dapat mengekalkan dan meningkatkan kualiti kehidupan mereka, sebagaimana diutarakan oleh Heart dan Kalderon (2013) serta Heinz et al. (2012). Sekiranya sesuatu media yang dibangunkan dan digunakan itu menepati ciri dan prinsip reka bentuk instruksi yang betul, golongan dewasa kebiasaannya akan cuba menerimanya dengan baik.

KESIMPULAN

Kesimpulannya, sesi pembelajaran dengan tutor hologram karakter manusia sebenar didapati diterima secara baik oleh pelajar pelbagai peringkat umur. Khususnya, bagi kandungan pembelajaran yang tidak terlalu rumit dan untuk suatu tempoh masa yang munasabah. Walau bagaimanapun, dapatan ini hanyalah terbatas bagi karakter manusia sebenar lelaki. Dapatan mungkin berbeza sekiranya karakter manusia sebenar berciri lain digunakan seperti karakter perempuan, rakan sebaya, bukan rupa tempatan dan sebagainya. Tambahan pula, kandungan pembelajaran yang disampaikan oleh tutor hologram ini merupakan pengetahuan am yang tidak terlalu rumit. Dapatan mungkin juga berbeza sekiranya melibatkan kandungan pembelajaran yang rumit. Bagi kandungan pembelajaran yang rumit, aspek interaksi dua hala adalah perlu untuk mencapai keberkesanan. Bagi meningkatkan kesan pengalaman pelajar (LX) yang lebih baik terhadap penggunaan tutor hologram, beberapa faktor dapat dipertimbangkan sebagai kajian lanjutan. Antaranya, penggunaan reka bentuk karakter pelbagai tahap realistik, penggunaan tutor hologram untuk pelbagai subjek pembelajaran, dan penambahan fitur interaksi pintar yang dapat meningkatkan minat pelajar generasi remaja.

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APPENDICES

Appendix A

1. User Experience Questionnaire (UEQ)

Appendix B

1. Approval Of Human Research Ethics Committee Sultan Idris Education University (UPSI/PPPI/PYK/ETIKA (M)/014(24)



SOCIAL SCIENCES & HUMANITIES

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Effects of Class-Size Reduction on Students' Performance

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ABSTRACT

A major factor affecting students' academic performance is the classroom environment, in which class size plays an important role. This study aims to test the impact of class-size reduction on students' performance and examine other factors affecting it. The results are established using a simple model that determines the impact of class size, individuals' earnestness toward studying, and individuals' learning environments on students' performance. The results reveal the benefits of class-size reduction and how elementary students benefited from the smaller class size. This study will help school managers, teachers, and society understand the importance of creating an optimal learning environment based on students' needs.

Keywords: Class-size reduction, eagerness toward studying, learning environment, optimal class size

INTRODUCTION

Education is one of the major factors promoting economic development and can help alleviate poverty. Only through education can people develop adequate skills, acquire knowledge, and adopt the

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temperament to perform effectively to contribute toward personal and societal development. Many factors associated with education may enhance or weaken students' learning and academic performance. A key factor responsible for falling education standards is the large class size. Numerous studies have been conducted to determine the effect of class size on students' academic performance. Teachers and parents believe that students receive more attention in a smaller class than in a larger class. Some students may also feel more comfortable clarifying their queries and participating in class discussions. Bascia's (2010) findings

support the statement, concluding that parents appear comfortable in frequently meeting with teachers given a reduced class size. Many parents reported developing better relationships with teachers following their frequent one-to-one meetings.

Iacovou (2002) stated that class-size reduction (CSR) has helped children perform well in reading during their early years, producing better test scores. However, it did not have a significant effect on their mathematics scores. The study also observed that the reading score of girls studying in smaller classes was marginally higher than that of boys.

Zyngier (2014) reported that smaller classes positively affected student achievement and narrowed down achievement gaps. The benefits of a smaller class size outweighed the cost comparison in all 112 peer-reviewed studies.

These studies examined the impact of CSR in elementary schools by analyzing the learning environment, consequences of CSR in a poor learning environment, level of comprehension in a small class, and how CSR affects students' academic achievement. The findings established that a smaller class size promotes teachers' ability to monitor students more efficiently using a variety of pedagogies, creates a conducive learning environment, and provides individual attention to students, enhancing teachers' productivity and students' performance. The major variable in the study is class size, which is the number of students a teacher manages in their class. Students' performance measured across various academic subjects is considered

students' academic achievement. The school environment is an important factor contributing to pupils' learning and assimilation abilities. The school environment usually facilitates students' learning, and environments can be either stimulating or unexciting and favorable or obstructive to the development of students. If the school environment is not motivating and challenging and fails to inspire students to learn, it is considered a poor learning environment.

Additionally, the study aims to understand how class size affects teachers' instructional and classroom management practices. Therefore, this study aims to analyze the relationship between class size and academic performance in early elementary levels and how teachers' perceived class size affects students from poor learning environments or economically disadvantaged places. Finally, the study aims to verify the consistency of the class size policy in schools.

Many previous studies have empirically examined the impact of learning environments on students' performance by considering CSR. However, limited studies have analyzed it theoretically, and the mechanism underlying the impact of CSR remains unclear. Therefore, the main objective of this study is to focus on how CSR theoretically increases students' academic performance and determine the optimal class size under various situations.

The second part of the study analyzes previous research on the influence of class size on students' performance. Subsequently, the proposed model is described, and the study concludes by discussing the implications of the results introduced by the model.

LITERATURE REVIEW

Class size is the number of students that a teacher is responsible for in the classroom. (Kedney, 1989). Many researchers have emphasized that smaller classes have been found to have greater chances of individualizing instructions and achieving a healthier classroom environment. In addition, student attitude, individualization, student participation, quality of instruction, and teachers' attitudes are all positively affected by reducing the class size (Smith & Glass, 1980).

However, do students learn more in smaller classes? Much of the evidence in the literature on education provides mixed opinions. In contrast, some of the literature cited in this study covers the impact of CSR on students' behavior, academic achievement, teachers' employment, wages, and parental convenience.

Shin (2012) found that a reduced class size promoted higher academic achievement in all subjects for black students and a significantly higher academic achievement in reading, math, listening, and word recognition skills among students studying in kindergarten up to Grade 3.

Dynarski et al. (2013) estimated the effects of reduced class size from early elementary school to post-secondary education. Having smaller class sizes from early school days increased students' probability of attending college by an

additional 2.7 percentage points. The research also demonstrated the effects of class size on increasing enrollment among black students, children from low-income families, and high-poverty schools. CSR could help close income and racial gaps in post-secondary education attainment during early childhood. Small class size also increases students' probability of attaining a degree by 1.6 percentage points, concentrating in high-earning fields such as STEM, business, and economics. Zyngier's (2014) meta-analysis revealed that out of the 112 peer-reviewed studies, an overwhelming majority found that smaller classes helped narrow students' achievement gaps. In a literature review by Mathis (2017) on poor and minority students, the positive effects of CSR were observed to be twice as large.

According to Siegfried and Kennedy (1995), instructors must adjust their teaching methods, as class size alone will not significantly impact learning. The study suggested that it is mandatory to change teaching strategies based on class size; otherwise, class size does not directly impact students' performance. The study also verified that the actual effect of smaller class size is influenced by students' work ethics (including an aptitude for certain subjects, attentiveness, reticence in class, and attendance).

Bohrnstedt and Stecher (1999), Hruz (2000), and Krueger (2000), summarized studies on CSR. They demonstrated that a class with a student capacity of 15 showed higher achievements than their peers in larger classes in the first year after a CSR.

More advantages and statistically significant results were observed in math classes than in reading classes. The study noted that children from a small class could maintain their advantage during the subsequent years but did not show any advancements in their achievement. Konstantopoulos (2008) determined that higher-ability students benefited more from a smaller class than their average counterparts.

Many studies examined the impact of smaller class sizes on student achievement and have provided affirmative answers to this question, linking reduced class size to positive effects on student achievement (Biddle & Berliner, 2002; Finn & Achilles, 1990; Glass & Smith, 1979; Grissmer, 1999). It has been particularly observed in the case of early primary grade, African-American, and poor students (Bain et al., 1992; Nye et al., 2004; Smith et al., 2003). According to some reports, these effects are sustained beyond the "treatment" years for students exposed to smaller classes (Ehrenberg et al., 2001; Finn et al., 2001; Nye et al., 2002). Positive outcomes in student and teacher attitudes have also been found in smaller classes (Smith & Glass, 1980; Zahorik et al., 2003). Therefore, CSR helps improve student achievement in the early grades and for students often believed to be at risk. It enhances the affective experiences of both teachers and students. Correa (1993) and Lazear (2001) hypothesized a theoretical model to establish the role of class size in improving class productivity and function. These studies also emphasized that a large class size leads to a decline in student learning. They recommended that a

smaller class size improves student-teacher interaction.

According to Ingersoll (2015), 54% of the observed teachers left their jobs, citing a larger class size. In the long run, reducing class size may help retain experienced teachers. Correspondingly, it can improve student achievement and reduce the disruption associated with teacher turnover. Isenberg (2010) demonstrated that they had a smaller proportion of first-year teachers. Another study by Loeb et al. (2005) estimated that very large classes (33 students or more) significantly influenced indicators of teacher turnover.

Furthermore, Fredrikkson et al. (2012) analyzed the long-term effects of CSR. They showed that CSR positively affects individual wages in the labor market. Finally, Gilraine et al. (2018) considered the changes in several equilibria, such as the proportion of private schools and housing prices in the area where CSR is being implemented.

On the contrary, Hoxby (2000) mentioned that the positive effects of CSR, as shown in many studies, can be overestimated. For example, parents are inclined toward education and allow their children to enter schools where CSR has been implemented and cooperate with teachers positively. This action boosts students' performance and reaffirms the effectiveness of CSR.¹

¹ To eliminate this bias, we assume that the marginal rate of parents' contribution becomes lower in our model in the next section. Specifically, the great the parents' cooperation, the lower the increase in its effect.

In most past studies, students in smaller classes outperformed their peers from larger groups. It was reported that CSR outcomes saw a marginal increase in test scores after two or three years. CSR implementation, students receive more teaching time during class hours, fewer disciplinary issues, and more parent-teacher contact time. Overall, there was enhanced literacy instruction, student talk, and student participation in smaller classes.

Students' interactions with their peers in classrooms helped improve their social skills to build healthy friendships that motivated them to attend classes. According to Hamm and Faircloth (2005), friendships are critical for students during their school life and support their psychological growth and maturity, enhancing their social skills and self-awareness, which influence the development of self-evaluation and self-growth; they demonstrated the unprecedented effects of peer groups on a children's school lives. In addition, CSR can sometimes influence students' opportunities to socialize with a larger number of peers.

Peer groups can also negatively influence the students. The association with friends who are not serious about studies can influence students to neglect their studies, leading to poor academic performance. According to Olalekan (2016), peer groups make students feel more comfortable and relaxed. The author also emphasized that brilliant students' association with dull friends would negatively influence their learning. Similarly, an association with a brilliant peer group would positively affect

dull students and stimulate their interest in learning. Olalekan (2016) stated that the nature of a peer group determines its impact on the motivation and achievements of its members. Any environment that does not motivate students' educational needs is considered a poor learning environment.

Wilson (2002) reported lower suspension rates among students in late grades who had been in small classes in their early years of education. For example, tenth-grade students who had been in smaller classes in Grade 3 were suspended on an average of 0.32 days, compared with 0.62 and 0.77 days for students in "regular" and "regular plus aide" classes, respectively. Similarly, the attendance rate of tenth graders who had been assigned to smaller classes in their early years was significantly higher compared with other students (16 days per year of absence compared to 23 and 24 for "regular" and "regular plus aide" classes, respectively).

Finn and Boyd-Zaharias (2005) reported that 11 literature reviews showed a positive impact of smaller class sizes on students' learning behavior, including a reduction in their anti-social behavior (i.e., withdrawing from interactions with the teacher or other students engaging in disruptive acts). It also showed an increase in pro-social behavior (i.e., following rules, interacting positively with the teacher, and collaborating with other children). Another study showed that disciplinary referrals decreased sharply in the two years after smaller class sizes were implemented, with a 26% drop in the first year and a 50% decline in the second year.

Dee and West (2011) studied longitudinal data on eighth-graders that reductions in class size were associated with enhancements in their non-cognitive skills related to psychological engagement with school; more positive reactions to teachers, peers, and academics in general; higher levels of interest and motivation; lower levels of boredom and anxiety; and a greater sense of belonging. In addition, students in smaller classes were more likely to look forward to attending school, believed that the subjects studied would play a useful role in their future, and were less hesitant to ask questions.

Ho and Kelman (2014) found that smaller classes reduced gender gaps in performance. The study was conducted at Stanford Law School via rich individual-level covariate and grade information on every student in every mandatory first-year course to study whether assignment to smaller classes reduces the gender gap in law school in terms of performance. The results revealed a significant relationship between the gender gap and law school performance.

The COVID-19 pandemic has opened up the necessity for online classes; according to most studies, students in large-enrollment online courses had less communication with professors and peers than those in small enrollment online courses (Chen et al., 2017). It is most likely because of the size of the class. The class size frequently influences instructors' teaching and assessment approaches. The professors in this sample acknowledged the need for modifications in design and delivery,

such as limiting the number of available products. To successfully teach high-enrollment online courses, they may need to conduct assessments or hire teaching assistants. The faculty also emphasized the significance of creating clear expectations. Trammell and LaForge (2017) discovered that an online course with high enrollment is well-designed and structured and can reduce student complaints, improving their performance.

Lowenthal et al. (2019) emphasized the need to intentionally and carefully design high-enrollment online courses to help their faculty manage the workload involved while still enabling students to have a successful learning experience.

Theoretical Framework

Numerous studies have investigated the effects of class size on academic performance. As a result, this topic has received increasing attention from educators to policymakers in recent years. In the current study, the researchers tested whether elementary school teachers agreed or disagreed with the theory that smaller class sizes increase students' academic performance.

This study explores the various effects of CSR that contribute to the academic success of elementary school students. In addition, this study sought to conceptualize the effect of class size on teaching and learning processes and the learning environment of elementary students, an under-researched area. Importantly, this study also focused on conducting a follow-up study on class-size rules over these periods.

The Model

According to Becker's (2009) human capital theory, we assume that individuals accumulate their human capital through education. This study uses a simple model based on Lazear (2001) to determine how CSR affects every student's performance in a class and the optimal class size for various students.²

First, we assume that the maximum value of human capital for an individual i acquired through education, V_i , is as follows:

$$\begin{split} V_i &= \mathbf{A} \left(\frac{\theta_i}{\left| \theta_i - \frac{1}{n} \sum \theta_i \right| + 1} \right)^{\alpha} e_i^{\beta} \\ &= \mathbf{A} \left(\frac{\theta_i}{\left| \theta_i - \overline{\theta} \right| + 1} \right)^{\alpha} e_i^{\beta}, \end{split} \tag{1}$$

Where A is an exogenous variable, θ_i is the individual's ability to understand teaching, and $0 < \theta_i < 1$ is satisfied. $\overline{\theta}$ is the average level of students' ability to understand teaching in a classroom, and e_i is the level of individual learning environments, such as the number of school supplies provided by their family or parents' perception and attention toward their children's learning needs. The human capital function is based on the Cobb-Douglas production function, and $0 < \alpha$ and β <1 are satisfied. However, whether human capital can be maximized depends on an individual's earnestness. Specifically, the human capital per student acquired through education is:

$$V_{i}\bar{p}^{n} = A \left(\frac{\theta_{i}}{\left| \theta_{i} - \overline{\theta} \right| + 1} \right)^{\alpha} e_{i}^{\beta} \left(\frac{1}{n} \sum p_{i} \right)^{n}$$
(2)

Where p_i is the level of an individual's earnestness toward studying, \bar{p} is the average level of earnestness in a classroom; $0 \le p \le 1$ is satisfied, and n is the number of students.³ (2) clarifies that the average level of earnestness in the classroom affects individual human capital because the peer group's effect on academic performance is observed in a classroom. When the average level of earnestness toward studying in a classroom is higher than a particular student's earnestness toward studying, the student's earnestness increases and vice versa; moreover, when an individual's ability to understand teaching approaches the average level of understanding in a classroom, individual human capital increases. Therefore, the level of teaching and teaching style usually focus on a student with average ability in a classroom.

Next, we consider the benefits of education. The classroom operating cost (such as a teacher's salary and installing equipment for learning, such as a blackboard

² The mutual dependence between factors and phenomena can be clear through economic models. Therefore, we can understand human action quantitatively and evaluate school policies.

³ The concept that the effect of earnestness on individual human capital increases when the number of students in a classroom decreases is based on Lazear (2001). A small class size improves student-teacher interaction and realizes fewer disciplinary issues, as Correa (1993) and Leazer (2001) suggest. However, there is a possibility that the level of an individual's earnestness toward studying increases when a class size becomes larger and students' abilities in a classroom become diversified. Cooperation or competition among them can increase their earnestness toward studying. This possibility should be considered in future research.

or an air conditioner) is W, and students in that classroom pay the cost.⁴ The benefits derived from education per student π_i are as follows:

$$\pi_{i} = V_{i}\bar{p}^{n} - \frac{W}{n}$$

$$= A\left(\frac{\theta_{i}}{|\theta_{i} - \bar{\theta}| + 1}\right)e_{i}^{\beta}\left(\frac{1}{n}\sum p_{i}\right)^{n} - \frac{W}{n}$$
(3)

We assume that the benefits of education are always positive. That is, $\pi_i > 0$ is satisfied. From (3), we can observe that every student's value of benefits derived through education becomes an increasing function of e_i and p_i In contrast, the decreasing function of W. Individual learning environments and individual earnestness toward studying are the factors that boost benefits through education. In contrast, operation cost decreases the value of benefits.

Let us consider the optimal class size. Then, the first-order condition of (3) for n is s:

$$\frac{\partial \pi_i}{\partial n} = V_i \bar{p}^n \log \bar{p} + \frac{W}{n^2} = 0. \tag{4}$$

From (4), we obtain the optimal class size as:

$$n^* = \sqrt{\frac{-W}{V_i \bar{p}^n \log \bar{p}}}.$$
 (5)

From (3) and (4), it is determined that the value of n increases when the value of p increases and vice versa (see Appendix A).⁵ Therefore, the higher the students' earnestness toward studies, the larger the optimal class size. Moreover, we observe that n is the increasing function of W, whereas n is the decreasing function of V_i , from (5). Therefore, the more the individual learning environments increase, the smaller the optimal class size is. In addition, the optimal class size decreases when the deviation of an individual's ability to understand from the average level in a classroom is small. In contrast, the higher the operating cost, the larger the optimal class size.

Subsequently, we examine the benefits of education and transition in the optimal class size. For simplicity, we assume that students receive education for two periods. The benefits of education can be rewritten as:

$$\pi_{1i} + \pi_{2i} = V_{1i}\overline{p_1}^n - \frac{W}{n} + \delta \left(V_{2i}\overline{p_2}^n - \frac{W}{n} \right)$$

$$= A \left(\frac{\theta_{1i}}{|\theta_{1i} - \overline{\theta_1}| + 1} \right)^{\alpha} e_{1i}^{\beta} \left(\frac{1}{n} \sum_{i} p_{1i} \right)^n - \frac{W}{n} + \delta \left(A \left(\frac{\theta_{2i}}{|\theta_{2i} - \overline{\theta_2}| + 1} \right)^{\alpha} e_{2i}^{\beta} \left(\frac{1}{n} \sum_{i} p_{2i} \right)^n - \frac{W}{n} \right),$$

$$(6)$$

Where δ is the discounted present value, and π_{ji} , V_{ji} , p_{ji} , and θ_{ji} indicate the benefits from education, human capital, earnestness toward studying, and the ability

⁴ In a real society, schools incur these costs through grant money provided by the government, and students do not seem to pay for them directly, especially in public schools. However, the grant money provided by the government is collected through taxes. Specifically, citizens pay for the costs indirectly. Therefore, we assume that each student pays the operating cost.

⁵ The analysis of the relationship between n and p is the same as Lazear (2001).

to understand the teaching of individual i in period j, respectively.

The range of θ_i is smaller in the early elementary grades because the accumulation of knowledge is lower at the elementary level, and the study content is easier to understand. In contrast, the content increases and becomes more advanced during the late elementary grades. Therefore, the deviation of individual ability to understand from the average classroom is narrow in lower grades, whereas it is large in higher grades. That is,

$$\frac{\theta_{1i}}{|\theta_{1i} - \overline{\theta_1}| + 1} > \frac{\theta_{2i}}{|\theta_{2i} - \overline{\theta_2}| + 1}, \tag{7}$$

is satisfied. The decline in individual understanding of teaching in the second period decreases the level of earnestness toward study, p_{2i} . On the contrary, as benefits from education are the increasing function of e_i , improving individual learning environments in the first period boosts the level of e_{2i} and e_{2i} . The first-order condition of (6) for n is as follows:

$$\frac{\partial(\pi_{1i} + \pi_{2i})}{\partial n} = V_{1i}\overline{p_1}^n log\overline{p_1} + \frac{W}{n^2} +$$

$$\delta\left(V_{2i}\overline{p_2}^n\log\overline{p_2} + \frac{W}{n^2}\right) = 0. \tag{8}$$

When the class size for two periods is decided before the first period and does not change, from (8), we obtain the optimal class size through two periods as

$$n^{**} = \sqrt{\frac{-(1+\delta)W}{V_{1i}\overline{p_1}^n \log \overline{p_1} + \delta V_{2i}\overline{p_2}^n \log \overline{p_2}}} \cdot (9)$$

Effects of CSR on Students' Academic Performance

The study obtained four results by examining the effects of CSR on students' academic performance. First, we theoretically clarify how CSR increases students' academic performance using the following proposition.

Proposition 1: CSR is Effective in Increasing Students' Performance

Proof. A small class is amenable to multiple ways of teaching, such as adopting interactive teaching or assignments, which a large class cannot have. These methods effectively prevent deviations in an individual's ability to understand classroom teaching from becoming large. Moreover, CSR can improve the individual learning environment because the teacher in a classroom can easily grasp the individual learning environment in a classroom of a smaller size. It will help the school give the students and their parents some valid advice to improve the learning environment directly or support students whose learning environments are poor. Individuals' earnestness toward studies increases when their ability to understand teaching approaches the average level in a classroom as the content of the subjects is suitable for them and when individual learning environments are improved. Since (2) shows that less deviation from the average level, good individual learning environments, and high earnestness increase the value of human capital, CSR effectively increases students' academic performance. This result introduced by the model is consistent with results from empirical

studies shown in the literature review, which clarifies school students' academic success through CSR.

Second, the study introduces the following proposition.

Proposition 2: CSR can Effectively Increase Students' Academic Performance in Early Elementary Grades Rather than in Late Elementary Grades

Proof. The deviation of individual ability to understand classroom teaching in the early elementary grades is marginal compared to the deviation in late elementary grades since the individual accumulation of knowledge about each subject is not large. Therefore, it is easy for teachers in early elementary grades to prevent the deviation of an individual's ability to understand from becoming larger through various interactive methods to teach, such as group discussion rather than the class where the deviation of individual ability to understand is large. Since a small deviation in an individual's ability to understand classroom teaching increases the value of human capital, as shown by (1), CSR is effective in early elementary grades rather than in late elementary grades.

This model introduces results in line with some empirical studies, such as reduced class size leading to positive effects on student achievement (Biddle & Berliner, 2002), particularly in the early primary grades and for African-American and poor students. Therefore, students may benefit from smaller classes regardless of the teaching method used by the teachers.

Similar to earlier studies, the study also found that children in smaller classes were better achievers and concentrated longer than their counterparts in large classes due to improving individuals' learning environments and their high earnestness toward studies.

Third, this study considers the relationship between individuals' learning environments and academic performance.

Proposition 3: CSR can be Effective for Those with Poor Learning Environments

Proof. Individual learning environments also affect the value of individual human capital, as shown in (2). For example, when parents do not pay attention to their children's studies or their families cannot afford enough school supplies, students' learning environments become poor—the value of human capital and students' earnestness toward their studies decreases. On the contrary, students whose families are rich and their parents want their children to receive quality education always provide sufficient school supplies and plenty of learning opportunities. Proposition 1 demonstrates that CSR improves individual learning environments. The high level of learning environments directly improves the value of human capital and elevates it indirectly by increasing their children's earnestness toward studying. Since these two factors increase the value of human capital, we clarify that CSR can be more effective for those with poor learning environments.

These results support empirical studies, such as that by Tsavga (2011), which states that the learning environment plays a vital role in determining students' success, as it elucidates how students achieve their learning goals and address their learning tasks. Undoubtedly, the environment plays a major role in molding individual behavior to meet learning demands. For example, Correa (1993) and Lazear (2001) recommended that a small class size improves student-teacher interaction and leads to more teaching time during class hours, fewer disciplinary issues, and more reported parent-teacher contact time. Overall, this enhanced literacy instruction, student talk, and participation in smaller classes create a positive learning environment. Conversely, a poor learning environment does not contribute to students' motivation or learning experiences.

Finally, the study calculates the optimal class size through two periods, short and long, and analyzes the transaction of the optimal class size. From (5) and (9), it is clear that $n^* > n^{**}$ is realized when

$$|V_{1i}\overline{p_1}^n log\overline{p_1}| < |V_{2i}\overline{p_2}^n log\overline{p_2}|, \quad (10)$$

is satisfied, and vice versa. Specifically, the optimal class size becomes smaller as individual learning environments increase and the deviation of individual understanding becomes smaller by CSR and vice versa. On the contrary, raising earnestness toward studying increases the optimal number of students in a classroom, as shown in (5). Accordingly, the following proposition can be suggested.

Proposition 4: The Optimal Class Size is Small when Introducing the Policy, and the Class Size Increases with Time

Proof. When students begin to learn, there is a possibility that some students' learning environments are poor. Therefore, (10) is satisfied by CSR because it helps improve the learning environment. As long as the value of e_i increases, the optimal class size decreases. On the contrary, the marginal rate of improvement of individual learning environments becomes low, and students' understanding largely deviates over time. In this case, the effects of CSR are small. Therefore, the optimal class size increases with time.

This two-period model also shows that CSR can effectively increase students' academic performance, especially in elementary grades. Nevertheless, this result is consistent with those of earlier empirical works.

CONCLUSION

This study theoretically clarifies the effects of CSR on students' academic performance by focusing on each student's ability to understand teaching, the learning environment, and earnestness toward studies. Four propositions are suggested based on the model. First, it explains how CSR affects students' academic performance and shows its effectiveness. Second, it demonstrates that CSR is more effective in improving students' human capital in early elementary grades because they receive active attention from teachers rather than those in late elementary grades. In most

cases, small classes allow teachers to engage in more individualized teaching and create a difference in the curriculum. However, it is well known that teachers do not always adapt their teaching strategies to take advantage of smaller classes (Evertson & Randolph, 1989; Graue et al., 2008). Some teachers use the same teaching strategies in smaller and larger classes, which may not always be effective.

Third, it is also effective for students whose learning environments are poor rather than students whose learning environments are rich.

Fourth, this study focuses on the transition of the optimal class sizes. In the initial period, the optimal class size is smaller. In contrast, it increases with time because the individual learning environment has already been organized well and there is little room for improvement, and individual understanding has deviated.

This study will help educational experts determine whether CSR is worthwhile for elementary or secondary levels and determine the economic impact it creates in schools. In addition, research can further explore the need to understand teachers' instructional and classroom management practices of small class sizes, the benefits it can bring to students during their formative years of education, and its impact on children from a long-term perspective.

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APPENDIX

Appendix A

The relationship between n and p.

