

## **The Prospective Relationships among Maternal Behaviors, Maternal Education and Child Academic Achievement**

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### ***Abstract***

This study aimed to investigate issues of consistency and change in maternal behaviors and children's outcomes over time, and, prospectively, the nature of the relationship between mothers and children's academic achievement. Both family status and family processes, i.e. maternal education, maternal depression, and maternal marital happiness were included in the study. This study investigated how these factors affected maternal behaviors, and how, in turn, these behaviors influence children's attributes, i.e., child's academic orientation, self-esteem, social adjustment, and academic achievement. This study found gender differences in adolescents' self-esteem, academic orientation, and academic achievement. Girls on average had lower self-esteem than boys. Meanwhile, boys have lower levels of academic orientation and lower academic achievement (GPA) than girls in their adolescent years. The prospective findings indicated maternal nurturance behaviors influenced children's academic achievement through children's academic orientation. The prospective longitudinal findings in this study also found that children's self-esteem was not a mediating variable in the relationship between parental nurturance behaviors and the children's academic achievement in the mother-son dyads. However, a mediating effect on children's self-esteem was found in mother-daughter dyads.

Keywords: maternal behavior, maternal education, academic achievement, academic orientation

### ***Introduction***

Parental behaviors have enormous effects on children's outcomes. Research found that supportive, involved parents have children with high self-esteem, academic success, positive psychological adjustment, social skills, and strong cognitive abilities (Van Lissa, Keizer, Van Lier, Meeus & Branje, 2019; Gniewosz, G., Katstaller, M., & Gniewosz, B., 2023). On the other hand, the absence of parental support has been found to be linked with delinquent behaviors and other negative developmental outcomes (Maccoby & Martin, 1983; Peterson & Rollins, 1987). In research concerning changes in mean levels of parental practices, it has been generally found that parental expression of affection decreases with the age of the child (Clarke-Stewart & Hevey, 1981; Roberts, Block, & Block, 1984; Steinberg, 1987). In research regarding stability in parental practices, findings generally revealed consistency in parental practice across time (Hock & Lindamood, 1981).

For most psychologists, it is common that parental child-rearing practices change as their children mature. For example, Maccoby (1980) suggested that as a child grows, parents use more verbal modes of discipline and control of privileges and spend less time with their children. Parents with adolescent daughters may become more restrictive with their daughters (Block, 1984). According to Steinberg (1988), maternal negative affection might be relatively stable during middle childhood and then increase when children enter early adolescence due to changes in family dynamics.

It is interesting to examine consistency and change in parenting behaviors during the adolescent years since so many continuities and discontinuities are appearing at this time. McNally, Eisenberg, and Harris (1991) investigated stability in parenting practices from childhood to adolescence. The results showed a substantial degree of stability in parental behaviors such as control, independence, and expression of affect and values noted over the 8-year period. In addition, some practices increased or decreased with age.

Families of different parental education levels notably diverge in their use of parenting styles (Dombusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987). Dombusch et al. (1987) found that families with higher parental education tended to be lower in authoritarian and permissive parenting and higher in authoritative parenting. In addition, previous studies have shown that parental education is negatively predictive of traditional punitive discipline strategies (Maccoby & Martin, 1983).

Past research showed that parental education is a robust correlate of children's school performance (Mullis & Jenkins, 1990; White, 1982). DeBaryshe, Patterson, and Capaldi (1993) proposed that parental education was related directly to parenting but not to children's achievement.

In their study, parents with lower education were likelier to use coercive discipline strategies and were likelier to have children who displayed antisocial behavior and who had lower grades in Grade 6 (DeBaryshe, Patterson, & Capaldi, 1993). Melby and Conger (1996) also found that mothers' and fathers' education levels were positively related to involved parenting and adolescents' academic performance three years later.

