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Relationships of Birth Order, Parent-Child Relationship, Personality, and Academic Performance

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ABSTRACT

This study investigated the relationships between birth order, personality, academic performance, and parent-child relationship amongst 120 college students from the Klang Valley. The sample constituted of 30 firstborns, 30 middleborns, 30 lastborns, and 30 only children with a mean age of 20.0 years (*SD*= 1.85). Instruments used in this study were Ten Item Personality Inventory (TIPI) and Parent-Child Relationship Survey (PCRS). Results indicated that participants of different birth orders did not differ significantly in terms of their personality, academic performance and parent-child relationship. Furthermore, this study also found no relationship between parent-child relationship and academic performance. However, extraversion was found to be correlated positively with academic performance. Besides, this study also indicated that parent-child relationship did correlate with children's openness to experience, emotional stability, and conscientiousness. This implies the importance of a match between one's personality trait and field of study, as well as the importance of good parenting practices.

Keywords: Birth order, personality, parent-child relationship, academic performance

INTRODUCTION

People are intrigued by the fact that children of a family behave differently although they are raised in the same environment, such as neighbourhood, and share the same genetic pools from both of their parents. On top of behaviours, siblings do differ in terms of personality characteristics (Michalski & Shackelfold, 2002), college attendance (Bayer, 1966), intelligence (Boomsma *et al*., 2008), familial sentiment (Salmon & Daly, 1998), and others. Firstborns are always described as being responsible, high achievers and perfectionists, whereas lastborns and only child are always described

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as the baby of the house and are mostly spoiled children (McGuirk & Pettijohn, 2008). As a result, these differences among siblings have attracted the attention of researchers over the past decades.

In 1920s, Alfred Alder was one of the pioneers who studied the effects of ordinal position of birth, sex of siblings and family size on children's developmental course. It is important to note that although siblings do share environmental context, there is one context that is impossible to be shared with – birth order (Dixon, Reyes, Leppert, & Pappas, 2008). This is the variable that makes the child a unique individual in a family. Generally, parents are excited and anticipated about their first child and hence, tend to be overly protective and pay more attention, investment, as well as expectation on this first child. However, parents' attention, investment, and expectation vary across children (Michalski & Shackelford, 2002). As the second child arrives in the family, the firstborn may experience dethronement and the same happens to the second born once a third child arrives and so forth (Adler, as cited in Adams, 1972). Besides, Downey (2001) also suggested that parental resources that a child receives decrease as the sibship size grows bigger. Therefore, every child experiences different levels of parental resources and investment as a result of their birth order, while these unique experiences will in turn shape their developmental course. According to Carlson and Kangun (as cited in Claxton, 1994), such differential treatment by parents has been a "centuries old phenomenon that extends across cultures".

To date, most of the birth order effect studies were conducted in the West and there were very little published studies that reported birth order effects within Malaysian context. The results found in the western countries may not be generalized into Asia context due to cultural difference and differences in parenting styles (Chao, 1994). Thus, this study aimed to examine the relationships between birth order, personality, parent-child relationship and academic attainment among college students from the Klang Valley, Malaysia. A better understanding of these relationships might help parents to understand the differences amongst their children, which may in turn facilitate parent-child relationship.

LITERATURE REVIEW

Birth order is defined as a person's rank by age among his or her siblings (Steelman, 1985). In other words, it is the chronological order of birth in a family. Birth order can be classified into firstborn, middleborn, lastborn and only child.

Personality, on the other hand, refers to the unique constellation of consistent behavioural traits of an individual (Weiten, 2007). It helps to explain why everyone acts differently in a similar situation. Cattell (as cited in Weiten) has identified 16 personality dimensions by using factor analysis. Later, McCrae and Costa (1997) proposed Five Factor Model and suggested that human behavioural traits could be further summarized into five distinct factors, namely, extraversion, neuroticism, agreeableness, openness to experience, and conscientiousness.

The third variable of this study is parent-child relationship. Sears (1951) described parent-child relationship as the socialization between the parents and the child. This dyad relationship is seen to differ in terms of general quality and closeness and it is partly determined by the parental investment within this dyad (Rohde *et al*., 2003).

Lastly, academic attainment refers to one's achievement in schools or colleges and it is usually measured by academic grades (Hauser & Sewell, 1985) or college attendance (Bayer, 1966). Besides, McCall (1994) defines academic underachiever as a student who performs below his or her expected cognitive abilities, which are frequently measured by IQ, aptitude or educational test.

Birth Order and Personality

The most prominent topic of birth order studies is its impact on personality. Over the decades, a large number of studies have been carried out to examine personality differences among siblings. Alfred Adler, one of the pioneers of this topic of interest, has theorized that each birth position has a set of personality traits. According to Adler (as cited in McGuirk & Pettijohn, 2008), firstborns are always seen as leaders, high-achievers, ambitious, and conforming. They attempt to please their parents via traditional way, which is through academic performance and responsible behaviours (Paulhus, Trapnell, & Chen, 1999). Middle birth children, on the other hand, may experience difficulty finding a position of privilege and significance in the family because they never have the opportunity to monopolize parents' attention (Adams, 1972). Thus, they constantly fight to stay ahead of their younger siblings and uphold or perhaps, surpass their older brothers or sisters. In contrast, lastborns and only children are frequently viewed as the baby and spoiled kid of the family. It is because both of these birth positions are the only focus of the family. However, unlike the only children, the laterborn children, including the middle birth and last birth children, are aware of the higher status of the firstborn, so, they will seek alternative strategies to outstand their siblings (Paulhus *et al*., 1999).

Dethronement theory

In addition, Adler (as cited in Adams, 1972) also proposed a dethronement theory. Before the birth of the younger sibling, the eldest child has his or her parents' complete attention but he or she is later dethroned by a newborn sibling. As a consequence of dethronement, the child struggles to regain parental attention and his or her family niche. This leads the firstborn to develop characteristics such as conscientious and conservative (Paulhus *et al*., 1999). Besides, firstborns may be more independent and competent as a result of dethronement (Adams). These personality characteristics are seen to facilitate one's academic attainment in the future.

Family-niches model

Another theory that describes birth order effect on personality development is family-

niches model (Sulloway, 1996). According to Sulloway, children are motivated to solicit parental investment when they perceive differential parental investment within the family. They compete for parental investment by creating distinctive niches. Sulloway also hypothesized that firstborns are less agreeable as compared to the laterborns because they dominate the younger siblings to minimize the diversion of parental investment. In contrast, the younger siblings avoid confrontation with the firstborns to solicit parental investment, which in turn leads them to be more agreeable. Besides, he also suggested that firstborns correlate negatively with openness as compared with laterborns because openness is the factor that assists the laterborn children to create alternative approaches to compete for parental investment. Furthermore, he concluded that firstborn are more conscientious than the laterborns because firstborns echo their parents' attitudes, beliefs, and personality characteristics. On the other hand, laterborns may develop attitudes, beliefs, and personality characteristics that are apart from the elder siblings and parents. Therefore, Sulloway describes the laterborns as born to rebel.

In the past, studies that were carried out to examine the relationship between birth order and personality have generated inconsistent findings. Some studies succeeded to find significant birth order effects on personality differences between siblings (Healey & Ellis, 2007; Paulhus *et al*., 1999), while some others have failed to support Adler's predictions and Sulloway's theory (as cited in Parker, 1998). For instance, Healey and Ellis who studied university sample (n = 161 sibling pairs) and older adults (n = 174 siblings pairs) reported that there were significant differences between firstborn and secondborn siblings in their personality traits. Firstborns scored significantly higher on conscientiousness and lower in openness to experience than their secondborn siblings, which supported the dethronement theory and family-niche model. Moreover, Paulhus and others had their participants to nominate the most achieving and conscientious sibling within their family and found that the firstborns were rated as more achieving and conscientious than laterborns. Similar findings were replicated in Michalski and Shackelford's (2002) study, where they found that firstborns correlated negatively with agreeableness. Furthermore, Tharbe and Harun (2000), who examined personality differences amongst 161 form five students in Kuala Lumpur, also reported that birth order theory was applicable to Malaysians. They found that there were certain dominant trait patterns although no significant relationship between birth order and personality was reported.

