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Parent Academic Involvement as Related to School Behavior, Achievement, and Aspirations: Demographic Variations Across Adolescence

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Abstract

A longitudinal model of parent academic involvement, behavioral problems, achievement, and aspirations was examined for 463 adolescents, followed from 7th (approximately 12 years old) through 11th (approximately 16 years old) grades. Parent academic involvement in 7th grade was negatively related to 8th-grade behavioral problems and positively related to 11th-grade aspirations. There were variations across parental education levels and ethnicity: Among the higher parental education group, parent academic involvement was related to fewer behavioral problems, which were related to achievement and then aspirations. For the lower parental education group, parent academic involvement was related to aspirations but not to behavior or achievement. Parent academic involvement was positively related to achievement for African Americans but not for European Americans. Parent academic involvement may be interpreted differently and serve different purposes across sociodemographic backgrounds.

Adolescence is a critical time for forming aspirations for the future, especially with regard to career aspirations (Schulenberg, Goldstein, & Vondracek, 1991; Vondracek & Lerner, 1982). School performance is a key mechanism through which adolescents learn about their talents, abilities, and competencies, which are an important part of developing career aspirations (Gottfredson, 1981; Lent, Brown, & Hackett, 1994, 2000). Parent academic involvement may ensure that adolescents obtain academic skills and knowledge that prepare them for considering higher level occupations (Young & Friesen, 1992). In fact, school performance and career

aspirations in adolescence are often correlated (Abu-Hilal, 2000; Mao, 1995; Trusty, Robinson, Plata, & Ng, 2000), and supportive parents are associated with the development of career aspirations (Hill, Ramirez, & Dumka, 2003; McDonald & Jessell, 1992; McWhirter, Hackett, & Bandalos, 1998; Young & Freisen, 1990; Young, Freisen, & Borycki, 1994). Although research has consistently shown that parent academic involvement is associated with achievement and achievement is related to career and educational aspirations, little is known about whether parental involvement in schooling is ultimately related to adolescents' aspirations for adulthood and the mechanisms of influence, especially across the middle and high school years. Thus, the focus of this study was on the following questions: Is parent academic involvement associated with career and educational aspirations? If so, to what extent is this relation explained by relations to school behavior or academic achievement?

Parent academic involvement is largely defined as parents' work with schools and with their children to benefit their children's educational outcomes and future success. Parent academic involvement is often operationalized as volunteering at school, parent-teacher contact or communication, involvement in academic-related activities at home, and the quality of parent-teacher relationships, especially in studies of elementary school students. For middle and high school students, parent discussions with teachers and school administrators and discussions between parents and adolescents about school and plans for the future are often included in definitions of parent academic involvement (Hill & Taylor, 2004). These assessments of parent academic involvement have been consistently related to school achievement across grade levels (Eccles & Harold, 1993, 1996; Epstein, 1987; Epstein & Dauber, 1991; Epstein & Sanders, 2002; Grolnick & Slowiaczek, 1994; Hill, 2001; Kohl, Lengua, McMahon, & The Conduct Problems Prevention Research Group, 2000; Reynolds, 1991). Among middle and high school students, discussions among parents, teachers, and school administrators, and discussing schooling and future plans with adolescents have the strongest relations with academic outcomes (Epstein & Sanders, 2002; Yonezawa, 2000).

Despite consistent findings regarding the relation between parent academic involvement and achievement and between achievement and aspirations, only two known studies have examined the direct relation between parent academic involvement and adolescents' career aspirations (i.e., Knowles, 1998; Trusty, 1999). Although they used the same dataset (i.e., National Educational Longitudinal Study 1988), their results are inconsistent. In Knowles's (1998) study, parent academic involvement, narrowly defined as mothers' report of attendance at PTA meetings and school events, was not directly related to post-high school and college plans or to the career outcomes adolescents expected to achieve by the time they reached 30 years of age. In contrast, Trusty (1999), using a more comprehensive assessment of parent academic involvement including involvement in the school and home contexts, found that parent academic involvement was related to the dichotomous outcome of whether the student expected to earn a bachelors degree. Variations in assessments of parent academic involvement and outcomes complicate the story. More comprehensive assessments of multiple aspects of parent academic involvement using multiple reporters and a more comprehensive assessment of aspirations would be a better test of the relation. Although existing research does not provide a consistent picture, parents' participation in their adolescents' schooling may increase adolescents' aspirations by improving achievement outcomes and changing adolescents' interactions with school. Therefore, the activities in which parents engage to support their adolescents' achievement may also promote career aspirations. However, the underlying mechanisms of influence remain an important question.

Parent academic involvement may improve school performance by reducing behavioral problems that may interfere with learning. Aggression, inattention, and social problems are three behavioral issues that have a consistent and negative relation with achievement (Hinshaw, 1992; Leach & Tan, 1996; McNeal, 1999). Underlying mechanisms of the relations between

parent academic involvement and achievement include increasing social control (e.g., McNeal, 1999). Through parent academic involvement, parents establish relationships with teachers, school administrators, and other parents, and learn important information about school policies and behavioral expectations (Epstein, 1987; Epstein & Sanders, 2002; Yonezawa, 2000). These may increase parents' ability to shape their adolescents' school behavior. Using a social control paradigm, McNeal (1999) found that parent academic involvement reduces problem behaviors because, as parents come to know one another and agree on goals, these relationships "serve as an extra source of social constraint to stem potential nonnormative behavior" (p. 122). Similarly, increasing communication between home and school reduced disruptive behaviors and increased on-task behavior (Leach & Tan, 1996) and improved school behavior by increasing the clarity of rules and reinforcement of appropriate school behavior at home (Gottfredson, Gottfredson, & Hybl, 1993). Parent academic involvement reduced problem behaviors at school and, in turn, improved school performance (McNeal, 1999).

