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Relationships Among Parenting Knowledge, Quality of Stimulation in the Home and Child Academic Performance

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ABSTRAK

Kajian ini telah menentukan perkaitan di antara pengetahuan keibubapaan, kualiti rangsangan di rumah, dan prestasi akademik kanak-kanak. Subjek kajian terdiri daripada 60 orang ibu Melayu dengan anak mereka yang berumur di antara 8 hingga 9 tahun, yang mana telah di kenalpasti menggunakan persampelan rawak berlapis. Data dikumpulkan melalui temubual dan pemerhatian di rumah responden. Pengetahuan keibubapaan telah diukur menggunakan instrumen khas yang telah dibentuk sendiri oleh penyelidik. Kualiti persekitaran rumah telah diukur menggunakan inventori HOME oleh Caldwell dan Bradley (1984). Maklumat berkaitan pencapaian akademik anak telah diperolehi daripada laporan kad kemajuan sekolah. Hasil kajian menunjukkan terdapat perkaitan signifikan di antara variabel tumpuan. Pengetahuan keibubapaan mempunyai perkaitan yang signifikan dengan kualiti rangsangan di rumah, yang mana mempunyai perkaitan signifikan pula dengan prestasi akademik kanak-kanak. Analisis selanjutnya menunjukkan bahawa terdapat perkaitan signifikan di antara faktor latarbelakang keluarga (pendidikan, pendapatan keluarga, dan bilangan anak) dengan pengetahuan keibubapaan, dan kualiti rangsangan di rumah. Implikasi hasil kajian dibincangkan.

ABSTRACT

The present study determined the relationships among parenting knowledge, quality of stimulation in the home, and children's academic performance. Subjects were 60 Malay mothers with children aged 8 to 9 years, who were identified using stratified random selection. Data were collected by interview and observation in the home of the respondents. Parenting knowledge was measured using an instrument that was specially developed by the researcher. The quality of stimulation in the home was assessed using Caldwell and Bradley's (1984) HOME inventory. Information on the children's academic achievement was obtained from their school report cards. Results show significant associations among the variables of interest. Parenting knowledge was significantly related to the quality of stimulation in the home, which in turn, was significantly related to the academic performance of the children. Additional analyses show significant associations between family background factors (education, family income, and number of children) and parenting knowledge, and quality of stimulation in the home environment. Implications of the findings are discussed.

INTRODUCTION

Parenting is an art and a science, as well as a responsibility that comes with being part of a family. Most parents want to be "good" parents: doing what is most helpful, nurturing and encouraging their children's growth and

development. However, parenting is a complex and an intellectually challenging task. Parents need to have accurate and adequate child development and parenting knowledge in order to become competent parents. Today's complex and fast changing world may also demand parents to demonstrate higher levels of efficacy to ensure that their children can function effectively and cope successfully with the challenges of modern living. Parenting today is realized as even more complicated than yesteryears, and thus possessing accurate information and providing quality childrearing environment are vital for producing children with excellent capabilities.

Past research has provided evidence of the interrelationships among parenting knowledge, the quality of the home environment and child development (Stevens, 1984; Parks & Smeriglio, 1986; Stern & Alvarez, 1992). In general, these studies indicated that good understanding of childcare and development could increase a parent's ability to provide stimulating environment in the home, which subsequently, increase his/her child's developmental outcomes. Notwithstanding, other studies have shown that poor parenting knowledge is associated with poor parenting adjustment, dissatisfaction with parenting role, less positive child stimulation and contact, and greater use of physical punishment (Altman-Klein & Cordell, 1987; Culp, Applebaum, Osofsky, & Levy, 1988; Chamberlain, Szumoski, & Zastowny, 1980). Lower acquisition of parenting information and negative caretaking behaviors have both been shown to be related to negative child outcomes (Culp, Applebaum, Osofsky, & Levy, 1988; Elster et al., 1983; Stevens, 1984). Siti Nor et.al.'s (1992) study provided evidence that supported the significant associations between parenting knowledge, parenting practices and child outcome. The study focused on 30 mothers with children aged 5-6 year-old. Findings from the study indicated that the level of parenting knowledge acquired by the mothers is significantly related to their childcare practices, and which in turn, is significantly related to the cognitive abilities of their children.