There were also studies that found no relationship between birth order and personality traits. For instance, Jefferson, Herbst, and McCrae (1998) administered brief measures of neuroticism, extraversion, and openness to experience to 9964 participants and reported that the self-report of personality dimensions were unrelated to birth order. However, the authors found that peers did rate the younger siblings as higher in agreeableness and openness.

Yet, spouse ratings failed to replicate such findings. On top of that, Parker (1998) also administered a short form of NEO-PI to 593 only children, firstborns, middleborns, and lastborns, but found no relationship between birth order and personality traits. The inconsistency of birth order effects on personality had led Ernst and Angst (as cited in Dixon *et al*., 2008) to conclude that the birth order effect on personality traits were artefacts of poor research designs where confounding variables, such as socioeconomic status (SES) and sibship size, were not controlled. The results were biased because families of higher SES and smaller in size would constitute of more firstborns whereas families of lower SES but larger in size would constitute of more laterborns. Furthermore, Michalski and Shackelford (2001) also claimed that the use of within-family designs would provide more advantages over the use of between-family designs as it decreased the variation of SES, sibship size, and parental personality traits.

Birth Order and Parent-Child Relationship

On top of personality difference, research evidences also proved that parent-child relationship differed amongst siblings. As mentioned above, parent-child relationship is partly determined by the parental investment within the dyad. However, parental investment decreases as sibship size increases (Downey, 2001).

Kilbride, Johnson, and Streissguth (as cited in Taylor & Kogan, 1973) discovered that mother-first child interaction was significantly more intensive than mother-laterborn child interaction, regardless or the social classes. In another study, Rohde *et al*. (2003) measured parent-child relationship quality by examining: (1) parental favouritism, (2) rejection of parental authority by becoming the family rebel, (3) closeness to kin, and (4) seeking of emotional support after a distressing event. They reported that parents preferred the lastborns the most and the laterborns tended to be the family rebels. Besides, they discovered that firstborn felt closest to the parents more than lastborn did whereas the middleborns were least likely to feel close to their mother but were more likely to name their father or sibling. Moreover, Kidwell (1981) claimed that middleborns experienced less positive relationship with their parents as compared to firstborns and lastborns and they viewed their parents as less supportive, less reasonable and more punitive.

Birth Order and Academic Achievement

In addition, ordinal position does impact one's intelligence (Boomsma *et al*., 2008), which in turn influences one's academic achievement or college attendance (Bayer, 1966). Intrauterine theory, confluence hypothesis, and resource dilution hypothesis are commonly offered to explain such association.

Intrauterine theories

Some of the intrauterine theories claim that young mother is able to provide a

"rich uterine environment" for her earlier born children, and this results in greater health and intelligence in the earlier-borns (Adams, 1972). However, there are intrauterine theories that suggest the otherwise because mothers experience less labour and less likely to use forceps in subsequent delivery, which in turn reducing the possible damaging to the child's health and intelligence (Adams).

Confluence hypothesis

Another theory that explains the relationship between birth order and academic performance or college attendance is confluence hypothesis (Zajonc & Markus, 1975). Zajonc and Markus claimed that the impact of birth order on cognitive achievement is largely influenced by the attention one receives from his parents and siblings and the opportunity to serve as intellectual resource. As expected, firstborns usually get the most attention from their parents. Once the sibship size grows bigger, the amount of attention that the subsequent siblings receive is getting lesser and lesser. Thus, intelligent quotients (IQ) amongst the siblings decrease steadily with birth order. Therefore, firstborns who had the most attention should have higher IQ as compared to the laterborns. However, this is largely depended on the age gap between the siblings. Zajonc and Markus proposed that when the older siblings take up the role of teaching, it would actually enhance their intellectual development. However, this effect does not happen until the older siblings are 11 years, plus or minus 2 years. On the other hand, the youngest and only children never have the opportunity to serve as an intellectual resource and hence, they do not perform as well as firstborns academically.

Resource dilution hypothesis

The last theory that explains the association between birth order and academic achievement is resource dilution hypothesis. Downey (2001) describes resources as money, personal attention and cultural objects, such as books, music, pictures and others. He also suggests that parental resources are finite and will be diluted by the addition of siblings. According to resource dilution model, parents are able to allocate their time and resources fully to their only child or firstborn whose sibling(s) has yet arrive. However, the arrival of new child makes the parents to divide their resources accordingly. For example, parents may not be able to send all of their children to university due to limited education fund and this explains the overrepresentation of only child or firstborns in colleges or universities. Besides, resource dilution model also claims that the relative richness of parental resources also affects one's educational success. As a result, only child and firstborn, who had the full parental resources before the arrival of new sibling, achieve better academic attainment than do laterborns.

There were empirical research findings that demonstrated the birth order effect on academic achievement and college attendance (see Bayer, 1966; Breland, 1974; Nuttall, Nuttall, Polit, & Hunter, 1976).

Travis and Kohli's (1995) study (N = 817) found that birth order did impact the total years of education completed among the middle class population. The authors also found that only children appeared to excel academically too, which supported the resource dilution hypothesis. In addition, Nuttall *et al*. (1976) studied a sample of 553 participants from four suburban Boston communities and reported that firstborn girls had better academic attainment than the laterborn girls, but such effect was not reported in boys. Similar findings were replicated in Breland's (1974) study, who found that firstborns had higher scores in National Merit Scholarship Qualification Test (NMSQT). When step-down analysis was carried out, the birth order difference was only found in purely verbal of NMSQT test.

There were also studies that suggested birth order was unrelated to education achievement, which were against the aforementioned theories. For instance, Edwards and Thacker (1979) recruited 326 college freshmen of two-child families into their studies and discovered no association between birth order and grade point average. However, Edwards and colleague explained that the results might due to the failure to control age difference between siblings and most of the participants were college students, who initially had had high achievement already. However, Hauser and Sewell (1985) found no relationship between birth order and educational attainment as well. They examined 9000 Wisconsin high school graduates among their full sibship and reported no significant birth order effect on academic achievement when other confounding variables were controlled.

Personality and Academic Achievement

Interestingly, personality characteristics seem to play a part in one's academic achievement as well. Conscientious individuals are well-organized, focused, persistent, and efficient and hence, they have their own revision schedule. Open individuals are said to have divergent thinking style, which helps these individuals in terms of creativity (Musgrave-Marquart, Bromley, & Dalley, 1997). Individuals who are highly agreeable are gentle, cooperative, and are able to maintain social connection. These characteristics are highly favourable in situations when group project assignments and collaborative learning are involved (Chowdhury & Amin, 2006). In contrast, extraverts are outgoing and are interested in social and impulsive activities. Therefore, they spend fewer hours in revision. Last but not least, neurotics usually experience stress or anxiety more than non-neurotics and hence, these perceived stress and anxiety may impact students' performance during stressful events, for instance examinations (Chamorro-Premuzic & Furnham, 2003b).

Relationships between personality factors and academic achievement have been confirmed by tremendous research evidence. For instance, Musgrave-Marquart *et al*. (1997) examined the relationship between personality and academic achievement amongst 161 undergraduates. Their results showed significant relationships between academic

achievement and personality factors, such as neuroticism, conscientiousness, openness, and agreeableness. Chowdhury and Amin (2006), who studied a sample comprised of 105 students taking Introductory Economics, also reported that conscientiousness, agreeableness, and the interaction of conscientiousness and agreeableness correlated significantly to students' performance in the course. Students who were highly conscientious and agreeable achieved better performance than those who scored low in conscientiousness and agreeableness subscales. In addition, Chamorro-Premuzic and Furnham (2003a; 2003b) also found that personality traits such as neuroticism, conscientiousness, psychoticism, and extraversion correlated significantly with exam marks, which accounting to about 10-17% unique variance in overall exam grades. Moreover, Ooi, Goh, and Beh (n.d.), who examined the relationships between personality trait and academic performance of 95 INTI International College Penang (IICP) students, also concluded that personality type did have an effect on academic performance.

