Pertanika J. Soc. Sci. & Hum. 20 (4): 973 - 988 (2012)

PERTANIKA JOURNALS

SOCIAL SCIENCES & HUMANITIES

Journal homepage: http://www.pertanika.upm.edu.my/

Relationship between Big-five Personality Domains and Students' Academic Achievement

Lim, P. S.* and Melissa Ng Abdullah, L. Y.

School of Educational Studies, Universiti Sains Malaysia, 11800 Penang, Malaysia

ABSTRACT

Personality is a multidimensional psychological construct that can influence the way students engage in learning and their academic performance. This study aimed to examine the relationships between the different personality domains and students' academic performances in Malaysian context. The sample consisted of 360 students (Male, n = 180; Female, n = 180) from five randomly chosen secondary schools in a state in the northern part of Peninsular Malaysia. A quantititave survey approach was used in this study. In particular, the Malay Version Five-Factor Personality Inventory (NEO-FFI) was used to measure the students' personality domains while their academic achievement was denoted by Grade Point Average (GPA). Inferential statistics revealed that there were no gender differences in the different personality domains, except for neuroticism, where females had recorded a higher mean score. The Pearson's correlation coefficient analysis revealed that openness and conscientiousness were positively related to Malaysian students' academic achievements. Finally, regression analysis has confirmed that the two variables accounted for the changes in students' academic performances. The findings have significant implications for education matters.

Keywords: Big-Five personality, neuroticism, extraversion, openness to experiences, greeableness, conscientiousness

ARTICLE INFO

Article history:
Received: 9 December 2010
Accepted: 25 November 2011

E-mail addresses:
limpohsim@hotmail.com (Lim, P. S.),
melissa@usm.my (Melissa Ng Abdullah, L. Y.)
* Corresponding author

INTRODUCTION

Academic excellence is a crucial public policy issue that is frequently discussed in Malaysia. The release of public examination results never fails to capture widespread attention throughout society, especially amongst parents, teachers, school administrators and the Malaysian Ministry

ISSN: 0128-7702

of Education (MOE). Many stakeholders regard students' academic achievement as a priority concern due to its significant implications for their future. Achievements in public examinations, for instance, could determine students' placement in science or arts stream; their competitiveness for securing scholarships; influence further studies and future job prospects; and impact their futures in many other ways. In short, it has long-term implications. However, statistics has shown that there are still many low-achieving students in the public examinations and regular school-based assessment such as monthly tests. For example, approximately 36.47% candidates (n = 17,163) failed to obtain a Grade D for all the subjects they took in the 2008 *Penilaian Menengah Rendah* (Lower Secondary Examination). The figure showed that more than one-third of the students failed to obtain the minimum passing grade in this examination. These low-achieving students are generally perceived by the society as having low cognitive abilities because intelligence is always considered as the prime determinant in academic performance (Rodhe & Thompson, 2007). However, numerous studies in educational psychology have revealed that apart from intelligence, academic performance can also be influenced by non-cognitive factors. One of the factors that is emphasised in the literature of educational psychology is students' personality type (Steinmayr & Spinath, 2008; Bratko *et al.,* 2006). Personality is a construct that has not been widely researched on in the Malaysian context. Past studies have shown that personality forms the behaviour of a person and affects one's learning habits, and in turn influences his or her academic success (O'Conner & Paunonen, 2006; Furnham & Heaven, 1990; De Raad, 2000). Personality traits such as conscientiousness denote learning habits that are considered favourable to academic achievements, namely hardworking, responsible, and self-discipline (Lieven *et al*., 2002; Chamorro-Premuzic & Furnham, 2003a; Chamorro-Premuzic & Furnham, 2003b; Nguyen *et al*., 2005; Laidra *et al*., 2007, Gray & Watson, 2002; Noftle & Robins, 2007). As such, other than intelligence, personality may be another dominant factor that could play significant roles in students' academic success.

Personality is a multidimensional psychological construct. The existence of earlier studies on personality has resulted in the emergence of several different approaches that explain personality from different perspectives. The Five Factor Model, amongst other, is the most widely used approach in explaining the learning behaviour and academic achievement of students (Gray & Watson, 2002; Chamorro-Premuzic & Furnham, 2003a; Chamorro-Premuzic & Furnham, 2003b; Noftle & Robins, 2007). This model explains one's personality from five domains. The categorization of the personality domains was statistically supported by the results of factor analyses. Each domain contains a cluster of personality traits. The model was found to be culturally unbiased, universal,

stable, and consistent across time. As noted by Mischel, Shoda and Ayduk (2008), the authenticity of the model is proven as the dimensions could accurately describe the individuals' characteristics in real-life context. The existence of the five dimensions of personality construct, as proposed by the Five Factor Model, was supported by past study (Larsen & Buss, 2005). According to O'Connor and Paunonen (2007), these domains are neuroticism, extraversion, openness to experiences, agreeableness and conscientiousness, which were found to be related to academic achievements of older students, including those at the college and university levels.