Based on available literature, the present study determined the relationships among parenting knowledge, the quality of stimulation provided in the home environment and the academic achievement of children. The study focused specifically on Malay mothers and their 8-9 year-old children. Fathers were not included in the present study for it has been shown that mothers are traditionally more involved than fathers in the everyday activities of their children, and hold major impact on their children's development (Sroufe, Cooper & Dehart, 1996).

Besides determining the relationships among the three variables of interest, this study also determined the relationships between family background factors (age of mother, education, family income and number of children) and parenting knowledge, quality of stimulation in the home, and the child academic performance. A review of the literature indicated that there are substantial relations between family background factors and the levels of parenting knowledge, quality of home stimulation and the level of achievement children possessed. In their study, Park and Smeriglio (1986) found significant associations between family background and parenting knowledge, home environment and child outcome. The study showed that among low socioeconomic status families, parenting knowledge was significantly related to quality of stimulation in the home, that in turn, is related to a child's developmental performance. Park and Smeriglio (1986) observed that the mothers parenting practices could be influenced by their knowledge of the relationship between childrearing practices and child outcomes.

Research findings by Tsao (1994) is consistent with Park and Smeriglio (1986) findings. In the study, Tsao examined the relationships between several family background factors including education, occupation and income and parenting knowledge, knowledge of child development, and childrearing involvement of 145 Taiwanese parents (55 fathers and 90 mothers). The study found that parents' levels of education, occupation, and annual income are positively related to the parents' level of parenting knowledge, knowledge of child development and childrearing involvement. Negative relationship was however, found between the parents' age and their level of parenting knowledge and childrearing involvement. Older parents were shown to have better information on childrearing, and are more involved in caring for their children.

A recent study by Doshi and Rozumah (1997) provided evidence that support the significant associations between family factors

and parent's knowledge, attitude and childcare practices (KAP). The study sample consisted primarily of low-income parents (n = 80) from a FELDA scheme in Negri Sembilan. Although the study found small relations between selected family background factors and parenting KAP, it demonstrated that family context do influence parenting KAP. Results of the study showed that respondents' age and levels of parental education are significantly related to parenting knowledge. Parents who were older in age and completed more years of formal education showed better parenting than other parents in the study. The study also found that more educated parents have better parenting attitude than other parents. In addition, the findings indicated significant and positive correlation between family income and parenting practices.

The primary purpose of the present study is to determine the relationships among parenting knowledge, the quality of stimulation in the home, and child's academic performance. The study expected that there are significant and positive correlations among these three variables. Also of interest to the present study is the relationships between selected family background factors and parenting knowledge, the quality of stimulation in the home, and child academic performance. The study expected the following variables to be related to the three dependent variables focused on in the present analyses: age of mother, education, family income and number of children. Findings from this study may create awareness among parents on the importance of acquiring appropriate knowledge in child development and of providing proper guidance and stimulation for children to reach their full potentials. In addition, the information obtained may help to further refine the understanding of factors that influence parenting and child development.

METHODOLOGY

Sample

Sample for the study consists of 60 Malay mothers and their 8-9 year-old children. The sampling technique adopted was stratified random sampling, i.e.. a number of Third Grade male and female students from Sungai Kapar Elementary School, Semanggol, Perak who fulfilled the study criteria (Malay, 8-9 year-old, and staying in two-parent families) were initially identified and selected at random. Mothers of these children were then included as respondents for the study. Table 1 shows the demographic characteristics of the sample.

Mothers' involved in this study could be considered as relatively young. Their age ranged from 25 to 50 years, with a mean of 37.7 years. Almost all of the respondents had some schooling, average educational attainment was 7 years, and ranged from 0 to 14 years. Quite a large proportion of the respondents have children between 4 to 8. Mean number of children was 5.