Parent-Child Relationship and Academic Achievement

Additionally, children's relationship and interaction with each parent and perceived social support from family members facilitate positive academic achievement as well (DuBois, Eitel, & Felner, 1994). DuBois *et al*. (1994) suggested that positive parent-child relationship makes the parents a valuable source that helps children with school assignments. In addition, Patterson, DeBaryshe, and Ramsey (1990) also claimed that strong bonding with parents also prevents the emergence of delinquency behaviour, which is strongly associated with poor academic outcome.

However, Forehand, Long, Bordy, and Fauber's (1986) study proved that only father-adolescent relationship predicted children's academic performance because conflicts usually happened between mothers and adolescents. Thus, when conflicts between father and adolescent occurred, it was more disruptive to adolescent school performance. Besides, children's failure in academic performance was usually ascribed as the father's responsibility, and hence creating more conflicts.

Parent-Child Relationship and Children's Personality

On top of its influence on academic performance, parent-child relationship seems to be related to children's personality as well. A child has a great deal of interaction, irrespective of positive or negative, with his or her parents since the day he or she was born. Hence, these interactions are said to be the major determinants of a child's personality and behaviours (McCrae & Costa, 1988). Walters and Stinnett (1971) also agreed that mothers and fathers have very strong impacts on their sons and/or daughters. However, they argued that such impacts from mothers or fathers are very different and the intensity of influences varies across childhood and adolescence.

There were a number of researches that confirmed the relationship between parent-child relationship and adults' personality. For instance, McCrae and Costa (1988) recruited 619 participants into their study and found that adult children who were well-adjusted, agreeable, extraverted, open to new experience, and conscientious recalled their parents as loving. Those who described themselves as introvert, less conscientious, but were open to new experiences recalled their parents as casual rather than demanding. Lastly, McCrae and Costa (1988) reported that there was also association between the attention scale and extraversion subscale. Similar findings were replicated when peer-rating of the adult children personality were substituted.

In addition, Siegelman (1965) also examined the association between parent-child relations and adult children personality amongst 151 undergraduate college students. The respondents who were anxious and introverted recalled their parents as rejecting while respondents who were less anxious and extraverted recalled their parents as loving. In the following year, Siegelman (1966) replicated his study with 106 fourth-, fifth-, and sixth-grade males. However, unlike his previous study that used the self-report measure of personality, this study utilized peer nomination method. The results indicated that boys who reported their parents to be punishing were rated as withdrawn by their classmates while boys who reported their parents to be loving were not rated as withdrawn.

HYPOTHESES

If the aforementioned theories are valid, one's personality, relationship with parents, and academic performance can be predicted by looking at one's ordinal position. However, of all the aforesaid literatures, most of them were conducted in the western countries and little is known about the relationship between birth order, personality, parent-child relationship and academic achievement in Malaysian context. As a result, this study aims to examine if such relationships between birth order, personality, parent-child relationship and academic performance can be found among Malaysian college students. Therefore, the proposed hypotheses are:

1. Siblings of different birth positions differ significantly in terms of Conscientiousness and Agreeableness.
2. There is significant difference in the quality of parent-child relationship among firstborns, middleborns, lastborns, and only children.
3. There is significant difference in academic performance among firstborns, middleborns, lastborns, and only children.
4. Extraversion, conscientiousness, agreeableness, openness to experience and emotional stability correlate with academic performance.
5. Parent-child relationship correlates positively with academic performance.
6. Parent-child relationship correlates with children's personality traits (i.e.,

extraversion, openness to experience, agreeableness, emotional stability and conscientiousness).

METHOD

Study Design

This was a cross-sectional study that aimed to discover the relationships between birth order, personality, parent-child relationship and academic performance among college students who aged between17 and 24. The independent variable of this study was birth position of the participants, whereas dependent variables were participants' personality traits, parent-child relationship, and academic performance.

Participants

After unusable data (e.g., incomplete information or participants who were non-Malaysians) were filtered, only 120 college students from the Klang Valley (i.e., Bandar Sunway, Petaling Jaya and Subang) were qualified to be involved in this study. This study did not target a large group of participants because it was difficult to get only child and hence, only 120 participants were selected into this study so that it constituted a fair amount of the participants from each birth position (i.e., firstborn, middleborn, lastborn and only child).The participants' age ranged from 17 to 24 years, wherby the mean age was 20.0 years with a standard deviation of 1.85. There were 35 (29.2%) and 85 (70.8%) males and females respectively. Of the participants, there were 13 Malays (10.8%), 96 Chinese (80.0%), 10 Indians (8.3%), and 1 unknown (0.8%). Seventy-five percent of the participants (n= 90) were science stream students when they were in high schools. Besides, every participant is Malaysian and has taken Sijil Pelajaran Malaysia (SPM). In addition, the participants of this study consisted of 30 firstborns, 30 middleborns, 30 lastborns, and 30 only children (see Table 1).

TABLE 1
Descriptive Demographic Characteristics of the Participants

Variables	Frequency	Percentage (%)
Gender		
Male	35	29.2
Female	85	70.8
Race		
Malay	13	10.8
Chinese	96	80.0
Indian	10	8.3
Others	1	0.8
Nationality		
Malaysian	120	100.0
Non-Malaysian	0	0
Stream		
Science	90	75.0
Art/ Business	30	25.0
Birth Order		
Firstborn	30	25.0
Middleborn	30	25.0
Lastborn	30	25.0
Only child	30	25.0

Materials

The participants were required to fill in the consent form and demographic sheet (see Appendix A) before they proceeded to the questionnaires behind. The participants'

SPM results were scored according to the grades that they obtained. Grades A, B, C, D, and F were credited 5, 4, 3, 2, and 1 point, respectively. The total points of the participants' best 6 subjects represented their academic performance. The higher the total points, the better it was the academic performance of the participants.

The scales used in this study were Ten Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003) and Parent-Child Relationship Survey (PCRS; Fine & Schwebel, 1983). TIPI (see Appendix B) is a 10-item brief scale that measures the Big-Five personality traits: extraversion (B1 and B6), emotional stability (B4 and B9), openness to experience (B5 and B10), conscientiousness (B3 and B8), and agreeableness (B2 and B7). The participants were required to rate on a 7-point Likert scale, ranging from strongly disagree to strongly agree. Items B2, B4, B6, B8, and B10 had to be reverse-scored before the mean scores for each subscale was computed. TIPI has good test-retest reliability, r=. 72, and external correlation, r= .90. Besides, it also demonstrates strong convergent and discriminant validity, r=.77, with the full Big Five Inventory.

PCRS (see Appendix C) is a 24-item scale that was intended to measure the quality of parent-child relationships. It comes in two forms, one for assessing the mother-child relationship while the other for assessing the father-child relationship. Both forms are identical except for the words "mother" and "father" are interchangeable. Sample of PCRS shown in Appendix D was the father version. Despite the fact that both forms are identical, they measure different factors of parent-child relationship. The factors for father subscale are positive affect (items 3, 14, and 18-24), father involvement (items 1, 2, 6, 9, 10, and 16), communication (items 7, 8, and 15-17), and anger (item 13). Meanwhile, the factors for mother subscale are positive affect (items 1-3, 6, 7, and 15-23), resentment/ role confusion (items 9 and 14), identification (items 13, 23, and 24), and communication (items 4, 5, 7, 8, and 15-17). Before PCRS score was computed, negatively worded items such as 9, 13, and 14 (see Appendix D) had to be reverse-scored. The mean score for each factor was easily computed by summing the individual item scores and dividing by the number of items on that factor. The total score for PCRS was the sum of the mean scores of every subscale. The higher the PCRS score, the better the parent-child relationship is. PCRS has an excellent internal consistency, with alphas for the father subscale that ranged from .89 to .94, with an overall alpha of .96, and alphas for mother subscale that ranged from .61 to .94 with an overall alpha of .94.