Personality Domain and Academic Achievement

Previous research has examined the relationship between personality domains and students' academic achievement at primary, secondary and tertiary educational levels (see Table 1). Relevant past studies were reviewed and summarized in terms of samples' education level, instrument used to gauge personality, and key research findings. Literature reviews suggest that different personality domains seem to have distinctive influence on academic achievement across different educational levels. For this reason, the studies were categorized mainly according educational level. The first category consisted of research that focused solely on primary students, such as the large-scale study carried out by Laidra, Pullmann and Allik (2007). The second category included studies that involved a combination of primary and secondary students, such as research done by Gray and Watson (2002) as well as Noftle and Robins (2007). The third category involved research that focused mainly on university students (Lieven, Coetsier, Fruyt, & Maeseneer, 2002; Chamorro-Premuzic & Furnham, 2003a; Chamorro-Premuzic & Furnham, 2003b; Nguyen, Allen & Fraccastoro, 2005). At the primary level, Laidra *et al*. (2007) sampled a total of 3,618 primary and secondary students (male, n=1,746; female, n=1,872) in the Republic of Estonia, Northern Europe. Two instruments were employed in the study. The findings revealed that students' achievement at the primary level was more associated with openness to experiences, i.e. primary school children who are keen to explore new learning experiences have greater academic success. At the secondary level, however, achievement was more related to the conscientiousness dimension, whereby students who are hard working, systematic and efficient at managing their studies will achieve better academic performance. Literature reviews show that the majority of past studies were more concerned on investigating the personality domains of older children, such as those at the secondary and university levels, in relation to academic performances. Gray and Watson (2002), for instance, found that both secondary and undergraduates' academic achievements, as measured by their Grade Point average (GPA), were more related to the conscientiousness dimension of personality construct as compared to other dimensions of personality (neuroticism,

TABLE 1
Correlation between Five Factor Personality and Academic Achievement

Journal Article	Measurement		Correlation				
	Five Factor Personality	Academic Achievement	N	E	O	A	C
Laidra *et al*. (2007)	EBFQ-C	GPA Grade 2	**-.15**	.03	**.26**	**.23**	**.14**
		GPA Grade 3	**-.13**	.06	**.25**	**.29**	**.19**
		GPA Grade 4	**-.12**	.07	**.28**	**.25**	**.23**
	NEO-FFI	GPA Grade 6	**-.25**	**.14**	**.12**	**.23**	**.32**
		GPA Grade 8	**-.16**	-.00	**.13**	**.08**	**.21**
		GPA Grade 10	**-.19**	-.01	**.18**	**.12**	.30
		GPA Grade 12	**-.11**	-.04	**.11**	.00	.20
Gray & Watson (2002)	NEO-FFI	GPA University	.00	-.09	**.18**	**.15**	**.36**
		GPA Secondary School	.00	-.05	.01	.11	**.22**
Noftle & Robin (2007)	BFI	SAT verbal	**-.05**	.02	**.20**	**-.03**	**.01**
		SAT math	**-.07**	**-.06**	**.05**	**-.06**	**.07**
		GPA College	**.04**	-.02	**.06**	**.03**	**.22**
		GPA Secondary School	.03	.03	.01	**.10**	**.22**
		SAT verbal	-.03	**-.15**	**.20**	-.05	-.09
	NEO-FFI	SAT math	.03	-.08	.02	-.06	-.03
		GPA College	**-.08**	.02	**.13**	.10	**.19**
		GPA Secondary School	.04	-.09	.03	.06	.10
		SAT verbal	**-.02**	.07	**.26**	-.10	.05
		SAT math	**-.08**	-.04	.04	-.03	-.03
	HEXACO	GPA College	.01	-.13	.05	-.03	**.20**
		GPA Secondary School	.05	.03	.02	**.11**	**.26**
		SAT verbal	-	-	**.26**	-	.00
		SAT math	-	-	.05	-	-.06
	NEO-PI-R	GPA College	-	-	**.13**	-	**.18**
		GPA Secondary School	-	-	.04	-	**.25**
Lieven *et al*. (2002)	NEO-PI-R	End of First Year Score	.06	**-.12**	.09	-.05	**.24**
		End of Second Year Score	.03	-.02	.08	-.08	**.17**
		End of Third Year score	.03	-.04	**.15**	-.10	**.19**
Chamorro-Premuzic & Furnham (2003a)	NEO-PI-R	First Year GPA	-.01	**-.17**	-.03	.07	**.25**
		Second Year GPA	**-.22**	-.02	.06	.04	**.36**
		Third Year GPA	**-.21**	**-.13**	.02	.08	**.39**
Chamorro-Premuzic & Furnham (2003b)		CGPA	**-.16**	-.11	.02	.07	**.36**
	NEO-FFI	First Year GPA	**-.28**	.05	**.34**	-.06	.33
		Second Year GPA	**-.31**	.06	.06	.02	.34
		Third Year GPA	**-.32**	-.02	.03	.02	.34
Nguyen *et al*. (2005)		CGPA	**-.35**	.07	.22	.34	.39
		Research Report	**-.25**		.13	-.03	.36
	BFI	End of Course Grade	**-.17**	-.01	**.12**	**.17**	.21
		GPA	.00	**-.19**	.07	.05	.18
				-.08			