Slightly more than half of the respondents indicated they were unemployed, for those who were employed, most were in blue-collar jobs (e.g., farmers & laborers). The average family income for the sample was over RM8OO (median = RM600) per month. Total family income was determined by adding the husband's, wife's and other incomes (such as from part-time jobs or contributions from older children who are already working). Overall, respondents in this study could be considered as coming from low-income families. Given that the respondents were not living in urban or metropolitan area of the country, the amount of family income they have may be adequate.

Half (51.7%) of the children involved in the study were male, and the rest (49.3%) were female. Their age ranged from 96 months to 120, with a mean of 108.5 months.

Instrumentation

Parenting Knowledge was assessed using a Likert-type scale that was specially developed by the researcher for the study. The instrument contains 20 items measuring the mothers' child-rearing/child development knowledge. These items were developed based on findings in the research literature, child development theories, and experts' opinions. This method of scale development therefore, provides evidence for its content validity. Internal consistency reliability that was calculated for the scale produced a coefficient alpha of .60.

In order to avoid reponse bias, items in the scale were arranged in a mixture of positive (11) and negative (9) statements. Examples of positive and negative items are as follows: "Parents need to give their child opportunity to voice out his/her opinion" (positive); "Children need to be treated like adults so that they mature quickly" (negative).

TABLE 1
Demographic characteristics of sample

	N	%	Mean	SD
Age (years)				
Less than 30	6	10.0		
30-40	34	56.7		
More than 40	20	33.3		
			37.7	6.8
Education (years)				
Less than 4	10	16.7		
4-10	34	56.7		
More than 10	16	26.7		
			7.2	3.8
Occupation				
Professional & Technical	6	10.7		
Administration & Management	3	5.0		
Clerical	1	1.7		
Sales	5	8.3		
Farmers/labourers	10	16.7		
Not working	35	58.3		
Income				
Less than 500	50	83.3		
500-1000	5	8.3		
More than 1000	5	8.3		
			228.3	358.4
Family Income				
Less than 1000	45	75.0		
500-1000	9	15.0		
More than 1000	6	10.0		
			850.7	650.0
No. of children				
Less than 4	11	18.3		
4-8	43	71.7		
More than 8	6	10.0		
			5.4	2.7
Age of child (months)				
Less than 105	18	30.0		
105-115	29	48.3		
More than 115	13	21.7		
			108.5	6.8
Sex of child				
Girls	29	48.3		
Boys	31	51.7		

Note. SD = Standard Deviation

Mothers' responses for this scale ranged from 3 (strongly agree) to 0 (strongly disagree). Negative items were recoded before scoring so that high scores represent high knowledge in parenting. Mean score obtained by the respondents on the parenting knowledge scale was 61.4 (SD = 3.3), and the range span from 56 to 70.

Quality of Stimulation in the Home was measured using the elementary version of the Home Observation for Measurement of the Environment (HOME) scale (Caldwell & Bradley, 1984). The scale consists of 59 items, which are grouped into 8 categories: 1. Emotional and Verbal Responsitivity, 2. Encouragement of Maturity, 3. Emotional Climate, 4. Growth

Fostering Materials and Experiences, 5. Provision for Active Stimulation, 6. Family Participation in Developmentally Stimulating Experiences, 7. Paternal Involvement, and 8. Aspects of the Physical Environment. Information for each item of the scale was obtained by both observation and interview in the home at a time when the target child is awake and can interact with the mother. Each item is scored 'yes' (1) or 'no' (0), and a total score is obtained for all items in the 8 subscales. High scores indicate the availability of "high" quality stimulation in the home. The mean score on the HOME for the present sample was 42.8 (SD = 6.2). The respondents' scores ranged-from 25 to 55.

Data on the reliability and validity of the HOME are widely published. The HOME has been used in several countries and across different cultural groups. Bradley et al.'s (1988) data revealed a coefficient alpha of .90 for the elementary HOME. For the present study, the HOME scale total score coefficient alpha was .82.