In a sample of sixth-, eighth-, and tenth-grade students and their mothers and fathers. Smith (1989) found that maternal education had an effect on children's school grades, realistic education expectations, and ideal educational aspirations. Paternal education had an effect only on student's educational expectations. This study emphasized maternal influence on a child's academic performance and educational goals.

Bayley and Schaefer (1964) found that maternal behaviors were associated with their sons' intelligence scores when the children were 9 to 13 years of age. In contrast, there was little or no relation between maternal behaviors and their daughters' scores. Their findings showed that maternal behaviors such as love, warmth versus hostility, and strictness were relatively continuously related to the boys' abilities, while no such relation was found between maternal behaviors and girls' abilities.

Past studies have examined several mediating variables in the relationship between parenting and children's academic performance (DeBaryshe, Patterson, & Capaldi, 1993; Glasgow, Dombusch, Troyer, Steinberg, & Ritter, 1997; Steinberg, Elmen, & Mounts, 1989; Wentzel, Feldman, & Weinberger, 1991). DeBaryshe and colleagues (1993) found that parents' use of coercive disciplinary practices was negatively related to the boys' academic engagement in seventh grade. In turn, boys' seventh-grade academic engagement was positively related to eighth-grade academic achievement. Therefore, boys' academic engagement was a mediating variable in the relation between parental coercive disciplinary practices and their academic achievement.

Steinberg, Elmen, and Mounts (1989) investigated mediators in the relationship between authoritative parenting and academic performance. They pointed out it appears that changing adolescents' motivation to work hard and strive for success holds the most promise to enhance school performance among adolescents.

As children make the transition from elementary school to high school, children's motivation to work hard becomes an important predictor of academic achievement (Eccles & Midgley, 1989). Some researchers have conducted investigations of environmental antecedents of individual differences in achievement orientation. Parental influence is undoubtedly one factor affecting a child's achievement orientation from an early age.

Thus, this study hypothesized that maternal education has a positive effect on maternal nurturance behavior, marital depression has a negative effect on maternal nurturance behaviors, and maternal marital happiness has a positive effect on maternal nurturance behavior. In turn, maternal nurturance behavior is assumed to have an effect on children's academic orientation and on children's academic achievement. In particular, the study hypothesized that maternal education has both direct and indirect effects on children's academic achievement, the latter through children's academic orientation. Further, the study also hypothesized that maternal education has an effect on children's academic achievement through maternal nurturance behavior, and through children's academic orientation.

## **Methods**

### **Subjects**

This study included a total of 398 adolescents including 198 females and 200 males and their parents at wave 1. The mean age for the adolescents at Time 1 was 12.42 years. At Time 2, there were 382 adolescents including 190 females and 192 males and their parents. The mean age for the adolescents was 13.43 years at Time 2. At Time 3, a total of 374 adolescents including 186 females and 188 males and their parents were still involved in the study. The mean age for the adolescents at Time 3 was 14.36 years.

### **Plan of Analysis**

To investigate changes over time, I will examine changes in mean levels in parental behaviors, children's academic orientation, children's social adjustment, children's self-esteem, and children's academic achievement over time. Three (time of measurement) by 2 (gender) by 2 (grade) repeated measures MANOVAs will be used to investigate change over time. Repeated measures designs are those that perform a sequence of observations on each subject.

Structural equation modeling was utilized to elucidate the effect of family status and family processes on children's academic achievement. Thus, this study will examine the direct as well as indirect influences of parenting behaviors on children's academic achievement, the indirect effects hypothesized to come about through the effects of parental behaviors on children's academic orientation, or children's self-esteem, or children's social-emotional adjustment, which then affects children's academic achievement.

## Results

### Cross-sectional Correlations

#### *Maternal behaviors and children's outcomes at Time 1*

The results of correlational analyses showed that the mother's nurturance behavior was positively related to children's academic orientation, self-esteem, and social adjustment, but not to children's grade point averages. Positive associations were also evident between the mother's monitoring behavior children's academic orientation and children's self-esteem. On the other hand, maternal strictness behavior was negatively related to children's self-esteem and children's social adjustment. Thus, maternal behaviors, i.e., the mother's nurturance, monitoring, and strictness, were not correlated significantly with children's grade point average but were positively or negatively associated with children's academic orientation, self-esteem, and social adjustment.