Note: Numbers in **bold** show significant correlations at the alpha value of .05.

extraversion, agreeableness and openness to experience). In other words, students with conscientiousness personality traits tend to perform better at both secondary and tertiary levels. Similar findings were obtained by Noftle and Robins (2007) in a large-scale study on 10,497 undergraduate students at the University of California. Conscientiousness was found to be the most influential personality dimension on students' academic performances, and this was followed by the openness dimension. These findings suggest that students who are conscientious and open to learning experiences are more likely to attain academic success than those who are lacking in these two personality traits.

The literature reviews also suggest that primary school students' academic achievement is more related to the openness domain, while secondary school students' performance is more affected by the conscientiousness domain (Laidra *et al*., 2007). Some of the traits in the openness domain are intellectual curiosity, aesthetic sensitivity, attentiveness to inner feelings and preference for variety, which seem to have positive impacts on students' learning. According to Costa and McCrae (1992), openness is associated with high cognitive ability such as divergent thinking, while conscientiousness is a tendency to show self-discipline, such as in actively planning and organizing tasks, acting dutifully and aiming for achievement. Students who are conscientious are purposeful, have strong will to learn and are determined to be successful in the academic context (Costa & McCrae, 1992; Digman & Takemoto-Chock, 1981). Studies involving secondary and university cohorts, on the other hand, have also identified conscientiousness as the most significant personality domain in relation to academic performance, and this is followed by the openness dimension (Gray & Watson, 2002; Noftle & Robin, 2007). Despite different instruments being used to measure students' personality domains (e.g., NEO-PI-R, NEO FFI or BFI), the findings seem to point to the conclusion that conscientiousness was strongly correlated with academic achievement at the tertiary level (Lieven *et al*., 2002; Chamorro-Premuzic & Furnham, 2003a; Chamorro-Premuzic & Furnham, 2003b; Nguyen *et al*., 2005).

Gender Differences in Personality Domains

Apart from academic achievement, gender differences in the personality domains have also captured the attention of educational researchers. Earlier research by Eysenck and Cookson (1961) showed that boys aged 7 to 16 years were more inclined towards extraversion personality traits as compared to girls; in contrast, female college students had more agreeableness and neuroticism traits than their male counterparts (Chapman *et al.,* 2007). The findings from these past studies indicate that there are gender differences in students' personality domains. The postulation was further supported by Feingold (1994). In line with this, Costa, Terracciano and McCrae (2001) also found that males and females differ

in their personality through a synthesis of data from 26 cultures, representing 23,031 respondents. Women were found to obtain higher scores in neuroticism, agreeableness and openness. Similarly, Nguyen *et al*. (2005) also discovered that female students were more inclined towards agreeableness and conscientiousness, while, male students were emotionally stable compared to their female counterparts. This was supported by Khairul's (2003) findings which indicated that female students' mean score in neuroticism domain was greater than that of the males; however, there were no significant gender differences in agreeableness, extraversion, conscientiousness, and openness domains.

Gender differences seem to be an important construct in psychological research, as this factor may account for many behavioural differences between female and male students. In fact, the Ministry of Education (MOE) has investigated the issue of gender differences in academic achievements in the country. Nevertheless, the possible link between academic gap and personality differences between male and female students is relatively an uncharted area of research in Malaysia, and this calls for more investigation to confirm the hypothesis. In Malaysia, females seem to outperform their male counterparts at all academic levels: primary, secondary and even tertiary levels (Loh, 2008). The annual public examinations results have further reaffirmed the findings that female students performed far better than the males academically. It is therefore important for researchers to confirm whether or not these differences were accounted for by gender differences in the personality domains. We also need to ascertain to what extent personality dimensions explain the academic performances of Malaysian secondary students, as this is a critical educational level whereby higher achievers could gain wider access to higher education. There are also needs to establish the validation of Malay-language instrument in measuring the different dimensions of personality. As supported by literature reviews, the NEO-FFI is considered an appropriate instrument to gauge local students' personality traits. Nevertheless, it needs to be translated and adapted before it could be used in the local context. As a whole, four research questions were formulated to guide this investigation.

OBJECTIVES OF THE STUDY

1. To test the validity and reliability of the Malay Language Version NEO-FFI in measuring secondary students' personality.
2. To determine whether there are any gender differences in personality domains.
3. To test the relationships between personality domains and secondary students' academic achievement.
4. To identify those personality domains that predict secondary students' academic achievement.