Data Analysis

Raw data of this study were keyed into and analysed using Statistical Package for the Social Sciences (SPSS) 14.0. The analyses used were the analysis of variance (ANOVA) and Pearson correlation. Hypotheses 1, 2, and 3 were tested using ANOVA whereas hypotheses 4, 5, and 6 were tested using Pearson correlation.

Procedure

The participants were approached randomly in campuses and were briefed about the purpose of this study by the author. As the participants agreed to participate in the present study, each of them was required to sign consent letter. Once consent was obtained, demographic sheet, TIPI and PCRS were administered to them. The instruction for each scale was written at the top part of every scale.

RESULTS

Birth Order and Personality

Table 2 shows that the skewness values of each personality factor fall between -1 and +1. Thus, it can be concluded that the dependent variable (i.e., personality traits) was normally distributed among the four birth positions.

It was hypothesized that siblings of different birth orders differed in terms of conscientiousness and agreeableness. Such differences amongst the participants were tested using ANOVA. The results indicated that the effects of birth order on agreeableness, F (3, 116) = 1.75, p>.05, and conscientiousness, F (3, 116) = 0.30, p>.05, were not statistically significant. In addition, the participants of different birth orders did not differ significantly in terms of extraversion, F (3,116) = 0.78, p>.05, openness to experience, F (3, 116) = 0.55, p>.05, and emotional stability, F (3, 116) = 1.00, p>.05 too (see Table 3). This signified that one's personality is not affected by his birth position in a family. Hence, the first hypothesis was rejected.

Birth Order and Parent-Child Relationship

As shown in Table 4, both the Kurtosis and skewness values were within the range of -1 and +1. Hence, it can be concluded that the dependent variable, parent-child relationship, was normally distributed amongst the four birth orders.

Furthermore, it was hypothesized that quality of parent-child relationship also differed amongst siblings of different birth orders. The relationship quality difference was analyzed using ANOVA. The results showed no significant differences in terms of father positive affect subscale, F (3, 116) = 0.85, p>.05, father involvement subscale, F (3, 116) = 0.34, p>.05, father communication subscale, F (3, 116) = 0.45, p>.05, father anger subscale, F (3, 116) = 0.71, p>.05, father-child relationship total score, F (3, 116) = 0.29, p>.05, mother positive affect subscale, F (3, 116) = 1.15, p>.05, mother communication subscale, F (3, 116) = 0.84, p>.05, mother resentment/ role confusion subscale, F (3, 116) = 0.72, p>.05, mother identification subscale, F (3, 116) = 0.34, p>.05, and mother-child relationship total score, F (3, 116) = 0.20, p>.05, amongst the four birth positions (see Table 5). This indicated that the quality of parent-child relationship remained the same irrespective of the birth orders. Thus, second hypothesis was rejected as well.

TABLE 2
A summary of descriptive statistic for personality among different Birth Orders

		Statistic	Std. Error
Firstborn			
Extraversion	Mean	4.4667	.30881
	Median	4.2500	
	Variance	2.861	
	Std. deviation	1.69143	
	Skewness	.027	.427
	Kurtosis	-.983	.833
Agreeableness	Mean	4.8333	.14843
	Median	4.7500	
	Variance	.661	
	Std. deviation	.81297	
	Skewness	-.036	.427
	Kurtosis	.006	.833
Conscientiousness	Mean	4.5000	.20622
	Median	4.5000	
	Variance	1.276	
	Std. deviation	1.12954	
	Skewness	.096	.427
	Kurtosis	-.028	.833
Emotional stability	Mean	4.3833	.18675
	Median	4.2500	
	Variance	1.046	
	Std. deviation	1.02287	
	Skewness	.390	.427
	Kurtosis	-.141	.833
Openness to experience	Mean	4.9167	.19926
	Median	5.0000	
	Variance	1.191	
	Std. deviation	1.09137	
	Skewness	-.134	.427
	Kurtosis	.488	.833
Middleborns			
Extraversion	Mean	4.3167	.23548
	Median	4.5000	
	Variance	1.664	
	Std. deviation	1.28977	
	Skewness	.010	.427
	Kurtosis	.307	.833

cont'd Table 2

		Statistic	Std. Error
Agreeableness	Mean	4.3167	.17201
	Median	4.2500	
	Variance	.888	
	Std. deviation	.94215	
	Skewness	-.057	.427
	Kurtosis	-.442	.833
Conscientiousness	Mean	4.4333	.20724
	Median	4.5000	
	Variance	1.289	
	Std. deviation	1.13512	
	Skewness	-.184	.427
	Kurtosis	-.739	.833
Emotional stability	Mean	4.3167	.20550
	Median	4.2500	
	Variance	1.267	
	Std. deviation	1.12559	
	Skewness	-.032	.427
	Kurtosis	-1.188	.833
Openness to experience	Mean	4.8333	.21620
	Median	5.0000	
	Variance	1.402	
	Std. deviation	1.18419	
	Skewness	-.824	.427
	Kurtosis	1.207	.833
Lastborns			
Extraversion	Mean	4.6833	.24969
	Median	4.7500	
	Variance	1.870	
	Std. deviation	1.36763	
	Skewness	.095	.427
	Kurtosis	-1.115	.833
Agreeableness	Mean	4.7167	.18520
	Median	4.5000	
	Variance	1.029	
	Std. deviation	1.01441	
	Skewness	.714	.427
	Kurtosis	-.369	.833

cont'd Table 2

		Statistic	Std. Error
Conscientiousness	Mean	4.5333	.27432
	Median	4.5000	
	Variance	2.257	
	Std. deviation	1.50249	
	Skewness	.193	.427
	Kurtosis	-.740	.833
Emotional stability	Mean	4.7833	.25673
	Median	5.0000	
	Variance	1.977	
	Std. deviation	1.40616	
	Skewness	-.429	.427
	Kurtosis	.208	.833
Openness to experience	Mean	5.1500	.21057
	Median	5.2500	
	Variance	1.330	
	Std. deviation	1.15333	
	Skewness	-.339	.427
	Kurtosis	-.705	.833
Only children			
Extraversion	Mean	4.8333	.23407
	Median	5.0000	
	Variance	1.644	
	Std. deviation	1.28206	
	Skewness	-.114	.427
	Kurtosis	-1.115	.833
Agreeableness	Mean	4.7333	.18215
	Median	4.5000	
	Variance	.995	
	Std. deviation	.99770	
	Skewness	.387	.427
	Kurtosis	.243	.833
Conscientiousness	Mean	4.7333	.24299
	Median	5.0000	
	Variance	1.771	
	Std. deviation	1.33089	
	Skewness	-.530	.427
	Kurtosis	-.029	.833

cont'd Table 2

		Statistic	Std. Error
Emotional stability	Mean	4.4000	.18785
	Median	4.2500	
	Variance	1.059	
	Std. deviation	1.02889	
	Skewness	.644	.427
	Kurtosis	.296	.833
Openness to experience	Mean	4.8333	.17671
	Median	4.7500	
	Variance	.937	
	Std. deviation	.96787	
	Skewness	.203	.427
	Kurtosis	-.448	.833

TABLE 3
Analysis of Variance for the Personality Factors of Four Birth Positions

Personality factors	Firstborn		Middleborn		Lastborn		Only Child		*F* (3, 116)
	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*	
EX	4.47	1.69	4.32	1.29	4.68	1.37	4.83	1.28	0.78
OPE	4.92	1.09	4.83	1.18	5.15	1.15	4.83	0.97	0.55
AGB	4.83	0.81	4.32	0.94	4.72	1.01	4.73	1.00	1.75
CSC	4.50	1.13	4.43	1.14	4.53	1.50	4.73	1.33	0.30
EMOS	4.38	1.02	4.32	1.13	4.78	1.41	4.40	1.03	1.00

Note. EX = extraversion; CSC = conscientiousness; AGB = agreeableness; OPE = openness to experience; EMOS = emotional stability.