From (4), the following equation was obtained:

$$W = -n^2 V_i \bar{p}^n log \bar{p}. \tag{11}$$

Substituting (11) into (3), it is satisfied that

$$\pi_i = V_i \bar{p}^n + \frac{n^2 V_i \bar{p}^n \log \bar{p}}{n}$$

$$= V_i \bar{p}^n (1 + n \log \bar{p}) > 0. \tag{12}$$

Therefore, it can be written as 1+nlogp>0. Using the implicit function in (4), the following equation was introduced:

$$\frac{\partial n}{\partial p} = -\frac{\frac{\partial^2 \pi_i}{\partial n \partial p}}{\frac{\partial^2 \pi_i}{\partial n^2}} > 0. \tag{13}$$



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The Effect of Design-Based Learning Integrated with Educational Neuroscience Instructional Model on Students' Learning Outcomes, Executive Functions, and Learning Stress

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ABSTRACT

The investigation examined the consequences of design-based learning integrated with the educational neuroscience instructional model (DEN) and conventional instructional model (CIM) for tenth-grade students' learning outcomes, executive function, and learning stress. Since the physics curriculum is planned to prepare students for discovering complex scientific concepts through real-life experience, the use of the DEN model is necessary to measure its efficiency. The cluster random sampling method was used to select 63 out of 494 tenth-grade students from Numsomphittayakhon School, Thailand. The researcher administered seven tests and employed the pre-test and post-test control group research design. The experimental and control groups were taught using DEN and CIM, respectively. The data were analyzed by repeated measures of multivariate analysis of variance to study the consequences of both instructional models. The results indicated that students from both groups seemed to demonstrate no significant difference in all the pre-tests on the dependent

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the efficiency of the DEN model to promote student learning outcomes and executive functions and reduce students' learning stress.

Keywords: Conventional instructional model, educational neuroscience instructional model, executive functions, learning outcomes, learning stress

INTRODUCTION

The physics curriculum is one of three science subjects offered at the high school level in the Thai education system. It is intended to prepare students to understand how the universe works so that they can discover complex scientific concepts and create real-work relationships to recognize its impact on daily life (Chiou et al., 2013). According to Tornee et al. (2017a), Thailand's science education is planned to support the relevance of the science curriculum with students' realistic involvement. Therefore, students are anticipated to achieve universal scientific literacy: science process skills, and a scientific mind because the science subject is compulsory from first to twelfth grade in Thailand's basic education core curriculum (Yuenyong & Narjaikaew, 2009). In this line of reasoning, the concept of developing students (Chinnery, 2014) and a systematic process to assist students' memory through a teaching plan and learning activities (Isman, 2011) have become essential principles in developing an instructional design model (Srikoon et al., 2018).

Design-based learning is defined as an investigation style of education or instruction. It is based on incorporating the project idea, and its layout has been progressively introduced into the classroom at the K-12 and post-secondary levels (Cobb et al., 2003). Cobb et al. further justified that design-based learning balances instructive experimental investigation with the theoryfocused model of studying settings. Hence, it is a vital method for realizing when, why, and how instructive innovations should be implemented. On the other hand, Vaninsky (2017) referred to educational neuroscience as the processes that initiated and governed the flow of the biopotentials and sought to develop precise domains in the brain so that students can achieve the desired educational results.

An instructional model was developed by researchers whereby design-based learning and educational neuroscience were amalgamated in teaching physics lessons. Despite these two approaches having differences in their theory and method, they share pedagogy as a common field of applications. The instructional model is the so-called educational neuroscience instructional model (DEN), which was created by integrating design-based learning and educational neuroscience. This model is composed of five phases as follows: (i) identifying the learning problems; (ii) associating with knowledge; (iii) leading to solving problems; (iv) checking together; and (v) summarizing and evaluating.

In identifying the learning problems phase, students identify the learning problems according to their teachers' problem situation. The problem is related to students' daily life situations and can trigger five sensory aspects of their brain to cultivate a new sensory memory. It will ultimately enable them to make a new association to expand their prior knowledge to an extended knowledge. When the new information stimulates the brain's memory region, it will distribute across other brain regions. Hence, it corresponds to the multisensory plates (Anderson, 2009; Goswami, 2008). It is followed by creating attention and providing a better command to the prefrontal brain to increase its perception of the task of top-down attention and, ultimately, the construction of a better consolidation process (Cohen et al., 2021).

Students must explore and search for associated knowledge with technological assistance in the associating with knowledge phase. First, students decide how to identify the knowledge and use it. Next, they find the issues that affect the problem situation and retrieve additional knowledge from the network to form the associated schemas to solve the problem situation (Noesselt et al., 2012). It is followed by the third phase leading to solving problems. Students are encouraged to use their five senses to design, create, and develop inventions or innovations to solve the problem situation by working together with their team members during this phase. At this point, students are allowed to maximize the utilization of their five senses to receive multiple channels of information. For example, they can consistently shake, smell, listen to the sound, or touch an object. This information will then transform the neurotransmitters linking and activating neurons in the area, such as the multi-sensory superior temporal sulcus complex (MSTS-c) and the superior colliculus with the prefrontal cortex. It will enable the students to use their knowledge to design, create, and develop inventions or innovations to solve problems (Engel et al., 2012).

In the checking together phase, students are provided with opportunities to present their solutions collaboratively using a variety of formats, such as competition artifacts. According to Spalding et al. (2015), students' prefrontal cortex, as a key structure for the performance of executive functions, will use coordinated operation of higher-order thinking whenever the checking together activity is guided and discussed properly with their teachers. Next, in the summarizing and evaluating phase, the students must reflect on their solutions and the learning process to evaluate quickly and efficiently. The final phase involves many brain areas, such as the posterior cortical regions, ventromedial prefrontal cortex (vmPFC), the hippocampus, and the angular gyrus (Spalding et al., 2015).

The conventional instructional model (CIM) is the standard method for teaching science subjects in Thailand. It was employed to teach the control group. The Institute for the Promotion of Teaching Science and Technology (IPST) (2012) endorsed CIM as a standardized instructional model in Thailand. The CIM entails five phases: engage, explore, explain, elaborate, and evaluate. Generally, the model permits teachers and students to practice ordinary activities, develop students' abilities based

on their previous understanding and skills, create connotations, and persistently evaluate their comprehension of an idea. In the engagement phase, teachers provide activities that encourage students to think about the learning outcomes. Hence, students will be psychologically engaged in the concept or skills they are learning. It is followed by the explore phase, which offers students a familiar foundation of practices. Students will vigorously explore their learning situation or employ resources to develop concepts, processes, and skills. In the explain phase, teachers assist students by explaining what they explored in the previous phase so that they can express their conceptual knowledge or prove the skills that they have learned. The fourth phase is the elaborate phase whereby students are inspired to broaden their conceptual understanding and apply their skills. The final phase of CIM is the evaluation phase. Teachers evaluate students' understanding and capabilities as their key learning of concepts and development of skills.

Previous researchers have found that design-based learning and a neurocognitive-based instructional model can encourage and significantly affect students' learning outcomes (Srikoon et al., 2017; Sripongwiwat et al., 2016; Tornee et al., 2017b; Uopasai et al., 2017, 2018). These research results indicated how students' learning outcomes, such as academic achievement, science process skills, and a scientific mind, can be advanced if an appropriate instructional model is used. In addition, Jordan et al. (2011) found that a

functioning instructional model can assist students' scientific literacy, such as science process skills and a scientific mind, and their learning outcomes are closely related to their teacher's determinations.

Executive function is collectively referred to as cognitive processes, such as attention and working memory, required for intellectual influence on performance (Diamond, 2013). Meltzer (2010) stated that executive function constitutes one of the cognitive components, namely, biological and sociodemographic factors, which need further investigation. Moreover, Gilbert and Burgess (2008) described the concept of executive functions as a group of intellectual capabilities that can influence and adjust other cognitive processes, for example, attention, memory, and motor skills. According to Srikoon et al. (2017), schools can only build an executive function culture in their classroom after teachers empower students to discover 'how to solve problems flexibly' and 'how to learn.' These cognitive procedures are essential for working memory and attention to accomplishing a task. Similarly, Yang and Chang (2015) defined attention as the crucial development of intelligence that includes coordinating data into a comprehensible composition and elevating intangible knowledge. Working memory is an operational approach to collecting data and knowledge management, crucial for the accurate operation of additional complicated intellectual tasks (Jacob & Silvanto, 2015; Sanchez-Torres et al., 2015). Furthermore, Yang and Chang (2015) found that attention can influence working memory learning outcomes.

Vogel and Schwabe (2016) emphasized the complexity of learning stress. It can have enhanced or damaging consequences on remembrance, differing according to the particular memory procedure or phase specifically influenced by anxiety and the action of the main functional anxiety reaction system. Nevertheless, Sripongwiwat et al. (2018) found that the method students handle demanding events varies considerably depending on whether and how they identify and respond to the situation. Sripongwiwat et al. (2018) conducted a sequence of crosssectional surveys with 925 secondary school students in northeast Thailand. Their results showed that the students' lower secondary and higher secondary groups exhibited significant differences in all six types of learning stressors. However, males and females had significant differences only for academic-related stressors.

The above literature review highlights the significant effects of effective instructional models on students' learning outcomes (Srikoon et al., 2018; Tornee et al., 2017b; Uopasai et al., 2018), their executive functions (Srikoon et al., 2017; Uopasai et al., 2017), and their learning stress (Sripongwiwat et al., 2018) in science subjects. Therefore, researchers have concluded a significant relationship between the instructional model used by science teachers and students' learning outcomes, executive functions, and learning stress. However, considering the limitations of the

previous studies, the current study used a two-way factorial design to investigate the effectiveness of DEN and CIM intervention delivered in two different ways to two groups of students to examine their impacts on learning outcomes, executive functions, and learning stress. This study was designed to examine the DEN model's effect by seeking to address the following research purposes using this line of reasoning. The researchers investigated the mean differences between the experimental and control groups on their learning outcomes in physics test achievement, science process skills, and scientific mind, their executive functions regarding attention and working memory, and their learning stress.

MATERIALS AND METHODS

Research Design

A pretest and posttest control group was employed as a true experimental research design. This design was chosen to assess the two groups and evaluate any transformation arising from the treatment investigated. The subjects of this study were randomly assigned to the two groups. Both were presented with two different instructional treatments, namely DEN and CIM, for the experimental and control groups. The researchers considered the randomized design, in which they compared the post-test scores of the experimental and control groups while monitoring for pretest differences, as proposed by Bellini and Rumrill (2009). In other words, the randomized layout meant that the random assortment and allocation of subjects to the two groups would subsequently result in the random assignment of groups to treatments. The measurement of change (post-test scores—pre-test scores) provides a method for assessing the effectiveness of the two instructional models. Therefore, a two-way method was utilized - DEN versus CIM; time of measure: pre-test versus post-test.

Population and Samples

Random cluster sampling was employed in which the subjects of the population were randomly selected from the existing groups and called a 'cluster.' The cluster in this study refers to a natural but heterogeneous, intact cluster of tenth-grade students from 15 classes in Numsomphittayakhom School, Udon Thani province, Thailand, in the 2019 academic year. A total of 63 samples were selected from a population of 494 and appointed to the experimental group (n = 35) and the control group (n = 28), respectively.

Research Instruments

The researchers employed seven types of instruments in the format of tests to collect, measure, and analyze the data relevant to the study's aim: learning outcomes, executive functions, and learning stress. A total of seven types of tests were employed to evaluate the respective dependent variables, namely, a physics achievement test, a science process skills test, a scientific mind scale, an attention battery test, a working memory battery test, a stress test (ST5), and a learning stressor questionnaire.

Students' learning outcomes were measured using three research instruments:

a physics achievement test, a science process skills test, and a scientific mind scale. The physics achievement test was a multiplechoice test that covered questions normally found in typical school examinations. The initial physics achievement test consisted of 60 questions and was sent to three science experts for validity checking. Two experts specialized in science education and were affiliated with the Faculty of Education of a public university in Thailand and had teaching experience in physics subjects for more than ten years in higher secondary schools. The third expert was a science expert teacher of a level equivalent to an associate professor in a university. This expert worked in a secondary school, and their highest academic qualification is a master's degree in science education. The three experts advised removing some questions. The final version of test comprised 40 questions (KR20 = 0.95; discrimination index = 0.40 to 0.87; and difficult index = 0.40 to 0.80).

The science process skills test was adapted from Tornee (2014) and comprised 45 multiple-choice items with 13 science process skills as follows: measuring, using numbers and calculating, observing, communication, classifying, space/space relationship and space/time relationship, predicting, inferring, formulating hypotheses, controlling variables, experimenting, defining operationally, and interpreting data and conclusion. The science process skills test was piloted. The reliability value was KR-20 = 0.81, the difficult index = 0.29–0.78, and discrimination index = 0.21–0.73.

The scientific mind scale evaluated six traits: reasonableness, curiosity, perseverance, responsibility, honesty, organization and carefulness, and openmindedness. The scientific mind scale consisted of 25 items to which students were required to react according to a five-point Likert scale. The reliability value (α) of this scientific mind scale was 0.82.

Two set of battery tests were used to measure executive functions, namely attention and working memory abilities, in terms of their accuracy and time reaction. Both sets of tests were originally presented in the Thai language and adopted from Bunterm et al. (2015). The two battery tests comprised eight attention tasks and 17 working memory tasks. The eight attention battery tasks covered: (i) SR-dot; (ii) SRletter; (iii) Focus-dot; (iv) Focus-letter; (v) Sustain-dot; (vi) Sustain-letter; (vii) Select ch-letter Thai (20), and (viii) Select chletter Thai (21). The 17 working memory tasks included: (i) stoop; (ii) flanker-arrow; (iii) odd-even; (iv) vowel-consonant; (v) left-right; (vi) up-down; (vii) switch-updown-left-right; (viii) switch-Thai Letter Number; (ix) two-word span; (x) three-word span; (xi) four-word span; (xii) zero-number updating; (xiii) 1-number updating; (xiv) 2-number updating; (xv) 0-back; (xvi) oneback, and (xvii) two-back.

Each student was given ten trials for every task, making 80 and 170 trials for the respective attention and working memory tasks. The reaction times of less than 200 milliseconds were omitted, and data were scrutinized in the range of $\overline{x} \pm 3$ S.D. The

eight tasks of the attention battery test and the 17 tasks of the working memory battery test were assessed by Bunterm et al. (2015) for construct validity using the goodness of fit test. Furthermore, the test-retest reliability values of attention and working memory tasks ranged from 0.822 to 0.979 and 0.939 to 0.998, respectively. Therefore, it can be concluded that both battery tests have passed the tests of validity and reliability, and therefore they are considered good measures (Sekaran, 2003).

The researchers adapted the Thailand Secondary School Stressor Questionnaire from Sripongwiwat et al. (2018). The latter modified and converted it from English to the Thai language from the original instrument developed by Yusoff (2011, 2016). The stress test (ST5) and learning stressor components covered in this instrument measure students' responses to the intensity of stress experienced. At the same time, they were treated with two different instructional models in their physics learning process. The instrument consisted of 39 items with a response range of 0 to 5. Hence, in this order, the students' responses ranged from no stress-causing lowest, mild, moderate, high, and highest stress. The reliability values of the ST5 and the learning stressor instrument were found to be $\alpha = 0.91$ and, hence, reflected a good measure of learning stress.

Data Analysis

The researchers examined three major constructs encompassing eight factors: academic achievement in physics, scientific mind, science process skills, working memory accuracy and reaction time, attention accuracy and reaction time, and learning stress. In addition, repeated MANOVA testing was utilized to analyze the impact of time, instructional model, and interaction between instructional model and time on learning outcomes, executive functions, and learning stress as dependent variables. According to Hair et al. (2013), employing MANOVA assessed whether there were any significant mean differences in the experimental and control groups from an identical sample dispersal. Moreover, Everitt and Dunn (1991) clarified that Hotelling's trace is a direct degree of the amount of variance in the mixture of dependent variables encountered for the collection variable. Therefore, it examines the mean differences between the two experimental and control groups toward a mixture of dependent variables.

RESULTS

The results of this study are described in the following section. Before applying the treatments to the experimental or control groups, the researchers conducted a preliminary study to ensure that all the experimental or control group students were no different in terms of their age and handedness. The preliminary tests showed that there were no significant differences for students' age (t(63) = 0.949, p>.05) or handedness (t(63) = 0.678, p>.05) between the groups. Hence, both the control and experimental groups had a similar sample dispersion and were identical. The

researchers could then continue with the treatment of the instructional model.

The initial findings discuss the differences in the learning outcomes, executive functions, and learning stress of tenth-grade students before and after treatment with the DEN and CIM models. It is followed by an assessment of the effect of these models on the students' learning outcomes, executive functions, and learning stress. Lastly, the different impacts of the two instructional models were measured.

Results for Learning Outcomes

The impacts of the DEN and CIM models on the students' learning outcomes were measured using a two-way MANOVA test. Before the researchers began to evaluate the effects of the instructional models, Box's M test for equality of variancecovariance matrices was used to ensure that the assumption of homogeneity across the group was met. The result showed that Box's M=10.195, F=2.341, $df_1=21$, $df_2=12302.44$, Sig=.141; p>0.05 is not significant; hence, these results supported the assumption that both experimental and control groups were homogeneous. The repeated-measures MANOVA analysis confirmed a significant multivariate effect of the interaction between the groups and reaction time: Hotelling's trace $T^2 = 259.00$, F(3, 59) = 5093.75, p <0.01, partial $\eta^2 = 0.996$. Moreover, the results also indicated that there was a significant multivariate effect between the learning outcomes of the physics subject that encompassed students' achievement in physics tests, science process skills, and

scientific mind across the groups, regardless of their reaction time, as well as across within-subjects time point regardless of student group: Hotelling's trace $T^2 = 8.08$, F(3, 59) = 159.04, p < 0.01, partial $\eta^2 = 0.890$ (refer to Table 1).

The univariate tests showed that students from the experimental group gained higher scores in all three aspects of learning outcomes. Specifically, the overall results of the learning outcomes showed that student's achievement in the physics subject (F(1,62)= 1105.22, p < 0.01, partial $\eta^2 = 0.948$), science process skills (F(1,62)= 1008.27, p < 0.01, partial $\eta^2 = 0.845$), and scientific mind (F(1,62)= 132.83, p < 0.01, partial $\eta^2 = 0.535$) were higher than students from the control group regardless of time point.

Students' learning outcomes in physics were measured from three aspects, namely, test achievement, science process skills, and scientific mind. Table 2 illustrates the pre-test versus post-test learning outcomes

Table 1
MANOVA and univariate results of learning outcomes (LO)

Effect			Hotelling's trace T ²	F	Df_1	Df_2	partial η ²
Between-subjects	Group		259.00	5093.75**	3	59	0.996
	Time*LO		32.27	634.71**	3	59	0.970
	Group*LO		8.08	159.04**	3	59	0.890
			Univariate	test			
Learning outcomes	Exp. $(n = 35)$		5) Ctrl. $(n = 28)$		F	*2	partial η ²
Learning outcomes	M	SD	M	SD	Г	p	раппан
Achievement in physics test	28.86 2.79 1		15.14	2.10	1105.22**	0.000	0.948
Science process skills	38.80 3.06		5 26.75	5.05	1008.27**	0.000	0.845
Scientific mind	3.79 0.27		3.54	0.39	132.83**	0.000	0.535

Note: **p<.01

Table 2
Mean score and standard deviation of learning outcomes

I coming outcomes	Exp. (r	n = 35	Ctrl. (1	t-value	
Learning outcomes	M	SD	M	SD	
Achievement in physics test					
Pre-test	9.94	1.91	9.64	2.42	0.55
Post-test	28.86	2.79	15.14	2.10	21.56**
Science process skills					
Pre-test	11.91	3.18	11.25	3.10	0.83
Post-test	38.80	3.06	26.75	5.05	11.71**
Scientific mind					
Pre-test	3.25	0.27	3.60	0.45	1.62
Post-test	3.79	0.27	3.54	0.39	2.89**

Note: **p<.01

in the physics achievement test, scientific mind test, and science process skills test of the control and experimental groups before and after treatment with the DEN and CIM models. All post-tests improved the students' learning outcomes after the treatment compared to the pre-tests, whether they were taught using DEN or CIM.

Results for Executive Function

Both executive functions of attention and working memory were assessed concerning the students' accuracy and reaction time (in milliseconds, ms). The impacts of the DEN and CIM models on the students' executive functions were measured using a two-way MANOVA test. A repeated measure of time acted (before and after treatment) as the independent variables and the accuracy percentage of executing

the eight attention tasks, comprising SRdot, SR-letter, Focus-dot, Focus-letter, Sustain-dot, Sustain-letter, Select ch-letter Thai (20), and Select ch-letter Thai (21), were dependent variables. The results confirmed a significant multivariate effect between subjects of the combined accuracy of performing the 17 tasks across student groups irrespective of time point: Hotelling's trace $T^2 = 1378.37$, F(8, 54) = 9303.96, p <0.01, partial $\eta^2 = 0.999$. It can be concluded that there is a significant multivariate effect within-subjects time point irrespective of student group: Hotelling's trace $T^2 = 17.82$, F(8, 54) = 120.27, p < 0.01, partial $\eta^2 =$ 0.947. Therefore, the result further showed that there is a significant multivariate effect across the interaction between student groups and time points: Hotelling's trace T² = 3.70, F(8, 54)= 24.97, p < 0.01, partial η^2 = 0.787 (refer to Table 3).

Table 3
MANOVA and univariate results of executive function (Accuracy of attention test AA)

	-	-					
Effect	Hotelling's trace T ²		F	Df_1	Df_2	partial η ²	
Between-subjects	Group	137	78.37	9303.96**	8	54	0.999
	Time*AA	17	7.82	120.27**	8	54	0.947
	Group*AA	. 3	.70	24.97	8	54	0.787
		Univaria	te test (P	ost-test)		-	
Attention tasks	Exp. (n =	= 35)	Ctrl.	(n = 28)	F	p	partial η ²
	M	SD	M	SD			
SR-dot	38.60	4.73	35.00	4.51	19.47**	0.000	0.242
SR-letter	44.06	3.98	28.18	5.08	37.23**	0.000	0.379
Focus-dot	9.37	0.65	8.61	0.50	14.32**	0.000	0.190
Focus-letter	9.34	0.68	8.21	0.63	20.89**	0.000	0.255
Sustain-dot	9.00	0.77	8.25	0.59	4.53*	0.037	0.069
Sustain-letter	9.57	0.56	8.86	1.08	9.71**	0.003	0.137
Select ch-letter Thai (20)	45.37	6.83	39.93	2.40	11.56**	0.001	0.159
Select ch-letter Thai (21)	18.94	0.91	16.96	2.46	34.11**	0.000	0.359

Note: *p<.05 and **p<.01

While univariate tests were executed on the dependent variables, the results indicated that the accuracy percentage of executing the attention tasks described above in the experimental group was more accurate than the control group at a significant level of 0.01. In other words, they obtained higher attention accuracy in almost all the attention tasks except the sustain-letter attention task compared to students in the control group. Table 4 shows the mean score and standard deviation of attention accuracy for each attention task between the control group and experimental group before and after treatment of DEN and CIM.

On the other hand, when students were performing the eight attention tasks, they acted as dependent variables for the reaction time of attention. In contrast, a repeated measure of time (before and after treatment) acted as the independent variable. The two-way MANOVA results confirmed a significant multivariate effect across the interaction between the student group and time point: Hotelling's trace $T^2 =$ 655.67, F(8, 54) = 4425.79, p < 0.01, partial $\eta^2 = 0.998$. It can be concluded that there is a significant multivariate effect between subjects of the combined reaction time for the eight tasks across student groups irrespective of time point: Hotelling's trace $T^2 = 19.87$, F(8, 54) = 134.24, p < 0.01, partial $\eta^2 = 0.952$. The result further showed that there is a significant multivariate effect within-subjects time point irrespective of student group: Hotelling's trace $T^2 = 6.34$, $F(8, 54) = 42.79, p < 0.01, partial <math>\eta^2 = 0.864$ (refer to Table 5).

Table 4

Mean score and standard deviation of executive function (Accuracy of attention test)

Attention tasks		Exp. (1	n = 35	Ctrl. (r	n = 28	– t-value
Attention tasks	-	M	SD	M	SD	– t-value
SR-dot	Pre-test	31.77	5.80	31.29	4.53	0.363
	Post-test	38.60	4.73	35.00	4.51	3.063**
SR-letter	Pre-test	27.31	10.54	25.57	9.37	0.685
	Post-test	44.06	3.98	28.18	5.08	13.913**
Focus-dot	Pre-test	8.29	0.71	8.25	0.70	0.200
	Post-test	9.37	0.65	8.61	0.50	5.156**
Focus-letter	Pre-test	7.23	0.81	7.14	0.71	0.443
	Post-test	9.34	0.68	8.21	0.63	6.741**
Sustain-dot	Pre-test	7.43	0.81	7.18	0.67	1.308
	Post-test	9.00	0.77	8.25	0.59	4.272**
Sustain-letter	Pre-test	9.43	0.78	9.46	0.84	0.175
	Post-test	9.57	0.56	8.86	1.08	3.395**
Select ch-letter Thai (20)	Pre-test	36.43	1.70	35.89	1.81	1.206
	Post-test	45.37	6.83	39.93	2.40	4.019**
Select ch-letter Thai (21)	Pre-test	15.40	2.92	16.07	2.61	0.950
	Post-test	18.94	0.91	16.96	2.46	4.412**

Note: **p<.01

Table 5
MANOVA and univariate results of executive function (Reaction time of attention test RT)

	V		,				
Effect		Hotelli trace	_	F	Df_1	Df_2	partial η ²
Between-subjects	Group	655.6	67 4	4425.79**	8	54	0.998
	Time*RT	19.8	7	134.24**	8	54	0.952
	Group*RT	6.34	4	42.79**	8	54	0.864
		Univariate test					
Attantion tools	Exp. (n =	(n = 35) C		(n = 28)	- F		montial m2
Attention tasks	M	SD	M	SD	- F	p	partial η ²
SR-dot	368.74	43.06	409.83	66.03	27.69**	0.000	0.312
SR-letter	502.41	71.22	529.88	76.14	36.16**	0.000	0.372
Focus-dot	372.11	47.27	418.23	69.67	66.19**	0.000	0.520
Focus-letter	381.99	66.22	485.35	79.42	71.94**	0.000	0.541
Sustain-dot	401.90	48.06	437.01	76.41	23.31**	0.000	0.276
Sustain-letter	457.59	55.23	525.11	58.45	27.15**	0.000	0.308
Select ch-letter Thai (20)	444.02	35.58	516.65	49.70	95.18**	0.000	0.609
Select ch-letter Thai (21)	483.78	41.16	545.40	37.07	34.92**	0.000	0.364

Note: **p<.01

When univariate tests were executed on the dependent variables, the results indicated that the reaction times of the experimental group when performing the eight attention tasks were significantly shorter than the control group, irrespective of the time point at a significant level of 0.01. In short, students from the experimental group had a shorter reaction time when executing all the attention tasks than students from the control group. The mean scores and standard deviation of the reaction times of the eight attention tasks before and after treatment are shown in Table 6.

Working memory was another component of executive function measured by its accuracy and reaction time. A repeated measure of time before and after instructional model treatments acted as the independent variable and the accuracy percentage of executing the 17 working

memory tasks comprising stoop, flankerarrow, odd-even, vowel-consonant, leftright, up-down, switch-up-down-left-right, switch-Thai letter number, two-word span, three-word span, four-word span, zeronumber updating, one-number updating, two-number updating, zero-back, oneback, and two-back working memory tasks acted as dependent variables. The two-way MANOVA results confirmed that there is a significant multivariate effect between subjects of the combined accuracy while they were conducting the 17 working memory tasks across student groups irrespective of time point: Hotelling's trace $T^2 = 1093.62$, F(17,45)= 2894.87, p< 0.01, partial $\eta^2 = 0.999$. Moreover, the results showed that there is a significant multivariate effect across withinsubjects time point irrespective of student group: Hotelling's trace $T^2 = 47.21$, F(17,

Table 6

Mean score and standard deviation of executive function (Reaction time of attention test)

A 44 4 : 4 1		Exp. (1	1 = 35	Ctrl. (1	1 = 28	t-value
Attention task	KS .	M	SD	M	SD	
SR-dot	Pre-test	426.92	57.08	432.55	67.59	0.358
	Post-test	368.74	43.06	409.83	66.03	2.977**
SR-letter	Pre-test	551.50	72.79	547.32	76.50	0.830
	Post-test	502.41	71.22	529.88	76.14	2.897**
Focus-dot	Pre-test	434.30	60.84	432.55	67.59	0.451
	Post-test	372.11	47.27	418.23	69.67	1.167**
Focus-letter	Pre-test	474.69	64.07	474.69	64.07	0.140
	Post-test	381.99	66.22	485.35	79.42	1.111**
Sustain-dot	Pre-test	450.30	49.87	449.55	75.66	0.220
	Post-test	401.90	48.06	437.01	76.41	1.808**
Sustain-letter	Pre-test	511.51	63.06	534.92	62.35	0.351
	Post-test	457.59	55.23	525.11	58.45	2.236**
Select ch-letter Thai (20)	Pre-test	564.04	53.08	540.51	45.94	0.217
	Post-test	444.02	35.58	516.65	49.70	1.447**
Select ch-letter Thai (21)	Pre-test	625.02	44.08	611.83	36.51	0.144
	Post-test	483.78	41.16	545.40	37.07	1.575**

Note: **p<.01

45)= 124.97, p< 0.01, partial η^2 = 0.979. It can be concluded that there is a significant multivariate effect across the interaction between student groups and time points: Hotelling's trace T^2 = 7.91, F(17, 45)= 20.92, partial η^2 = 0.888 (refer to Table 7).