METHODOLOGY

This study employed quantitative research approach to achieve the objectives of the study. Details on the samples, instrument, and statistical analysis are as follows:

The sample for this study consisted of 360 secondary school students. Simple random sampling technique was used to select the samples for this study. In more specific, the fish bowl technique had been used to sample the students from five secondary schools in Penang, a northern state in Malaysia. First, the population of secondary students from each of the school was listed and numbered consecutively. Next, the fish bowl or lottery technique was used to select the samples. This technique involves the selection of the sample at random so as to ensure that all the students in the five secondary schools have an equal chance of been selected (Saunders, Lewis & Thornhill, 2003). A specific number was assigned to each student and these numbers were written on pieces of paper and drawn from a box. The process was repeated until the required sample size was reached (Kumar, 2005).

In this study, the Malay Version NEO Five-Factor Inventory (NEO-FFI) (NEO-FFI; Costa & McRae, 1992) was employed to measure students' personality traits. This 60-item, five-point likert scale is amongst the most widely-used instrument to measure personality domains. The scores derived from this self-report instrument are reliable, stable, and have predictive validity (Matthews *et al.,* 2003). The NEO-FFI was developed based on the five factor model of human personality variation, which construes individual differences in terms of the following traits: neuroticism, extraversion, openness, agreeableness, and conscientiousness (Costa & McCrae, 1992; Hrebickova *et al.,* 2002). A double back translation method was used to translate the items into Malay language by a panel of experts who are competent in both English and Malay Languages. Its validity and reliability were tested and the details of the analysis are presented in the discussion section. Academic achievement, on the other hand, was measured by a standardized public examination, the *Penilaian Menengah Rendah* 2008 (Lower Secondary Examination). Performance in the different subjects in PMR examination was computed into continuous data as Grade Point Average (GPA).

Factor analysis and reliability tests were used to test the validity and reliability of the Malay version NEO-FFI. Inferential statistics, which included *t*-test, Pearson's correlation coefficient analysis, and multiple regression analyses, was run to analyze the collected data.

RESULTS

Validity and Reliability NEO-FFI

Factor analysis was carried out in the pilot study to test the validity of the translated version NEO-FFI. The sample consisted of 180 secondary students taken from one school in the state of Penang, Malaysia. Prior to this analysis, the underlying assumption of the factor analysis, such as sphericity, was tested and no violation

was found. The chi-square value was not significant at .05. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO), on the other hand, was .651, indicating that the factors are interpretable (Table 2). Based on the loadings (exceeded .30), five domains were identified: neuroticism (10 items), extraversion (10 items), openness (8 items), agreeableness (6 items) and conscientiousness (11 items), and this finding is similar to those obtained in past studies (Costa & McCrae, 1992; Hrebickova *et al.,* 2002).

TABLE 2
Rotated Component Matrix (NEO-FFI)

	Component				
	N	E	O	A	C
S1 N	.382				
S6 N	.497				
S11 N	.525				
S21 N	.577				
S26 N	.481				
S31 N	.338				
S41 N	.476				
S46 N	**.471**	-.384			
S51 N	.458				
S56 N	.572				
S2 E		.422			
S7 E		.660			
S12 E	-.380	**.492**			
S17 E		.654		.306	
S22 E		.481			
S27 E		.343			
S32 E		.582			
S37 E		.765			
S42 E	-.361	**.578**			
S52 E		.638			
S8 O			-.465		
S13 O			.619		
S23 O			.539		
S33 O			.601		
S38 O			-.469		
S43 O			.630		
S48 O			.729		
S53 O			.545		
S9 A				.612	
S14 A				.466	
S24 A				.416	
S29 A				.303	
S39 A				.581	
S59 A				.577	
S5 C					.357
S10 C					.640
S15 C					.601
S20 C					.613
S25 C					.533
S30 C	-.331			.304	**.349**
S35 C					.614
S40 C					.473
S50 C					.678
S55 C	-.358				.509
S60 C					.636

Note: N = Neuroticism, E = Extraversion, O = Openness, A = Agreeableness, C = Conscientiousness
Items 3, 4, 18, 28, 45, 54, and 58 were excluded because the loadings were less than .30.
Items 16, 19, 34, 36, 44, 47, 49, and 57 were removed as they did not load on the postulated dimension.