TABLE 4
A Summary of Descriptive Statistic for Parent-Child Relationship among Different Birth Orders

		Statistic	Std. Error
Father-child relationship			
Firstborns	Mean	18.1337	.85574
	Median	18.8667	
	Variance	21.969	
	Std. deviation	4.68711	
	Skewness	-.799	.427
	Kurtosis	1.094	.833

cont'd Table 4

		Statistic	Std. Error
Middleborns	Mean	18.9415	.65013
	Median	19.1667	
	Variance	12.680	
	Std. deviation	3.56089	
	Skewness	-.180	.427
	Kurtosis	-.328	.833
Lastborns	Mean	18.7967	.78919
	Median	19.6556	
	Variance	18.685	
	Std. deviation	4.32259	
	Skewness	-.523	.427
	Kurtosis	-.482	.833
Only children	Mean	18.1985	.76521
	Median	18.1833	
	Variance	17.566	
	Std. deviation	4.19122	
	Skewness	-.151	.427
	Kurtosis	-.154	.833
Mother-child relationship			
Firstborns	Mean	19.9143	.88853
	Median	20.7619	
	Variance	23.685	
	Std. deviation	4.86671	
	Skewness	-.707	.427
	Kurtosis	.092	.833
Middleborns	Mean	20.7786	.70390
	Median	20.7500	
	Variance	14.864	
	Std. deviation	3.85541	
	Skewness	-.143	.427
	Kurtosis	-.527	.833
Lastborns	Mean	20.3706	.88810
	Median	21.8929	
	Variance	23.662	
	Std. deviation	4.86432	
	Skewness	-.852	.427
	Kurtosis	-.024	.833

cont'd Table 4

		Statistic	Std. Error
Only children	Mean	20.4056	.62087
	Median	20.3095	
	Variance	11.564	
	Std. deviation	3.40064	
	Skewness	-.062	.427
	Kurtosis	-.240	.833

TABLE 5
Analysis of Variance for Parent-Child Relationship Mean Scores of Four Birth Positions

Subscales	Firstborn		Middleborn		Lastborn		Only Child		*F* (3,116)
	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*	
Father									
PA	5.39	1.11	5.38	1.00	5.42	1.00	5.03	1.29	0.85
IN	4.52	1.48	4.83	0.99	4.63	1.34	4.56	1.33	0.34
CM	4.01	1.37	4.33	1.31	4.05	1.53	3.91	1.58	0.45
AG	4.20	1.81	4.40	1.38	4.70	1.62	4.70	1.53	0.71
TT	18.13	4.69	18.94	3.56	18.80	4.32	18.20	4.19	0.29
Mother									
PA	5.29	1.33	5.75	0.97	5.56	1.21	5.75	0.88	1.15
CM	5.08	1.41	5.50	1.17	5.40	1.35	5.55	1.12	0.84
RS	5.08	1.56	4.70	1.58	4.80	1.56	4.48	1.71	0.72
ID	4.47	1.41	4.83	1.34	4.61	1.56	4.62	1.34	0.34
TT	19.91	4.88	20.78	3.86	20.37	4.86	20.41	3.40	0.20

Note. PA = positive affect subscale; RS = resentment/ role confusion subscale; IN = involvement subscale; ID = identification subscale; CM = communication subscale; AG = anger subscale; TT = total score

Birth Order and Academic Achievement

As shown in Table 6, the skewness values for firstborns, middleborns, lastborns and only children were -2.451, -2.522, -2.122 and -1.541 respectively, which had the tendency towards zero. This result implied that the data were near normal distribution.

It was also hypothesized that birth order played a significant role on one's academic performance as well. Such relationship was analysed using ANOVA. However, with an alpha level of .05, the birth order effect on academic performance was not statistically significant at all, F (3, 116) = 0.70, p>.05 (see Table 7). This finding suggested that birth order did not affect one's academic performance. Therefore, the third hypothesis was not supported.

Personality and Academic Achievement

The fourth hypothesis postulated that personality factors correlated with academic performance. Such relationship was analysed using bivariate correlation. The Pearson correlation showed that there was a relationship between personality and academic performance. However, significant positive association was only found between extraversion and SPM results, $r = .20$, $p<.05$, though such relationship was weak. Hence, the better the academic performance, the more extraverted the person was. However, no significant relationship was reported between other personality factors and SPM results (see Table 8). As a result, forth hypothesis was supported.

TABLE 6
A Summary of Descriptive Statistic for Academic Performance among different Birth Orders

		Statistic	Std. Error
Firstborns	Mean	28.4000	.51995
	Median	30.0000	
	Variance	8.110	
	Std. deviation	2.84787	
	Skewness	-2.451	.427
	Kurtosis	6.347	.833
Middleborns	Mean	27.2667	.74268
	Median	28.5000	
	Variance	16.547	
	Std. deviation	4.06782	
	Skewness	-2.522	.427
	Kurtosis	8.201	.833
Lastborns	Mean	27.1000	.87013
	Median	29.0000	
	Variance	22.714	
	Std. deviation	4.76590	
	Skewness	-2.122	.427
	Kurtosis	4.137	.833
Only children	Mean	27.7000	.58947
	Median	29.5000	
	Variance	10.424	
	Std. deviation	3.22864	
	Skewness	-1.541	.427
	Kurtosis	1.991	.833

Parent-Child Relationship and Academic Achievement

In addition, it was also hypothesized that parent-child relationship correlated positively with academic performance. Pearson correlation was conducted to test the relationship between parent-child relationship and academic performance. The results showed no significant associations between father positive affect subscale, r =.08, p>.05, father involvement subscale, r =.17, p>.05, father communication subscale, r =.06, p>.05, father anger subscale, r =.09, p>.05, father-child relationship total score, r =.13, p>.05, mother positive affect subscale, r =.03, p>.05, mother resentment/ role confusion subscale, r =.15, p>.05, mother identification subscale, r =.05, p>.05, mother communication subscale, r =-.05, p>.05, as well as mother-child relationship total score with SPM results, r =.06, p>.05, respectively (see Table 9). Such findings showed that the quality of parent-child relationship is unrelated to children's academic performance. Thus, the fifth hypothesis was also rejected.

Parent-Child Relationship and Children's Personality

On top of the hypotheses tested above, parent-child relationship was also hypothesized to be correlated with children's personality traits. In order to examine such relationship, the Pearson correlation was used to discover the associations between all the personality factors and parent-child relationship subscales. The results indicated that openness to experience was rather weak, but significantly, correlated with father communication subscale, r

TABLE 7
Analysis of Variance for SPM Results of Four Birth Positions

Variable	Firstborn		Middleborn		Lastborn		Only Child		F (3,116)
	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*	
SPM Results	28.40	2.85	27.27	4.07	27.10	4.77	27.70	3.23	0.70

TABLE 8
Correlation Matrix Depicting the Relationships between Personality Factors and SPM Results

Personality factors	SPM Results	EX	OPE	AGB	CSC
EX	.20*				
OPN	.17	.29**			
AGB	.09	-.10	.11		
CSC	.09	-.01	.12	.15	
EMOS	.05	.05	.14	.43**	.10

Note. EX = extraversion; CSC = conscientiousness; OPN = openness to experience; EMOS = emotional stability; AGB = agreeableness.
*p< .05.