#### *Maternal behaviors and children's outcomes at Time 2*

The mother's nurturance behavior was positively related to the child's academic orientation, child's self-esteem, child's social adjustment, and child's grade point average at Time 2. Maternal monitoring behavior was also positively associated with the child's academic orientation, child's self-esteem, and child's social adjustment but not with the child's grade point average. The mother's strict behavior was negatively correlated with the child's academic orientation and child's self-esteem. Thus, maternal nurturance behavior at Time 2 had positive relationships with all child outcomes variables, including the child's grade point average. Maternal monitoring behavior had the same relationships with the child's outcome variables except the child's grade point average. Maternal strictness behaviors negatively correlated with the child's academic orientation and self-esteem at Time 2.

#### *Maternal behaviors and children's outcomes at Time 3*

Consistent with the results at Time 2, maternal nurturance behavior showed positive correlations with children's academic orientation, self-esteem, social adjustment, and grade point average as predicted. Maternal monitoring behavior was also positively related to children's academic orientation, self-esteem, social adjustment and grade point averages. Consistent with the findings at Time 1, maternal strictness behavior was negatively associated with children's self-esteem and children's social adjustment.

### Cross-Lagged Correlations

The longitudinal consistency of individual differences in all variables was assessed by intercorrelating the variables between Time 1 and Time 2; Time 2 and Time 3; and Time 1 and Time 3.

#### *Cross-lagged correlations between Time 1 and Time 2 variables*

The autocorrelations were .66, .52, and .57 for maternal nurturance, monitoring, and strictness, respectively. Maternal nurturance behaviors at Time 1 were weakly to moderately predictive of the level of the child's academic orientation, child's self-esteem, and child's social adjustment at Time 2 ( $r$ 's ranged from .19 to .34). Maternal monitoring behavior at Time 1 was weakly and positively related to the level of child's academic orientation, child's self-esteem, and child's social adjustment at Time 2 ( $r = .13, .11, .14$ , respectively). And maternal strictness behavior at Time 1 was negatively related to the child's academic orientation and child's self-esteem at Time 2 ( $r$ 's ranged from -.12 to -.15). Besides, it also showed that higher levels of the child's academic orientation, self-esteem, and child's social adjustment at Time 1 were related to higher child's grade point average one year later ( $r$ 's were .43, .22, .27, respectively).

Results showed that some of the Time 1 child's variables (child's academic orientation, child's self-esteem, child's social adjustment and child's grade point average) were modestly related to Time 2 predictive variables (parental nurturance, monitoring, and strictness behaviors), suggesting the possibility of bidirectional relations between these variables.

#### *Cross-lagged correlations between Time 2 and Time 3 variables*

In terms of longitudinal consistency of the variables from Time 2 to Time 3. For parental behaviors, moderate to strong levels of stability were found in, maternal monitoring ( $r = .58$ ), and maternal strictness behaviors ( $r = .61$ ). High degrees of stability were obtained for maternal nurturance behaviors ( $r = .71$ ). In terms of child outcomes variables. The results showed a moderate to strong level of stability from Time 2 to Time 3 in child's academic orientation ( $r = .62$ ), child's self-esteem ( $r = .68$ ), and child's social adjustment ( $r = .48$ ). In addition, a high level of stability was found for child's grade point average ( $r = .87$ ).

For mothers, maternal nurturance behavior at Time 2 was positively related to the child's academic orientation ( $r = .34$ ), child's self-esteem ( $r = .32$ ), child's social adjustment ( $r = .31$ ), and child's grade point average ( $r = .21$ ) at Time 3. Similarly, maternal monitoring behavior at Time 2 was positively related to the child's academic orientation ( $r = .17$ ), child's self-esteem ( $r = .14$ ), child's social adjustment ( $r = .24$ ), and child's grade point average ( $r = .11$ ) one year later. In contrast, maternal strictness behavior at Time 2 was negatively related to the child's self-esteem ( $r = -.12$ ) and the child's social adjustment ( $r = -.16$ ) at Time 3.