As a whole, the adapted instrument recorded an alpha value (α) of .642, which was considered as acceptable reliability. Cronbach's Alpha analysis was then carried out on all the five subscales. The results showed that the low reliability of the instrument could be due to the items in the openness and agreeableness subscales. The alpha values in these two subscales were rather low (openness subscale, α = .631;

agreeableness subscale, α = .609). The alpha values for the other three subscales, on the other hand, were greater than .70 (neuroticism α = .725, extraversion α = .788 & conscientiousness α = .811). In order to strengthen the reliability of the Malay Version NEO-FFI, the items in the openness and agreeableness subscales were re-examined by experts and some refinements were made. After the items were improved, test-retest (n = 43) was carried out to re-examine the reliability of the scales. The time gap for the two tests was two weeks apart. The results showed that the reliability coefficients of the two subscales were satisfactory; openness, α = .855; agreeableness, α = .779 subscales. The findings generally confirmed that the Malay version NEO-FFI had adequate construct valid. Based on the findings on the factor analysis, there were five main personality domains in this instrument, and this is in line with the original instrument. In term of reliability, the results of test-retest analysis confirmed that it is a reliable instrument to be used in measuring Malaysian secondary students' personality domains over time.

Gender Differences in Personality Domains

Table 3 reveals the comparison between the male and female students on the five personality dimensions. There were no significant gender differences in extraversion [t (357.698) = -1.205, p > 0.05], openness [t (358) = -.851, p > 0.05], agreeableness [t (358) = -1.799, p > 0.05] and conscientiousness [t (358) = -1.943, p > 0.05] personality domains of the respondents.

As shown in Table 3, female students (M = 31.56) recorded a higher mean score on neuroticism as compared to the males (M = 30.18); the difference was statistically significant [t = -3.142 (358), p < 0.05]. This suggests that female students may be more emotionally unstable, feeling more anxious and insecure than their male counterparts.

TABLE 3
Descriptive Statistics and t-Test on Specific Personality Domains by Gender (n=360)

Domain	Male (n = 180)		Female (n = 180)			
	Mean (M)	Standard Deviation	Mean (M)	Standard Deviation	t	Sig. (2-way)
Neuroticism	30.18	4.20	31.56	4.20	-3.14	.002*
Extraversion	35.39	4.88	36.09	6.07	-1.21	.229
Openness	36.94	4.46	37.34	4.46	-.85	.396
Agreeableness	39.62	4.03	40.36	3.76	-1.80	.073
Conscientiousness	39.23	6.09	40.44	5.67	-1.94	.053

Note: *Significant at the alpha level of .05

The Relationships between Personality Domains and Academic Achievement

Pearson's Correlation Coefficient Analysis was carried out to analyse the associations between the five personality domains and students' academic achievement. In this study, academic performances were measured by the Grade Point Average (GPA) obtained through standardized examination. The output of the analysis is presented in Table 4.

TABLE 4
Relationships between Specific Personality Domains and Academic Achievement

Personality Domains	Academic Achievement (GPA)
Neuroticism	.029
Extraversion	.081
Openness to experiences	.222*
Agreeableness	.055
Conscientiousness	.211*

Note: * Significant at .05; GPA = Grade Point Average

As shown in Table 4, two personality domains were found to be significantly related to academic achievement. These domains were openness ($r = .222$, $p < .05$) and conscientiousness ($r = .211$, $p < .05$). Based on Cohen's (1988) guidelines, the strength of associations for these variables was considered small, yet positive and significant at an alpha level of .05. This implies that respondents with greater inclination towards openness and conscientiousness personality domains are more likely to attain higher academic achievement ($r < .30$). The other personality domains of the respondents, namely neuroticism ($r = .029$, $p > .05$), extraversion ($r = .081$, $p > .05$), and agreeableness ($r = .055$, $p > .05$) were not significantly correlated with their academic achievements. This further suggests that the three personality domains were not related to students' academic achievement.

TABLE 5
Model Summary

Model	R	R^2	Adjusted R^2	Standard Error of the Estimate
1	.250[a]	.062	.057	.777

Predictors: (Constant), Conscientiousness, Openness
Dependent: Academic achievement (GPA)

$$y = a + b_1X_1 + b_2X_2$$

Which is $y = 1.338 + 0.028\ X_1 + 0.018\ X_2$

Where
- y = academic achievement (dependent variable)
- a = constant
- b_1 = unstandardized openness coefficients
- X_1 = domain openness (independent variable)
- b_2 = unstandardized conscientiousness coefficients
- X_2 = domain conscientiousness (independent variable)

TABLE 6
Coefficient[a] Value

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Standard Error	Beta	*t*	Sig.	Tolerance	VIF
1	(Constant)	1.338	.364		3.674	.000		
	Openness	.028	.011	.154	2.597	**.010**	.742	1.347
	Conscientiousness	.018	.008	.133	2.235	**.026**	.742	1.347

a. Dependent variable: GPA

Predictive Values of Personality Domains on Academic Achievements

Multiple regression analysis (Enter Method) was run to determine the predictive values of personality domains on academic achievement. As demonstrated by the findings in Table 4, only two (openness and conscientiousness) out of five domains were significantly related to students' academic achievements. Hence, only openness and conscientiousness domains were entered into the regression equation (Table 5). As shown in Table 5, the R^2 value was .062, indicating that 6.2% of the variance in academic achievement was explained by openness and conscientiousness domains. In other words, the two variables explained 6.2% of the changes in the students' academic achievement.