TABLE 9
Correlation Matrix Depicting Relationships between Parent-Child Relationships Subscales and SPM Results

Subscales	SPM	FPA	FIN	FCM	FAG	FTT	MPA	MRS	MID	MCM
FPA	.08									
FIN	.17	.63**								
FCM	.06	.64**	.84**							
FAG	.09	.31**	.19*	.25**						
FTT	.13	.80**	.84**	.87**	.61**					
MPA	.03	.44**	.49**	.43**	.12	.46**				
MRS	.15	.11	.23*	.12	.07	.17	.26**			
MID	.05	.40**	.43**	.38**	.21*	.45**	.82**	.25**		
MCM	-.05	.35**	.45**	.47**	.16	.46**	.90**	.26**	.70**	
MTT	.06	.40**	.49**	.42**	.18	.47**	.90**	.61**	.85**	.86**

Note. FPA = father positive affect subscale; MPA = mother positive affect subscale; FIN = father involvement subscale; MRS = mother resentment/ role confusion subscale; FCM = father communication subscale; MID = mother identification subscale; FAG = father anger subscale; MCM = mother communication subscale; FTT = father-child relationship total score; MTT = mother-child relationship total score; SPM = SPM results.
*p< .05. **p<. 01.

=-.19, p<.05, father-child relationship total score, r =-.19, p<.05, mother positive affect subscale, r =-.21, p<.05, mother communication subscale, r =-.23, p<.05, and mother-child relationship total score, r =-.24, p<.01. See Table 10. The results implied that the better the parent-child relationship, the less open to experience the person would be. Furthermore, as shown in Table 10, weak but significant associations were also reported between father anger subscale and conscientiousness, r =.23, p<.05, as well as father anger subscale and emotional stability, r =. 21, p<.05. Such relationships suggested that the less anger a person felt towards his or her father, the more conscientious and emotionally stable the person was. Thus, the sixth hypothesis was supported (see Table 10).

DISCUSSION

Summary of the Results of Data Analysis

This study examined the relationships between birth order, parent-child relationship, academic performance and personality. In summary, this study found no significant differences in terms of personality factors, academic performance, and parent-child relationship of different birth orders. Furthermore, this study also revealed that parent-child relationship was unrelated to children's academic performance. However, a significant relationship between academic performance and personality factor was reported. Extraversion was found to be correlated positively with academic performance. On top of that, this study indicated that parent-child relationship did correlate with children's personality. Such parent-child relationship subscales

TABLE 10
Correlations between Parent-Child Relationship Subscales and Personality Factors

Subscales	EX	OPN	AGB	CSC	EMOS
FPA	.14	-.09	.07	.08	.07
FCM	.01	-.19*	-.06	-.01	-.03
FAG	.07	-.14	.13	.23*	.21*
FIV	.11	-.15	.00	.02	-.04
FTT	.10	-.19*	.05	.11	.07
MPA	-.02	-.21*	.01	-.02	.01
MCM	-.11	-.23*	.04	-.01	.01
MRS	-.16	-.14	.06	-.06	-.04
MID	-.05	-.18	.08	.02	.08
MTT	-.12	-.24**	.07	-.02	.02

Note. FPA = father positive affect subscale; FIN = father involvement subscale; FCM = father communication subscale; FAG = father anger subscale; FTT = father-child relationship total score; MPA = mother positive affect subscale; MRS = mother resentment/ role confusion subscale; MID = mother identification subscale; MCM = mother communication subscale; MTT = mother-child relationship total score; EX = extraversion;
CSC = conscientiousness; OPN = openness to experience; EMOS = emotional stability; AGB = agreeableness.
*p< .05. **p<. 01.

as father-child communication, mother-child communication, mother positive affect, father total score, and mother total score correlated negatively with children's openness to experience. Further, father anger subscale correlated positively with children's emotional stability and conscientiousness as well.

Birth Order and Personality

In contrast to the first hypothesis, this study found that the participants of different birth orders did not differ significantly in terms of conscientious and agreeableness. On top of that, no significant difference was reported for other personality factors. Such findings did not support both dethronement theory and family-niches model, which reports that children of each birth position possess a number of characteristics. Besides, this study failed to replicate Healey and Ellis' (2007), Michalski and Shackelford's (2002), Tharbe and Harun's (2000), and Paulhus *et al*.'s (1999) findings, where the authors reported that siblings of different birth orders did differ in terms of conscientious, agreeableness, and openness to experience. Therefore, based on the present study, it was concluded that participants' personality is not the results of their experiences of being dethroned or the distinctive niches that they have created in the family.

The inconsistent result could be due to the methodological difference between the present study and other studies. For instance, Paulhus *et al*. (1999), who showed that firstborns were more achieving and conscientious than laterborns, had their participants to nominate the most achieving and conscientious sibling within their family instead of assessing siblings' personality

traits using personality measures. Furthermore, Jefferson *et al*. (1998), who reported that younger siblings were more agreeable and open to new experience, employed peer-rating method instead of self-rating. However, the authors reported that birth order was unrelated to personality when self-report data were analysed. As a result, inconsistent results could be due to the methodological difference between the studies.

On top of methodology difference, the insignificant results obtained could be due to the use of between-family comparison. As mentioned previously, Michalski and Shackelford (2001) claimed that the use of within-family design was more advantageous than the use of between-family design as it could minimize the variation of parental personality traits, socioeconomic status, sibship size effects and others. However, due to the difficulty in conducting within-family experiment, this study employed between-family design. Therefore, insignificant results could be due to confounding variables such as sibship size, socioeconomic status, and parental personality traits.

In spite of the tremendous studies that documented birth order effect on personality, there were also scholars who were against this idea. Hoffman (as cited in Jefferson *et al*., 1998), who investigated family environment as a source of personality difference amongst siblings, claimed that one's personality is the outcome of multiple interactions of such influences as parental intervention, peer relationships, and family sibship size. She also argued that any single of the aforesaid influences was unlikely to explain much variance in one's personality outcome. Therefore, the insignificant result of this study could be explained by Hoffman's speculation, where personality was not determined solely by birth order.

Birth Order and Parent-Child Relationship

On the contrary to the second hypothesis, this study indicated that there was no significant difference in parent-child relationship amongst different birth positions. In other words, the quality of parent-child relationship remained the same regardless of the birth order. Such results contradicted the research findings obtained by Kilbride *et al*. (as cited in Taylor & Kogan, 1973), Kidwell (1981), and also Rohde *et al*. (2003).

One of the reasons of the insignificant result could be due to participants' age. The participants of this study were young adults who had a mean age of 20.0 years. According to Erik Erikson's (as cited in Santrock, 2008) psychosocial theory, young adults are in the stage of intimacy versus isolation. At this point, young adults start to form intimate relationship and healthy friendships with others, otherwise isolation will result. Therefore, close, intensive relationships with friends and lovers could be the main focus of the participants, regardless of ordinal positions in this study. As a result, quality of parent-child relationship amongst participants of different birth order did not differ significantly. Besides, studies that documented significant differences or

changes in the parent-child relationship of different birth positions (Hilton, 1967; Taylor & Kogan, 1973) were conducted among children aged between 2- and 5-years old instead of young adults.

Second, the method used to measure quality of the parent-child relationship could also be a factor that led to the insignificant results. Robbins (as cited in Hilton, 1967) claimed that the reliability of retrospective report of children's perceived parent-child relationship or parents' report about the manner in which they treated their children was subjected to biasness. Children who had unfinished business or issues with their parents might rated the items negatively. In this study, self-rating measure was employed where participants were required to rate the perceived parent-child relationship. Thus, there could be a possibility that participants' responses were biased.