The results also showed that higher levels of a child's academic orientation, child's self-esteem, and child's social adjustment at Time 2 were related to a higher child's grade point average at Time 3 ( $r$ 's are .48, .18, and .15, respectively).

Results also demonstrated that some of the Time 2 child's variables (child's academic orientation, child's self-esteem, child's social adjustment, and child's grade point average) were modestly related to Time 3 parental behavior variables (parental nurturance, monitoring, and strictness behaviors).

#### *Cross-lagged correlation between Time 1 and Time 3 variable*

For parental behaviors, moderate to high stabilities were also found for maternal nurturance ( $r = .55$ ), maternal monitoring ( $r = .40$ ), and maternal strictness behaviors ( $r = .54$ ).

For the relationships between parental behaviors and child's outcomes across the two years, maternal nurturance behavior at Time 1 was also positively related to child's academic orientation ( $r = .24$ ), child's self-esteem ( $r = .27$ ), and child's social adjustment ( $r = .23$ ) two years later.

Results also showed that higher levels of the child's academic orientation, child's self-esteem, and child's social adjustment at Time 1 were modestly related to a higher level of the child's grade point average ( $r$ 's were .45, .24, and .30, respectively) two years later.

### **Repeated Measures Multivariate Analyses of Variance (MANOVAs)**

The second set of analyses, 3 (time of measurement) by 2 (gender) by 2 (grade) repeated measures MANOVAs, were conducted to investigate changes in mean-level for all variables over time.

#### *Mother's parenting behaviors*

In the repeated measures MANOVA for maternal nurturance behavior with grade and gender as the between-subjects factors and time as the within-subjects factor, a significant effect was found for grade ( $F(1, 361) = 10.20, p < .01$ ). The mean scores of maternal nurturance behaviors were 29.68, 29.52, and 28.76, at Time 1, 2, and 3, respectively for the lower grade (6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup>). On the other hand, the mean scores of maternal nurturance behaviors were 28.52, 27.56, and 26.79 at Time 1, 2, and 3, respectively for the higher grade (8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>). It showed that at each time, mothers of lower grade students were more nurturant than the mothers of higher grade students. No significant interaction relationship was found between gender and grade. In addition, a significant within-subjects effect was found for time ( $F(2, 722) = 13.21, p < .001$ ). The mean scores of maternal nurturance behaviors were 29.07, 28.47, and 27.71 at Time 1, 2, and 3, respectively, indicating a decrease over the three waves. There was no significant interaction between the within-subjects factor of time and the between-subjects factors of grade and gender, meaning the difference between Time 1, 2, and 3 in maternal nurturance behaviors did not depend upon the values of either gender or grade or both.

In the repeated measures MANOVA for maternal monitoring behavior with gender and grade as between-subjects factors and time as within-subjects factor, significant main effects were found for gender ( $F(1, 364) = 5.03, p < .05$ ), grade ( $F(1, 364) = 8.06, p < .01$ ), as well as a significant interaction effect between gender and grade ( $F(1, 364) = 6.18, p < .05$ ). The results of one-way ANOVAs with child's gender as the factor and maternal monitoring behavior as the dependent variable indicated that there were no significant differences in maternal monitoring behavior between boys and girls at each of the three waves for the lower grade; there were significant differences in maternal monitoring behavior between boys and girls for the higher grade. In addition, the results of the ANOVA with child's grade as the factor and maternal behavior as the dependent variable showed that there were significant differences in maternal monitoring behaviors for different grades (6<sup>th</sup> vs. 8<sup>th</sup> grade, 7<sup>th</sup> vs. 9<sup>th</sup> grade and 8<sup>th</sup> vs. 10<sup>th</sup> grade) for the girls at Time 1, 2, and 3, but no significant difference in maternal monitoring behavior was found for the boys at these different grades. Furthermore, a significant within-subjects effect was found for time ( $F(2, 728) = 16.16, p < .001$ ). The mean scores of maternal monitoring behaviors were 13.51, 14.18, and 14.54 at Time 1, 2, and 3, respectively, indicating an increase from Time 1 to Time 3.