Based on the statistically outputs in Table 6, the openness domain could predict academic achievement significantly with a beta value of .154 ($t = 2.597$, $p < .05$) after the effect of conscientiousness was statistically controlled. The conscientiousness domain, on the other hand, was also able to predict achievement significantly. Its beta value was .133 ($t = 2.235$, $p < .05$) after the effects from the openness domain were controlled. On top of that, diagnostic tests were also run and confirmed that there were no multicollinearity problems in the regression model. The tolerance values for the two predictors were high and Variance Inflation Factor (VIF) was less than 2.0 (Table 6). In addition, the Condition Index revealed values less than 30.0 (Table 7). All the tests supported the findings that the underlying assumptions for the regression analysis were not violated and the model was supported statistically.

TABLE 7
Collinearity[a] Diagnostic

Model	Domains	Condition Index
1	(Constant)	1.000
	Openness	16.404
	Conscientiousness	20.888

Dependent variable: GPA

DISCUSSION AND IMPLICATIONS

The aim of the study was to determine the relationships between the different dimensions of personality and students' academic achievements. When gender differences were examined, the findings showed that the female students were more

inclined towards neuroticism traits than their male counterparts. The finding of this study is similar to the ones obtained by other international studies which claimed that men and women differed in the neuroticism domain when personality is concerned. According to Feingold (1994), gender differences in neuroticism trait are most likely caused by the different chromosomes between males and females. Females have two X chromosomes compared to males, who have only one X chromosome. These chromosome differences have contributed towards weaker personality traits among the females, and thus they are more worried and stressed as compared to their counterparts. However, this study found that even though the difference was significant, the variation was considered to be small (t = -3.142, $p < 0.05$). Hence, gender differences in personality may not be so much linked to a pair of sex-chromosomes (XX vs. XY). The differences between males and females in terms of neuroticism may be influenced by a combination of genes, physiological as well as nurturing differences between males and females. In other words, the differences between the male and female students in terms of neuroticism might be due to many factors, yet the differences were considered small, as found in this study. In addition, there were no gender differences in other personality domains, such as extraversion, openness, agreeableness and conscientiousness. The findings of this study are similar to those of the other local studies, such as in Khairul's (2003) study, where males and females did not differ in the domains of extraversion, openness, agreeableness and conscientiousness. Such findings are also in line with those exist in other literature (Costa *et al*., 2001; Feingold, 1994; Chapman *et al*, 2007).

The results of this study indicated that the female students were more neurotic compared to male students. The literature review has shown that neuroticism may not contribute positively towards academic achievement (De Raad & Perugini, 2002; Laidra *et al*., 2007; Chamorro-Premuzic & Furnham, 2003b). Nevertheless, many past studies have consistently demonstrated that female students always outperformed males (Gibb, Fergusson & Horwood, 2008; Ryan, 1999). Despite their inclination towards the negative trait in terms of academic performance, females generally still do better than males because learning and achievement may be influenced by many other factors such as language proficiency, learning strategy, the way they were brought up (Zalizan *et al.,* 2005), as well as school factors (Gibb, 2008; Zalizan *et al*., 2005). For example, Zalizan (2005) found that females have more proficiency and learning strategies than males, which helped them in the learning process and prepared them better for examinations. Moreover, Gibbs *et al*. (2008) indicated that school assessment and pedagogy might be biased towards females. According to Gibbs *et al*. (2008), teaching and schooling have become "feminised" and schools are no longer adequately addressing the male students' needs. Hence, to narrow the performance gap between the male and female students

in the country, factors like learning styles, learning proficiency and strategies, family control, assessments and pedagogy may need to be re-examined.

This study also found that the relationship between conscientiousness domain and academic achievement was significant and positive ($r = .222$, $p < .05$). In particular, students who are responsible, with good discipline, hardworking, and have high motivation have greater tendency to obtain good results. The finding is in line with much past research (see Lieven *et al*., 2002; Chamorro-Premuzic & Furnham, 2003a; Chamorro-Premuzic & Furnham, 2003b; Nguyen *et al*., 2005; Laidra *et al*., 2007, Gray & Watson, 2002; Noftle & Robins, 2007). In addition, similar results were obtained between the openness domain and academic achievement ($r = .211$, $p < .05$). This result indicates that students who are imaginative, have flexible thinking and originality, accept new ideas and have curiosity show better academic achievements.