Third, such insignificant results could be resulted by the age gap of the siblings. Adler (as cited in Kidwell, 1981) stated that birth order effects could be completely absent when the age gap between their ages was large. For instance, firstborn A's experiences, whose younger sibling is ten years apart, could entirely be different from that of firstborn B, whose younger sibling is only two years apart. As a result, firstborn A was initially raised as an only child due to the wide spacing, and hence, had all his or her parents' attention and resource. However, age gap of the siblings was not controlled in this study. Therefore, this could be a possible confounding variable that led to insignificant results.

Birth Order and Academic Achievement

Intrauterine theories, resource dilution hypothesis, and confluence hypothesis conclude that there is significant difference in terms of academic achievement amongst individuals of different birth positions. Most of the literature has also documented that firstborns and only children have better academic achievement or college attendance as compared to middleborns or lastborns (see Bayer, 1966; Breland, 1974; Nuttall *et al*., 1976; Travis & Kohli's, 1995). However, the findings of this study have failed to support the aforementioned theories and hypotheses. Yet, it replicated the research findings by Hauser and Sewell (1985) and Edwards and Thacker (1979) as birth order was found to be unrelated to participants' SPM results.

There were a few possible explanations for the absence of relationship between birth order and SPM results among Malaysian college students. First, the participants of the present study comprised of college students. In order to be enrolled into college, every student has to fulfil the entrance score. As a result, the participants of this study were all high-achievers already. This could be shown in their average SPM results' score. The mean SPM results score of this study was 27.62 out of 30. Besides, parental age and age difference between siblings, which were not controlled in the present study, could be the determinants of one's academic attainment as well (Edwards & Thacker, 1979). Third, the insignificant results could be the artefacts of study design. Due to the fact that the present study was a between-

family design, there was high a possibility that SPM results could be influenced by other confounding variables such as parenting styles, parental expectation, familial intellectual environment, biological determinants and others. Last but not least, Blake (1981) found that sibship size actually exerted a greater effect on individuals' academic attainment than birth order did after age, socioeconomic background, religion, community size, southern origin and family status were controlled. Sibship size effect was also confirmed by Pong (1997) who reported that large sibship size would impede both Malay and non-Malay children. Obviously, more systematic research is required to examine the roles of birth order and sibship size in one's academic achievement.

Personality and Academic Achievement

In line with the forth hypothesis, this study found a significant relationship between personality and academic performance. However, the research findings of the present study are not in parallel with the literature mentioned previously. In the past, the researchers found that such personality factors as conscientious, agreeableness, openness to experience, and neuroticism were related to academic achievement (for e.g., Chowdhury & Amin, 2006; Musgrave-Marquart *et al*., 1997). This study, however, found no significant association between these personality factors and academic achievement. Yet, a significant relationship was reported between extraversion and SPM results.

The possible explanation for such a relationship is that the current study comprised of mostly science students. As reported, 75% of the participants were from science stream. In Malaysia, science stream students are obligated to enrol Mathematics, Additional Mathematics, and two or all science subjects (i.e. Chemistry, Biology, & Physics), whereas art/business students are required to take a combination of History, Geography, Principles of Accounts, Business or Basic Economics. As compared to art/business students, the subjects that science students took require complete understanding and application. Besides, Science is all about exploration, research, and experiments, where students are expected to learn by conducting experiments. Thus, it was postulated that being extraverted is advantageous for science students as they have to do practical work, instead of pure memorization, to gain true knowledge. Conversely, conscientiousness or agreeableness does not seem to play an important role in the progress of gaining knowledge for science students. Such explanation supports the research findings of this study as positive relationship was reported between extraversion and SPM results.

Another possible explanation for the reported relationship was based on Eysenck's theory. According to Eysenck's theory (as cited in Dobson, 2000), the arousal level difference between introverts and extraverts causes the differences observed in their response to task performance and environment. Introverts who have

higher level of cortical arousal is likely to result in poorer performance under stress, whereas extraverts who have lower level of cortical arousal is likely to bring about better performance under stress. Therefore, extraverted students should be able to perform better under stressful event, such as examination.

Parent-Child Relationship and Academic Achievement

In contrast to the fifth hypothesis, the current study reported that parent-child relationship was unrelated to children's academic performance. This finding supported DuBois, Felner, Brand, Adan, and Evans's (1992) and Dubow, Tisak, Causey, Hryshko, and Reid's (1991) research evidences as their studies suggested that adolescents' perceived social support from family members was unrelated to academic adjustment. Besides, other family variables were somewhat found to exert a greater impact on school-aged children only (DuBois *et al*., 1994).

On top of perceived parent-child relationship, academic performance could be mediated by other family factors as well, such as family general levels of academic aspiration and achievement orientation, parenting styles, the degree to which a family is characterized by order and routine, or the autonomy and control one has over his or her family relationships (DuBois *et al*., 1994). Therefore, it was speculated that children's academic achievement was not solely affected by their relationship with the parents but it could also be mediated by the aforesaid family variables. Hence, significant relationship between parent-child relationship and children's academic performance was not reported.

Parent-Child Relationship and Children's Personality

This study found that parent-child relationship was correlated with openness to experience, emotional stability, and conscientiousness. The participants who were conscientious and emotionally stable reported to feel less anger towards their fathers. Surprisingly, the participants were less open to experience although good parent-child relationship was reported. Nonetheless, this relationship was not in parallel to the aforesaid literature.

The available explanation that was postulated to explain the negative relationship between openness to experience and parent-child relationship was the child-rearing practice of the Chinese. Belsky (as cited in Julian, McKenry, & McKelvey, 1994) once stated that parental behaviour is largely depended on parents' views and perceptions about raising children. These behaviours would later influence children's developmental outcome. In comparison to Caucasian parents, Chinese parents exhibit more conservative parenting characteristics (Julian *et al*., 1994). In a paper, Wu *et al*. (2002) summarized that Chinese parents encourage modest behaviours and use shaming and love withdrawal to foster dependency and sensitivity toward others' feelings. Besides, these parents are also directive and protective. Chinese children are generally viewed as incapable of

understanding and hence, parents are supposed to provide a safe and appropriate environment for their children (Wu *et al*., 2002). Thus, Chinese parents are generally more protective. For instance, children are encouraged to stay physically close and be dependent to their parents. In addition, Chinese parents always assume the responsibility in making decision and regulating children's behaviour. In summary, Chinese children do not have much autonomy as Caucasian children. In the long run, Chinese children would grow up to be less open to new experience and more dependent to their parents. Due to the fact that the participants involved are 80% Chinese, it was not surprised to see a negative relationship between parent-child relationship and openness to experience.

Strengths and Limitations

All in all, the current study consists of a number of strengths that have made the research findings valid and informative. First, this study involved equal number of participants from different ordinal positions and hence, the research findings were not biased in terms of any birth position. Second, the issue whether only child is raised as a firstborn or lastborn is still a controversial one; thus, some studies either excluded only child from their study or grouped them into the firstborn category. Therefore, the inclusion of only child as a distinct birth order category was a merit of the current study. Third, this study employed tools (i.e., TIPI & PCRS) that have strong reliability and validity. Last but not least, this study was one of the very little studies that examined the birth order effects in the Malaysian context.

Despite the aforementioned strong points, the current study is still limited in some aspects. First, the measured parent-child relationship could be biased because the participants could rate it negatively if they had unfinished business with their parents when they were involved in this study. Besides, it also involved both parties (i.e. the parents and the child), so the inclusion of the ratings from both parties could be more informative. Second, most of the participants were recruited from Sunway University College. Hence, the research findings might not be strong enough to be generalized to every young adult in Malaysia. Third, age gap and sibship size, which might led to the absence of birth order effects, were not controlled in this study. Finally, the research findings of this research could be the artefacts of the nature of between-family study.