For maternal strictness behavior, the results of repeated measures MANOVA with gender and grade as between-subjects factors and time as within-subjects factor showed a significant effect for grade ( $F(1, 367) = 5.72, p < .05$ ). The mean scores of maternal strictness behaviors were 9.60, 10.00, and 9.67 for the lower grades (6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup>) at Time 1, 2, and 3, respectively. For the higher grades (8<sup>th</sup>, 9<sup>th</sup>, and 10<sup>th</sup>), the mean scores of maternal strictness behaviors were 10.45, 10.31, and 10.41 at Time 1, 2, and 3, respectively. It indicated that at the higher grader mothers used more strict behaviors.

#### *Child's outcomes variables*

In the repeated measures MANOVA for child's academic orientation with gender and grade as the between-subjects factors and time as the within-subjects factor, a significant main effect was found for gender ( $F(1, 369) = 43.09, p < .001$ ). The means of academic orientation for boys were 15.49, 15.66, and 15.54 at Time 1, 2, and 3, respectively. The means of academic orientation for girls were 16.52, 16.58, and 16.63 at Time 1, 2, and 3, respectively. Univariate ANOVAs showed there was a significant gender difference at each time: girls had higher levels of academic orientation than boys at each wave.

With respect to the child's grade point average, the results of repeated measures MANOVA showed a significant effect for gender ( $F(1,223) = 19.72, p < .001$ ). Boys' mean grade point average scores were 27.07, 25.65, and 26.47 at Time 1, 2, and 3, respectively. For girls, the mean scores were 30.48, 29.88, and 30.81 at Time 1, 2, and 3, respectively. The results of univariate ANOVAs showed that girls performed better than boys during this period. Besides, a significant within-subjects effect was found for time ( $F(2, 446) = 11.58, p < .001$ ). For the combined data, the mean scores of grade point averages were 28.74, 27.80, and 28.60 at Time 1, 2, and 3, respectively. There was no significant interaction effect between the within-subjects factor of time and the between-subjects factors of gender and grade, meaning the difference between Time 1, 2, and 3 in a child's grade point average did not depend upon the values of either gender or grade or both.

### Structural Equation Modeling Analyses

#### *Prospective longitudinal findings for the structural model*

The structural model was tested using AMOS for each of the following two dyads: 150 mother-son dyads, and 144 mother-daughter dyads.

For the mother-son dyads, maternal education was positively related to the child's academic achievement ( $B = .20, t = 2.79, p < .01$ ). Maternal nurturance behavior had an effect on the child's academic orientation ( $B = .38, t = 5.07, p < .001$ ), and in turn, child's academic orientation had a positive effect on child's academic achievement ( $B = .37, t = 4.68, p < .001$ ). Thus, the child's academic orientation was a mediating variable in the relation between maternal nurturance behavior and the child's academic achievement. A total of 23 % variance was explained by maternal education, maternal nurturance behavior, and the child's academic orientation.

In the mother-daughter dyads, maternal education was positively related to the daughter's academic achievement ( $B = .15, t = 1.97, p < .05$ ). Maternal nurturance behavior was positively associated with the daughter's academic orientation ( $B = .42, t = 5.58, p < .001$ ). In addition, the daughter's academic orientation was positively related to the daughter's academic achievement ( $B = .40, t = 4.82, p < .001$ ). Thus, similar to the mother-son dyads, the daughter's academic orientation was a mediating variable in the relationship between maternal nurturance behavior and the child's academic achievement in the mother-daughter dyads.