On the contrary to past studies, the results indicate that in the Malaysian context, both openness and conscientiousness domains are important for secondary students' academic achievements. Past studies seem to indicate that openness is more strongly related to achievement at the primary level and not so much at the secondary stage. This is likely caused by the change of the personality measure, a difference between the two samples; primary and secondary level (Laidra *et al*., 2007). According to Laidra *et al*. (2007), some researchers (e.g. Costa and McCrae) define openness by such characteristics as being imaginative, curious and aesthetically sensitive, whereas others (e.g., Goldberg) define it in terms of intellectual characteristics. The NEO-FFI follows the first definition, while a more intellectual definition is employed in the EBFQ-C (Laidra *et al*., 2007). Therefore, more research is needed to investigate the relationship between the openness domain and academic achievement in the primary and secondary levels using the same instrument. Besides, a recent research suggests that Asian students' socialized conformity is fairly easy to overcome with explicit instructions to "be creative", or instructions that emphasise the group benefits of creativity (Miller, 2006). According to Chamorro-Premuzic and Furnham (2008), openness determines higher IQ. This IQ affected deep learning, which in turn led to higher exam grades. Thus, in order to achieve good results at the secondary level, where learning is more challenging, students need to have openness traits.

In order to examine how well the domains of openness and conscientiousness explain academic achievement, multiple regressions were conducted. The findings showed that openness and conscientiousness were significant predictors of achievement. These findings were congruent with past studies (Laidra *et al*., 2006; Noftle & Robins, 2007; Chamorro-Premuzic & Furnham, 2003b). However, the two domains only accounted for 6.2% of the changes in secondary students' achievements. This

implies that academic intelligence may still be a stronger predictor of school performance in standardized test (Farsides & Woodfield, 2003; Kuncel *et al.,* 2004). As found by Steinmayr and Spinath (2008), intelligence explained about 25% of variance in school achievement. The implication of the study shows that further studies need to take in consideration factors such as cognitive ability in predicting academic achievement.

CONCLUSION

Based on the findings of this study, it is concluded that gender differences in academic achievement may not be accounted for by the variation in personality domains. As a whole, personality only has a small influence on academic achievement. Nevertheless, two of the personality domains, namely, openness and conscientiousness, have contributed positively towards secondary students' performance. Research into the different domains of personality provides a more meaningful understanding about the link between personality traits and academic performance in the local context. The findings of this study indicate that counsellors and teachers ought to focus more on conscientiousness and openness traits like self-discipline, good time management, intellectual curiosity, aesthetic sensitivity, and attentiveness to improve students' performance.

REFERENCES

Bratko, D., Chamorro-Premuzic, T., & Saks, Z. (2006). Personality and school performance: Incremental validity of self- and peer-ratings over intelligence. *Personality and Individual Differences, 41*, 131 – 142.

Chamorro-Premuzic, T., & Furnham, A. (2003a). Personality traits and academic examination performance. *European Journal of Personality, 17*(3), 237-250. Retrieved on January 10, 2008, from *EBSCOhost* (*AN 10243526*).

Chamorro-Premuzic, T., & Furnham, A. (2003b). Personality predicts academic performance: Evidence from two longitudinal university samples. *Journal of Research in Personality, 37*(4), 319-338. Retrieved October 13, 2008, from *ScienceDirect*.

Chamorro-Premuzic, T., & Furnham, A. (2008). Personality, intelligence and approaches to learning as predictors of academic performance. *Personality and Individual Differences, 44*, 1596 – 1603.

Chapman B. P., Duberstein, P. R., Sorensen, S., & Lyness, J. M. (2007). *Gender differences in five factor model personality traits in an elderly cohort: Extension of robust and surprising findings to an Older Generation*. Retrieved January 15, 2008 from http://www.pubmedcentral.nih.gov/picrender.fcgi?tool=pmcentrez&artid=2031866&blobtype=pdf.

Cohen, J. (1988). *Statistical power analysis for the behavioural sciences*. Hillsdale, NJ: Erlbaum.

Costa, P. T., & McCrae, R. R. (1992). *NEO PI-R professional manual*. Odessa, FL: Psychological Assessment Resources.

Costa, P. T., Terracciano, A., & McCrae, R. R. (2001). Gender differences in personality traits across cultures: Robust and surprising findings. *Journal of Personality and Social Psychology, 81*(2), 322 – 331.

De Raad, B. (2000). *The big five personality factors: The psycholexical approach to personality*. Seattle: Hogrefe & Huber Publishers.

De Raad, B., & Perugini, M. (Ed.). (2002). *Big five assessment*. Germany: Hogrefe & Huber Publishers.

Digman, J. M., & Takemoto-Chock, N. K. (1981). Factors in the natural language of personality: Re-analysis, comparison, and interpretation of six major studies. *Multivariate Behavioural Research, 16*, 149 – 170.

Eysenck H. J., & Cookson, D. (1961). Personality in primary school children, ability and achievement. *British Journal of Educational Psychology, 39*, 109 – 122.