When univariate tests were performed on the dependent variables, the results indicated that the experimental group performed the 17 working memory tasks more accurately than the control group at p < 0.01. This result implies that the DEN model has significantly affected the students' working memory. In terms of accuracy, it is greater than the effect of the CIM in all the working memory tasks except the flanker-arrow task. Table 8 shows the mean scores and standard deviation of accuracy

percentage of the 17 working memory tasks before and after treatment.

In addition, the researchers continued to examine students' reaction times while they were executing the 17 working memory tasks as dependent variables, and a repeated measure of time before and after instructional model treatment acted as the independent variables. The two-way MANOVA results indicated a significant multivariate effect across the interaction between the student group and time point: Hotelling's trace $T^2 = 3237.59$, F(17, 45) = 8570.07, p < 0.01, partial $\eta^2 =$ 0.999. Furthermore, the results showed that there is a significant multivariate effect between-subjects (of the combined reaction time of ten tasks) across student groups

Table 7
MANOVA and univariate results of executive function (Accuracy of working memory test AWM)

Effect		Hotel trace	_	F	Df_1	Df_2	partial η²
Between-subjects	Group	1093	3.62	2894.87**	17	45	0.999
	Time*AWM	47.	21	124.97**	17	45	0.979
	Group*AWM	7.9	91	20.92**	17	45	0.888
	Univa	ariate tes	t (Post-	test)			
Woulding manager to also	Exp. $(n = 3)$	35)	Ctr	l. (n = 28)	· F		partial
Working memory tasks	M	SD	M	SD	Г	p	η^2
Stoop	82.74	6.07	82.74	6.07	19.11**	0.000	0.239
Flanker-arrow	84.86	7.03	84.86	7.03	22.49**	0.000	0.269
Odd-even	37.46	7.01	37.46	7.01	6.45**	0.014	0.096
Vowel- consonant	44.94	3.60	44.94	3.60	5.62**	0.021	0.084
Left-right	55.60	6.28	55.60	6.28	10.34**	0.002	0.145
Up-down	58.09	2.76	58.09	2.76	25.29**	0.000	0.293
Switch-up-down-left-right	42.69	3.70	42.69	3.70	8.32**	0.005	0.120
Switch-Thai Letter Number	36.11	3.59	36.11	3.59	18.15**	0.000	0.229
2-word span	4.40	0.55	4.40	0.55	23.42**	0.000	0.277
3-word span	13.49	1.22	13.49	1.22	26.86**	0.000	0.306
4-word span	3.69	0.47	3.07	0.54	47.28**	0.000	0.437
0-number updating	4.51	0.51	3.32	0.48	21.26**	0.000	0.258
1-number updating	10.20	1.86	10.20	1.86	11.14**	0.001	0.154
2-number updating	4.71	0.46	4.71	0.46	25.56**	0.000	0.295
0-back	4.31	0.53	3.18	0.53	11.13**	0.001	0.154
1-back	3.32	0.48	2.82	0.61	22.62**	0.000	0.271
2-back	2.89	0.63	2.36	0.49	12.05**	0.001	0.165

Note: **p<.01

Table 8
Mean score and standard deviation of executive function (Accuracy of working memory test)

W/1.:	41	Exp (r	n = 35	Ctrl (n = 28)		- t-value
Working men	iory tasks	M	SD	M	SD	- t-value
Stoop	Pre-test	68.14	9.33	71.07	10.49	0.781
	Post-test	82.74	6.07	82.74	6.07	5.530**
Flanker-arrow	Pre-test	79.20	9.14	78.89	9.01	0.639
	Post-test	84.86	7.03	84.86	7.03	2.951**
Odd-even	Pre-test	28.94	11.20	26.93	6.00	1.571
	Post-test	37.46	7.01	37.46	7.01	6.307**
Vowel- consonant	Pre-test	36.17	10.49	36.07	4.67	1.798
	Post-test	44.94	3.60	44.94	3.60	8.516**
Left-right	Pre-test	47.66	9.14	47.00	8.83	1.112

Table 8 (continue)

W 1:	4 1	Exp (r	n = 35	Ctrl (1	n = 28)	4 1
Working memor	y tasks	M	SD	M	SD	- t-value
	Post-test	55.60	6.28	55.60	6.28	4.513**
Up-down	Pre-test	47.29	6.59	50.89	5.31	0.773
	Post-test	58.09	2.76	58.09	2.76	6.933**
Switch-up-down-left-	Pre-test	22.71	6.67	36.89	4.79	0.072
right	Post-test	42.69	3.70	42.69	3.70	5.414**
Switch-Thai Letter	Pre-test	11.06	4.14	28.36	5.53	1.433
Number	Post-test	36.11	3.59	36.11	3.59	6.721**
2-word span	Pre-test	3.06	0.76	3.32	0.48	0.726
	Post-test	4.40	0.55	4.40	0.55	8.178**
3-word span	Pre-test	11.26	1.69	11.57	1.62	0.556
	Post-test	13.49	1.22	13.49	1.22	5.347**
4-word span	Pre-test	2.94	0.59	2.64	0.56	0.891
	Post-test	3.69	0.47	3.07	0.539	8.038**
0-number updating	Pre-test	3.31	0.47	3.61	0.57	0.060
	Post-test	4.51	0.51	3.32	0.475	6.695**
1-number updating	Pre-test	6.86	1.68	8.71	1.78	1.194
	Post-test	10.20	1.86	10.20	1.86	3.210**
2-number updating	Pre-test	3.57	0.65	3.68	0.67	1.907
	Post-test	4.71	0.46	4.71	0.46	7.272**
0-back	Pre-test	3.06	0.80	3.36	0.56	0.591
	Post-test	4.31	0.53	3.18	0.53	6.055**
1-back	Pre-test	2.94	0.73	2.82	0.61	0.707
	Post-test	3.32	0.48	2.82	0.61	5.603**
2-back	Pre-test	2.37	0.49	2.36	0.49	0.115
	Post-test	2.89	0.63	2.36	0.49	5.801**

Note: ** *p*<.01

irrespective of time point: Hotelling's trace $T^2 = 63.87$, F(17, 45) = 169.06, p < 0.01, partial $\eta^2 = 0.985$. This implies that there is also a significant multivariate effect withinsubjects time point irrespective of student group: Hotelling's trace $T^2 = 14.93$, F(17, 45) = 39.63, p < 0.01, partial $\eta^2 = 0.937$ (refer to Table 9).

When univariate tests were executed on the dependent variables, the researchers found that students from the experimental group could perform the 17 working memory tasks comparatively shorter than the students from the control group, regardless of the time point at p < 0.01. In other words, the DEN model significantly caused the students to react faster in performing the 17 working memory tasks than the students who were taught with the CIM. Table 10 shows the reaction time results between the experimental and control groups while performing the 17 working memory tasks before and after treatment.

Table 9 MANOVA and univariate results of executive function (Reaction time of working memory test RTWM)

	v		,	5	0	•	
Effect			otelling's trace T ²	F	Df_1	Df_2	partial η ²
Between-subjects	Group		3237.57	8570.07**	17	45	0.999
	Time*RTV	VM	63.87	169.06**	17	45	0.985
	Group*RT	WM	14.93	39.63**	17	45	0.937
	Ţ	Jnivaria	te test (Post	t-test)			
W1	Exp. (n	= 35)	Ctrl.	(n = 28)	F		
Working memory tasks	M	SD	M	SD	Г	p	partial η ²
Stoop	512.67	39.12	562.98	66.85	25.38**	0.000	0.294
Flanker-arrow	523.56	45.18	542.22	59.05	9.74**	0.003	0.138
Odd-even	535.37	34.67	590.25	109.71	93.36**	0.000	0.605
Vowel- consonant	505.67	50.28	592.70	45.55	57.16**	0.000	0.484
Left-right	457.19	46.10	496.10	67.77	35.38**	0.000	0.367
Up-down	456.56	52.25	524.62	65.55	85.58**	0.000	0.584
Switch-up-down-left-right	458.34	81.38	485.07	99.15	1.37	0.246	0.022
Switch-Thai Letter Number	536.98	62.19	604.22	54.82	45.12**	0.000	0.425
2-word span	3777.59	389.72	4071.20	589.97	0.002	0.962	0.000
3-word span	4613.80	73.85	4931.88	450.83	6.63*	0.012	0.098
4-word span	4165.12	297.81	4251.44	254.52	0.005	0.944	0.000
0-number updating	1507.54	166.12	1520.64	190.46	4.09*	0.047	0.063
1-number updating	2556.77	46.17	3270.64	451.76	88.38**	0.000	0.592
2-number updating	961.83	180.27	1059.92	116.28	49.44**	0.000	0.448
0-back	369.29	42.25	414.77	45.37	12.45**	0.001	0.170
1-back	338.47	51.25	447.08	72.55	6.82*	0.011	0.101
2-back	365.04	17.69	431.20	32.80	35.32**	0.000	0.367

Note: *p<.05 and **p<.01

Table 10
Mean score and standard deviation of executive function (Reaction time of working memory test)

Wanting	wr to also	Exp (n	1 = 35)	Ctrl (n	Ctrl (n = 28)	
working memo	Working memory tasks		SD	M	SD	- t-value
Stoop	Pre-test	577.88	50.26	585.79	65.17	0.544
	Post-test	512.67	39.12	562.98	66.85	3.729**
Flanker-arrow	Pre-test	556.11	46.49	559.92	57.38	0.291
	Post-test	523.56	45.18	542.22	59.05	1.422**
Odd-even	Pre-test	606.16	38.56	606.91	112.30	0.037
	Post-test	535.37	34.67	590.25	109.71	2.795**
Vowel- consonant	Pre-test	574.93	42.65	575.97	42.59	0.096
	Post-test	505.67	50.28	592.70	45.55	7.115**
Left-right	Pre-test	513.37	56.86	515.12	71.04	0.109
	Post-test	457.19	46.10	496.10	67.77	2.706**
Up-down	Pre-test	550.13	64.25	540.67	66.28	0.573

Table 10 (continue)

W1-:	. 41	Exp (r	1 = 35)	Ctrl (n	Ctrl (n = 28)		
Working memory	/ tasks	M	SD	M	SD	- t-value	
	Post-test	456.56	52.25	524.62	65.55	4.588**	
Switch-up-down-left-	Pre-test	581.34	91.77	588.17	93.82	0.291	
right	Post-test	458.34	81.38	485.07	99.15	1.175**	
Switch-Thai Letter	Pre-test	613.80	73.85	623.98	43.63	0.645	
Number	Post-test	536.98	62.19	604.22	54.82	4.492**	
2-word span	Pre-test	4413.46	450.05	4701.59	806.92	1.794	
	Post-test	3777.59	389.72	4071.2	589.97	2.370**	
3-word span	Pre-test	5550.76	668.93	5472.56	663.24	1.794	
	Post-test	4613.80	73.85	4931.88	450.83	2.370**	
4-word span	Pre-test	4405.54	339.65	4486.26	364.82	0.907	
	Post-test	4165.12	297.81	4251.44	254.52	1.218**	
0-number updating	Pre-test	1878.35	297.48	1776.99	349.80	0.243	
	Post-test	1507.54	166.12	1520.64	190.46	2.456**	
1-number updating	Pre-test	1119.52	225.49	1137.05	112.78	0.441	
	Post-test	2556.77	46.17	3270.64	451.76	3.123**	
2-number updating	Pre-test	448.46	71.67	446.37	80.26	0.375	
	Post-test	961.83	180.27	1059.92	116.28	2.492**	
0-back	Pre-test	506.69	78.92	508.90	85.27	0.110	
	Post-test	369.29	42.25	414.77	45.37	4.108**	
1-back	Pre-test	434.32	25.11	440.51	22.31	0.107	
	Post-test	338.47	51.25	447.08	72.55	6.954**	
2-back	Pre-test	3345.75	219.92	3321.66	211.98	1.021	
	Post-test	365.04	17.69	431.20	32.80	10.230**	

Note: ** p<.01

Results for Learning Stress

The researchers evaluated the stress and learning stress of both experimental and control groups using pre-test versus post-test. In addition, a two-way MANOVA test was used to examine the effects of the two instructional models on learning stress. The results showed that students from the experimental group maintained almost the same stress level both pre-test and post-test, but students from the control group experienced an increase in their stress level

post-test. Moreover, the results indicated decreased learning stress in the experimental group but increased learning stress in the control group. In short, students who are taught using the DEN model have less learning stress than students who are taught using the CIM.

Box's M test for equality of variance-covariance matrices was insignificant (Box's M= 15.52, F= 1.439, df₁=10, df₂=15859.24, Sig=.156; p>0.05) and implied that the assumption of homogeneity across the group

was met. Repeated-measures MANOVA analysis confirmed a significant multivariate effect of the interaction between the groups and reaction time: Hotelling's trace $T^2 = 43.813$, F(2, 60)=1314.40, p<0.01, partial $\eta^2 = 0.978$. Moreover, the results indicated that there is a significant multivariate effect between stress, which encompassed the experience of ST5 and learning stress across the groups regardless of their reaction time: Hotelling's trace $T^2 = 1.528$, F(2, 60)=45.82, p<0.01, partial $\eta^2 = 0.604$. It can be concluded that there is a significant multivariate effect across within-subjects time point regardless of student group: $T^2 = 1.528$

0.643, F(2, 60)= 19.298, p< 0.01, partial η^2 = 0.391 (refer to Table 11).

When univariate tests were performed on the dependent variables, the results indicated that the ST5 score of the experimental group was higher than the control group regardless of time point, F(1,62)=9.539, p < 0.01, partial $\eta^2 = 0.135$; and learning stress was also higher than for the control group, F(1,62)=75.513, p < 0.01, partial $\eta^2 = 0.553$. Table 12 illustrates the details of students' stress and learning stress as reflected in their pre-tests and post-tests before and after the treatments with the two instructional models.

Table 11 MANOVA and univariate results of learning stress (LS)

Effect		Hotelling trace T	_	F	Df_1	Df_2	partial η ²
Between-subjects	Group	43.813	3	1314.40**	2	60	0.978
	Time*LS	1.528		45.82**	2	60	0.604
	Group*LS	0.643		19.298**	2	60	0.391
		Univ	ariate te	st (Post-test)			
Learning stress	Exp. (n =	35)	Ctrl.	(n = 28)	F	p	partial η ²
	M	SD	M	SD			
Stress	4.17	1.97	6.00	2.48	9.532**	0.002	0.135
Learning stress	80.34	20.26	96.64	16.80	75.513**	0.001	0.553

Note: **p<.01

Table 12
Mean score and standard deviation of learning stress

Danandani	D 1 4 11		1 = 35)	Ctrl (1	t-value	
Dependent variables		M	SD	M	SD	t-value
Stress	Pre-test	6.17	2.18	4.17	1.97	0.11
	Post-test	6.18	2.78	6.00	2.48	3.25**
Learning stress	Pre-test	120.74	22.98	80.34	20.25	2.62
	Post-test	106.28	19.79	96.64	16.79	3.49**

Note: ** p<.01

DISCUSSION

The study's results have provided a better understanding of the fundamental device of the DEN model for the enhancement of tenth-grade students' learning outcomes, executive functions, and decrement of learning stress. Therefore, the overall results have the potential to make a substantial contribution to teacher education. Furthermore, consistent with past research results (Srikoon et al., 2017; Sripongwiwat et al., 2016; Tornee et al., 2017; Uopasai et al., 2017, 2018), our results showed similar outcomes for optimizing an appropriate instructional model treatment to assist the devices of education and growth associated with group differences in educational accomplishment, particularly in teaching science or applied science subjects.

The contemporary era of information and communication technology has the effect of increasing the burden of educational transformation. Therefore, it is necessary to distinguish the advanced responsibility of the science curriculum to ensure that students gain skills rather than remember the lesson content (Wilkin, 2014). Furthermore, all basic education institutions face many challenges brought about by the COVID-19 pandemic. Hence, science teachers should consider design-based learning and educational neuroscience learning theories when developing lesson plans to produce better learning consequences and develop their students' executive functions to sustain the subject's relevance in the 'new normal' era. In conclusion, the results of this study implied that physics learning outcomes and executive functions are essential in improving students' long-term skills. Finally, the researchers would like to encourage physics teachers to explore and use the DEN model to develop outstanding human capital in the future.

CONCLUSION

The impetus for the current study was to report the effectiveness of DEN model intervention on tenth-grade students' learning outcomes, executive functions, and learning stress in Thailand. However, despite meaningful results for the efficiency of the DEN for promoting students' learning outcomes and executive functions and reducing students' learning stress, the study has its limitations. It is because a true experimental design that allowed students to assign multiple intervention conditions randomly would have been useful. Therefore, the researchers recommended longitudinal interventions for future studies.

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Innovation During COVID-19 Pandemic: Water, Sanitation, and Hygiene in Informal Settlements

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ABSTRACT

This paper explores informal settlements' innovations in the water, sanitation, and hygiene sector during the COVID-19 pandemic. Water, sanitation, and hygiene are important aspects that can reduce the spread of COVID-19. However, the water and sanitation conditions in densely populated informal settlements tend to be sub-standard, and residents must often rely on shared facilities. Previous research has generally explored innovation on a macro scale, whereas this research is local. This paper explores four elements of innovation: form, actor, conflict, and regulation, to study social innovations in six urban villages in Bandung City, Indonesia. This study found that innovations during the COVID-19 pandemic have generally been in the form of arrangements for using shared facilities and providing handwashing facilities. A mix of actors comprised the community, village/sub-district officers, the COVID-19 task force, and other community organizations, highlighting the importance of combining a bottom-up and top-down approach to social innovations. However, a lack of rules and the institutionalization of innovations, perceived getting better conditions, scheduling, and funding prevented the long-term success of the innovations. The paper develops policy recommendations for the water, sanitation, and hygiene sector based on these findings.

Keywords: COVID-19, hygiene, informal settlement, innovation, sanitation, water

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INTRODUCTION

The spread of Novel Coronavirus Disease (COVID-19) closely relates to water, sanitation, and hygiene (WASH) (Donde et al., 2021). Nevertheless, WASH conditions are deteriorating during the COVID-19 pandemic, especially in informal settlements,

such to peoples' economic conditions and increasing demand for these services (Parikh et al., 2020). Therefore, there is an urgent need to identify water access as a public health priority during the COVID-19 pandemic (Renukappa et al., 2021) because of the important role of water in effective handwashing, sanitation, and overall public health (Donde et al., 2021; Warner et al., 2020).

In 2010, the United Nations General Assembly recognized safe drinking water and sanitation as human rights in Resolution 64/292 (United Nations, 2020). Thus, even a pandemic should not decrease access to clean water. However, in the Global South, access to water and sanitation is still an issue that is further exacerbated by rapid population growth (Behera et al., 2020). A quarter of the total world population is estimated to live in slum areas or informal settlements (Friesen et al., 2018). WASH conditions are generally worse in these informal settlements. These problems are related to the quality of life and economic conditions (Rahut et al., 2015) and can cause the spread of water-borne diseases (Reddy & Behera, 2006).

The COVID-19 pandemic leads to questions about contemporary approaches toward informal settlements (French et al., 2020). The infrastructure in these settlements is over-burdened, and it is not easy to carry out social distancing (Nyashanu et al., 2020). Adequacy and proximity are specific concerns during the COVID-19 pandemic. Informal areas are generally densely populated low-income areas. The clean water and sanitation infrastructure types

vary and include household connections and shared water infrastructure. The use of shared facilities hinders the application of physical distancing. Besides, reaching these shared facilities can be risky because the users have to pass through narrow alleys (Parikh et al., 2020). Such conditions are evident in informal settlements in various cities in Indonesia.

Some social innovations can be witnessed in informal settlements in Indonesia that address the various limitations in the WASH sector during the COVID-19 pandemic. These local-social innovations require further exploration to identify their status and their challenges. Sowby (2020) stated that the COVID-19 pandemic offers lessons about emergency preparedness in the water sector. Various interventions have emerged in the water sector (Antwi et al., 2021). Cases in Europe showed that these were generally short-term interventions to ensure a continuous water supply and make up for lost income by customers during the pandemic.

This study aims to identify the elements of social innovation in water and sanitation infrastructure and hygiene in informal settlements during the COVID-19 pandemic. Most studies on social innovations are on the macro scale, such as on the city or regional level (see, for example, Certoma, 2022; McFarlane et al., 2021; O'Byrne, 2014; von Schnurbein, 2021). However, studies on local-scale social innovations lack based on the authors' knowledge. Furthermore, studies related to innovation in the WASH sector during the COVID-19 pandemic are also limited.

We use six informal settlements in Bandung City in Indonesia as case studies. Bandung City is the third-largest city in Indonesia and is located on Java Island. Like other big cities in Indonesia, Bandung City has many informal settlements facing water and sanitation provisions problems. We assessed the condition of innovation in the cases using four elements of social innovation: a form of innovation, actor, conflict, and institutionalization. The study results can aid policy formulation in the WASH sector to address the spread of COVID-19. The remainder of this paper is structured as follows. The next section is a literature review of the elements of social innovation followed by the methodology. Then follows the result and discussion of innovations in the case studies and the conclusion.

LITERATURE REVIEW: THE ELEMENTS OF SOCIAL INNOVATION

The Elements of Social Innovation

Social innovation is the implementation of new ideas about how people organize activities or social interactions to fulfill one or more common goals (Christmann, 2020). Avelino et al. (2019) and Haxeltine et al. (2013) stated that social innovation is a change in social practices and relationships that involve new ways of doing, organizing, knowing, and forming a framework. In other words, how people decide, act, and behave individually or collectively (Franz et al., 2012). Social innovation can be in new products and services, processes, markets,

collaborative platforms, organizational forms, and business models (Foundation, 2012). Social innovation is different from other forms of innovation, such as business innovation and technical innovation, which generally use technology to convey innovation.

Social innovation usually does not have to be something new, unlike other types of innovation. Rather, it is a novelty (Christmann, 2020). Social innovation can combine elements that already exist in a novel way. Old elements integrated into new situations, contexts, or spatial settings can also be categorized as social innovation. Another difference between social innovation and other innovations is the motivation of the main actors involved. The main motivations for business innovation are commercialization and competition. Conversely, the main motivations for social innovations are the social benefits and the public good of supporting the organization, community, and society (Dawson & Daniel, 2010). However, sometimes technical aspects and funding limitations remain a consideration even though social innovations aim to improve social conditions (Mumford et al., 2002).

Social innovation is a specific initiative that is implemented locally (Avelino et al., 2019; Domanski et al., 2019; Nilsson & Blomkvist, 2021). It refers to voluntary community involvement in developing and ensuring the sustainability of a new solution to address a social or environmental challenge (Davies & Simon, 2013). Voluntary community involvement in social

innovation is directed at collective actions to achieve common goals. It is done by sharing information and resources, identifying problems, resolving them together, and making joint decisions that affect decision-making and the government (Davies & Simon, 2013).

Social innovation is made up of four elements: (1) forms of social innovation, (2) actors, (3) conflict, and (4) institutionalization (Christmann, 2020). In this context, the novelty lies in the existence of authentic ways in which these elements are combined again (Füg & Ibert, 2019). Social innovation can take several forms: unconnected elements, the first link between elements, consolidation of elements and links, variation and adaptation, and mundane routine (Christmann, 2020).

Various actors are involved in social innovations (Christmann, 2020). Community involvement is a key element of social innovation (Esmaeilpoorarabi et al., 2020). It is important because interest groups and communities play a crucial role in promoting behavioral change. It is the case because, generally, people are more willing to change when they engage in collective initiatives with peers (Marchesi & Tweed, 2021). Social innovation has four community profiles: the 'citizen-sensor,' the 'sharing citizen,' the 'collaborative citizen,' and the 'entrepreneurial citizen' (Angelidou & Psaltoglou, 2017). Although community involvement is important in innovation, Harrison and Rubin (2018) suggest that a combination of top-down and bottom-up will yield better results.

Conflicts commonly play a role in processes of social innovation. Conflict in the form of friction and resistance commonly occurs in social innovation. However, these conflicts generally do not lead to failure. On the contrary, conflicts that constitute a constructive process support the progress of innovation. Various types of conflict can occur, such as avant-garde vs. establishment, dominant vs. average avant-garde, pragmatists vs. idealists, and fatigue (Christmann et al., 2020).

Institutionalization is the fourth element of social innovations (Christmann et al., 2020). Regulations are important in driving innovation (Bradshaw, 2017; Harrison & Rubin, 2018; Hodge & McCallum, 2017). Regulations are also a step toward institutionalizing social innovations. Efforts to institutionalize innovation include establishing concepts, rules and regulations, and differentiation of rules and regulations (Christmann et al., 2020). Institutionalization is an effort to change innovative practices into something more in the form of established orders (Howaldt & Schwarz, 2010).

Water, Sanitation, and Hygiene in Informal Settlement during Covid-19 Pandemic: Previous Studies

Informal settlements show a high vulnerability to Covid-19 transmission. It is due to the high population density, narrow road network, and shared facilities, such as water points and public toilets (Parikh et al., 2020). The government policy to overcome the transmission of Covid-19 in

informal settlements includes lockdowns and mobility limitations. From the previous studies, it is known that India, Bangladesh, and Uganda implemented the lockdown policy (Akter et al., 2021; Bauza et al., 2021; Nuwematsiko, 2022; Parikh et al., 2020), while Indonesia implemented the limitation of mobility (Parikh et al., 2020). The form of innovation and adaptation that is carried out is very dependent on the implemented policy, lockdown, or limitation of mobility. In the case of a lockdown, innovation and adaptation are carried out top-down from the government or on a household and individual scale. In contrast, in the case of mobility limitation, innovation is also carried out on a neighborhood scale.

In informal settlements in India (Dharavi), it was found that there were initiatives related to WASH that were individual initiatives or direct interventions from the government. At the same time, in Indonesia, many community initiatives were spearheaded by the community leader (Parikh et al., 2020). The existence of communal-scale innovation in Indonesia is due to the limited WASH intervention from the government for informal settlement. However, Shermin and Rahaman (2021) stated that limited direct intervention, such as the provision of handwashing facilities, water supply availability, and overcrowded sanitation facilities, caused the situation to worsen.

Bauza et al. (2021) explained that there had been a change in community behavior in the WASH sector due to the Covid-19 Pandemic. This study, conducted in rural India, found changes in individual behavior

related to handwashing and water use. People are washing their hands more often with soap. People also filter and boil water before use. However, some individuals and families cannot implement the habit of washing their hands because of the problem of soap prices. At the same time, the Covid-19 pandemic has resulted in a decrease in income. Regarding water access, a few families no longer have access to water taps because, during a pandemic, water taps are not allowed. The study does not specifically mention informal settlements. However, the conditions in the case study have similarities with informal settlements in terms of water and sanitation infrastructure and the community's economic conditions.