Academic Performance of the children was determined by adding their second-semester examination (1994) scores on 4 basic subjects (i.e., Malay Language, English Language, Mathematics, and Islamic Studies). The highest score attainable for each subject was 100 points, and thus, the 4 subjects totalled to 400 points. The mean score of the children on the four academic subjects used in the analyses was 248.2 (SD=81.8). Median score was 259, and ranged from 47 to 374.

RESULTS

Correlational analyses were done to determine the extent of associations among parenting knowledge, quality of stimulation in the home, and the child's academic performance. Table 2 presents the zero-order correlations among the three variables. All of the correlations were in the expected directions, and moderate in magnitude.

Consistent with expectations, there were significant and positive correlations among parenting knowledge, quality of stimulation in the home and child's academic performance. These findings are consistent with past studies (e.g., Steven, 1984; Park & Smeriglio, 1986; Doshi & Rozumah, 1997). Parenting knowledge is significantly related to the quality of stimulation in the home and the academic performance of children. Likewise, the quality of stimulation parents provide for their children in the home is significantly related to the academic achievement scores of the children. These findings tend to suggest that parents who know more about caregiving structure their home environment in ways that are stimulating for the children's to excel in school.

TABLE 2
Zero-order correlations among parenting know ledge, quality of stimulation in the home, and academik performance

Variables	PK r	QS r	AP r
Parenting knowledge	1.00	0.53***	0.41***
Home stimulation		1.00	0.44***
Academic performance			1.00

Note. PK = Parenting knowledge; QS = Quality of stimulation in the home; AP = Academic performance of children. *p <.05, **p <.01, ***p<.001

As noted earlier, the second objective of the present study is to determine the relationships between selected family background variables (specifically, age of mother, education, family income and number of children) and parenting knowledge, quality of stimulation in the home, and child academic performance. It was expected that all of these family background variables included in the analyses will be significantly related to the three dependent variables. The data were consistent with this expectation. Table 3 shows the zero-order correlations among the variables used in the analyses: family background (age of mother, education, family income, and number of children), parenting knowledge, quality of stimulation in the home, and academic achievement of children. Most of the correlations coefficients were statistically significant, and small to moderate in size.

All of the family background variables, with exception of mothers' age, were found to be significantly related to the mothers' level of parenting knowledge. Mothers who have had higher levels of education and family income tended to have higher knowledge in parenting than other mothers in the study. These mothers also had fewer children at the time of the study.

TABLE 3.
Zero-order correlations between family background variables and parenting knowledge, quality of stimulation in the home, and child academic performance

Variables	PK r	QS r	AP r
Age of mother	-0.26	0.05	0.12
Education	0.49***	0.59***	0.41***
No. of children	-0.33***	-0.36**	-0.27*

Note. PK = Parenting knowledge; QS = Quality of stimulation in the home; AP = Academic performance of children. *p <.05, **p <.01, ***p<.001

As shown in Table 3, three out of the four family variables were significantly related to the quality of stimulation in the home. Mothers who have had more years of schooling, higher family income and fewer children seemed to provide better quality stimulation for their children. In addition, these mothers have higher levels of parenting knowledge compared to other mothers.

With exception of the mothers' age, the family background variables were found to be significantly related to the children's academic performance. The study found that children who do well in school appeared to come from families that have higher levels of family income, and fewer children in the households. These children also tended to have mothers who completed more years of education. Additionally, these mothers have higher levels of parenting knowledge and provide the children with better quality stimulation in the home.

Predictors of Parenting Knowledge, Quality of Stimulation and Child's Academic Performance

Several stepwise multiple regression analyses, using the forward selection procedure were also performed in the present study to determine which of the selected independent variables uniquely predict the mothers' parenting knowledge, the quality of stimulation the mothers provide, and the academic performance of the children. Results of the analyses are shown in Table 4. The F values for all the regression models were found to be highly significant (p <.001).