Implications

The major implication of the research findings is to educate the importance of good parenting practices among the Asians parents, especially the Chinese. Asian parents are advised to nurture independence and decision making since their children were young. Besides, they should be less protective and let their children to grow, learn and master everything on their own so that they are open to new experience, independent and strong enough to face challenges in their life. In addition, it is

suggested that secondary schools consider providing brief personality test and advice for students who are going to choose their mainstream. Moreover, it seems personality traits do play a role in one's academic achievement. If one's trait matches his field of study, there is no doubt that it may enhance one's academic performance in that area. Furthermore, educators may want to understand their students' strengths and weaknesses, as well as their learning styles in order to promote learning progress.

Future Direction

For future study, it is recommendable to increase the sample size and collect data from various universities so that the power and generalization of the study could be increased. Furthermore, researchers are advised to collect data from both parents and children or to employ the observation method to countercheck the measured parent-child relationship. Besides, researchers should take such confounding variables as sibship size, age gap between siblings or socioeconomic status into account if birth order studies were to be conducted. Moreover, researchers should attempt to employ within-family design to study birth order effects so that confounding variables are well-controlled.

On top of birth order studies, researchers could make an attempt to explore and compare the personality difference between science and art/business students, as well as its impact on academic achievement.

CONCLUSION

In conclusion, the current study has reported that there is no significant difference in the academic performance, parent-child relationship and personality amongst children of different birth orders. These findings are different from those which have been conducted in the western countries where children of different birth position were found to have different personality traits and different attainments in terms of their academic performance. Besides, parent-child relationship is not related to children's academic achievement. However, this study indicates that extraversion is positively correlated with academic achievement. Furthermore, parent-child relationship correlates negatively with children's openness to experience but positively with conscientiousness and emotional stability. This implies the importance of a match between one's personality trait and field of study as well as the importance of good parenting practices.

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APPENDIX A

Demographic Sheet

A1. Age: _____

A2. Gender:
1. Male
2. Female

A3. Nationality :
1. Malaysian
2. Non-Malaysian

A4. Race:
1. Malay
2. Chinese
3. Indian
4. Others

A5. Birth order:
1. Firstborn
2. Middleborn (if you are not firstborn, lastborn, or only child)
3. Lastborn
4. Only child

A6. Total number of siblings, including yourself, in your family: _____

A7. I am a _____ stream student.

1. Science
2. Art

A8. Your Sijil Pelajaran Malaysia (SPM) results:

(***Please rate your best 6 subjects according to the scale given)***

A = 5	**B = 4**	**C = 3**	**D = 2**	**F = 1**

□ Malay Language	____	□ English Language	____
□ Chinese Language	____	□ Moral	____
□ History	____	□ Islamic Studies	____
□ Science	____	□ Mathematics	____
□ Chemistry	____	□ Biology	____
□ Physics	____	□ Additional Mathematics	____
□ English for Science and Technology	____	□ Principles of Accounts	____
□ Basic Economics	____	□ Business	____
□ Business Accounting	____	□ Geography	____
□ Art	____	□ Others: _____	____

APPENDIX B

Ten Item Personality Inventory (TIPI)

Instruction: Here are a number of personality factors that may or may not apply to you. Please circle a number that indicates the extent to which ***you agree or disagree with each statement***. Below the table each factor is illustrated further.

		Strongly disagree	Disagree moderately	Disagree a little	Neutral	Agree a little	Agree moderately	Strongly agree
B1	Extraverted Enthusiastic	1	2	3	4	5	6	7
B2	Critical Quarrelsome	1	2	3	4	5	6	7
B3	Dependable Self-disciplined	1	2	3	4	5	6	7
B4	Anxious Easily upset	1	2	3	4	5	6	7
B5	Open to new experiences Complex	1	2	3	4	5	6	7
B6	Reserved Quiet	1	2	3	4	5	6	7
B7	Sympathetic Warm	1	2	3	4	5	6	7
B8	Disorganized Careless	1	2	3	4	5	6	7
B9	Calm Emotionally stable	1	2	3	4	5	6	7
B10	Conventional Uncreative	1	2	3	4	5	6	7

- Extraverted : Tend to be with people and seek out relationship with others.
- Critical : Judges self or others severely. Worry too much about what is said and done.
- Dependable : Able to be trusted by other people.
- Anxious : Constantly perceive that there are threats around you.
- Open to new experience : Don't mind trying new things and are open to others' idea.
- Reserved : Tend to be personally guarded, keep to yourself and find it difficult to be close with others.
- Sympathetic : Sensitive to others' feelings. Expresses a willingness to understand and help.
- Disorganized : Don't mind if things are messy and do things as it comes.
- Calm : Relaxed and tranquil. Patient and does not get frustrated easily.
- Conventional : Secure and confident with routine tasks. Like to keep to norms and reject new approaches.

APPENDIX C

Parent-Child Relationship Survey (PCRS)

Please complete the following items about your ***father.***

D1	How much time do you feel you spend with your mother? (1= almost none, 7= a great deal)	1	2	3	4	5	6	7
D2	How well do you feel you have been able to maintain a steady relationship with your mother? (1= not at all, 7= extremely)	1	2	3	4	5	6	7
D3	How much do you trust your mother? (1= not at all, 7= a great deal)	1	2	3	4	5	6	7
D4	How confident are you that your mother would not ridicule or make fun of you if you were to talk about a problem? (1= not at all, 7= extremely)	1	2	3	4	5	6	7
D5	How confident are you that your mother would help you when you have a problem? (1= not at all, 7= extremely)	1	2	3	4	5	6	7
D6	How close do you feel to your mother? (1= very distant, 7= very close)	1	2	3	4	5	6	7
D7	How comfortable would you be approaching your mother about a romantic problem? (1= not at all, 7= extremely)	1	2	3	4	5	6	7
D8	How comfortable would you be talking to your mother about a problem at school? (1= not at all, 7= extremely)	1	2	3	4	5	6	7
D9	How confused are you about the exact role your mother is to have in your life? (1= not at all, 7= a great deal)	1	2	3	4	5	6	7
D10	How accurately do you feel you understand your mother's feeling, thoughts, and behaviour? (1= not at all, 7= a great deal)	1	2	3	4	5	6	7
D11	How easily do you accept the weaknesses in your mother? (1= not at all, 7= extremely)	1	2	3	4	5	6	7
D12	To what extend do you think of your mother as an adult with a life of her own, as opposed to thinking of her only as your mother? (1= think of as only a mother, 7= see as adult with life of her own)	1	2	3	4	5	6	7
D13	How often do you get angry at your mother? (1= almost never, 7= quite often)	1	2	3	4	5	6	7
D14	In general, how much do you resent your mother? (1= not at all, 7= a great deal)	1	2	3	4	5	6	7
D15	How well do you communicate with your mother? (1= not at all, 7= extremely)	1	2	3	4	5	6	7

D16	How well does your mother understand your needs, feelings, and behaviour? (1= not at all, 7= extremely)	1	2	3	4	5	6	7
D17	How well does your mother listen to you? (1= not at all, 7= extremely)	1	2	3	4	5	6	7
D18	How much do you care for your mother? (1= not at all, 7= a great deal)	1	2	3	4	5	6	7
D19	When you are away from house, how much do you typically miss your mother? (1= not at all, 7= a great deal)	1	2	3	4	5	6	7
D20	How much do you respect your mother? (1= not at all, 7= a great deal)	1	2	3	4	5	6	7
D21	How much do you value your mother's opinion? (1= not at all, 7= a great deal)	1	2	3	4	5	6	7
D22	How much do you admire your mother? (1= not at all, 7= a great deal)	1	2	3	4	5	6	7
D23	How much would you like to be like your mother? (1= not at all, 7= a great deal)	1	2	3	4	5	6	7
D24	How much would you be satisfied with your mother's lifestyle as your own? (1= not at all, 7= extremely)	1	2	3	4	5	6	7