Akter et al. (2021) explained the conditions of an informal settlement in Khulna, Bangladesh, related to the Covid-19 Pandemic. Some innovations made by the community are using ash as a substitute for soap to overcome the high price of soap. To overcome the problem related to the use of shared facilities, such as toilets, baths, and washes, a small portion of households made makeshift attached toilets. Funds for constructing this toilet were obtained by borrowing from relatives or friends. Families who cannot afford to make toilets lower water use to reduce trips to community toilets.

Nuwematsiko et al. (2022) stated that slum dwellers in Kampala, Uganda, did not feel the impact of the Covid-19 Pandemic on access to WASH. The community and the government have invested in WASH to anticipate the spread of Covid-19 due to the poor WASH sector.

MATERIALS AND METHOD

Approach

This study uses six cases of informal settlement in Bandung City, namely Lebak Siliwangi, Tamansari, Cipaganti, Sukabungah, Pungkur, and Nyengseret (see Figure 1). Informal settlements are high-density settlements, with houses and infrastructure built independently by the community, not by developers or the government. With this condition, informal settlement tends to be a slum area. The selection of study sites was carried out based

on directions from KOTAKU (Indonesia's slum upgrading program) Officer. The criteria used are high-density settlement and the existence of social innovation.

As is common in large cities in the Global South, Bandung City faces problems with informal settlements. In each case, the study identifies the condition of the elements of social innovation in water and sanitation provision related to the COVID-19 pandemic. The elements are: 1) form of innovation, 2) actor, 3) conflict, and 4) institutionalization and regulation. The elements are explained in Table 1.

Table 1
Elements of innovation

Element of Innovation	Question
Form of Innovation (Christmann et al., 2020)	What is the type of innovation?
Actor (Christmann et al., 2020)	Who is the main actor of innovation?
Conflict (Christmann et al., 2020)	Are there any conflicts in the implementation of innovation?
Institutionalization and Regulations (Bradshaw, 2017; Hodge & McCallum, 2017)	What kind of institutionalization is evident in the innovation?

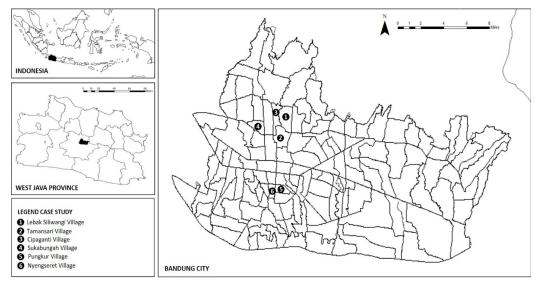


Figure 1. Case study location

Data Collection and Analysis

This study uses two types of data: primary and secondary data. Primary data was obtained through online interviews with stakeholders consisting of representatives from KOTAKU, the Health Office, the Public Works and Spatial Planning Office of Bandung City, the Head of Pungkur Village, and the heads of neighborhood units (Community Leader) or residents for each case. The objective of the interviews was to explore the condition of the element of innovation in the six cases.

This study uses qualitative-descriptive analysis in the form of content analysis. The questions used for the analysis were the form of innovation, actors of innovation, conflict, and institutionalization and regulation (see Table 1). The coding system applied is a combination of the directed and traditional systems. The directed system starts from the relevant theory or research results. In this research, the main coding system is derived from the results of the previous study, namely the four elements in the social innovation system. Furthermore, the categories in the four elements developed according to the categories that emerged from the interview. The results of these interviews were transcribed and analyzed using the categorization system described above. One person carried out the content analysis. However, to ensure the credibility of the research, peer-checking was carried out by other research members, and member checking by returning to the respondents to confirm the results.

RESULT

This section will describe the general condition of water, sanitation, and informal settlements in Bandung City, followed by a description of community innovations in infrastructure management during the COVID-19 pandemic.

Water, Sanitation, and Informal Settlements in Bandung City

The Public Water Supply Company (PDAM) and the Office of Housing and Settlement Areas, Land, and Landscaping of Bandung City (DPKP3) are responsible for providing water and sanitation services in Bandung City. DPKP3 is responsible for non-piping infrastructure, which serves 1.52% of the population in Bandung City. PDAM provides piped water services and serves about 75.75% of the city's population. The supply of decent water is 77.27% (Bandung City Development Planning Agency [BCDP], 2014), with average domestic water consumption of 15.32 m³/ month (Ministry of Public Works and Housing [MPWH], 2018). Currently, the existing raw water production is 2,800 liters/ second, with a non-revenue water rate in 2018 of 42%.

The slum baseline data from the KOTAKU (MPWH, 2021) shows that in Bandung City, 29% of residential buildings in slum settlements are not served by clean water/piped raw water or non-piped protected and proper water networks. Moreover, 17% of the community cannot acquire the minimum standard of 60 liters per person/day for showering, drinking, and

washing (Government of Indonesia [GoI], 2018). Furthermore, 10% of residential buildings in slum settlements do not have access to communal latrines/toilets, and 19% do not have gooseneck toilets connected to a septic tank. In addition, 69% of households dispose of their greywater into the settlement surface drainage. 52% of solid household waste in slum areas is transported to temporary or final disposal sites less than twice a week, 9% of slum areas are regularly inundated, and 35% of the drainage network in slum areas has an insufficient capacity (MPWH, 2021).

The local and national governments have various policies to provide water and sanitation facilities in informal settlements (see Table 2). This assistance is mainly in budget sharing between the government and the community. However, the implementation of projects and technical assistance from the government has halted during the COVID-19 pandemic because of the re-allocation of the government budget. Therefore, this budget is prioritized to address the direct impact of the COVID-19 pandemic.

Description of the Cases

Lebak Siliwangi Urban Village. Lebak Siliwangi Urban Village is located in Coblong Sub-District. It has an area of 1 km² with 4,243 people and a population density of around 4,243 people/km². Most residents of this village work in the service sector (Bandung City Statistics Office [BCSO], 2018). The clean water consumption of households in this village

is 40 liters/person/day. This number is below the water consumption standard in Indonesia, 60 liters/person/day (GoI, 2018). Approximately 85% of the population of this urban village can fulfill their clean water needs through various systems such as public clean water from public water supply companies, communal networks, and public wells (SAPPD, 2020). In addition, most households have access to sanitation facilities for black water, namely their latrines and final disposal of feces in the form of tanks/wastewater management installations. However, for greywater, more than 60% of households dispose of wastewater directly into rivers (SAPPD, 2020).

Tamansari Urban Village. Tamansari Urban Village is in Bandung Wetan Sub-District. It has a total area of 1.02 km² and is inhabited by 22,553 people. The population density of this urban village is 22,111 people/km². Most people in this village work in the wholesale/retail trade and restaurant sectors (BCSO, 2018). An area of 10.74 hectares consisting of 40 building units in this urban village is categorized as a slum area. This slum section has 161 inhabitants from 51 households. Not all people living in slum areas have access to clean water and sanitation infrastructure. In this area, the percentage of people served by proper drinking water facilities is 77.5%, and access to family toilets/shared latrines is 82.5% (MPWH, 2021). However, none of these comply with technical requirements. The clean water consumption of the households of Tamansari Urban Village ranges between 15 to 300 liters/day (SAPPD, 2020).

Cipaganti Urban Village. Cipaganti Urban Village is in Coblong Sub-District. It has an area of 0.34 km², a population of 10,396, and a population density of around 30,575 people/km². The residents of this village mostly work in the service sector (BCSO, 2018). Most residents use tap water with a meter (PDAM/PAM) for drinking and bathing/washing purposes. The family defecation facilities in this area are good because they comprise private latrines, and the final disposal of feces is through tanks/wastewater management installations.

Sukabungah Urban Village. Sukabungah Urban Village is part of the Sukajadi Sub-District. It has an area of 0.49 km², a population of 25,388 people, and a population density of around 51,813 people/ km². Most residents of this village work in the service sector (BCSO, 2018). This village contains a slum area of 21,04 ha consisting of 102 building units. This slum area has a population of 537 people from 161 households. All residents have access to clean water and sanitation facilities, but not all these facilities comply with technical standards. A total of 98.04% of the population of this urban village has proper drinking water facilities. However, only 46.08% of the population can fulfill their needs for clean water. Access to family toilets/shared latrines is 97.06%, but only 20.59% of these facilities meet the technical requirements (MPWH, 2021).

Pungkur Urban Village. Pungkur Urban Village is in Regol Sub-District. It has an area of 0.3 km², a population of 7,494, and a population density of around 24,980 people/km². Most residents work in the wholesale/retail trade and restaurant sectors (BCSO, 2018). The urban village contains a slum area of 4.83 ha consisting of 220 building units. This slum area has a population of 1,154 from 299 households.

Not all residents have access to clean water and sanitation services. Specifically, 84.09% of the population is served with proper drinking water facilities, and 85% can fulfill their clean water needs. However, access to family toilets/shared latrines is 92.27%, but only 1.36% of these meet technical requirements (MPWH, 2021).

Nyengseret Urban Village. Nyengseret Urban Village is part of the Astanaanyar Sub-District. It has an area of 0.38 km² with a population of 12,235 and a population density of around 32,198 people/km². Most residents work in the wholesale/retail trade and restaurant sectors (BCSP, 2018). This urban village contains a slum area of 10.8 ha consisting of 450 building units. This slum area has a population of 1,932 from 518 households. Access to clean water and sanitation services in this area is good. However, not all residents are served, and there are still facilities that do not comply with technical standards. The percentage of people who have access to proper drinking water facilities is 97.56%, and 99.33% of the population can fulfill their clean water needs. Access to family toilets/shared

Table 2 Case study overview

Condition	Lebak Siliwangi	Tamansari	Cipaganti	Sukabungah	Pungkur	Nyengseret
Total population*	4,243	22,553	10,396	25,388	7,494	12,235
Population density (people/km ^{2)*}	4,243	22,111	30,575	51,813	24,980	32,198
Area $(km^2)^*$	1	1.02	0.34	0.49	0.3	0.38
Slum area (km²)*	NA	0.1074	NA	0.2104	0.0483	0.108
Slum buildings (units)**	NA	40	NA	102	220	450
Total residents in the slum areas (people)**	NA	161	NA	537	1,154	1,932
Total households in the slum areas**	NA	51	NA	161	299	518
Water and sanitation condition of slum area**	A A	• 77.5% of the population has access to proper drinking water • 82.5% have access to family/ shared latrines • 100% of family/ shared comply with technical requirements	NA	• 98.04% of the population has access to proper drinking water • 46.08% can fulfill their need for clean water • 97.06% have access to family/ shared latrines • 20.59% of family/ shared latrines do not comply with technical requirements	 84.09% of the population has access to proper drinking water. 85% can fulfill their need for clean water. 92.27% have access to family/ shared latrines. 1.36% of family/ shared latrines. romply with technical requirements. 	• 97.56% of the population has access to proper drinking water. • 99.33% can fulfill their need for clean water. • 94.44% have access to family/ shared latrines. • 100% of family/shared latrines comply with technical requirements.
Livelihoods**/***	Service sector	Wholesale/retail trade and restaurants sectors	Service sector	Service sector	Wholesale/ retail trade and restaurants sector	Wholesale/ retail trade and restaurants sector
Place/drain for wastewater from bathing/washing water**/***	River	River/sewers	Drainage (sewers/ gutters)	River	River	River

Table 2 (continue)

Nyengseret	Tap water with meter (PDAM)	Tap water with meter (PDAM)			
	Tap v (PD/	Tap water (PDAM)	Yes	Yes	Yes
Pungkur	Branded bottled water	Borehole or pump	°N	N _o	°Z
Sukabungah	Tap water Borehole or pump with neter PDAM)	Tap water Borehole or pump with meter (PDAM)	NA	No	No
Cipaganti	Tap water with meter (PDAM)	Tap water with meter (PDAM)	Yes	Yes	°Z
Tamansari	Refill water	Tap water with meter (PDAM)	Yes	Yes	Yes
Lebak Siliwangi	Tap water with meter (PDAM)	Tap water with meter (PDAM)	Yes	Yes	Yes
Condition	Source of water for drinking**/***	Source of water for bathing/ washing**/**	River water is polluted with waste**/***	Occurrence of water pollution incidents**/**	Availability of community development related to sanitation and water infrastructure**/***

Source: * = BCSO (2018), **=SAPPD (2020), ***=MPWH (2021)

latrines is 94.44%, but none of these meet technical requirements (MPWH, 2021). Table 2 gives an overview of the case studies' population and water and sanitation conditions.

Community Innovations in Infrastructure Management during the COVID-19 Pandemic

Lebak Siliwangi Urban Village. Clean water infrastructure in Lebak Siliwangi is very diverse, starting from piped water from the local water utility PDAM, communal piping systems, and shared public wells. During a pandemic, the location of the use of shared facilities can become problematic. Several community innovations emerged to prevent the spread of COVID-19. For example, a schedule for using the facilities has been enforced to avoid overcrowding. In addition, handwashing facilities are also provided in several places, especially on the entry route to the settlement. There have also been restrictions on entering the settlement area. However, these efforts have begun to decline.

The actors that implement these efforts include (1) the community together with the management of the neighborhood unit who provide handwashing facilities and enforce entry restrictions; (2) the COVID-19 task force, community, and neighborhood administrators help with disinfection of the neighborhood; (3) community protection units which monitor the implementation of health protocols; and (4) village officers, neighborhood officers, the community, the COVID-19

task force, and community organizations collaborating in controlling COVID-19 by establishing 3M health protocols (3M is the Indonesian abbreviation for using masks, washing hands, and maintaining distance) and promoting cleanliness activities to simultaneously support the 100% ODF (Open Defecation Free) program and Kang PisMan (Reduce, Separate, and Make Use) program through Gober (Culvert and Cleanliness) officers. However, during the pandemic, a problem in this urban village was that many residents used shared facilities, making social distancing difficult to implement. In addition, innovations related to the prevention of COVID-19 were carried out well at first. Nevertheless, in the following months, these efforts began to decline.

Tamansari Urban Village. Most residents of the slum area of Tamansari Urban Village have access to the PDAM (public water supply), so there are not many community activities related to communal infrastructure. During the COVID-19 pandemic, the absence of budget assistance related to infrastructure from the KOTAKU program led to community innovations at the beginning of the pandemic by providing a sink at the end of alleys and hand sanitizers in the mosque. However, these efforts have been discontinued because the residents have become increasingly slack. As a result, the impact of the COVID-19 pandemic on clean water and sanitation infrastructure is felt less by the community. Initially, the water supply from PDAM was problematic,

but water flow became smoother during the pandemic because of a decline in population after boarding students returned to their hometowns. Drainage conditions also improved because of the population decline. It is linked to the habit of many people disposing of their domestic waste in the drainage system.

The actors in this village showed various efforts to halt the spread of COVID-19. For example, (1) the community, together with neighborhood administrators, provided sinks and hand sanitizers at the end of the alleys and the mosque; (2) the community protection team monitored the implementation of health protocols; (3) the COVID-19 task force, community, and neighborhood officials disinfected the neighborhood; and (4) the Family Empowerment and Welfare (PKK) provided necessities for vulnerable populations. Furthermore, this urban village followed the 3M regulations set out by the state of using masks, washing hands, and maintaining distance. In addition, the Citarum Harum Program and the KOTAKU Program are strategic programs for maintaining sanitation and hygiene and providing proper water facilities.

Cipaganti Urban Village. Most of the residents of Cipaganti Urban Village are served by PDAM through a grant program for drinking water (hibah air minum). The rest uses shared facilities, which are generally in the mosques. There are two shared facilities currently being used by the community. During the pandemic, there is a queue of users of the shared facilities.

However, there are no written rules for using these facilities. Therefore, related to general COVID-19 protocols, people have become slack in queuing orderly and keeping their distance. In addition, hand washing facilities and soap used to be provided independently, but these have been discontinued. Moreover, in the early days of the pandemic, entry to residential areas was restricted, but this is not the case anymore.

To prevent the spread of COVID-19, the actors involved in this village include (1) village/sub-district officers who plan and implement strategies for preventing COVID-19, (2) the community protection team that monitors the implementation of health protocols, (3) the COVID-19 task force and the community who provide independent handwashing facilities with soap, and (4) the Family Empowerment and Welfare (PKK) team which provided necessities for vulnerable groups. Furthermore, this neighborhood follows the 3M regulations set out by the state, namely, using masks, washing hands, and maintaining distance. In addition, the urban village implements a 100% ODF (Open Defecation Free) program, which is a strategy for maintaining cleanliness and proper sanitation.

Sukabungah Urban Village. All residents of Sukabungah Urban Village are served by the local water utility PDAM, so no one uses shared facilities. The form of innovations in preventing COVID-19 is public facilities and stalls for washing hands with soap, for example, in shops. Entry restrictions to

residential areas were implemented only at the pandemic's start. Efforts to prevent COVID-19, such as restricting entry to settlements, did not continue because most of the population uses private facilities.

The actors involved in efforts to prevent the spread of COVID-19 in this urban village include (1) village/subdistrict officers who plan and implement strategies for preventing COVID-19, (2) the community protection team which monitors the implementation of health protocols and entry restrictions in residential areas, (3) the COVID-19 task force and the community, who provide independent hand washing and soap facilities. The regulations applied in this village follow 3M regulations set out by the state of using masks, washing hands, and maintaining distance. In addition, the KOTAKU Program is a strategy for maintaining sanitation and hygiene and providing proper water facilities, especially in slum areas.

Pungkur Urban Village. In Pungkur Urban Village, 75% of the community is served by the piped water network from the local water utility PDAM. The rest of the residents use individual wells, shared wells, and communal piping network facilities. The lack of available land hinders the addition of clean water facilities in this neighborhood. The form of innovations for preventing the spread of COVID-19 in the shared facilities here relate to their management, specifically scheduling and bringing water to each other's homes and using the toilet at home. In addition, handwashing stations and soap are provided at alley entrances. At

the pandemic's beginning, Pungkur Urban Village restricted access to non-residents. At the entrances of the neighborhood, facilities for washing hands with soap were installed. However, later these efforts began to decline.

The actors involved in preventing the spread of COVID-19 and their efforts in this urban village include the following: (1) the community and village administrators plan, realize, and monitor the implementations of strategies in preventing COVID-19, (2) the COVID-19 task force and the community who independently provide hand washing and soap facilities, and (3) KOTAKU facilitators facilitate water and sanitation infrastructure provision, especially in slum areas. The regulations applied in this urban village follow the national 3M regulations of using masks, washing hands, and maintaining distance. In addition, there is the Citarum Harum Program and the KOTAKU Program, like in Tamansari Urban Village, which is a strategy for maintaining sanitation and hygiene and providing proper water facilities.

Nyengseret Urban Village. Most families in Nyengseret Urban Village use the clean water facility from the local water utility PDAM for drinking and their daily necessities such as bathing and washing. However, water continuity is a problem in this village. Especially during the dry season, it is not easy to obtain water, and residents regularly need to ask for water or buy it from neighbors. With the increase in COVID-19 cases, the innovations in this village are like the other case areas.

Namely, security personnel and residents often spray disinfectants on all corners of the neighborhood. Furthermore, hand washing tools, hand sanitizers, and masks were also actively distributed.

The actors involved in preventing the spread of COVID-19 in this village include (1) village/sub-district officers who plan and implement strategies for preventing COVID-19, (2) the community who helps maintain cleanliness, and (3) the COVID-19 task force. The urban village follows the 3M set out by the state of using masks, washing hands, and maintaining distance. In addition, the KOTAKU Program seeks to maintain sanitation cleanliness and provide proper water facilities, especially in slum areas.

The management of clean water infrastructure carried out by the community generally provides a place for washing hands at the access to housing or public places. It is done independently by the community. The urban village implemented schedules for queueing and using shared facilities. In addition, people collect water and carry out their activities at home rather than in public facilities in some places. It is not a problem for piped network users because they have access to water in their houses. During the pandemic, various places saw a 5-10% increase in water use. Table 3 shows the comparison of elements of case study innovation.

DISCUSSION

The forms of innovation related to water and sanitation during the COVID-19 pandemic have generally been arrangements for using shared facilities and providing handwashing facilities. Other forms of innovation unrelated to water and sanitation are restrictions on entering the settlement for non-residents, spraying disinfectants, social distancing, and using masks. These innovations are not something new, but these activities can be categorized as innovation because there is a difference in doing something.

The innovations in each informal settlement are relatively similar, although the communities in the different settlements have not coordinated these efforts. The type of innovation in informal settlements in India, Bangladesh, and Uganda is similar (Akter et al., 2021; Bauza et al., 2021; Nuwematsiko et al., 2022). The difference is only in the use of shared facilities, which is found in the case in Indonesia. There is no intervention in terms of technology in the communities. This result is following Wehn et al. (2021) and Nuwematsiku et al. (2022). The areas with adequate access to piped water supply have implemented no specific arrangement for the use of water infrastructure. This result supports Parikh et al. (2020) statement that piped water infrastructure is better for serving the city in the long term.

The actors involved in the innovations consist of the community, village/sub-district officers, the COVID-19 task force, and other community organizations. Both community and the village-scale government came up with innovative ideas. Thus, as Harrison & Rubin (2018) stated, a combination of bottom-up and top-down approaches is important in social innovation.

 Table 3

 Comparison of elements of case study innovation

Element of				
Innovation	Innovation Form of Innovation	Actors	Conflicts	Institutionalization / Regulation
Lebak Siliwangi	Rules for using shared facilities Provision of handwashing facilities at the entrance to settlements Restriction to entering residential areas	Community and neighborhood unit/village administrators COVID-19 task force Community protection units	Shared facilities are still heavily used, which makes social distancing difficult. At first, innovations related to the prevention of COVID-19 were carried out well, but in the following months, these efforts began to decline.	• 3M health protocol (using masks, washing hands, and maintaining distance) • Rules for using shared facilities
Tamansari	 Provision of a sink and hand sanitizer at the end of the main alley. Road closures 	 Community and neighborhood management Community protection team COVID-19 task force Family Empowerment and Welfare Team 	Over time, the innovations to provide sinks and sanitizers at the end of the main alley did not continue because the public did not care anymore.	3M health protocol (using masks, washing hands, and maintaining distance)
Cipaganti	 Application of queueing for using shared water and sanitation facilities. Hand washing and soap facilities are provided independently. 	 Village/sub-district officers Community protection team COVID-19 task force. Family Empowerment and Welfare Team 	Queuing rules were poorly followed because there were no written rules, so this effort did not continue during the pandemic.	3M health protocol (using masks, washing hands, and maintaining distance)
Sukabungah	Each shop owner provides hand washing facilities. Restrictions on entry to residential areas.	Village/sub-district officers Community protection team COVID-19 task force	Efforts to prevent the spread of COVID-19, such as restrictions on entry to settlements, were discontinued because most residents use private facilities.	3M health protocol (using masks, washing hands, and maintaining distance)

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Institutionalization / Regulation	3M health protocol (using masks, washing hands, and maintaining distance)	3M health protocol (using masks, washing hands, and maintaining distance)
Conflicts	The availability of land constrained the efforts to provide clean water facilities. Therefore, scheduling was implemented for using shared facilities. However, over time, these efforts began to decline.	Water continuity is problematic because people face difficulties obtaining water during the dry season.
Actors	Community and neighborhood unit/village administrators. COVID-19 task force KOTAKU Facilitators	 Village/sub-district officers Community COVID-19 task force
Element of Innovation Form of Innovation	Scheduling the use of shared water and sanitation facilities. Enforcement of restrictions to entering settlements for non-local residents. Provision of handwashing facilities.	 Providing facilities for washing hands and masks. Spraying of disinfectants.
Element of Innovation Location	Pungkur	Nyengseret

The actors involved in innovation in this study are different from those stated by Akter et al. (2021), Bauza et al. (2021), and Nuwematsiko et al. (2022). In these studies, the actors involved are individual households, the government, and NGOs, while in this study, the actors involved are mostly neighborhood-scale actors and the community. In addition, the actors involved depend on the policies implemented to deal with the transmission of COVID-19. For example, lockdown policy involves more actors on an individual and government scale on a top-down basis, while the limitation of mobility policy involves neighborhoodscale actors.

This study finds a fairly important role for community leaders regarding actors. The contribution given is not in the form of a large financial contribution but in directives to innovate, make regulations and set sanctions, and raise funds. Besides community leaders, there is also an important role of village-scale government. Besides the directive to innovate, the village-scale government connects the community with outside parties or higher-level government parties who will assist.

Efforts to implement the innovation that community leaders and village-scale government have directed are supported by a fairly large role from the community. It was stated by Respondent 1, from Tamansari Urban Village,

"The limited community meeting was conducted to discuss the form of innovation. The form of innovation is adjusted to the needs of the residents" (Respondent 1)

The cases impose no rules, sanctions for violating the rules, or specific types of organizations to implement rules, except in Lebak Siliwangi. The community, community leader, and village-scale government in the rest urban village have not realized the importance of rules and sanctions in the sustainability of an innovation. In Lebak Siliwangi urban village, the use of shared facilities is scheduled, as stated by Respondent 2 in Lebak Siliwangi Urban Village,

"There are rules set out in the use of shared facilities, and social sanctions, such as frowning, verbal assaults, which are applied for violations of the rules. The users of shared facilities are the controllers of the implementation of the rules". (Respondent 2)

However, the existence of rules and sanctions for violating the rules does not guarantee the continuity of this innovation. Innovations made by the community are driven by conditions that can threaten health and safety. After conditions are felt better, innovation discontinues even though there are rules and sanctions. Respondent 3 in Lebak Siliwangi Urban Village stated,

"The implementation of rules and sanctions do not continue, because we feel that the conditions of Covid-19 get better". (Respondent 3)

Besides the perceived better condition, the scheduling factor is also an obstacle to the sustainability of the implementation of innovation, as stated by Respondent 2 in Lebak Siliwangi,

"...so far activities that use shared facilities are carried out in the morning before other activities. Timing the use of shared facilities causes users to adjust the overall schedule. This is not an easy thing". (Respondent 2)

Christmann et al. (2020) and Howaldt and Schwarz (2010) stated that rules and regulations are very important in establishing innovations as long-term practices. Nevertheless, this study finds that rules and regulations do not fully guarantee continuity of innovation. Factors that encourage innovation and the difficulty in implementing the innovation also determine the sustainability of innovation.

Besides rules or regulations, this study also found that funding availability influences the implementation of innovation. This finding is consistent with the study of Akter et al. (2021) and Bauza et al. (2021) for cases in India and Bangladesh. People living in informal settlements are mostly low-income people. In a pandemic situation, most people experience a decrease in income. The provision of soap for handwashing is not an urgent matter for the people. Respondent 4 in Cipaganti Urban Village, said that

"...the provision of soap for communal handwashing has been stopped because of funding problems". (Respondent 4) In the case of Indonesia, the provision of soap is carried out communally with shared funds, but funding problems remain an obstacle. The monetary reason is one of the reasons for the discontinuation of providing common facilities in the case study areas. This finding is also consistent with the study from Mumford et al. (2002), that funding limitations are an important consideration in social innovation processes.

In some locations near universities, such as Lebak Siliwangi, Tamansari, and Cipaganti, the pandemic led to a better quantity of water. Many households rent out their house or room to students from nearby universities. During the pandemic, the students return to their hometowns because the teaching and learning process is online, which causes a decrease in population—consequently, the discharge of water sources that can be utilized increases.

CONCLUSION AND RECOMMENDATIONS

The community has implemented several efforts or innovations in terms of WASH, which is especially important during the COVID-19 pandemic. Even before the pandemic, the high population density and economic condition of informal settlements have been sources of WASH problems. During the pandemic, the problem is even worse. The community, the village/sub-district officers, and community organizations implemented some innovations to overcome these WASH problems. Nevertheless, these have not been long-lasting actions because of a lack of regulations and sanctions, better

conditions, scheduling, and funding. This study also found that settlements with good water supply through a pipeline network have fewer problems than those with shared facilities. Another finding is that the number of populations impacts the quality of the water supply.

Based on the findings, the study proposed (1) institutionalizing or regulating innovations in other to sustain the action, (2) educating people related to WASH and public health, and (3) prioritizing the household connection as a means of water supply in informal areas, (4) controlling population to avoid overburdening the capacity of water and sanitation facilities.