In the first set of the regression analyses, shown in the first column of Table 4, parenting knowledge was the dependent variable and the family background variables (age of mother, years of education, family income, and number of children) were used as the independent variables. The four family background variables accounted for 34% of the variance in the mothers' parenting knowledge scores. Of the four variables, only mothers' education and levels of family income were significant predictors of the mothers' parenting knowledge when other factors were controlled.

TABLE 4.
Stepwise multiple regression analyses on predictors of parenting knowledge, quality of stimulation in the home, and academic performance

Variables	PK B	QS B	AP B
Age of mother	-	.04***	-
Education	.28*	.54***	-
Family Income	.38**	-	.29**
No. of children	-	-.30**	-
PK	-	.26*	-
QS	NI	-	.29*
AP	NI	NI	-
R^2	.34	.55	.26
F value	14.51	16.54	9.76
Sig. Level	.001	.001	.001

Note. Betas reported are standardized beta. Betas are not reported for variables that failed to enter a model. PK = Parenting knowledge, QS=Quality of stimulation in the home, AP=Academic performance, NI=Not included in the model. *p <.05. **p<.01, ***p <.001

In the second set of the regression analyses (see second column of Table 4), quality of stimulation in the home was used as the dependent variable and the family background variables including parenting knowledge was the independent variables in the analyses. Table 4 shows that only family income did not enter the prediction equation. The results show that mothers' age, education, levels of family income and parenting knowledge were all significantly related to the quality of stimulation mothers provide for their children at home when other factors were statistically controlled. The predictor variables accounted for 55% of the variance in the HOME scores.

Results of the final set of the regression analyses are shown in the third column of Table 4. In this analysis, the dependent variable was the academic achievement scores of the children. Independent variables used in the analysis were family background, parenting knowledge, and HOME scores. Together the predictor variables accounted for 26% of the variance in the achievement scores of the children. After controlling for other factors, only two variables emerged as unique predictors of the children's achievement: family income and HOME scores.

DISCUSSION AND IMPLICATIONS

Results of the bivariate analyses indicated that parenting knowledge is significantly related to quality of stimulation in the home, and children's academic attainment. Similarly, quality of stimulation in the home is significantly related to the children's school performance. Clearly, the results suggest that acquiring appropriate and adequate child development knowledge is important for competent parenting. The quality of parenting children received will subsequently determine how well they do in school. Lower level of knowledge in child development may therefore result in poor home environment and poor child functioning. Thus, parenting must be regarded as a process that need preparation and learning, and not as a natural instinct. It seems advisable for those engaged in parenting education to emphasize the importance of systematic understanding of child development and caregiving for stimulating children towards their optimum development.

The study found that several selected family backgroud factors (specifically, age of mother, education, family income, and number of children) are related to the mothers' parenting knowledge, quality of stimulation she provides in the home, and children's academic performance. Mothers who completed more years of schooling, have higher family income and fewer children to care for achieved higher scores on the parenting knowledge scale than other mothers in the study. These mothers were also found to provide better quality stimulation in the home, and have children who achieved good grades in school.

When the family background factors were statistically controlled, only two factors (i.e., education and family income) were found to be significantly related to the mothers' levels of parenting knowledge. More educated mothers and mothers with higher family income were found to have higher parenting knowledge. These findings seemed to imply that more educated mothers, and mothers with higher family income have the means to obtain more information on child-rearing. Being more educated these mothers may have read more books related to child care and development, and attended more seminars, workshops or courses on children.

Four variables were found to be unique predictors of the quality of stimulation mothers provide for their children in the home: age of mother, education, number of children, and parenting knowledge. Consistent with previous research (Ragozin et al., 1982; Stevens, 1984; Menaghan & Parcel, 1991) mothers who were older in age, completed more years of education, had fewer children to care for, and had higher levels of parenting knowledge were found to be more able to prepare a home environment that are cognitively conducive for their children. These findings show that over the years more mature mothers may have gathered greater information and experience on ways to stimulate their children's learning, thus, they scored higher on the HOME inventory.