The same model was run for all dyads with parental monitoring in place of parental nurturance. The result was found in the mother-son dyads where maternal marital happiness was positively related to maternal monitoring behavior ( $B = .18, t = 1.99, p < .05$ ). In turn, maternal monitoring behavior was positively associated with son's academic orientation ( $B = .21, t = 2.68, p < .01$ ), and son's academic orientation was positively associated with son's academic achievement ( $B = .40, t = 5.31, p < .001$ ).

When parental strictness behavior was substituted for parental monitoring in the model, the results of the path analyses indicated parental strictness behaviors were not related to the child's academic orientation except for the mother-daughter dyads in which maternal strictness behavior was negatively associated with the daughter's academic orientation ( $B = -.17, t = -2.06, p < .05$ ).

#### *Summary*

The prospective longitudinal findings indicated that for all dyads parental nurturance behavior was positively related to the child's academic orientation, which, in turn, was positively associated with the child's academic achievement. In addition, parental education had a direct effect on children's academic achievement for all the dyads. There was no direct, significant relationship between parental nurturance behavior and a child's academic achievement in any of the dyads.

### Conclusions

This study aimed to investigate parental influence on children's academic achievement positively and longitudinally. Three maternal factors, maternal depression, maternal marital happiness, and maternal education that may affect the maternal behaviors of nurturance, monitoring, and strictness which, in turn, might influence children's academic achievement, were examined. The effects of maternal behaviors on children's academic achievement were explored separately by evaluating a structural model for mother-son and mother-daughter dyads.

#### *Consistency across time*

In order to examine consistency, correlations were computed for each of the variables between Time 1 and Time 2, Time 2 and Time 3, and Time 1 and Time 3. Consistent with the previous studies (McNally, Eisenberg, & Harris, 1991; Roberts, Block, & Block, 1984), the present study showed a relatively moderate to high level of consistency in both mothers' parenting behaviors. This finding might reflect that individual differences in parental practices are based on their deep-seated beliefs (Kochanska, Kuczynski, & Radke-Yarrow, 1989; Miller, 1988); thus even over the period from early adolescence to mid-adolescence, parental behaviors are quite stable over time. As noted by Goodnow (1988), understanding parental beliefs is important independent of their relation to parenting behaviors.

Children's academic achievement, as measured by GPA, showed the highest correlations among these children's outcome variables, which is consistent with the findings of Simmions, Burgeson, Blyth, and Bush (1987) that objective academic scores demonstrated very high stability between Grade 6 and Grade 10.

### *Change across time*

Researchers who study adolescence are particularly interested in changes associated with early adolescence. The present study revealed that from late childhood (6<sup>th</sup> grade, pre-transition to junior high) to early adolescence (7<sup>th</sup> grade, post-transition) to middle adolescence, a slight decrease in maternal nurturance behaviors over two years was found. The finding is consistent with previous studies (Clarke-Stewart & Hevey, 1981; Maccoby, 1980; Roberts, Block, & Block, 1984; Schaefer & Bayley, 1964; Steinberg, 1987) that parental expressions of affection decrease with increasing age of the child. As a child develops, parents show less physical affection to their children. On the other hand, maternal monitoring behaviors showed a slight increase over two years. No significant changes were found for maternal strictness behaviors across time.

There was also a difference in grade point averages for boys and girls. Girls' academic achievement was better than boys during this period as evidenced by their school grade point average. There was a significant difference in children's academic achievement over the three waves. A slight decrease was found in children's academic achievement from Time 1 to Time 2, but an increase was revealed from Time 2 to Time 3 for both boys and girls. This change probably revealed the effect of school transition occurred during this period (Simmons, Carlton-Ford, & Blyth, 1987). The significant decreasing grade point average occurred as adolescents moved from one school to another school. Simmons, Carlton, & Blyth (1987) indicated that GPA seems more continually responsive to change in school environments, with students declining in whatever years they change school. However, the results also showed that as adolescents got accustomed to the new learning environment, their grade point averages increased.