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Review Article

'You are Hired': Technical and Vocational Education and Training Graduate Employability and Experts' Views

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ABSTRACT

It is theoretically acknowledged that strategically organised talent management organisational mission, vision, and mission. It was reported that only 70% of universities in Malaysia declared workforce-ready graduates. As a result of the graduate employability investigation, the Ministry of Higher Education (MoHE), parents, and graduates were alerted. However, a recent employers' investigation revealed that recruiting skilled graduates remained to be seen. An investigation emphasising talent management attributes was launched to address the gap by employing the Differentiated Model of Giftedness and Talent (DMGT). Drawn from DMGT, interpersonal measurement was the main construct to identify the talent management attributes. First, a qualitative method and semi-structured interview were chosen for the data collection process. Second, a seven-expert panel comprising academics and industry executives were gathered to describe the ideal university graduate's attributes. The finding revealed seven main university graduate attributes: 1) communication, 2) leadership, 3) critical thinking and problem-solving, 4) teamwork, 5) lifelong learning and information management, 6) ethics, morals, and professionalism, and 7) entrepreneurship

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skills. The selected academics and industry executives recommended paying attention to career adaptability and digital technology. Higher Education Institutions (HEI) might better consider meeting the demands of the workforce and industry in the context of globalisation and digitalisation by focusing

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ISSN: 0128-7702 e-ISSN: 2231-8534 on the seven graduate attributes as evident in the investigation. As such, the seven graduate attributes are instrumental in the industry workforce.

Keywords: Employability, graduates, HEI, soft skills, talent management

INTRODUCTION

Organisational talent management theoretically functions in three ways. Firstly (Eny et al., 2021). First, talent management improves individuals' abilities. Second, individuals' abilities support the management system that affects organisations that act as employers. Third, talent management seeks to elevate individuals' abilities through necessary training, advice, equipment, and methods concerning quality products. Finally, given the prevalence of talent management, many organisations expect a commensurate return from such investment; employees are expected to deliver exemplary work and portray exceptional loyalty, commitment, reliability, integrity, and sincerity. As such, leaders' skills determine the success of organisations, but employees' talents in executing tasks are also instrumental as organisations promote their brands across the world (Santiago, 2019). As a result, talented employees remained significant predictors of organisation and company performance.

Studies concerning employees' characteristics revealed the centrality of strategically organised talent management. First, strategically organised talent

management allows employers to hire employees based on their abilities. It should be noted here that talent is commonly referred to as individuals' abilities that could predict companies' existing and prospective success (Younas & Bari, 2020). Abilities to identify, attract, integrate, develop, motivate, and retain individuals who are important to organisations are some of the many operationalisations of talent management (Al Aina & Atan, 2020). Second, strategically organised talent management also determines longterm organisational success, efficiency, and competitiveness (Johennesse & Chou, 2017). Work concerning organisational talent management typically involves 1) determining qualification and preparedness for promotion, salary increment, career placement, and excellent service awards, 2) motivating the officers, and 3) planning for the training needs.

However, it is argued that talent management could be useful to students in HEI. First, managing talent could properly manage and develop talents for the prospective industry. Career preparation could determine graduates' future. Second, studies recommended that developing soft skills among students in HEI was a priority. Soft skills elevate employability skills among students in HEI to meet one or more industry demands (McGunagle & Zizka, 2020). In Malaysia, the student curriculum combines soft skills and practical applications of courses. Some of the soft skills across HEI that were integrated included 1) communication skills, 2) critical thinking and problem-solving skills, 3) teamwork, 4) lifelong learning and information management skills, 5) entrepreneurship skills, 6) ethics, and 7) professional moral and leadership skills.

Two reasons motivated the incorporation of soft skills into the HEI curriculum: 1) the critiques from employers concerning graduates' lack of soft skills, for instance, communication and analytical skills, and 2) the globalisation of the workforce, which means increasing competitive skills from graduates. Thus, soft skills bolster graduates' readiness for the workforce (Succi & Canovi, 2020). Entrepreneurial skills, abilities to self-reflect, adaptability, confidence, and self-belief are some of the soft skills that could be incorporated into the HEI curriculum (Byrne, 2020). By consolidating soft skills, real-life contexts such as industry and the workforce could be exposed to students in HEI.

REVIEW OF THE LITERATURE

Employability Skills

Employability skills are defined differently in different contexts. First, employability skills could be defined as essential skills needed to meet workforce demands. Second, employability skills are equated with student-generated values seen through sufficient working skills and good personal qualities. Third, employability skills could be referred to as skills that support individuals' effective workplace performance (Kenayathulla et al., 2019). Finally, it was found that employability demarcated 'possession,' 'position,' and 'process' (Byrne, 2020). In

other words, graduates' skills and attributes and the role of higher education in boosting identity, status, and work-study transition are all determined by employability skills. Recruiters typically use employability skills as a success metric, given the prevalence of employability skills. Thus, the collaboration between HEI and employers elevates graduates' job readiness to meet existing and prospective workforce demands, as seen through the integration of soft skills into the curriculum.

Incorporating soft skills into the curriculum could be seen across Malaysian HEI. First, employability skills that are incorporated into the curriculum encompass 1) communication skills, 2) critical thinking and problem-solving skills, 3) teamwork, 4) lifelong learning and information management skills, 5) entrepreneurship skills, 6) ethics, professional, and moral skills, and 7) leadership skills. While HEI and representatives from industries consent to conceptualise soft skills, communication skills, planning skills, and ethical and social knowledge are understood differently by graduates; recent graduates' academic conceptualisation of soft skills may not accommodate workplace demands (McGunagle & Zizka, 2020). Second, studies revealed that employers' expectations of graduates' soft skills are motivated by the need for analytical and knowledge skills, to name a few (Cheong et al., 2016). As such, graduates who could demonstrate knowledge and skills meet the recruiters' expectations in an economy-related sense; recruiters are typically reluctant to invest in training. Therefore, employability skills determine workplace demands (Calvo & Manzano García, 2021).

Therefore, employability skills learnt through academic settings are insufficient to ensure graduate careers. Real-workforce contexts that require employability skills continue to be important predictors. Studies recommended that investigation be carried out to identify interventions to graduate career. The benefits of identifying graduate-related issues are two-pronged: 1) employability skills could be understood and applied in the real-world workforce, and 2) talented and skilled graduates remained the top-ranked university priorities. As such, workplace demands and employability skills continue to be addressed to elevate graduate competencies.

Talent Management

The notion of talent management is understood differently in different contexts. While talent could be defined as an individual's innate predisposition to skills (Younas & Bari, 2020), talent management is understood as a predictor of long-term organisational success. Specifically, talent management involves grooming employees' skills and creativity during orientation, career development, and career retention (Obliopas et al., 2019). Once employees have enrolled in talent management-oriented training, the employees are typically pooled and adequately trained according to employees unique requirements. Most companies implement a talent management approach to keep and develop employees' abilities

and skills. Therefore, talent management bolsters organisations in the context of creating skill-specific positions.

Economic industries motivate how skills change over time. First, economic industry and organisational requirements change over time. Therefore, learning and training environments are needed to meet the industry demands. In other words, changes in the economy influence how talent diversification is prioritised (Mok et al., 2020). Second, economic industries continuously demand higher skills and knowledge contingent upon the 21stcentury job markets, particularly realising individuals' self-potential (Mahmud et al., 2016). The attributes that bolster talents' development and management include individuals' abilities, time, leadership, and environment (Ghomi & Ahmadi, 2018). By complying with the pressure of 21st-century job markets, skills, and knowledge, students' talents are grouped based on variations in the job market. Thus, appropriate attribute and practice selection could enhance students' talent management.

Furthermore, the method 'career path determination' is usually employed by talent management across global multinational organisations. First, career path determination is based on the idea that management could help employees select, expand, and nurture prospective talent (Clarke & Scurry, 2020). Second, talent management attracts prospective employees as many organisations compete to secure highly skilled employees. Third, talent management is a significant predictor in shaping employees' direction

as per organisational needs. However, talent management in HEI, which could meet industry demands, remained to be seen.

Three points motivate the application of talent management across HEI. First, talent management guides students in meeting selfemployment and labour demands. Studies reported that talent management was not exploited fully to expose students' potential despite the availability of numerous graduate development programmes (Clarke & Scurry, 2020). Second, studies recommended that talent search committees seek prospective 'graduates' early (Jackson, 2020). Talent search committees typically assess prospective graduates based on potential, performance, and talent management criteria (Löfsten et al., 2020). Graduates' strengths and weaknesses are usually evaluated. Career paths could be charted by focusing on potential, performance, and talent management. Third, talent management could expose graduates to different sets of talent. Given the different understandings and personalities across Z-generation individuals, varying sets of skills could be exposed to prospective graduates (Goh & Okumus, 2020). The wide-ranging differences, behaviour-related or not, continue to influence talent management dynamics across HEI.

Therefore, talent management could be an important principle governing student employability. First, talent management bridges both knowledge and soft skills that prospective graduates need. Second, university talent management could help chart graduates' career paths based on students' diverse knowledge, soft skills, and talents. Third, while university-level decisions are usually focused on students' marketability, issues concerning students' adaptability to workforce demands could be addressed as a priority. Thus, the future of industries depends upon nurturing students' talents (McCracken et al., 2016).

The Differentiated Model of Giftedness and Talent (DMGT)

DMGT typically describes the processes of developing talent (P). P involves the shifts from extraordinary natural abilities or gifts (G) to extraordinary developed skills that systematically define expertise or talent (T) (Gagné, 2004). Three specific types of catalysts that reinforce and suppress the processes include 1) interpersonal catalysts (I), 2) environmental catalysts (E), and 3) opportunities (C). These catalysts shape the processes or steps that depict DMGT. It should be noted here that the term, giftedness, refers to the natural, untrained, and spontaneous behaviours and abilities (extraordinary gifts) with at least one domain of ability (Gagné, 2004). Therefore, the level of mastery that identifies an individual with giftedness falls within 10% and above. However, the term talent is commonly understood as the exceptional mastery of abilities (skills) developed systematically in at least one area of human activity. Therefore, at least a 10% level of skills mastery could identify individuals with talent.

Based on the components or catalysts in DMGT, the interpersonal catalyst is central. Interpersonal catalyst, or the 'soft skills'

faculty, predicts individuals' skills in dealing and interacting with others. The interpersonal catalyst comprises miscellaneous skills for mastery and development, namely, 1) communication, 2) leadership, 3) critical thinking and problem-solving, 4) teamwork, 5) information management, 6) ethics and professionalism, and 7) entrepreneurship. Studies revealed that at least 91 percent of employers could relate to interpersonal (soft) skills as prevalent (Seetha, 2014). Bearing the applications of the interpersonal catalyst, DMGT was used as a guide, as the ensuing discussions will show. Interpersonal measurement was employed as the main construct in identifying the graduate employability attributes.

STATEMENT OF THE PROBLEM

The dramatic surge in investigations on hiring indicates the urgency of developing graduate employability attributes. First, the issue of unemployment captures the attention of top-ranking officials (MoHE, 2020), parents, and graduates. For instance, the 2020 Graduate Tracing Study was a pivotal reference; 15.6% of 260 701 graduates of public HEI, community colleges, vocational colleges, training, and skills institutes were jobless. Out of 260 701 graduates, 13 906 were unemployed. In contrast, 79.5% of graduates failed to secure a job six months after graduating. 2% of the graduates were upgrading their skills in exchange for a higher salary. Second, the global COVID-19 pandemic worsens graduate unemployment. All industries, health-related or not, are affected, and graduates remain unemployed.

Third, 70% of universities in Malaysia claimed that the graduates were industryready. However, issues concerning skilled graduates are often raised by employers. For instance, 97% of employers agreed that university graduates were less competent in managing their talents to position themselves across the workforce (Suarta et al., 2017). It makes sense to raise the non-soft-skilled graduates because actual abilities cannot be depicted from technical skills, test scores, and transcripts alone. Furthermore, graduates' work varies across various disciplines, so identifying graduates within a specific field of expertise could be difficult. Thus, soft skills usually inform recruiters of graduates' abilities to socialise at HEI (O'Connor & Bodicoat, 2017). Communication skills, leadership, and teamwork are often predictors of hiring. By focusing on soft skills across HEI, graduate careers and employability could be determined (Ayala-Calvo & Manzano-García, 2020).

While the jury is out, graduates' lack of soft skills could be linked to grim exposure to talent management at HEI. First, studies recommended that graduates' careers be developed based on skill-specific talent, so graduates are exposed to talent management strategies (Goh & Okumus, 2020). Second, the development of graduates' talent based on employability skills could prompt graduates to become job creators as opposed to job seekers. By exposing graduates to opportunities for becoming job creators, HEI might better consider planning and developing a technology-

specific curriculum (Hartono, 2021). While technologies are at graduates' disposal, HEI could incorporate technologies in the curriculum and skills needed to satisfy the job creation opportunities. Third, graduates apply the skill-specific technology and soft skills following the HEI curriculum. By focusing on the knowledge and application of soft skills, prospective graduates help the workforce to thrive.

In Malaysian settings, the exam-specific curriculum could exacerbate graduate unemployment. The examination syndicate, which relies heavily on test scores, may emphasise rote memorisation. As a result, students' test scores soared and marginalised explicit training on soft skills (Appleby, 2017). Studies recommended that graduate employability and a well-rounded industry pool depend on inclusive training and a skill-specific curriculum (McGunagle & Zizka, 2020). Thus, the least integration of soft skills into the curriculum means less exposure to the importance, advantages, and acquisition of institutional social activities. By participating in social activities, soft skills are fostered. Addressing the gap, an investigation that identified the most important talent management attributes was launched.

METHODOLOGY

A qualitative research design was adopted to examine the talent management attributes of TVET graduates. Therefore, before the interview was conducted, protocol questions were constructed first. This set of questions has seven semi-structured questions and has

been validated in advance by three experts in technical and vocational fields. Once confirmation of the interview request is obtained, an appointment for the interview is initiated.

First, a seven-expert panel with an industry background and TVET academics were gathered. Second, a semi-structured interview was used because the approach entailed a combination of open-ended, closed, and follow-up questions (Adams, 2015). Specifically, instead of relying heavily on verbatim questions similar to a structured survey, the interviews revolved around the agenda items and addressed incidental, unexpected issues. Third, the interview centred on the perspectives of the industry and TVET academics concerning empowering talent-specific graduate employability. Two reasons motivated the selection of industry experts: 1) industryspecific talents among students could be formulated, and 2) once students graduated, the talents could be recontextualised to reflect employability skills. Fourth, during the interview, follow-up questions were improvised. Finally, the interviews were conducted virtually due to travel restrictions. For context, the government of Malaysia executed the nationwide movement control order (MCO) in observance of the COVID-19 pandemic.

After the interview with the seven experts was completed, the interview recording was converted to a transcript in a document. The document was handed back to seven experts for them to review the interview results and confirm the transcript.

Subsequently, a thematic analysis was employed to identify related narratives. The recurring patterns or themes were coded and identified. The thematic analysis is typically defined as the technique for finding, analysing, and reporting themes (Braun & Clarke, 2006). Thus, to identify constructs of talent management was to operationalise a thematic analysis. Four steps governed the processes of thematic analysis. First, before identifying the themes, interview transcripts were grouped and coded. Second, incremental matching across data items and codes was used to compare codes and accuracy search. Third, the codes were reviewed to generate a thematic 'map' of the analysis. Finally, an investigation was carried out to cross-check the details of themes, meanings, and stories.

FINDINGS AND DISCUSSION

The summary and discussion of the main findings are presented in this section. First, the general theme of talent management emerged from the interviews among TVET academics and industry experts. As such, the emerging themes were captured as a result of

Table 1
Attributes of talent management

1. Communication	
2. Critical thinking and problem-solving	
3. Leadership	
4. Teamwork	
5. Lifelong learning and information	
management	
6. Moral and professional ethics	
7. Entrepreneurship	

the interviews. Generally, the interviewees were delighted to elaborate on how talent management could help graduates elevate graduate employability. The thematic analysis generated six important attributes concerning the talent management construct. The following six soft skills attributes were similar to those recommended by HEI In an overview. Table 1 lists the attributes:

However, HEI might better consider using and applying additional or alternative attributes based on the changes in the industry. Specifically, additional graduate employability attributes were needed following the rapid industrial changes, needs, and new skills. The new attributes proposed by the experts are demonstrated in Table 2:

Based on the findings, it could be concluded that the seven elements of soft skills were relevant for graduate development and employability. The new attributes raised by the experts reflect the changes and revolution of the industry. Therefore, HEI might better consider new attributes consistent with prospective employers' needs and skills that may bolster organisational growth. In turn, employers rely on how universities prepare students with workforce training. By focusing on existing and new graduate attributes, prospective employers could hire HEI graduates.

Table 2
New attributes of talent management

No.	Attributes		
1.	Career adaptability		
2.	Digital technology		

Communication Skills

Communication skills play significant roles in a competitive 21st-century workforce as one of the soft skills. Prospective employers often value graduates with communication skills that could enhance organisational growth and performance. First, recruiters rank effective communication higher than other skills when applications are vetted (Patacsil & Tablatin, 2017). Second, other criteria included: 1) types of programmes, 2) tasks, 3) activities, and 4) skills learnt in HEI.

The dramatic surge in interactions highlighted the centrality of digital communication as opposed to in-person communication. In other words, technologydriven communications were generally preferred to in-person meetings. However, the revolution in communication calls for greater changes; graduates might better consider mastering effective communication regardless of the medium. First, acquiring communication skills could mean practising building a better relationship, productivity, and unrestricted negotiations of meaning. Second, responsive communication commonly generates effective solutions to problems and challenges that students may face (Charoensap-Kelly et al., 2016). Third, similar to responsive communications emphasising students, the labour workforce revolves around multi-faceted interactions.

Specifically, workplace interpersonal communication allows employees and employers to establish mutual relationships. Workplace interpersonal communications also allow participants to relate with others

in societies, families, and businesses (Patacsil & Tablatin, 2017). By taking turns to exchange life stories, employees negotiate meanings. A positive and friendly work environment is commonly nurtured when employees learn to get along. Graduates with exceptional communication skills are often productive and competitive (Succi & Canovi, 2020). Thus, organisations usually highly regard candidates who can initiate conversation, sustain communication, and respond to feedback.

Critical Thinking and Problem-Solving Skills

Studies equated critical thinking with 'wise consideration'. Definitions of critical thinking are abundant. First, critical thinking could be defined as the ability to solve problems using a combination of experiences, knowledge of research methods, and logical reasoning (Heard et al., 2020). Second, in an increasingly competitive workforce, employees with 1) technical skills, 2) the ability to think logically and analytically, 3) independent personality, 4) abilities to work collectively, and 5) problem-solving skills are highly sought (Moore & Morton, 2017). Third, employers appreciate new employees who can provide new insights into innovation and efficiency (Wrahatnolo & Munoto, 2018). Therefore, ideal employees think critically and creatively, share opinions and ideas, use good judgement, and make decisions.

In HEI, being creative and innovative is highly invaluable. Employers usually assess graduates through formal and informal HEI

activities. Workforce-related activities in HEI, for instance, project construction and problem-solving activities, require students to socialise, interact, and solve problems (Moore & Morton, 2017). Furthermore, feedback received from HEI instructors presents insights into what it means for students to respond to and distinguish between criticisms and praises. From the employers' perspective, self-involvement exposes students to the strategies of making ethical decisions, collective problemsolving skills, and perceptions of others. For instance, students could generate ideas and creativity when evaluating workplace situations, actions, and conflicts.

The changes in the education system determine prospective graduates. First, given the prevalence of diverse personalities and mindsets, creative individuals who use critical historical, systematic, and projective thinking are rare (Suarta et al., 2017). Second, individuals whose characteristics encompass creative and critical thinking may contribute to the development of systematic and projective organisations. To develop systematic and projective organisations is to hire graduates who can think 'outside the box' by combining thinking with past events, issues, and incidents (Pearl et al., 2019). Specifically, graduates who are critical and creative thinkers respond to issues, guidelines, and sets of criteria appropriately; facts and information inform the graduates who are critical and creative thinkers. As such, critical and creative thinkers contribute to risk-taking strategies that may affect organisations' short and long-term planning. Graduates who think creatively and critically predict current and prospective incidents and provide reasoning and factors that may exist in the future. By contemplating current and future issues, graduates contribute to organisational wellbeing through personal experiences.

Studies equated problem-solving abilities with creative and critical thinking. First, graduates or job candidates who can identify and solve recurring problems bolster successful organisational management and operation (Suarta et al., 2017). Second, graduates who solve organisational problems could 1) describe problems in detail, 2) compartmentalise the problem-solving processes, and 3) plan and select solutions before re-evaluating the actions and results. Therefore, graduates might better consider critical thinking and problem-solving skills synonymous with the workforce.

Leadership Skills

It is theoretically acknowledged that soft skills centralise leadership. Used appropriately, individuals whose potential is reserved and undiscovered are sought so that the individuals can be leveraged for their benefit. First, good leaders empower, motivate, and inspire colleagues (Mohamed et al., 2018). Second, proactive leaders are usually recognised as valuable workforce and departmental assets. Third, leadership is often associated with individuals' skills and abilities to influence others to make decisions. Thus, leaders also prompt employees to upgrade their skills and do things out of their norms.

Seven roles of leaders are highlighted by academic literature. Leaders work to 1) achieve organisational goals, 2) convey visions, 3) plan, 4) organise, 5) control, 6) mobilise, and 7) motivate others. First, leaders who display effective leadership help move the organisations forward (Chan et al., 2018). Second, leaders develop and sustain collaborative relationships with superiors, subordinates, peers, and miscellaneous stakeholders (De Carvalho & Junior, 2015). Third, aspiring leaders might better consider skills that build and maintain healthy relationships, particularly across individuals within and outside organisations. Fourth, by expanding workplace networks, organisational productivity and success are elevated. However, given the current circumstances, significant leadership weaknesses and issues may be explained by the lack of experience, education, and training in HEI (Succi & Canovi, 2020). By identifying the issues concerning leadership, long-term organisational planning could be bolstered.

Recent studies highlighted that organisational success depended on leadership qualities. First, strong leadership often demonstrate better and more holistic organisational performance. For instance, strong leadership bolsters greater degrees of customer satisfaction, organisational productivity, financial revenue, and quality of products (Suarta et al., 2017). Second, effective leadership determines employees' sustainability, performance, participation, and motivation. For example, 84% of organisations predicted a deficit of experienced leaders for the next five

years, declining existing performance among leaders (Suarta et al., 2017). The lack of leadership quality and skilled industrial employees are often cited as the primary causes of a decline in the number of experienced leaders. Third, several employers demanded the inclusion of leadership and managerial skills in HEI courses so students could learn the important job skills needed by future leaders (Succi & Canovi, 2020). By focusing on the relevant job skills, future leaders are nurtured, particularly in working in teams.

Teamwork Skills

Most graduate recruiters agree that teamwork is central. First, most employers prioritised employees who could offer exceptional strength to others in teams (Suarta et al., 2017). For instance, the top management and execution emphasise employees who are team players to help organisations grow exponentially with new ideas (De Carvalho & Junior, 2015). However, other graduates may be competent in assessing and 'fuelling' drive to the organisational operationalisation. Second, employers believe that the ability to work and collaborate well with colleagues determines the future of organisations. For example, training and part-time jobs allow graduates to work with other professionals (Succi & Canovi, 2020). Graduates who learn what it means to manage assigned tasks along with colleagues may be successful because teams require diverse elements.

In HEI, teamwork-based activities have been incorporated into the curriculum for

decades. First, teamwork-based activities guided by instructors generate dynamic skills that can be developed and expanded. Teamwork, combined with leadership, may lead to greater organisational success (Cetin & Kinik, 2015). Second, teamwork leads to optimal employee and organisational performance. For instance, teamwork realises organisational vision, mission, plan, and objectives through collaboration. Thus, teamwork upholds employees' performance (Löfsten et al., 2020). Third, teamwork enables team members to improve their skills, knowledge, and abilities while working together (Brock et al., 2017). Finally, effective teamwork behaviours and principles could determine employees' performance and productivity, as employees resolve conflicts and face demanding workplace challenges.

Lifelong Learning and Information Management Skills

Individuals' competencies usually depend upon learning and learning motivation. Learning typically involves changing the state of knowledge, skills, and attitudes, particularly in realising workplace changes. First, lifelong learning among youth is equated with the acquisition, processing, and sharing of a knowledge-based economy (Suarta et al., 2017). As such, students are conscious of the knowledge; graduates could innovate and resolve conflicts generated by challenges of modernisation. Thus, lifelong learning is seen as instrumental in long-term knowledge acquisition. Second, lifelong learning bridges the gap

between workplace and work productivity (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2019). Specifically, lifelong learning is a predictor of competencies among targeted groups; lifelong learning usually determines societal and employment progress (Sangiumvibool & Chonglerttham, 2017). Third, given the prevalence of challenges in the labour market, graduates committed to lifelong learning are usually hired.

Graduates may have worked in multiple jobs with fewer than three years of workforce duration. First, preparing students to face and succeed in an unpredictable world is one of the biggest challenges for universities. However, studies raise one complexity; many HEI standards are not streamlined with the employers' expectations (Hairani, 2018). Specifically, although the HEI preparation concerning lifelong learning is made available, students' awareness of the importance of lifelong learning during job hunting seems inadequate (Sangiumvibool & Chonglerttham, 2017). Second, studies recommend that students be prepared for employee assessment. Third, participation in internal and external multidisciplinary activities could prompt graduates to be independent (Hairani, 2018). Independent means that graduates have the liberty to explore endless opportunities that real-life knowledge could offer.

Students who can evaluate the necessary knowledge in the workforce demonstrate the students' mastery. One of the attributes could be explained through HEI programme assessments. For context, assessments dynamically bolster lifelong learning

skills and elevate graduates' careers (Succi & Canovi, 2020). Specifically, lifelong learning is equated to assessing information because lifelong learning skills involve individuals' abilities to investigate, evaluate options, and manage relevant information. As such, the information retrieved from various sources is used to regulate new ideas that prompt autonomous learning and the ability to develop inquisitive skills. Thus, lifelong learning generates explicit, implicit, and incidental information.

Ethics, Moral, and Professional Skills

The moral, professional, and ethical skills are typically related to students' ability to apply the principles of ethics and professional ethics. First, the ethics and professional ethics principles present societal, cultural, and environmental awareness insights. Second, moral, professional, and ethical skills encourage students to recontextualise ethical principles to make ethical decisions, particularly those involving the economy, environment, and socio-culture (Ngang & Chan, 2015). Third, the moral, professional, and ethical skills are equated with students' application of ethical principles, moral awareness, intentions, and behaviours while dealing with ethical issues. Furthermore, professional ethics and moral values are often applied in projects, for instance, through practical training, discussion with mentors, and presentations.

Hard skills are often taught through general enrollment standards, uniformed syllabus, and assessment systems. Nevertheless, the exposure to humaneoriented skills such as ethics, morals, and professional skills is quite complex because it 1) involves immeasurable elements and 2) differs across individuals with varying characteristics and backgrounds (Gelfand, 2016). The lack of ethics, morals, and professional skills among graduates could have been exacerbated by 'rote memorisation,' high-stake exams, and the examination-based education system (Cheruvalath, 2019). Employees with professional ethics, work culture, and industries seek productivity who can communicate ideas with people worldwide. Merely learning through memorising facts and numbers is irrelevant, incompetent, and undesirable (Ngang & Chan, 2015). Thus, HEI that solely emphasises test scores and HEI that lack moral, professional, and ethical skill training may do a great disservice to prospective candidates. Graduates who demonstrate the expansion of minds and analytical skills are sought by employers. Through ethical, moral, and professional skills, networks are built, conversations occur, and effective completion of projects is materialised.