It is noteworthy that mothers with more children are less able to provide stimulating environment for their children at home. This finding is consistent with past studies (Blake, 1989; Menaghan & Parcel, 1991). Perhaps for these mothers, providing the children with their basic daily needs (e.g., food and clothing) may be more important for the children's survival. Moreover, caring for more children may demand a lot of time and energy; so the mothers may have very little time and energy left for constructing a more stimulating home environment.

The fact that family income did not turn out as an important predictor may be largely due to the HOME measure, that also includes items assessing qualitative types of stimulation (i.e., aspects of parent-child interaction which do not require objects/materials to be purchased) available in the home environment. Another alternative explanation is that the effects of family income may have been more indirect via education or parenting knowledge.

Consistent with expectations, parenting knowledge significantly predicts the quality of

stimulation provided by mothers at home. Parks and Smeriglio (1986) also found similar relationships. This finding imply that mothers who know more about childrearing would structure their home environments in ways that promote positive development in their children.

After partialling out other factors in the study, only family income and quality of stimulation in the home emerged as unique predictors of children's performance. Children who came from families with higher incomes, and provided with better quality stimulation performed well academically. This finding may indicate that families with higher income have the ability to provide their children with resources (human and non-human) that are important for their children's cognitive development. Human resources such as the mother's education and knowledge are definitely at a higher level in high income than low income families, thus having mothers with these characteristics benefits the children socially and genetically. Furthermore, higher income families generally have fewer children than lower income families. Therefore, in terms of parental time, attention, and communication (non-human resources), children with fewer siblings may be gaining more of these resources than children with larger number of siblings.

As expected the study found that quality simulation in the home significantly predicted the children's academic achievement. This finding is consistent with earlier studies (Rozumah & Luster. 1992; Gottfried & Gottfried, 1984). The result shows that a home that is enriched with educational materials (e.g., games, books, etc.), and that allows children to learn and explore will encourage positive development in children. Furthermore, a home in which parents are always available and responsive towards their children's needs, will be a cognitively stimulating home for children.

Although in the multiple regression analyses mothers educational level, parenting knowledge, and number of children were not significant predictors of the children's achievement scores, this does not imply that these factors have no influence on the children's outcomes. Earlier correlational analyses showed that these factors have significant relationships with academic achievement (see Table 4). Thus, these findings may suggest that the effect of education, parenting knowledge, and number of children may more likely to be indirect, i.e., via the quality of stimulation provided in the home.

The findings discussed so far may imply that those who work with families need to consider the contributions of numerous factors within the family ecosystem on parents ability to provide optimum care. Practioners may need to develop intervention strategies that are appropriate for families at different background or socioeconomic status. Low socioeconomic families, particularly may need ample opportunities to learn about child care and development. Living in stressfiul life conditions (e.g., job instability, low income, large family size, poor housing) may sometimes hinder parents ability to focus on the developmental needs of their children or the quality of parent-child interaction. Family support or intervention programs that are appropriately design can help children and families to overcome factors that undermine their optimum functioning.

CONCLUSION

Results from the present study showed significant associations among parenting knowledge, quality of stimulation in the home, and children's academic performance. The study also revealed that at the bivariate level, family background factors including mothers' education, family income, and number of children are significantly related to the mothers' parenting knowledge, quality of stimulation she provides in the home, and children's academic performance. However, different factors were shown to predict the three major variables focused on in the study after the effects of other factors were statistically controlled. The significant predictors for parenting knowledge were education and family income; for quality of stimulation in the home were age of mother, education, number of children, and parenting knowledge; and for children's performance were family income and quality of stimulation in the home.

Results from the present study should be viewed cautiously for it was exploratory and correlational in nature. Moreover, the sample size may have underestimated the effects of the selected variables on the outcomes of interest. Future researchers may therefore want to further examine the effects of these variables using a larger sample. Other parenting factors such as parental beliefs, goals and expectations may also be interesting to explore in future studies. In

addition, parental influence on other aspects of child outcomes such as social and emotional development may be the focus of future research. Several findings from the present study may be relevant to policy-makers and practitioners involved in programmes or activities that are related to parenting and child development.

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