Farsides, T., & Woodfield, R. (2003). Individual differences and undergraduate academic success: The roles of personality, intelligence, and application. *Personality and Individual Differences, 34*, 1225 – 1243.

Feingold, A. (1994). Gender differences in personality: A meta-analysis. *Psychological Bulletin, 116*(3), 429 – 456. Retrieved on January 15, 2008, from *EBSCOhost* (Journal Article).

Furnham, A., & Heaven, P. (1990). *Personality and social behaviour*. London: Arnold.

Gibb, S. J., Fergusson, D. M., & Horwood, L. J. (2008). Gender differences in educational achievement to age 25. *Australian Journal of Education, 52*(1), 63-80. Retrieved February 15, 2009 from EBSCOhost (AN 31792850).

Gray, E. K., & Watson, D. (2002). General and specific traits of personality and their relation to sleep and academic performance. *Journal of Personality, 70*(2), 177-206. Retrieved on January 10, 2008 from EBSCOhost (AN 6183453).

Hrebickova, M., Urbanek, T., Bermak, I., Szarota, P., Fickova, E., & Orlicka, L. (2002). The NEO Five-Factor Inventory in Czech, Polish and Slovak Contexts. In McCrae, R. C., & Allik, J. (Eds.), *The Five-Factor Model of Personality Across Cultures* (pp. 53 – 78). New York: Kluwer Academic/Plenem Publisher.

Khairul Anwar Mastor. (2003). Personality traits and gender differences in the selection of academic major among malay students. *Jurnal Pendidikan, 28*, 3 – 13.

Kumar, R. (2005). *Research methodology: A step-by-step guide for beginners.* London: SAGE Publicaitons.

Kuncel, N. R., Hezlett, S. A., & Ones, D. S. (2004). Academic performance, career potential, creativity, and job performance: Can one construct predict them all? *Journal of Personality and Social Psychology, 86*, 148 – 161.

Laidra, K., Pullmann, H., & Allik, J. (2007). Personality and intelligence as predictors of academic achievement: A cross-sectional study from elementary to secondary school. *Personality and Individual Differences, 42*(3), 441-451. Retrieved on October 13, 2008, from ScienceDirect.

Larsen, R. J., & Buss, D. M. (2005). *Personality psychology: Domain of knowledge about human nature* (2nd Ed.). New York: Mcgraw-Hill Companies, Inc.

Lievens, F., Coetsier, P., Fruyt, F. D., & Maeseneer, J. D. (2002). *Medical students' personality characteristics and academic performance: a five-factor model perspective*. Retrieved on January 10, 2008 from http://users.ugent.be/~flievens/medical.pdf.

Loh, F. F. (2008, November 26). Parliament: No quota to rectify gender imbalance. *The Star Online*.

Matthews, G., Deary, I. J., & Whiteman, M. C. (2003). *Personality traits (2nd Ed.)*. Cambridge: Cambridge UniversityPress.

Miller, G. (2006). *Asian creativity: A response to Satoshi Kanazawa*. Retrieved on November 05, 2009 from http://www.epjournal.net/filestore/ep04129137.pdf

Mischel, W., Shoda, Y., & Atduk, O. (2008). *Introduction to personality: Toward an investigative science of the person* (8th ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Nguyen, N. T., Allen, L. C., & Fraccastoro, K. (2005). Personality predicts academic performance: Exploring the moderating role of gender. *Journal of Higher Education Policy and Management, 27*(1). Retrieved January 10, 2008, from EBSCOhost (AN 16472042).

Noftle, E. E., & Robins, R. W. (2007). Personality predictors of academic outcomes: Big five collect of GPA and SAT scores. *Journal of Personality and Social Psychology, 93*(1), 116-130. Retrieved January 10, 2008 from *EBSCOhost (Journal Article*).

O'Connor, M. C., & Paunonen, S. V. (2007). Big five personality predictors of post-secondary academic performance. *Personality and Individual Differences, 23*(1), 971 -990.

Rodhe, T. E., & Thompson, L. A. (2007). Predicting academic achievement with cognitive ability. *Intelligence, 35*(1), 83-92.

Ryan, K. E. (1999). Revisiting gender and achievement. Educational Researcher, 28. [Book reviews: Gender and fair assessment by Willingham, W. & Cole, N. S.]. Retrieved on February 15, 2009 from SAGE Publications.

Saunders, M., Lewis, P., & Thornhill, A. (2003). *Research Methods for Business Students*. London: Prentice Hall.

Steinmayr, R., & Spinath, B. (2008). Sex differences in school achievement: What are the roles of personality and achievement motivation? *European Journal of Personality, 22*(3), 185-209. Retrieved March 27, 2009 from EBSCOhost.

Zalizan Mohd Jelas, Saemah Rahman, Roselan Baki, & Jamil Ahmad. (2005). Prestasi akademik mengikut gender. *Jurnal Pendidikan, 31*, 93 – 111.