Entrepreneurship

Entrepreneurship, a skill taught in HEI, is central to graduate employability. While other attributes are prevalent, entrepreneurship is realised based on The Entrepreneurship Action Plan (EAP). EAP, which functions as the cornerstone of entrepreneurship, was first developed to emphasise self-reliance and creativity in enhancing revenues. The EAP has undergone significant changes,

particularly from 2021 through 2025, by considering additional concepts that could attract prospective entrepreneurs. Specifically, innovation and technologies are now prioritised in EAP premised on five domains: 1) new ideas, 2) new products, 3) new processes, 4) new marketing methods, and 5) a new organisational approach to business performance. First, ideas shift through the emphasis on innovation. Second, through innovation, new values are created. Third, alternative methods such as problem-based, work-based, and actionbased learning opportunities are being explored. Finally, entrepreneurship skills are further applied. The EAP emphasises HEI, and industries might better consider the five domains. Through HEI and industry collaboration, strategic partnerships through apprenticeships could be established (Manzano-García & Ayala-Calvo, 2020). By focusing on apprenticeship across HEI and industries, training in employability skills is emphasised, and prospective employers' needs may be met. Activities, skills, and knowledge made available to students are kept in the curriculum for the graduate academic foundation.

Career Adaptability

Future recruiters usually prioritise graduate employability skills. Given the unprecedented circumstances, university graduates might take up jobs that may not be desirable and relevant to graduates' academic training. As such, graduates may have trouble navigating work-related challenges. Thus, graduates might better

consider career adaptability before the hiring processes begin. Career adaptability as a psychological notion refers to the tools individuals need to deal with existing and prospective career shifts (Khalid & Ahmad, 2021). First, the workforce is an environment that could be introduced during graduates' academic training as applications of academic exercise and real-life workplace. Second, the students are exposed to theories, but students also get first-hand exposure to potential career options. Once hired, students can adapt to the workplace terms, conditions, norms, and practices when exposed to theories and real-world contexts, experiences, and aspirations. Third, students get to align their academic specialisation with industrial needs and demands. For instance, studies recommend that the realworld workforce be exposed to students because students could set expectations and mindsets as a way to adapt to a worklife balance (Zupan et al., 2017). Thus, HEI could plan activities closely related to career adaptability. By focusing on career adaptability as a framework of employment, students' transition from home to the workplace is seamless. Therefore, graduates' employability could be bolstered through the successful execution of planning, particularly using career adaptability.

Digital Technology

It is theoretically acknowledged that shifts in labour markets affect other things, particularly graduate hiring. First, technology-specific knowledge among graduates is acutely needed, mainly because

many job descriptions require graduates to meet highly sophisticated needs and demands. Second, digital technology is quickly incorporated into individuals' lives and several economic domains. For instance, the digitalisation of living alters working conditions, job dynamics, relevant skills, and holistic expertise (Bejaković & Mrnjavac, 2020). Third, academic literature on graduate employability is alarming; skilled manual labour may no longer be needed because millions of jobs have been massively automated. However, the automation of work paves the way for new jobs and skills. As a result, graduates might better consider digitalisation skills and experiences. Finally, academic training might consider offering digitalisationrelated courses.

Furthermore, the digitalisation of the labour market and workforce could mean higher demands for other tasks. For example, studies equated the notion of digitalisation with the increasing needs of employees with higher cognitive abilities, digital skills, and technological expertise. Therefore, by attending digitalisation-related training, graduates could elevate digital skills, bolster the digital economy, and develop societies (Pappas et al., 2018).

Given the prevalence of digitalisation, digital literacy skills for graduates might better be considered by HEI. One of the ways to emphasise digitalisation is to incorporate digital literacy activities and training into the curriculum. For instance, an HEI curriculum might focus on workforce characteristics, mission, and digital

operationalisation that may positively affect the workplace. Furthermore, the importance of digital literacy skills is increasingly becoming basic and instrumental to hiring requirements (Jagannathan et al., 2019). While digitalisation is inevitable, incorporating digital literacy skills poses two issues. First, studies acknowledge the complexity of combining digital literacy skills into the curriculum and the everchanging technological and industrial needs. Second, with the increasing need for HEI to comply with accreditation board requirements, the immediate changes to the curriculum emphasising digital literacy skills may nearly be impossible. Thus, digital literacy skills across HEI might be recommended to bolster graduates' hiring.

CONCLUSION

The talent management discussed in this paper is based on the DMGT proposed by Gagné (2004). First, the DMGT model is built on a talent management pattern that prioritises interpersonal factors, environment, and opportunity. Second, talent management is also built based on patterns of careers relevant to the current needs that accommodate the needs of industrial recruiters. As expressed in the model, the lens of interpersonal relationships posits that those individuals might better consider mastering interpersonal skills for workplace needs. Thus, the study results are DMGTaligned in the context of interpersonal relationships. On a broader level, the talent management attributes are necessary for long-term organisational talent, specifically

among graduates. First, the theoretical contribution of this study comprises the expansion of existing knowledge and theory in research fields. Existing models of knowledge and theories could be expanded to bolster the attributes of talent management among graduates in Malaysia. Second, the results of this study function as a reference for future research. Third, from practitioners' perspectives, the findings on graduate employability could guide educators and human resource managers. Human resource development and management programmes could be enhanced at the institutional and organisational levels by focusing on graduate employability attributes. Thus, the graduate employability attributes could benefit prospective students. As graduates who will venture into the workforce, graduates might better consider honing effective and enhanced skills, for instance, career adaptability and digital technology.

RECOMMENDATIONS

Further suggestions that are useful as a guide and reference to other researchers are presented. First, prospective investigators might better consider expanding the scope of the study. By focusing on recontextualising the study, additional knowledge, and information on talent management among graduates could be bolstered. Second, future research might better develop subsequent models. As the existing research only utilised the first catalyst of DMGT, it is worthwhile for other catalysts in DMGT to be investigated further. Other attributes in

talent management could be discussed by focusing on the second and third catalysts. Thus, employment in Malaysia could be comprehensively understood by examining other areas of DMGT.

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Review Article

Financial Planning for Retirement Models: An Integrative Systematic Review

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ABSTRACT

Hundreds of financial planning literature reviews exist; only a few papers discuss the context of retirement. This paper aims to give researchers clarity and confidence on financial planning for retirement (FPR) by incorporating diverse perspectives, including theories, methodologies, and determinants of FPR. Given the importance of conceptual models to test hypotheses and predict information in a scientific study, the literature illustrated a dearth of model adoptions in examining the determinants that shape individuals' perceptions of FPR behaviours. This paper highlights the pertinent gaps in the literature regarding the significant outcomes of empirical and theoretical contributions that relate to cognitive, psychological, and external variables influencing FPR. This review consists of two steps. The first step contains database searches, whereas the second step retrieves and screens all pertinent

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Keywords: Financial planning, financial planning for retirement models, post-retirement work, retirement financial planning, retirement planning, retirement preparation

INTRODUCTION

Financial planning is a distinct professional practice that appeared in the late 1960s. It is a process of thinking to predict and perform the actions to achieve desired future financial goals. Meanwhile, an individual's financial planning for retirement (FPR) determines the financial requirements. This process involves carrying out specific procedures and decisions to achieve these needs. Among these decisions is determining the sources and amount of retirement income that retirees will receive and the underlying expenditures, such as the cost of living and health care expenses (Topa & Herrador-Alcaide, 2016), as well as determining predictors of FPR behaviour.

Earlier work on FPR concentrated on the economic and demographic aspects (Lusardi & Mitchell, 2007), while later work delved into psychological determinants (Petkoska & Earl, 2009). However, more recent work tended to examine FPR based on a multi-perspective approach (Dolinski et al., 2016; Kiso & Hershey, 2017). They, for example, employed the Social, Personal, Occupational, and Familial Model (Dan, 2004), Planning Decisions and Behaviours Model (Hershey, 2004), and FPR Model (Smith, 1999). This later approach leads this study to examine the conceptualisation of FPR given the various theories and methodologies adopted and ultimately to identify existing gaps in the literature.

THE NEED FOR A SYSTEMATIC REVIEW

This study performs a systematic literature review (SLR) to contribute to the literature by examining existing studies that have examined FPR behaviour from multiple perspectives. It allows the study to assess theories, methodologies, and determinants of FPR to highlight the pertinent gaps in the literature. It provides researchers with a bird's eye view of what has been done so far by systematically evaluating the current literature, specifically understanding the substantial empirical and theoretical contributions to cognitive, psychological, and external influences.

Further, the scope of the review is broader than previous studies as it examined the studies on FPR sourced from more than one database, which included Scopus, ProQuest, EBSCO, Emerald, Web of Science, and Google Scholar. Similar attempts have been made to a lesser extent, such as by Kumar et al. (2019), who investigated women's FPR from four databases: ProQuest, Emerald, EBSCO, and Google Scholar. Likewise, Jantan (2020) examined retirement savings issues faced by households on literature from Scopus and Web of Science alone. Another instance is Tomar et al. (2021), who conducted a bibliometric analysis to examine existing retirement financial planning studies only in the Scopus, Web of Science, and EBSCO databases.

SYSTEMATIC REVIEW PROTOCOL

An SLR follows specific systems to collect extensive data from different databases to be critically evaluated and sorted qualitatively or quantitatively (Denyer & Tranfield, 2006; Kumar et al., 2019). This study applies the SLR protocol that was applied by Denyer and Tranfield (2006) and Kumar et al. (2019), known as the standard of "The Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA)" (Moher et al., 2009) for the aim of standardising SLR and writing style.

Methodology

The study selected Scopus, ProQuest, EBSCO, Emerald, Web of Science, and Google Scholar as sources of literature based on their reliability. In addition, the scope of the research included any related work that examined retirement models in the financial, economic, psychological, and social fields. Table 1 summarises the journals, publishers, and research areas in which the reviewed articles were published.

The protocol was limited using the database's search boxes mentioned above to keywords of ("retirement planning" OR "retirement financial planning" OR "financial preparation for retirement" OR "financial planning for retirement" OR "retirement preparation") AND "model" in the titles, abstracts, and keywords. Given the extensive coverage of existing articles on retirement planning models, a more targeted search chain has been established to extract entire articles from the search lines. Some filters have been applied in research to ignore reports, lectures, and book chapters, and the emphasis was only on peer-reviewed scholarly journal articles. See Figure 1 for the query text.

Taxonomy Analysis

The guideline of PRISMA has four phases: identification, screening, eligibility, and inclusion of articles. In the identification phase, as shown in Figure 1, the search for articles dated 2000–2019 with other mentioned filters resulted in a total of

Table 1
Years and countries of research

Country Years					Total	
USA	2000	2007	2014	2014	2017	5
Dutch & American	2010	X	X	X	X	1
Europe Countries	2012	X	X	X	X	1
Spanish	2017	2018	2019	2019	X	4
Brazil	2018	2019	X	X	X	2
Malaysia	2018	X	X	X	X	1

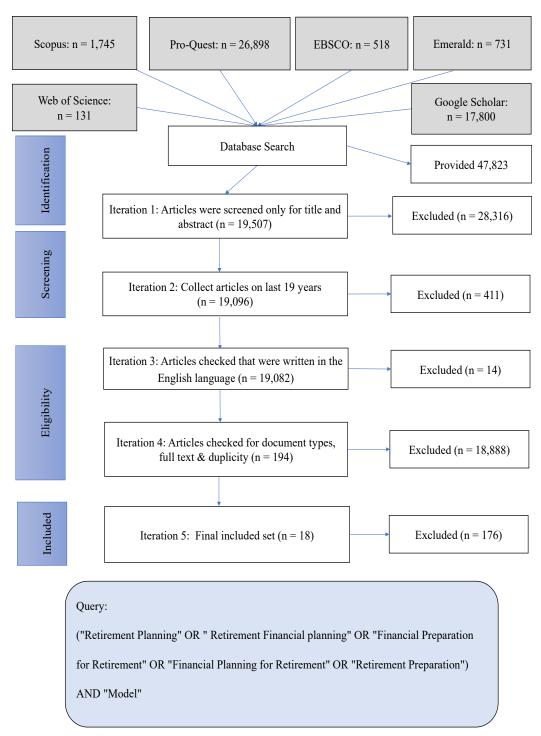


Figure 1. Literature search outcome

47,823 papers distributed among the five databases as follows: 1,745 (Scopus), 26,898 (ProQuest), 518 (EBSCO), 731 (Emerald), and 17,800 (Google Scholar). During the screening stage, two iterations were performed. The first iteration initially gathered data after the titles and abstracts were scanned, resulting in the exclusion of 28,316 documents. Then, after selecting documents dating from 2000 until 2019, the second iteration excluded 411 other documents.

Regarding the eligibility phase, the third iteration dealt with articles written in English and excluded further 14 articles. The fourth iteration, which examined the types of documents, full texts, the removal of duplicity, and relevance for study, excluded 1,888 articles, leaving 194 remaining. Finally, the last iteration included a duplicate screening to exclude articles that did not include FPR models. The balance is 18 articles, excluding 176 unrelated to the fields. These 18 articles were carefully examined to provide a comprehensive conceptual framework for the study.

Risk of Bias and Additional Analysis

This paper examines the general methodological content of the selected studies rather than their funding. Therefore, it requires no meta-analysis and is free of any biased assessment.

PUBLICATION TRENDS

Year and Country of Publication

The SLR began in December 2019 and found that FPR researchers have been using multi-disciplinary conceptual models since 2000. However, during this period, only two articles were published prior to 2010, while the rest were published from 2010 to 2019. Moreover, the literature search revealed that using theoretical models to examine FPR was a methodological approach adopted only recently as in 2012, regardless of the field of study.

Notably, the literature on the methodologically applied conceptual models mainly hailed from industrialised countries, though of late, as shown by Table 1 above, have also been the chosen approach in some developing countries such as Malaysia and Brazil (Jiménez et al., 2019; Palací et al., 2018).

Scope and Field of Studies

The 18 selected papers come from different journals and focus on various areas such as neuroscience, agriculture and biological sciences, finance, economics, and psychology. The results revealed that applying conceptual models to FPR has become the choice not only through studies in business and management but also in medicine and psychology. Table 2 summarises the journals, publishers, and research fields in which the reviewed articles were published.

Table 2
Articles, publishers and field of studies

No.	Journal Title (n)	Publisher	Field of Studies	
1	Journal of Career Development (1)	SAGE Publications		
2	International Journal of Bank Marketing (2)	Emerald Group Publishing Ltd.	Business, management, and accounting	
3	Work, Aging and Retirement (1)	Oxford University Press		
4	International Journal of Business and Society (1)	University Malaysia Sarawak	Business, management, accounting, finance, economics, and econometrics	
5	Journal of Vocational Behavior (1)	Elsevier Inc.	Business, management, accounting, psychology, and social sciences	
6	Journal of Personal Finance (1)	International Association of Registered Financial Consultants	Economics, Econometrics, and	
7	Journal of Economic Psychology (1)	Elsevier Inc.	Finance	
8	Certified Senior Advisors (1)	Society of Certified Senior Advisors	Health, social, legal, finance, and ethics	
9	Frontiers in Aging Neuroscience (1)	Frontiers Media S.A.	Neuroscience	
10	International Journal of Aging and Human Development (1)	SAGE Publications Inc.	Biochemistry, Genetics and Molecular Biology	
11	PLoS ONE (1)	Public Library of Science	Agricultural and Biological Sciences	
12	Journal of Adult Development (1)	Kluwer Academic Publishers	Psychology	
13	Frontiers in Psychology (2)	Frontiers Media S.A.	, ,,	
14	Journal of Cross-Cultural Gerontology (1)	Kluwer Academic Publishers		
15	The Gerontologist (1)	Gerontological Society of America	Medicine	
16	Journal of Women and Aging (1)	Haworth Press Inc.		

Note: n = number of articles

TRENDS IN RESEARCH DESIGNS

Research Design and Study Types

Regarding trends in research designs, only four of these papers were conceptual papers dealing with SLR, meta-analysis, or theoretical studies. Instead, most articles were quantitative empirical studies, with 12 using questionnaires and surveys, while the other two relied only on secondary data. However, qualitative methods were not popular, implying that FPR is still a developing personal financial planning field.

Statistical Tools and Sampling Techniques

The studies are classified according to the analytical tools used. As can be seen from the quantitative studies, the most effective standard quantitative analysis methods used were exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modelling (SEM). EFA and CFA are factorial analytics techniques used in scale development and scale adaptation research (Orcan, 2018). As for the software used to analyse the data, MPlus and Amos were the most popular programmes. Table 3 presents all sampling and the programmes used in the included studies. As far as sampling techniques are concerned, the studies have applied different sampling approaches, such as snowball sampling, convenience sampling, probabilistic sampling, and multi-model sampling.

Table 3
Sampling types and software programs used

No.	Sampling	Software program
1	Snowball	MPlus
2	Convenience	Amos
3	Probabilistic	SPSS
4	Multi-model	PLS

CONTENT ANALYSIS

For content analysis, the study reviews the conceptual models adopted and the underlying theories behind the examined articles before examining the determinants chosen in understanding the FPR behaviour.

Conceptual Models

The body of literature has proposed various conceptual models to study financial planning behaviours, where most of these models have been built based on previous models. Among those used include the Huston Model (2010), which was based

on the behaviour of financial management, the Hodges Model (2004) on the financial planning process (cited in Jiménez et al., 2019), and the Retirement Spending Models, such as Age Banding Model (ABM) in 2005, Changing Consumption Model (CCM) in 2013, the Life-Cycle of Spending Model (LSM) in 2014, and Reality Retirement Planning (RRP) model in 2005 (Welch, 2015).

Further, the SLR of the 18 papers noted two distinct approaches for the conceptual models. The first approach of conceptual models focused on a specific sample and context. These conceptual models are not flexible, so they are not easy to apply, expand, and develop with future studies because they have been developed for a given condition and need. For example, Nga and Yeoh (2018) proposed a multidisciplinary conceptual model to examine specific variables in Malaysian retirement saving behaviours. Similarly, Kiso and Hershey (2017) proposed a conceptual model of retirement planning metacognition to appraise individual disparities in perceptions of how Americans think about or predict engaging in FPR activities.

Meanwhile, the second approach of conceptual models focused on determining predictors. These conceptual models are flexible so that researchers can examine, develop and expand them in the future. For example, Hershey and Mowen (2000) developed the first comprehensive financial knowledge and personality factor model based on a personal level of retirement planning advanced by Mowen (2000) to

identify differences among workers in financial decision-making for retirement. In addition, this model introduced other psychological variables that could influence financial planning behaviour. Later on, Schuabb et al. (2019) expanded the model by establishing a mediation and moderation relationship to identify individuals' knowledge of FPR. Four years later, Hershey (2004) introduced the second multi-perspective model, the psycho-motivational model, advanced by Friedman and Scholnick (1997) as the underlying theory of the consumption function (TCF) to be appropriate for FPR. This model incorporates four dimensions: psychological, cultural, environmental influences, and task considerations, as appears in Figure 2.

Combining these dimensions impacts hard work and readiness to plan for retirement (Hershey et al., 2007b), saving time for retirement and gerontological counsellors and financial services professionals. The model has been applied in three different contexts: the USA (Hershey et al., 2007b), a comparison between the USA and Netherlands (Hershey et al., 2010), and Brazil (França & Hershey, 2018).

Hershey et al. (2012) subsequently developed a modified model called the "Capacity-Willing-Opportunity Model" (CWO) for work performance, as advanced by Blumberg and Pringle (1982) to be suitable for FPR studies. The CWO model is structured based on three dimensions. The first dimension is capacity, which includes perceptual variables and skills

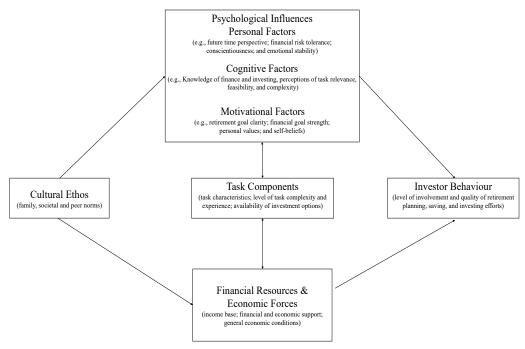


Figure 2. Second conceptual model (Hershey, 2004)

that allow planning and savings for retirement (Topa et al., 2018a), such as an individual's knowledge, experience, and skills (Hershey et al., 2012). These variables help differentiate people's abilities in terms of knowledge and skills needed to save, invest and plan for retirement. The second dimension is willingness, including the psychological, emotional, and motivational variables that drive people to plan and save for retirement. Retirement goal clarity, level of retirement anxiety, perception of social customs and norms, and financial risk tolerance are some of the factors that represent this dimension. The third dimension is the opportunity which

consists of external variables that affect workers' performance during FPR (Topa et al., 2018a). Examples of opportunity factors that affect FPR for individuals are environmental factors and constraints, such as financial advisors, social support, and the retirement savings programme, as shown in Figure 3 (Topa et al., 2018a). Empirically, the CWO model was employed only by Jiménez et al. (2019) and Palací et al. (2017, 2018) only in Spain.

There are several reasons why the CWO model is more compatible with FPR studies. Firstly, it is specifically designed to interpret FPR. Secondly, the three dimensions introduced by the model

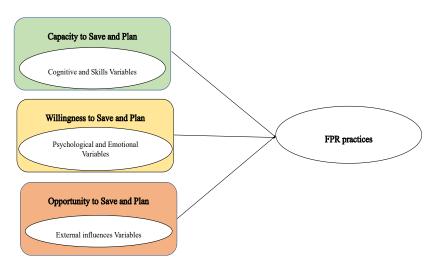


Figure 3. CWO conceptual model for Hershey developed by Blumberg and Pringle 1982 (Topa et al., 2018)

enable a detailed understanding of workers' behaviour in their FPR by incorporating additional variables to understand better the motivating effects of the determinants (Topa et al., 2018a). Further, this model is procedural because it has a temporal dimension, analyses age and stage of retirement, and how these interact with variables in the model (Topa et al., 2018a). Moreover, this model is appropriate for examining diverse economies with different cultural, social, and political environments due to the model's ability to change based on the lives of individuals that change over time, which represents the continuity of predispositions to change through adulthood (Hershey et al., 2012). Finally, this model overcomes other limitations of the FPR model and simultaneously evaluates the association between the variables of various fields and FPR.

Table 4 provides more specific information about the authors, samples, and country of origin, as well as the types

of models and underlying theories of the selected articles.

Underlying Theories

In empirical studies on FPR behaviours, scholars commonly used various theories from different disciplines to support each variable in the proposed conceptual models (Hershey et al., 2010; Nga & Yeoh, 2018). The theories employed included the Theory of Planned Behaviour (TPB), Life Cycle Hypothesis (LCH), and Image Theory, which is the most important. The theory was proposed by Beach and Mitchell (1987), who suggested several predictions, including personality traits, knowledgeable constructs, and perceptual and behavioural variables that belong to future events (França & Hershey, 2018). Psychological researchers usually use this theory in their studies to predict the participants' future goals, such as perceived adequacy of savings and levels of FPR.

Table 4
Authors, samples and country of origins, types of models and underlying theories

No.	Authors	Sample (Country of Origin)	Type of Model	Theory
1	Topa et al. (2012)	1272 immigrants (Europe)		Theory of Planned behaviour, Theory of Human Capital
2	Koposko, A Hershey (2014)	722 college students (USA)		Image theory
3	Orel et al. (2014)	138 middle-aged females (USA)		
4	Kiso, Hershey (2017)	988 adults (USA)	Fixed FPR Models	
5	Nga Yeoh (2018)	160 (Malaysia)		(Theory of planned behaviour, Continuity Theory, Social identity theory)
6	Vivl-Bua et al. (2019)	165,791 (Spain)		(General theory of employment, Life cycle theory of saving)
7	Hershey and Mowen (2000)	230 households (USA)	Hershey	
8	Schuabb et al. (2019)	319 health workers (Brazil)	Model 1	
9	Hershey et al. (2007)	265 middle-aged working adults (USA)		(Image theory & M3 theory of personality)
10	Hershey et al. (2010)	Working adults - 419 (American) and 556 (Dutch)	Hershey Model 2	(Social learning theory, Life cycle theory, Image theory, 3M theory)
11	Franca and Hershey (2018)	167 working adults (Brazil)		(Image theory & M3 theory of personality)
12	Palaci et al. (2017)	280 adults (Spain)		-
13	Palacı et al. (2018)	296 workers (Spain)	Hershey Model 3 (CWO)	Theory of Planned Behavior
14	Jiménez et al. (2019)	948 workers (Spain)		-
15	Topa et al. (2009)			-
16	Topa et al. (2018)	-	Conceptual Papers	Intentional Change Theory
17	Hershey (2004)		r apers	-
18	Kumar et al. (2019)			-

Ajzen (1991) proposed that TPB links attitudes and behaviour intention. In this regard, the theory helps academics explain the intent of saving and planning for retirement among study participants. LCH is an economic theory proposed by Franco Modigliani and Richard Brumberg in the early 1950s. It provides valuable information on people's spending and saving behaviours throughout their lives. For example, Vivel-Búa et al. (2019) used LCH to analyse the critical role of financial resources in saving decisions for retirement.

In contrast, Hershey et al. (2010) applied LCH to explain the role of social forces influence on saving and investing behaviour. Some other theories used included Continuity Theory, Social Identity Theory, and Social Learning Theory. Finally, Topa et al. (2018a) went a step further by proposing that the Intentional Change Theory be applied in future studies on FPR. Table 4 summarises the theories underlying the reviewed studies.

Determinants of FPR Models

A thorough review of the selected studies found that FPR behaviour differs across cognitive, psychological, sociodemographic, and external variables. The following paragraphs focus on reviewing selected studies to describe these variables.

Knowledgeable and Skill Variables. One of the most crucial cognitive factors in retirement planning is financial literacy (FL) (Hershey et al., 2010). The studies showed that financial literacy is essential in financial

decision-making (Koposko & Hershey, 2014) for knowledge and numeracy skills, leading to better planning and saving for retirement. However, financially illiterate people cannot save and plan for retirement, leading to poor mortgage decisions, poor financial security for seniors, and high debt loads. Consequently, researchers have applied financial literacy to FPR models with different roles.

First, França and Hershey (2018), Hershey and Mowen (2000), Hershey (2004), and Palaci et al. (2017) applied FL, besides psychological variables, as a mediator to explain the relationship of the independent variables to the FPR. On the contrary, Jiménez et al. (2019), Palaci et al. (2018) employed FL as the independent variable. However, Koposko and Hershey (2014) and Nga and Yeoh (2018) used FL as the independent and mediator variable. The results of the studies indicated that FL is an excellent predictor of participants' perception of FPR, even though the role of FL in the studies was different. Moreover, several studies in FPR have illustrated that FL interacts with various variables, such as parental influence in their adolescence (Gutierrez & Hershey, 2014) and university students (Thung et al., 2012). Also, FL was found to interact with gender (Kumar et al., 2019), income, and education level (Bucher-Koenen & Lusardi, 2011; Hastings & Mitchell, 2020).

Psychological Variables. Notwithstanding that the included studies have examined psychological variables and demonstrated

a significant relationship with FPR, Kumar et al. (2019) showed that they were still at the new stage. Selected studies confirm the importance of certain psychological variables: retirement goal clarity, confidence in retirement, retirement planning activity level, retirement relevance, and future time perspective.

On the one hand, selected studies showed that the most widely acknowledged predictor of financial planning for retirement is retirement goal clarity. Therefore, their relationship played a significantly positive role in planning activities. Also, they confirmed its influence directly (França & Hershey, 2018; Hershey et al., 2007b, 2010) and indirectly (Koposko & Hershey, 2014) on FPR. However, on the other hand, the selected studies also revealed that age and future time perspective were the most common but debatable predictors for retirement goal clarity (França & Hershey, 2018; Hershey et al., 2007b, 2010). Furthermore, they demonstrated that young people did not have clear retirement goals like adults, but these goals would develop over time and become more pronounced as they became older (Hershey et al., 2010). For this reason, it is not wrong to conclude that retirement goals are accordingly changing to people's age and needs (Zhu & Chou, 2018).

The second psychological determinant of FPR covered in the SLR is the future time perspective. This variable is a personality trait factor that measures what individuals think, believe, or do, not in the past or the present, but in the distant future (Hershey et al., 2010). In the experimental studies,

researchers have shown that future time predicts the preference of people to plan and save for retirement. Following Hershey's (2004) modification of the Life Planning Model as advanced by Friedman and Scholnick (1997), subsequent authors have noted that the future time perspective was a good indicator of the financial readiness of seniors. For example, Hershey et al. (2010) indicated that among participants aged 25-64, young adults were less motivated by FPR than older people by early learning experiences as part of the associated savings. Consequently, financially educated parents generally teach their children financial lessons early to motivate them to save and plan for their future (França & Hershey, 2018).