### *Maternal education and maternal behavior*

The results of present study did not find a relation between mother's education and maternal nurturance, monitoring, and strictness behaviors.

For the mother-son and mother-daughter dyads, mother's educational level was not associated with maternal nurturance behaviors, but positively related to son and daughter's academic achievement. One possible explanation for the difference in the relationship between mothers' and their respective nurturance behaviors is that mothers, as the primary caregivers, give their children more time and attention than fathers do. Level of education might influence mothers' parenting behaviors less than fathers' parenting behavior.

### *Maternal education and children's academic achievement*

Similar to the findings of DeBaryshe, Patterson, & Capaldi (1993), Melby and Conger (1996) and Smith (1989), for mothers at each of the three waves the correlations between parental educational level and children's school grade were significant. The results of the path analyses also indicated that maternal educational levels were positively related to children's academic achievement in the mother-son and mother-daughter dyads. It might indicate that adolescents who view their mother as models have higher academic aspiration and perform better if the parent was well educated than if the parent was not (Smith, 1989). The findings might also reflect that well-educated parent can help with school work as well as the value they place on school performance and their encouragement of academic achievement, thus children of well-educated mothers can have better academic achievement than their peers.

### *The impact of maternal behaviors on children's developmental outcomes*

Parents who use more warm, loving behaviors have offspring who are more academically oriented and who have high self-esteem. For maternal monitoring behaviors, the results also showed positive impact on children's academic orientation and self-esteem. Maternal strictness behaviors had negative impact on children's self-esteem at each of the waves, and on children's academic orientation at Time 2.

The findings of current study showed that nurturant parenting does not directly affect children's academic achievement, but indirectly through children's academic orientation. Although the effect of parental nurturance on children's academic achievement is indirect, mediated through children's academic orientation, these findings are still consistent with Baumrind's (1971, 1973) claim that the authoritative parenting style characterized by parental nurturance and warmth in parent-child relations leads to several positive developmental outcomes in children.

### *The mediating effect of children's attributes on academic achievement*

Consistent with the findings of DeBaryshe et al. (1993), Eccles and Midgley (1989), and Steinberg et al. (1989), it appears that children's academic orientation holds the most promise for psychological interventions designed to enhance academic achievement in school. The present study provided evidence that academic orientation had a positive influence on academic performance in subsequent years.

The findings concerning academic orientation as a mediator in the relationship between parental behavior and academic performance is especially interesting in considering controversies over self-esteem's commonly accepted contribution to children's academic achievement. Although there was a positive correlation between children's self-esteem and academic achievement, the prospective longitudinal findings in the present study showed that the relation between children's self-esteem and school performance was not direct.

Similar to the results by Steinberg et al. (1989), children's self-esteem was not a mediating variable in the relation between parental nurturance behaviors and the children's academic achievement in the mother-son dyads. However, a mediating effect for children's self-esteem was found in mother-daughter dyads.

### Discussion

This study found gender differences in adolescents' self-esteem, academic orientation, and academic achievement. Girls on average had lower self-esteem than boys, thus how to heighten girls' self-esteem in adolescence is an important issue for both parents and school personnel. Meanwhile, boys have lower levels of academic orientation as well as lower academic achievement (GPA) than girls in their adolescent years. Thus, parents as well as school counselors should cooperate in working and encouraging boys to enhance their academic orientation and their academic achievement.

The prospective findings indicated that maternal nurturance behaviors influenced children's academic achievement through children's academic orientation. Since school is the place where children perform academically, educators need to recognize the importance of the parent-child relationship. Schools should implement more conferences that encourage positive interactions in the parent-child dyads to enhance future academic success. In addition, since parental educational level is an important role on children's academic achievement, teachers or counselors should provide assistance to those students with less educated parents when they need help.

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