Retirement planning activities level is another critical psychological factor influencing FPR. It consists of several behaviours that motivate people to improve their financial knowledge, mainly saving and investing practices (Schuabb et al., 2019). Such behaviours differ from other psychological patterns (Hershey et al., 2007b). They encourage people to search for new information by attending courses or lectures in FPR. Examples of retirement planning activities include psychological preparation for retirement, financial management, retirement relevance, and personal saving practices examined in FPR studies. On an empirical basis, Jiménez et al. (2019) mentioned that psychological preparation for retirement has an explanatory role in FPR as financial self-efficacy (Zyphur et al., 2015). Also, Schuabb et al. (2019) reported that planning behaviours and the level of personal savings practices had a positive relationship to retirement saving behaviour. It means that for individuals who used to plan for every aspect of their lives, their level of savings will be high, indicating a positive and significant relationship with FPR (Hershey et al., 2007b; Palaci et al., 2017).

Socio-Demographic Variables. The SLR identifies significant socio-demographic factors (age, gender, work and job-related, income, family structure, and marital status) that consider different individual backgrounds in planning and saving for retirement.

Young people were less involved in FPR than pre-retirees, except those who were well-educated Jiménez et al. (2019) and Kumar et al. (2019) concluded that individuals might not start planning financially for retirement before 40 years old. One possible reason is that young people usually lack financial literacy and experiences considered motivating keys to planning and saving for retirement (Taylor & Geldhauser, 2007). Meanwhile, older adults can plan and save for retirement because they have more financial resources that help them use financial counselling services (Hirschi et al., 2017; Jiménez et al., 2019) to meet their post-retirement needs. However, França (2018) and Koposko and Hershey (2014) demonstrated no appreciable differences. Apart from these findings, Hershey et al. (2004, 2007a, 2010) and França (2018) concluded that retirement

goal clarity, financial planning knowledge, planning activities level, income, and future time perspective mediated the relationship between age and FPR.

Another socio-demographic factor that is important to FPR is gender. Even though França and Hershey (2018) and Vivel-Búa et al. (2019) found that gender was not a significant driver of retirement planning activities, Heilman and Kusev (2017) and Jiménez et al. (2019) documented that gender analysis was crucial given that males were more likely to be highly skilled experts (Glass & Kilpatrick, 1998; Topa et al., 2018b). However, Palaci et al. (2017) reported that gender occupational career levels do not affect FPR. Furthermore, empirical studies showed that women had less concern about their retirement (Fabre et al., 2016; Jiménez et al., 2019) and were incapable of planning to retire. Most probably because of poor financial literacy (Kiso & Hershey, 2017; Kumar et al., 2019) and discrimination in the labour force (Orel et al., 2004; Vivel-Búa et al., 2019). Along the same lines, studies recognised that women have less investment and savings in retirement (Fontes, 2011; Lum & Lightfoot, 2003). However, this result was contradicted by Vivel-Búa et al. (2019), who concluded that women were risk-averse, helping them raise more money to protect themselves and save for retirement.

Work and job-related variables that have a significant and positive impact on FPR include job requirements, employment status, years of experience, and job category. They influence several aspects of life, including financial exposure, lifestyle, and financial income (Kumar et al., 2019). Job category, for example, impacts individual financial decisions on how much to save and invest in pension plans (Vivel-Búa et al., 2019). Vivel-Búa et al. (2019) concluded that the probability of self-employed persons saving a life after leaving the labour market was higher than that of people who worked for the government, were unemployed, or were not in the labour market. It is given that work independence means lower replacement rates. In contrast, Topa et al. (2012) concluded that people with permanent contracts and stable jobs had more control over work procedures. They, therefore, have a greater ability to plan and invest in pension financing products.

Income as a socio-demographic factor is no less important than age and gender in FPR because, by nature, people generally aim at a higher level of economic wellbeing (Palací et al., 2018). Wealth or high incomes help individuals to have reasonable control over their short- and mediumterm financial resources. It also makes it possible to face unforeseen financial problems, achieve financial goals efficiently and allow people to make decisions to enjoy their lives. For example, people whose economic welfare was higher than the norm were more involved in saving and investing for financial preparation. In this respect, having a high-income level from various sources is a recognised predictor of financial planning for retirement (Palací et al., 2018). According to the SLR, Hershey et al. (2007a) showed that income

significantly impacted FPR and indirectly on psychological variables. Consistent with this study's result, Palaci et al. (2018b), Schuabb et al. (2019), and Topa et al. (2012) confirmed that financial well-being, family income, and salary were significant and positively linked with FPR. Furthermore, they pointed out that the income level was highly associated with FPR. The results of those studies included a recommendation that the relationship between income and FPR is strong.

Family structure is another major factor that influences FPR. Typically, men and women play different critical roles within the family. In terms of women, especially mothers, are responsible for raising their children and taking care of their husbands and other family members or even neighbours. On the other hand, as a father and head of a family, men are more likely to be caregivers, protectors, leaders, and teachers. They both play a significant role in the lives of their children and their families. As children grow up, their needs increase, discouraging parents from planning to invest in pension schemes. According to selected studies, Koposko and Hershey (2014) showed that learning experiences from parents and families play a significant role in increasing children's participation in financial planning. Also, Palací et al. (2017) showed that the economic behaviour of the parents influenced the economic behaviour of their children. However, empirical evidence showed that the relationship between the number of children and FPR was negative in the sense that financial assistance is increasing in a home with many children, and hence the allocation of financial resources for FPR will be reduced (Chatterjee et al., 2010; Vivel-Búa et al., 2019).

According to the financial planning literature, marital status may not be a critical factor affecting men's FPR, but the opposite is true for women. In other words, it determines financial security once a woman leaves the labour market. Studies demonstrated that marital status influences FPR (Orel et al., 2004; Schuabb et al., 2019) and could be one of the drivers of retirement savings (Vivel-Búa et al., 2019). Fontes (2011) stated that married individuals had a strong interest in saving for retirement to ensure the family's economic stability when income declines after leaving work and dependent on retirement income. More specifically, married women were relatively more impacted by their investment decisions than divorced and single women (Orel et al., 2004). However, single women displayed that they could not deal with critical events because of financial resources (Damman et al., 2014; Noone et al., 2010) or financial illiteracy.

External Variables. External factors influence individual performance and are generally grouped into three broad categories: social-environmental, economic, and circumstantial factors (Hershey et al., 2012). In general, these variables are essential because they influence employee decision-making, particularly when it comes to FPR. For example, the impact of social

network factors (e.g., support of spouse, friends, and parents) on human beings has been documented in the financial planning literature (Hershey et al., 2010; Koposko & Hershey, 2014; Kumar et al., 2019). Typically, people receive advice on their retirement from people who are educated, knowledgeable, and whom they trust. According to selected studies, Hershey et al. (2010) demonstrated that individuals could be influenced by the people closest to them, such as family, friends, and work colleagues, on their future financial goals and retirement planning for post-retirement life. In addition, Koposko and Hershey (2014) showed that parental experience is a crucial factor in influencing the process of financial socialization, shaping the attitudes and behaviour of their children. Nga and Yeoh (2018) also stated that the views of friends and spouses were seen as necessary in retirement decision-making.

Despite the impact of the social network variables on the financial planning of retirement, the role of economic variables (e.g., financial resources, economic socialization of parents, and saving) cannot be ignored. They are an essential driver of financial planning for retirement. Financial resourcing, for example, is a critical factor that impacts employees' retirement decisionmaking and the timing of decisions that will allow them to stay employed or retire from the workforce. Having sufficient financial resources helps employees feel economically secure by providing them with adequate income to meet their financial needs after retirement. Likewise, it helps

them face contemporary challenges, such as an increase in life expectancy and cost of living, which decreases workers' confidence in the sustainability and adequacy of their pensions. Therefore, employees have to increase their financial resources throughout their professional careers to have sufficient economic resources to meet their needs after retirement, as indicated by Palací et al. (2017). Moreover, they must prepare themselves for unexpected financial difficulties (Palací et al., 2018).

The economic socialization of parents is another critical economic variable that helps address the economic challenges that children and adolescents face in their daily lives (Palací et al., 2017). This variable improves children's financial decisions and skills, enabling them to adopt more responsible financial behaviour in adulthood. In terms of savings, it is considered one of the most critical economic variables widely examined among individuals, which is seen as the primary starting point for describing financial behaviour (Palací et al., 2018). For example, it was made clear by the disparity of saving-related opportunities between the American and Netherland pension systems (Hershey et al., 2007a). The scholars revealed that the American employees had greater participation in a wide range of financial tools of FPR than the Dutch since employer pension programs were not as common in the USA. Due to this, the workers are more ready to accept the financial burden of investing and save for post-retirement in America.

Circumstantial variables frequently influence people's financial behaviour. Kumar et al. (2019) indicated the catalysts and financial planning constraints identified by Kemp et al. (2005). The authors revealed that the catalysts of financial planning were employer programs and retirement courses. They also showed other factors (e.g., divorce, spousal death, and remarriage), which are considered catalysts and constraints that depend on the individual's circumstances. In conclusion, social network, economic, and circumstantial variables are examples of how critical external variables influence financial planning for retirement behaviour.

CONCLUSION

The study reviews 18 papers to assess theories, methodologies, and determinants of FPR to highlight the pertinent gaps in the literature. Based on Robinson et al. (2011), who identified seven possible research gaps, this review shows three significant gaps in the existing literature: knowledge, empirical, and population.

Research on FPR behaviour that developed definite conceptual models remains relatively ambiguous, especially in emerging countries. The first two conceptual models of Hershey (2000, 2004) examined FPR in the USA and compared a study between Brazil and the Netherlands. Meanwhile, the CWO model dominantly investigated Spanish adults. Although these studies shed light on various predictors like psychological, cultural, financial, and task characteristics factors, as indicated by Topa et al. (2018a), there is still a lack of

empirical studies to examine the complete model to understand the determinants of FPR behaviour. Hence, applying these conceptual models in developing countries may provide more interesting findings given the different work cultures and environments besides being demographically diverse.

It can be inferred from the SLR that a range of variables, namely, psychological variables underlying FPR, need to be studied more in-depth (Kumar et al., 2019). Retirement goals have been examined in numerous papers, but only a few researchers studied working-age people's goals. Notably, some other known significant psychological factors that shape people's financial behaviour, like self-control, have yet to be included in the selected studies. Accordingly, it will be beneficial to conduct further studies on retirement goal clarity and self-control in various samples.

Similarly, a set of economic variables, namely financial resources, has positively influenced FPR (Palací et al., 2018; Schuabb et al., 2019; Topa et al., 2012). However, other studies such as Blake (2004), Feldstein (1974, 1976, 1982), and França and Hershey (2018) proved that financial resources did not influence the retirement decision. It is another gap to consider. Likewise, despite the impact of social network factors on the financial planning of retirement, some studies investigated their interaction with FPR (Tomar et al., 2021). However, the results are still inconsistent (Murari et al., 2021). Therefore, additional studies are needed to assess whether the previous results correspond to future studies by applying different research methods.

Although numerous selected studies have examined social (for example, support of parents, spouses, and friends) and economic (for example, financial resources, salary, and financial well-being) variables that affect FPR behaviour, it is preferable to look beyond these variables to consider the influence of certain other external variables (for example, cultural and social norms, cost of living, pension schemes, health issues, and unexpected inheritance) and the effects of this interaction on FPR. Moreover, the interaction of the proposed variables is not limited to the inclination toward FPR but also the quality of retirement savings, the behaviour of investors, their choices of different retirement schemes, and the level of retirement wealth among individuals. These deserve further exploration in future research.

Moreover, most studies on FPR models have been conducted based on a quantitative approach. Therefore, there is a need for more clarity on FPR behaviour by applying qualitative or mixed-method in future research to provide comprehensive insights and valuable information regarding the relationship between cognitive, psychological, and external variables and financial planning for retirement. Since researchers did not draw attention until recently, this area needs a robust theoretical framework (Kumar et al., 2019).

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Community-Based Violence Against Women (VAW) Desks in the Philippines: A Multi-Level Assessment

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ABSTRACT

This study is a multi-level assessment of community-based Violence Against Women (VAW) desks status: (1) VAW system (policies and legislation); (2) entity (VAW desk setup), and (3) individual (VAW desk officers) levels' capacities in Calamba City, Laguna, Philippines. Data were gathered through a survey of 105 VAW desk officers and key informant interviews of five local officials. In addition, document reviews of national and local policies and reports on VAW were also employed in this study. Findings suggested that policies on establishing barangay-level VAW desks were properly enforced in Calamba City. However, the research results also showed a lack of equipment and resources to address VAW cases properly. In addition, VAW desk officers' age and educational background limit their capacity to implement their responsibilities effectively, for there are no clear qualifications needed to be a desk officer. There is also no clear local system on the orientation of roles

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gdconsignado@up.edu.ph (Gillian Dorado Consignado) jsamparo@up.edu.ph (Jennifer Marie Sunga Amparo) eaalampay@up.edu.ph (Erwin Gaspar Alday Alampay) *Corresponding author and responsibilities of the desk officers. Thus, the following recommendations: (1) national or local policy amendment to include the basic qualifications of desk officers; (2) maximize the role of the local group of desk officers in capacity-building and advocacy while partnering with civil society; (3) proper fund allocation of the city to ensure full functionality of VAW desks; and (4) strengthen feedback system and enforcement of rewards and penalties to motivate proper functioning of the desk

offices. The paper contributes to local governance perspectives, specifically on multi-level coordination, to effectively address VAW and provide gender and development (GAD) support services.

Keywords: Gender and development (GAD), local capacities, local governance, multi-level assessment, violence against women (VAW)

INTRODUCTION

Currently, violence against women (VAW) remains a pervasive global issue. In 2015, the United Nations Statistics Division reported that worldwide, 35% of women have experienced physical and/or sexual violence by an intimate partner or by a non-partner at some point in their lives. In the Philippines, one in five women aged 15 to 49 has experienced physical violence since age 15; 14.4% of married women have experienced physical abuse from their husbands; and more than one-third (37%) of separated or widowed women have experienced physical violence, implying that domestic violence could be the reason for separation or annulment (Philippine Commission on Women [PCW], 2014).

VAW is a serious threat that negatively affects the individuals' and communities' well-being. It undermines women's ability to enjoy fundamental freedom (Ortiz-Barreda & Vives-Cases, 2013). It represents both a serious violation of human rights and a major obstacle to overcoming inequality between women and men (Ortiz-Barreda & Vives-Cases, 2013). VAW is widespread and has serious implications for women's

health (Er Guneri et al., 2017), including psychosocial and mental health (Soomar, 2015).

The Declaration on the Elimination of VAW, adopted by the United Nations (UN) General Assembly (United Nations, 1993), defines violence against women as "any act of gender-based violence that results in or is likely to result in physical, sexual, or psychological harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or private life" (Article 1). In the Philippines, Republic Act No. 9262 (2004), also known as the Anti-Violence against Women and Their Children Act of 2004, defines "Violence against Women and Children (VAWC)" as any act or series of acts committed by any person against a woman who is his wife, former wife, or against a woman with whom the person has or had a sexual or dating relationship, or with whom he has a common child, or against her child whether legitimate or illegitimate, within or without the family abode, which result in or is likely to result in physical, sexual, psychological harm or suffering, or economic abuse including threats of such acts, battery, assault, coercion, harassment or arbitrary deprivation of liberty (Section 3). Because of its growing concern about VAW, the Philippine government has passed several laws and issued policies addressing this problem. Aside from Republic Act 9262, some of the laws include Republic Act 9710 (2009, The Magna Carta of Women); Republic Act 10630 (2013, Juvenile Justice and Welfare Act of 2006); Joint Memorandum Circular No. 2010-1 (2010, Creation of Local Committees on Anti Trafficking and Violence against Women and their Children); and Joint Memorandum Circular No. 2010-2 (2010, Guidelines in the Establishment of a Violence against Women's Desk in every Barangay).

This study explored the multi-level theory of understanding organizational capacity. Social phenomena, such as VAW, commonly occur synchronously and dynamically at multiple levels (e.g., macro-meso-micro levels) (Headley & Clark, 2020). In this study, the management processes and organizational features that may support or hinder the full functionality of VAW desk offices were analyzed. The VAW desk office can be considered a people-processing organization since its main function is to process and confer public status on the victim-survivors (Hasenfeld, 1972). Furthermore, these organizations do not need a personal bond to achieve the organization's goals (van Loon et al., 2013).

The community-based (barangay) VAW desk office, the implementing arm of the local government unit in the Philippines handling gender-sensitive issues at the grassroots, performs an important role in addressing these concerns. Thus, conducting a multi-level assessment from the system to the entity down to the individual level will provide baseline information on how a city addresses VAW. The study aims to answer the following research questions: (1) What are the VAW policies implemented at the national and local level (system level)?; (2) What is the state of the barangay VAW desk

offices in the city in terms of functionality (entity level)?; (3) How capable are the VAW desk officers in performing their functions (individual level)?; and (4) How can the capacity development interventions for the VAW desk services of the city be further improved? To further understand the background of the study, the next section discusses the related literature on Gender and Development (GAD), focusing on VAW in the international and local context.

Review of Related Literature

In a review of the Philippines' performance in accomplishing Sustainable Development Goal 5, which focuses on gender equality, David et al. (2018) argue that 'the Philippines fares well on some of the broad indicators of well-being of females and girls.' Loh (2009) also recognizes the multipronged approach adopted by some ASEAN countries like the Philippines, Indonesia, and Malaysia to combat gender violence. These include 'crisis intervention services and empowerment of women survivors; integrated services by the hospital and police service providers; community involvement and participation; legal reform advocacy on VAW; training and public education; and establishment of national coalitions on VAW.' Nevertheless, Garcia (2020), through his interview with different sectors working on VAW programs and services in the Philippines, found that VAW issues are still prevalent in the country.

A World Bank study conducted by Tavares et al. (2019) identified critical driving factors to address VAW issues at

the local level. These include budgetary commitments for the implementation of legislation on VAW, services like 24hour hotlines, training for health and law enforcement professionals, national protocols for health and law enforcement professionals, dedicated or specialized police units or staff, presence of a national plan on VAW, access to shelters and legal aid of victims (Tavares et al., 2019). It was reiterated in the study by Fraser and Wood (2018), particularly the need for an adequate budget, a comprehensive policy framework, including plans and data, appropriate training and capacity building of public officials, including enforcers, and cross-agency coordination. Fraser and Wood (2018) also reiterated the need for women to lead campaigns and monitor implementation by civil society and women's organizations (Fraser & Wood, 2018). The role of civil society and the complementary roles of NGOs and academics were also highlighted in the study of VAW policy implementations by Libre et al. (2017) and Garcia (2020).

Local governments are critical frontliners in local women empowerment and prevention of VAW in the community. Sumbas and Koyuncu (2019) argue for the institutionalization of gendersensitive policies and local-level initiatives for women empowerment. The role of government, particularly its leadership, in mainstreaming GAD policies and delivery of GAD services (Libre et al., 2017). In addition, the knowledge of the barangay officials is a good predictor of GAD policy implementation (Libre et al., 2017).

Despite the advancements in law and services conceptualized to address VAW issues in the Philippines, government services remain inadequate and focus more on response than prevention (Garcia, 2020). Therefore, there needs to be an amendment to government policies and proper budget allocation to ensure VAW services to women and children (Embate et al., 2019). For example, the Local GAD budget policy stipulated that a 5% gender budget be allocated to annual GAD plans in local government and government offices (Mendoza, 2020). However, this depends on the revenue and income of the government office and LGU, which might limit the implementation of meaningful genderfriendly programs and activities (Mendoza, 2020). In addition, the implementation of the GAD budget policy remains to be limited in practice (Concepcion, 2013). Also, Gudmalin (2017) argues for the need for public funds allocation for temporary shelter and immediate needs of victims, as per his study of lived experiences of victims of violence in Carmen, Bohol, Philippines.

Another limitation of local GAD programs and services in the Philippines is the lack of a 'strategic gender and development capability enhancement agenda' (Libre et al., 2017). In a study by Aquino (2017) in two barangays in Quezon City, Philippines, of the UN Women Safe Cities Initiatives Program implementation, the capacity improvement in promoting women's safety and security was also highlighted.

These studies recognize the need to investigate the factors affecting reporting behavior in VAW desks. However, this is not covered by our current study. Most of the reviews of VAW desks in the Philippines, based on a Google Scholar search (publications from 2017 to the present), focused on VAW reportorial factors. For instance, Garcia (2020) identified that some Filipino cultural factors could serve as risk and protective factors for reporting behaviors of women and children to VAW desks or other similar services or organizations. It is reinforced by Embate et al.'s (2019) findings when they called for a "rehabilitation of socio-cultural influences that marginalize women'. Also, the study by Embate et al. (2019) on women's desk provision in a national public hospital in the Philippines emphasized the need to delve into the sociocultural to organization/structural factors affecting service delivery and quality. In a study by Dimaano et al. (2018), one of the key reasons for victims reporting the abuse, particularly of a close relative or husband, is the victim's fear that the abuse is perpetrated on their children. In addition, family, economic and social factors, including Filipino culture, affect the occurrence and reports of violence against women (Bernarte et al., 2018). The common themes of VAW cases include physical abuse, mental abuse, threat, abandonment of children, child support issues, child custody, psychological abuse, economic abuse, and rape were the recorded cases among the evaluated barangays (Mohammed & Pulmano, 2017). In a case study in Tabuk City, respondents' survey found that psychological violence is the most pervasive form of VAW (Malawis-Ignacio, 2021). The role of culture and

local traditions, particularly in indigenous peoples' communities, were highlighted in the study of Najarilla (2018). Najarilla (2018) found no VAW desks in NCIP (National Commission on Indigenous People) offices in the Ifugao, Benguet, and Mountain Province, where indigenous peoples are found. She further argued that customary practices should be integrated into VAW policies and programs to ensure inclusiveness and respect for IP (Indigenous People) rights and traditions.

Given this review, we focused on assessing the service delivery of the VAW desk and identifying its capacity gaps. Specifically on how the system (policies), entity (VAW desks), and individual (VAW desks' officers) factors affect the task performance of VAW desks and their officers. Earlier studies have focused on each set of factors, and this study would contribute to how the interaction of these levels could affect the VAW desks' service delivery and capacity. The next section discusses the materials and methods used, comprising the study area, research design, and framework to realize how the study has been implemented.

MATERIALS AND METHODS

Study Area

As shown in Figure 1, the study was conducted in Calamba City, Laguna, Philippines, located 54 kilometers south of the country's capital, Manila. Calamba City is a haven for industries and was also considered the primary industrial hub outside of Metro Manila, resulting in the influx of migrants in the area.



Figure 1. Map of Calamba City, Laguna¹

Moreover, Calamba City is also a recipient of national awards for good governance, good financial housekeeping, disaster preparedness, business-friendliness, peace and order, environmental management, and social protection. The latter includes the establishment of barangay VAW desks. Thus, the selection of Calamba City, a highly urbanized city recognized for the delivery of its social services, particularly in addressing local VAW issues, could inform other similar cities, not only in the Philippines but also in Asia and the Pacific on the multiple and complex links of addressing VAW issues.

Research Design

A descriptive quantitative survey approach among the appointed barangay VAW desk officers in Calamba City from 2018 to 2020 was used to gather their demographic characteristics and capacities regarding their qualifications, roles, and perceived facilitating and hindering factors in performing their duties and responsibilities. The instrument was partly adapted from a local study entitled Assessment of the Capacity of Barangay Nutrition Scholars in the Municipality of Bay, Laguna (Gutierrez, 2012) from the Institute for Governance and Rural Development, College of Public Affairs and Development, University of the Philippines Los Baños; and from the Department of Interior and Local Government (DILG) Memorandum Circular 2017-114 or the Guidelines in Monitoring the Functionality of VAW Desk in Every Barangay. Prior to the actual conduct of the survey, the questionnaire underwent a thorough review. Pre-testing of the questionnaire was also piloted for two VAW desk officers at Barangay Bagong Kalsada, Calamba City, Laguna. It was done to check the comprehensiveness and clarity of the content; assess the issues that might arise during the actual data gathering process. After pre-testing, necessary revisions were then made to the questionnaire. The study was designed to be a complete enumeration of the 139 VAW desk officers. However, only 105 (75.54%) signified to participate in the study and gave their informed consent.

Meanwhile, key informant interviews of five selected city officials were also conducted to assess the capacities of the VAW set up in terms of the laws and policies implemented in the national and local context. The primary criteria in choosing

¹ Map is based on https://en.wikipedia.org/wiki/Calamba, Laguna.

the key informant for the study are (1) designated in service for 2018–2020 in the city office, which is the same as the survey respondents' contract, and (2) involvement in the implementation of VAW laws and services such as the Department of Interior and Local Government (DILG), City Social Services and Youth Development Office (CSSYDO)/Department of Social Welfare and Development (DSWD), and Philippine National Police (PNP). In addition, pertinent secondary documents were also collected and reviewed to draw out research conclusions and recommendations.

Study Framework

The multi-level theory informed this study of understanding organizational capacity. Multi-level research is beneficial in bridging the macro-micro gap in management and the science-practice gap (Molina-Azorin et al., 2020). Molina-Azorin et al. (2020) further argue that a multi-level assessment informs the joint analysis of various variables and interactions. In this study, the process links that may support or hinder the full functionality of VAW will be analyzed. Process links are management processes and organizational features that affect a level or another level.

In addition, capacity development concepts informed this study. Here, we focused on the specific technical, processual, and contextual capacities of the VAW desks that affect their full functionality. Technical capacity is the capacity to accomplish and perform technical tasks (Capacity for Disaster Reduction Initiative [CaDRI],

2011). For example, the technical capacity could be the technical role of the VAW desks or the qualification and tasks specified by the law of VAW desk officers. Processual capacity refers to the social, relational, and intangible functional capacities (Pearson, 2011). Some examples are leadership, negotiation, conflict resolution skills, and problem-solving skills (Acquaye-Baddoo, 2010), all critical in hearing VAW cases. Lastly, contextual capacities refer to local contexts and existing conditions affecting the organizational capacity (Pearson, 2011). These may include policies, values on specific concepts or issues, and systems observed in each organization.

This study will identify the capacity gaps of the VAW desk and how the different level variables affect these gaps. It could also inform recommendations to improve the functionalities of the VAW desk in the study area. We argue that using the multilevel approach and capacity development concepts would strengthen the study by generating insights into how one level of inputs could affect its outputs and that of another level (Paruchuri et al., 2018). The conceptual framework looked first at the broader context of VAW. This level discussed the national laws and policies, the VAW situation in Calamba City, and the policies they implement in the local context. After laying down the national and local VAW context, the next level focused on the status of the community-based (barangay) VAW desk offices which is the entity level. This level discussed the main facility, the VAW desk office, which is the implementing arm of the LGU in promoting the laws and policies. Lastly, the individual level focused on personnel—VAW desk officers. This level discussed the qualifications and roles and discussed the perceived hindering and facilitating factors of the VAW desk officers in performing their duties and

responsibilities. The conceptual framework then exposes the gaps that need to be addressed by capacity development and organizational development interventions. Below is the Conceptual Framework used in this study (Figure 2).

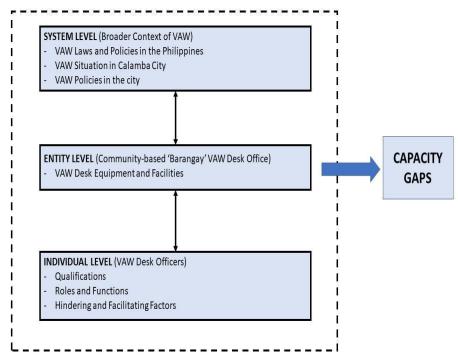


Figure 2. The multi-level assessment framework of the study

The collected data from the survey questionnaires were interpreted and analyzed using a multi-level approach looking at the system level (VAW laws and policies), entity level (VAW desk office), and individual level (VAW desk officers). Frequency distribution and other measures of central tendency were utilized for quantitative analysis of the primary data. Meanwhile,

thematic analysis was used to identify the key themes emerging from the survey and interviews. The next section focuses on the study results, including the demographic characteristics of the respondents and discussions on the system, entity, and individual levels.

RESULTS AND DISCUSSION

Demographic Characteristics of Respondents

Table 1 indicated that the barangay VAW desk officers were all women. It is an advantage because, in most cases, the perpetrators are male, and VAW victim-survivors may be more comfortable relating their experiences to fellow women (Philippine Commission on Women, 2012). Most VAW desk officers were between 50 and 59 years old (39%). The majority were also married (60%), Catholic (81.9%), and graduated high school (57.1%).

Aside from being a barangay VAW desk officer, 11 (10.5%) of them are also store owners, while the majority (46 or 43.8%) stated that they have no other job and 31 (29.5%) stated they are housewives. Moreover, most respondents (39%) have recently been appointed with one year or less in service. Moreover, key informants include five elected officials of the city. They are employed in offices that implement VAW laws and policies like the Department of Interior and Local Government (DILG), Philippine National Police (PNP), and the Department of Social Welfare and Development (DSWD).

Table 1

Demographic characteristics of the respondents

Characteristics	Frequency	Percentage
Age Group		
20–29	2	1.9
30–39	9	8.6
40–49	29	27.6
50–59	41	39.0
60–69	17	16.2
70–79	3	2.9
No answer	4	3.8
Civil Status		
Single	12	11.4
Married	63	60.0
Divorced	8	7.6
Widowed	17	16.2
Live-in	3	2.9
No answer	2	1.9

Table 1 (Continue)

Characteristics	Frequency	Percentage
Religion		
Roman Catholic	86	81.9
Iglesia ni Cristo	2	1.9
Islam/Muslim	3	2.9
Born Again	9	8.6
Baptist	2	1.9
Jesus Is Lord	1	1.0
KIDKH	1	1.0
Mistica	1	1.0
Education		
College graduate	14	13.3
College undergraduate	15	14.3
High school graduate	60	57.1
High school undergraduate	3	2.9
Elementary graduate	2	1.9
Vocational/technical courses	9	8.6
No answer	2	1.9
Occupation (other than being a VAW Desk Officer)		
Housewife	31	29.5
Store owner	11	10.5
Food/meat vendor	4	3.8
Online seller	3	2.9
Sangguniang barangay staff	2	1.9
Caretaker	1	1.0
Chairwoman (Cooperative)	1	1.0
Sewer	1	1.0
Photographer	1	1.0
Dog breeder	1	1.0
Employee	1	1.0
Farmer	1	1.0
Masseuse/manicurist	1	1.0
None	46	43.8
Years of service as VAW Desk Officer		
1 and below	41	39.0
1–3	21	20.0
4–6	16	15.2
6 & above	24	22.9
No answer	3	2.9

System Level

The Philippines recognizes the rights and privileges of women and their freedom against violence. Republic Act No. 9710 (2009), more commonly known as the Magna Carta of Women, enacted in 2009, states that the State condemns all discrimination against women. The state pursues by all appropriate means and without delay the policy of eliminating discrimination against women. Section 12 D, Rule IV of the Rules and Regulation Implementing the Magna Carta of Women, provides for VAW desks in every barangay to ensure VAW cases are fully addressed in a gender-responsive manner.

Results showed several national VAW laws at the system level, which are also adopted and implemented at the city level. These include:

- Republic Act 9710 (2009, Magna Carta of Women)
- Republic Act 9262 (2004, Anti-Violence Against Women and Their Children Act)
- Joint Memorandum Circular 2010-1 (2010, Creation of Local Committees on Anti-trafficking and Violence Against Women and Children)
- Joint Memorandum Circular 2010-2 (2010, Guidelines in the Establishment of Violence Against Women Desk in Every Barangay); and
- Memorandum Circular 2017-114 (2017, Guidelines in Monitoring the Functionality of VAW Desk in Every Barangay)

Meanwhile, local VAW laws and policies were also implemented at the municipal level. Calamba City, for instance, passed City Ordinance No. 605 (2017, an ordinance institutionalizing the establishment of barangay VAW desks in the 54 barangays of Calamba City) in 2017, which was adopted by its barangays based on the DILG guidance. However, aside from this, there were no other local ordinances concerning VAW that the city passed. As the ABC (Association of Barangay Captain) chairman of the city noted, "All the laws are already existing at the national level, so we just adopt it."

The Barangay VAW Desk Handbook was published in December 2012 by the Philippine Commission on Women (PCW) to serve as a guide for handling VAW cases at the community level. The handbook contains seven sections, which are as follows: (1) Setting up the VAW Desk; (2) Designating a VAW Desk Officer; (3) Guiding Service Delivery; (4) Financing VAW Desk Operations; (5) Recording and Reporting Clients Served; (6) Spreading the Word; and (7) Monitoring and Evaluating the Service of VAW Desk.

In 2012, the CALABARZON (Cavite, Laguna, Batangas, Rizal, and Quezon) Region, where Calamba City belongs, had 2,281 (8.92%) cases of VAW in the total reported crimes (Philippine National Police, Women and Children Protection Center, 2012). In the past five years (2013–2017), the city had 446 reported cases.²

² According to the local Philippine National Police – Women and Children Protection Center of Calamba City.

Figure 3 shows the number of VAW cases reported to Philippine National Police (PNP) Calamba from January 2013 to November 2017. Over that period, 2014 had the highest number of reported VAW cases at 131, while 2017 had the lowest at 59 reported VAW cases. According to the City Local Government Operations Officer

(CLGOO) of Calamba: "It just came down to us (policy) here in 2016 that it will be necessary for the barangay captain to designate VAW/women's desk in cases of VAW." Nonetheless, it should be noted that VAW cases declined after 2014, even as the law on the creation of VAW desk offices was only forwarded to the city in 2016.

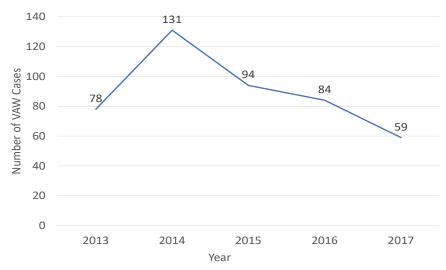


Figure 3. Number of VAW cases in Calamba City from 2013 to 2017

Entity Level

In a Joint Memorandum Circular 2010–2012, the guidelines for setting up a barangay-level VAW Desk were articulated as follows:

2.1. Setting up the VAW Desk—the barangay captain shall designate an area within the barangay hall for the VAW desk. S/he shall provide for the necessary furniture and fixtures such as, but not limited to, table, chairs, separate filing cabinet, and logbook for record-keeping of cases. Likewise, the barangay captain shall ensure the

confidentiality of the case and the privacy and safety of the victim-survivor.

To further monitor the VAW desk offices, Memorandum Circular No. 2017-114 [Guidelines in Monitoring the Functionality of VAW Desk in Every Barangay] (2017) was issued by the DILG in August 2017. It was intended to provide LGUs and other concerned entities with guidelines and a monitoring tool for assessing the functionality of barangay VAW desks. The said policy document was used to assess the entity level of the said VAW desk (Table 2).

Table 2
Summary of the VAW desk functions and findings of the study

Functionalities of the VAW desk (Based on DILG MC No. 2017-114)

Findings of the study

The VAW desk must be established, and the VAW desk officer must be designated through a barangay ordinance or an Executive Order (EO). The VAW desk officer designated must be trained in gendersensitive handling of VAW cases. The VAW desk officer shall have a separate room for the intake interview.

A functional barangay VAW desk shall have the basic equipment, furniture, vehicle, monitoring tools, and reference materials.

The VAW desk shall have its budget for operation and services integrated into the approved Barangay Gender and Development (GAD) Plan and Budget, which shall be at least five percent (5%) of their budgetary allocation.

The barangay shall prepare and submit quarterly accomplishment reports to the City/Municipal Social Welfare and Development Officer (C/MSWDO) and City/Municipal Local Government Operations Officer (C/MLGOO) within ten working days of the ensuing month.

The barangay designated all 105 VAW desk officers through the barangay ordinance. They also attended gender-sensitive handling of VAW cases courses offered by the city government through the CSSYDO, PNP, and Department of Interior and Local Government (DILG).

Not all VAW desks are in a separate room for intake interviews, given the limited space of the barangay hall and the limited budget for the VAW desk office.

There are basic equipment and tools present but are incomplete in some barangays. Refer to Table 3 for specific equipment inventory.

A portion of the five percent barangay GAD budget is allocated to the VAW desk offices' program, activities, or training. According to the CLGOO: "In other words, it is okay to get the budget there which can then be allocated for the functionality of their office." No policies discuss the distribution of the GAD Fund for the operation of the VAW desk office. The budget merely depends on the prioritization of the barangay, which is also based on the Internal Revenue Allotment (IRA) and the income of the barangay.

As for the reporting of cases, the respondents were asked how often they submitted their reports and the results showed that most (61.9%) of them submitted monthly (Table 4).

Table 3 below lists the summary of the VAW desk office items based on DILG Memorandum Circular No. 2017-114 (Guidelines in Monitoring the Functionality of VAW Desk in Every Barangay) present in 46 out of 54 barangays of the city included in the study. Results showed that the top five items that are present in the VAW desk offices are the monitoring logbook (95.65%), office tables (93.48%), VAW Desk Handbook (91.3%), and chairs

(89.13%) and VAW forms (86.96%). On the other hand, the least common items that their VAW desks have are sofa bed/folding bed/mat (21.74%), camera (19.57%), and voice recorder (2.17%). These items are important to be present in the VAW desk offices for a comfortable place for the victim-survivor to discuss concerns and properly document the VAW cases reported.

Table 3

VAW desk office items present in the barangays³

VAW Desk Office Items	No. of Barangays	Percentage
Monitoring logbook	44	95.6
Office table	43	93.4
VAW desk handbook	42	91.3
Chair	41	89.1
VAW forms	40	86.9
Landline/mobile phone	36	78.2
Availability of vehicle	35	76.0
Filing cabinet/storage area	30	65.2
Separate room for intake interview	29	63.0
First aid kit	26	56.5
List of service providers	20	43.4
Computer/typewriter	16	34.7
Sofa bed/folding bed/mat	10	21.7
Camera	9	19.5
Voice recorder	1	2.1

³ Only 46 out of 54 barangays answered this survey

Although all the 54 barangays in Calamba city have established their VAW desk offices, the CLGOO, Ms. Lenie Baustista, acknowledged that some offices lack equipment. She said: "Not all barangay VAW desk offices have all the equipment required for a VAW desk like having a sofa/mat/bed." It is due to budget limitations and prioritization of the barangays in the GAD budget allocation. Some of the respondents stated they still lack equipment because they have no budget for it, or the items are

still under approval or still being proposed in their plans.

In terms of report submissions, VAW desk offices must submit monthly reports to DILG, PNP, and CSSYDO/DSWD. The DILG then submits the report quarterly to the provincial office. Ms. Bautista says, "Our role is only to monitor those reports submitted by PNP and the barangay. Then we report this to the provincial office quarterly".

Table 4
Frequency of the report submission of the respondents

Submission Dates	Frequency	Percentage
Monthly	65	61.9
Quarterly	4	3.8
Monthly and quarterly	33	31.4
No answer	3	2.9
Total	105	10

It follows the process mentioned in the handbook. It is stated in three steps: 1) combine and organize the details from the VAW Docs Form, (2) prepare a written report using the monthly reporting form, and (3) submit it to the C/MSWDO and City/Municipal Local Government Office. According to the handbook, the written reports should be submitted quarterly.

Individual Level

Qualifications of VAW Desk Officers.Applicants should be qualified for their

position in any organization. According to Alaquel (2016), it is the duty of the human resource department (HRD) to hire the right candidates for specific jobs with the most efficient use of an organization's resources. In a study by Ekwoaba et al. (2015), finding competent workers is an important organizational challenge; the most challenging is recruiting and selecting employees with the correct qualifications to help achieve organizational goals. In the case of the recruitment of VAW desk officers, the barangay captain acts as the human resource

personnel. Therefore, the barangay captain has the power to appoint the officers as stated in Joint Memorandum Circular (JMC) 2010-2 (Section 2.2. Designation of VAW Desk Officer). However, the JMC did not provide specific rules about the qualifications of VAW desk officers. For example, age and education were not mentioned among the requirements.

The only competencies and attributes that the Barangay VAW desk handbook

(Philippine Commission on Women, 2012) explained are for officers to be properly and be thoroughly educated on gender-based violence. In addition, the Women's Crisis Center developed the following Knowledge, Attitudes, Skills, Habits, and Ethics of Work (KASHEW) that could be used as guidelines for choosing VAW Desk Officers, some of which are listed below (Table 5).

Table 5
Suggested characteristics of VAW desk officers

Aspect	Characteristics
Knowledge	Nature and dynamics of gender
_	Crisis intervention
	Victim mindset
Attitude	Unconditional acceptance
	Empathy
	Nonjudgmental
Skills	Assessment
	Interviewing and recording
	Communication
Habits and Ethics of Work	Genuine concern for the client
	Firm commitment to end VAW and family
	violence
	Observes confidentiality

Source: Philippine Commission on Women (2012)

Even though there are suggested characteristics included in the VAW desk handbook, the CLGOO acknowledged that political reasons and the barangay captain's background sometimes play a big part in the

selection of VAW desk officers. Ms. Bautista further explained: "Sometimes because of political background, the politicians play a big role in the appointment (of VAW desk officer). They choose someone from their

party even if they are already old." It might have implications in future cases where the barangay captain or the party members are possible suspects or perpetrators of the VAW cases.

Survey results revealed that some of the VAW desk officers were already oriented on how to perform their job through previous training and seminars. For example, one respondent (Respondent 57) shared that from proper training and seminars: "We are enlightened and become more knowledgeable about the role to perform on the VAW desk." On the other hand, another respondent (Respondent 41) said that the barangay captain oriented her on the responsibilities, "even before I became a VAW desk officer, the barangay captain already oriented me about the task."

Nevertheless, when Ms. Bautista was asked about the orientation of the newly hired VAW desk officer, she said:

"Usually, it is the city government that calls for the training and orientation. The barangay will not initiate their own training since there is only one VAW desk officer. The VAW desk officer still must wait for the PNP or DSWD training. An innovation in the city is they formed a League of VAW Desk (officers) which conducts quarterly meetings. The information, education, and communication (IEC) materials also add to their knowledge during their meetings."

Roles and Functions of VAW Desk Officers. Figure 4 shows the responses of the VAW officers to an open-ended question about their awareness of their roles as VAW desk officers. Most of their responses fall under four categories which are to respond to violence cases (45), assist victims of VAW (35), record number of cases (19), and coordinate and refer cases (4). Some of the statements of the respondents supporting this are listed below:

"We hear and respond to cases regarding women and children being abused." (Respondent 22)

"As VAW desk officers, we assist children and women being abused." (Respondent 18)

Noticeably, out of the seven tasks of VAW desk officers stated in Section 12 D, Rule IV of the Implementing Rules and Regulation (IRR) of the Magna Carta of Women (MCW), no response answered three categories which are 'to develop a plan; 'address other forms of abuse;' and 'lead advocacies.' The VAW desk officers are more reactive and responsive to VAW cases than proactive in advocating, developing, and leading VAW prevention activities. The latter behavior of being proactive involves creating change, not merely anticipating it, and taking the initiative to improve the organization's performance (Bateman & Crant, 1999). Thus, it is better to be proactive since, aside from responding to VAW cases which is the main role of the

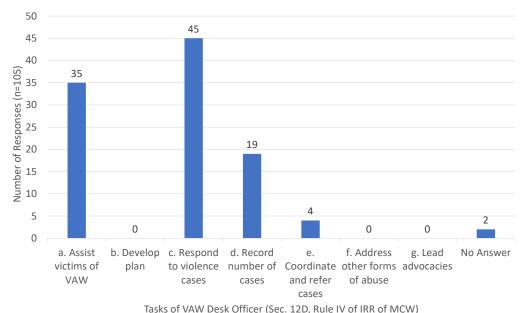


Figure 4. Awareness of respondents on their roles as VAW desk officers

VAW desk officers, they would be able to focus more on prevention and addressing the root cause of the problem. To further reiterate, Ms. Emma Balmes, the president of the group of barangays VAW desk officers of the city shared:

"If the victim-survivor goes to the barangay hall, the women's desk assists as to what kind of cases could be filed to the abusive spouse, live-in partner, or relationship partner."

One of the roles of VAW desk officers is to respond to gender-based violence cases brought to the barangay. When respondents were asked about their role in resolving such cases, some stated they served as mediators and counselors, orienting the victim-survivor on their rights; and assisting them with other government agencies like PNP and DSWD. It is supported by some responses from the VAW desk officers interviewed in this study.

"As VAW desk officers, we are the ones mediating on the complainant and the accused. When the two sides already agreed, we prepare a document on their agreement which they will also sign." (Respondent 48)

"We record and discuss the case to the complainant and the accused for it to be resolved." (Respondent 87)

"We discuss the case with the complainant and the accused if it is not severe but if it is severe, we assist them to the policewomen's desk." (Respondent 27)

"We discuss the case with both parties and their rights." (Respondent 1)

"If there are cases that the man often battered his partner, we ask them to separate all the more if they are not married." (Respondent 98)

However, as discussed in the VAW desk handbook (2012), Rule VIII of the IRR of RA 9262 explicitly prohibits mediation of VAW cases. It is based on the premise that VAW happens because of unequal power relations between men and women. Mediation between unequal parties may result in men imposing their will and control over women. Moreover, barangay officials who initiate mediation or reconciliation will be administratively liable. The CLGOO stated that there should be no mediation of VAW cases, and if the client wants it mediated, they can do this through the Katarungang Pambarangay (Barangay Courts). Ms. Bautista emphasized that "There should be no settlement. If the victim-survivor is not suing for the spouse, that means it should not enter the VAW record. They can be referred to =the Lupon ng Katarungang Pambarangay)". The Katarungang Pambarangay is a body that allows the mediation of complaints at the barangay level. However, the older mediation and counseling protocols at the barangay level are still predominant, as found in this study, as most VAW desk officers are guided by the barangay officials who try to reconcile the two parties and commonly view VAW issues as personal and marital challenges (David et al., 2018).

The respondents mentioned that they coordinate and refer cases. VAW desk officers also monitor the implementation of curfew hours and referral of violators to community service. It focuses on children and youth as the VAW desk officers also look after violence against children and youth.

Facilitating Factors

Respondents mentioned the critical role of their skill and attitude in proper case handling. As one respondent (Respondent 48) noted, the job requires much patience in attending to their clients—"It requires a lot of patience. Be calm when talking to people approaching our office." The completeness of VAW desk facilities also motivates the VAW desk officers in doing their duties. As a respondent (Respondent 105) noted, "Having a proper office and complete equipment helps us in doing our tasks." Lastly, the seminars and training provide a platform for them to be more knowledgeable in their decision-making. As one of the respondents (Respondent 2) shared: "The seminars help us learn best practices in handling cases. We could ask or call the president of the group of VAW desk officers of the city when we have clarifications about our tasks." A few respondents also stated that the support of the barangay officials is a crucial factor that motivates them to do their job.

Hindering Factors

The most common response given on factors that hinder the VAW desk officers in performing their job was the presence of meddlers. A respondent noted that these meddlers interfere with the proper handling of cases brought to the VAW desk (Respondent 75). Another respondent (Respondent 105) mentioned that these meddlers are mostly not fully aware of the event's details yet try to influence the process or the people affected by the case. As Step 4 in the protocols and procedures of the VAW desk handbook (2012) states, it should only be the barangay captain or councilor assisted by the VAW desk officers who should interview the victim-survivor. It further emphasizes the need for a private space or a separate intake room.

Another factor that hinders the VAW desk officer's proper performance is the complainant's demeanor, who is either uncooperative or impatient ('hot-headed'). It impedes the smooth and immediate resolution of the case. Lastly, the lack of funds and facilities were also mentioned as hindrances to the task performance of VAW desk officers. As one respondent emphasized, "If only I have my own office, other people would not interfere and meddle in the process of hearing the cases" (Respondent 74). Since VAW desks handle gender-sensitive issues, the officers must ensure that the victim-survivor is comfortable in a safe and private room or area to protect their confidentiality.4 To summarize, the last section discusses the conclusion and recommendations, including an illustration of the revised multi-level assessment framework of the study.

CONCLUSION

This study reviewed the performance of VAW desks in the Philippines using a multi-level framework that looked at the systems, entity, and individual levels. Results indicated that this approach provides a more holistic assessment of the dynamics of task performance of VAW desk officers and compliance of VAW desks to ensure the protection of women and children against various forms of abuse and violence at the community level. All the national VAW laws and policies are currently adopted and implemented by Calamba City. These are supported by a local city ordinance focusing on establishing VAW desk offices in all their barangays. All 54 barangays of the city have already established their VAW desk offices. They are also compliant in appointing VAW desk officers in all the city's barangays. Figure 5 shows the revised multi-level framework highlighting the various facilitating variables that shape the environment at each level to capture the complex network of factors and forces that lead to current practices and problems.

The study's contribution was mainly identifying the facilitating variables that promote effective multi-level management of VAW in an area. Figure 5 indicates the specific facilitating variables between each level. It also indicated the per-level critical success indicators in the case of Calamba City, Laguna. It could also inform other local government units (LGUs) working on addressing VAW. The study also identified capacity gaps concerning implementing VAW policies at the local level. First, at

⁴ Based on Step 1 of the protocols and procedures of the VAW Desk Handbook (2012).

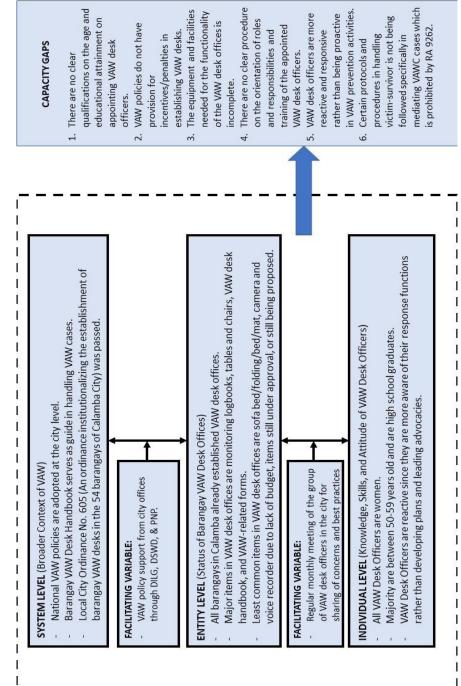


Figure 5. Revised multi-level assessment framework of the study

the system level, the national and local policies do not explicitly state the specific qualifications of a VAW desk officer, which will help identify qualified and competent VAW desk officers in the barangay. For example, there are no exact age and educational attainment qualifications for appointing VAW desk officers. Next, the VAW policies do not have provisions for incentives in establishing a local VAW desk or penalties for non-compliance. Thus, it relies on the priorities and support of local officials. Finally, at the entity level, the equipment and facilities needed for the functionality of the VAW desk offices remain to be incomplete, particularly equipment that would support better documentation (i.e., camera, voice recorder) and ensure the privacy of women and children's complainants (i.e., private room; sofa/chair for interviews). It is primarily due to a lack of funds at the barangay level. There is also no clear local system and schedules for orienting the appointed VAW desk officers' roles, responsibilities, and training. Local training relies on what the national or city government offers.

Lastly, at the individual level, the VAW desk officers are more reactive and responsive to VAW cases than proactive in advocating, developing, and leading VAW prevention activities. The latter behavior of being proactive is better since they would be able to focus more on prevention and addressing the root cause of the problem. However, some respondents admitted that certain protocols and procedures in handling victim-survivor are not being followed

specifically in mediating VAW cases which is prohibited by RA 9262. In addition, there is a need to improve the task performance of VAW desk officers in their GAD and VAW advocacy roles. However, the study also identified an innovative strategy of the City of Calamba in organizing an informal group of VAW desk officers of the city that serve as a network for the officers for co-learning and local consultation.

This study identified several recommendations based on the research findings, which surfaced by understanding the multi-level dynamics of VAW desk services implementation. The findings showed that adoption, monitoring, and enforcement of policies and programs are critical emergent properties that affect the local VAW desk officers' tasks, performance, and services offered to victims who come forward for assistance against an abuser or perpetrator. As the city government adopted the national policy to establish VAW Desks in all barangays, there is also a need to integrate local context, such as the inclusion of specific qualifications and maximize the role of the informal group of VAW desk officers in capacity building and advocacy for VAW. This network could also be institutionalized and be replicated in other areas to promote co-learning and sharing of best practices among VAW desk officers. In addition, the partnership with other women empowerment groups or civil society working on similar advocacies should be explored to help local areas in their advocacy roles. Also, the city government could devise financing schemes to support barangays with low incomes. In terms of monitoring, most VAW desks and local government officers are compliant with submitting reports to higher-level offices. However, feedback should be strengthened by using this data to improve policy and support programs like capacity building or provision of equipment to the barangay VAW desks. Lastly, enforcement of the policy and program provisions should be improved. Rewards and penalties should be designed and implemented to motivate the proper functioning of all barangay VAW desks in a local area.

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(REGULAR ISSUE)

(Manuscript Preparation & Submission Guide)

Revised: December 2020

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A review article reports a critical evaluation of materials about current research that has already been published by organising, integrating, and evaluating previously published materials. It summarises the status of knowledge and outlines future directions of research within the journal scope. A review article should aim to provide systemic overviews, evaluations, and interpretations of research in a given field. Re-analyses as meta-analysis and systemic reviews are encouraged.

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The Mediating Role of Cognitive Emotion Regulation Strategies in the Development of Social Behavior among Adolescents

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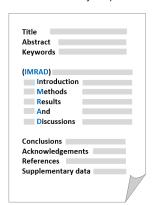
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	(Van der Port, 2015)	Emotions in second language teaching (pp. 145-163).
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	(Machado & Davim, 2014)	Springer, Cham. https://doi.org/10.1007/978-3-319- 06376-8
	(Sheldon & Turner-Vorbeck, 2019)	Sheldon, S. B., & Turner-Vorbeck, T. A. (Eds.). (2019).
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	(Khajouei et al., 2018)	org/10.1016/j.ijmedinf.2018.09.004
	(Yusop et al., 2020)	Yusop, F. D., Ab Ghaffar, F., Danaee, M., Firdaus, A.
	Or	Hamzaid, M. A., Abu Hassan, Z. F., Senom, F., Ebrahim N. A., Bonn, B. Y., & Chen, Y. M. (2020). Two decades of
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	Khajouei et al. (2018)	Social Sciences and Humanities, 28(1), 325-342.
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	(Tobler et al., 2017)	Walshe, K., Williams, A. N., Turney, C. S. M., Williams
	Or	M., Richards, S. M., Mitchell, N Cooper, A. (2017)
	'Author prominent' (the author's name is outside the parentheses):	Aboriginal mitogenomes reveal 50,000 years or regionalism in Australia. Nature, 544(7649), 180-184. https://doi.org/10.1038/nature21416
	Tobler et al. (2017)	mtps://doi.org/10.1036/frature21410
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	(De Rubeis et al., 2017)	sensitivity as a vulnerability marker for depressive symptom deterioration in men. <i>PloS One</i> , <i>12</i> (10), Article
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	(Jdaitawi, 2015)	
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	Jdaitawi (2015)	Missing page or article number
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	Ibrahim (2019a, 2019b)	
	Newspaper	•
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Newspaper article – without an author	("Economics nudging," 2017). OR	Economics nudging people away from war. (2017, December 16). <i>The Age</i> , 33.
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	Conference/Semina	r Papers
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Online	(McDonald et al., 2019) Or McDonald et al. (2019)	McDonald, E., Manessis, R., & Blanksby, T. (2019, July 7-10). Peer mentoring in nursing - Improving retention, enhancing education [Poster presentation]. STARS 2019 Conference, Melbourne, Australia. https://unistars.org/papers/STARS2019/P30-POSTER.pdf
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