Whereas parent academic involvement may improve behavior, a substantial body of research supports the negative relation between school behavior problems (especially inattention and aggression) and achievement. Hinshaw (1992) concluded from a meta-analysis that, by adolescence, there is a clear association between aggressive-antisocial behavior and underachievement. Although the direction of effect is still debatable, strong evidence suggests that early behavior problems are negatively associated with later achievement. Elementary school age aggressive behavior is related to school dropout at 12th grade (Kupersmidt & Coie, 1990) and educational attainment at age 30 (Huesmann, Eron, & Yarmel, 1987). In addition, more recent longitudinal research has supported the negative effects of early problem behaviors, including inattention, problems with social skills, and aggression, on school failure and lower achievement across elementary and secondary schools (Fergusson & Woodward, 2000; Malecki & Elliott, 2002). Although it has not been empirically tested longitudinally, previous research suggests that parent academic involvement may improve school achievement through its impact on school behavior problems such as aggression, inattention, and social problems, and it may affect career aspirations directly or indirectly through its influence on school achievement. The current study tests these relations longitudinally.

School behavior, achievement, and career aspirations, and parents' roles in shaping these factors do not occur in isolation. Demographic factors such as socioeconomic status (SES) and ethnicity are associated with achievement outcomes. Ethnic minority adolescents and adolescents from lower SES backgrounds are at increased risk for lower academic performance, completing fewer years of schooling, and lower career aspirations (Albert & Luzzo, 1999; Conger et al., 1993; Jencks & Phillips, 1998; Lent et al., 2000; McLoyd, 1990, 1998; Reynolds, Mavrogenes, Bezrucko, & Hagemann, 1996). Parents' SES has a direct influence on children's eventual occupational attainment (Rehberg & Hotchkiss, 1979) and has been found to be the most powerful and consistent predictor of achievement and career aspirations (Duncan, 1994; Schulenberg, Vondracek, & Crouter, 1984). Although students who do well academically tend to have higher aspirations, this association is weaker for African Americans compared with European Americans (Mao, 1995).

The influence of demographic factors may also be indirect through their effect on parent academic involvement. There has been a push for greater parent academic involvement, greater collaboration between families and schools, and an assumption that common goals for students' achievement are most effectively met through collaboration, based on ecological models that emphasize connections among individuals and organizations (Bronfenbrenner, 1979; Eccles & Harold, 1996). However, parents' ability to be true collaborators with their children's teachers and school personnel often varies across ethnic and SES backgrounds (Lareau, 1996, 2003; Lichter, 1996). Parents from higher SES backgrounds are more likely to see themselves as collaborators with their children's teachers and tend to presume that they have more rights

entitling their involvement in school (Lareau, 1996, 2003; Lichter, 1996; Yonezawa, 2000). Low-income parents often have barriers to participating in their children's schooling, including a lack of resources and social support and increased stress associated with a lack of financial resources (Reynolds, 1991). For example, more highly educated mothers were more likely to advocate actively for their adolescents' placement in honors courses, manage more actively their adolescents' academic achievement, and have more information about schooling than were less educated parents (Baker & Stevenson, 1986; Yonezawa, 2000). These differences in the conceptualization of parental involvement across demographic backgrounds may explain mean-level differences in parent academic involvement including findings that suggest that African Americans and families from lower SES backgrounds are often less involved at school (Halle, Kurtz-Costes, & Mahoney, 1997; Kohl et al., 2000).

Parent academic involvement may function differently across ethnicity and SES. African Americans were found to have higher levels of involvement in educational activities at home, whereas European Americans were found to have higher levels of involvement at school such as volunteering in the classroom or visiting the school (Eccles & Harold, 1996). Hill and Craft (2003) found that parent academic involvement was associated with behavioral control among African Americans and European Americans, albeit in different ways. For African Americans, parent academic involvement was associated with improved academic skills, which improved school performance. For European Americans, however, parent academic involvement was associated with improved social competence, which, in turn, improved school performance. There has been much less research on whether the influence of parent academic involvement on achievement and career aspirations varies across demographic backgrounds. In addition, much of the research that suggests differences in how parent academic involvement affects achievement has been conducted with elementary school samples and has been cross-sectional in design. To understand better the demographic variations in the relations among parent academic involvement, school behavior, achievement, and aspirations, longitudinal research across middle and high school levels is necessary.

Although ethnic minority status and lower SES background are often confounded, there is evidence that ethnicity and SES have unique effects. In socioeconomically comparable samples of African Americans and European Americans, ethnic differences in math achievement outcomes remained after controlling for SES, suggesting that ethnicity and SES have unique influences (Hill, 2001). Among an ethnically diverse, low-income sample residing in the same neighborhood, African Americans and European Americans reported similar levels of perceived barriers for reaching their aspirations, whereas adolescents of Mexican descent perceived many fewer barriers, suggesting that the effect of SES on career aspirations and perceived barriers was similar for African American and European American adolescents but different for Mexican American adolescents (Hill et al., 2003). Because there are unique and interactive effects of ethnicity and SES, it is important to consider the direct and indirect effects of SES and ethnicity and the influence of these constructs on the relations among parent academic involvement, behavior problems, achievement and aspirations.

Although parent academic involvement has been shown to be related to school behavior and adolescents' achievement, further research is necessary to determine whether this relation extends to adolescents' career aspirations and the extent to which these relations generalize across ethnicity and SES background, which are the overarching goals of this study. We hypothesized that parents' involvement would be related to aspirations directly as well as indirectly through school behavior problems and achievement (see Figure 1), and we tested this model longitudinally. We included SES and ethnicity as exogenous factors that influence other variables in the model. In addition, we tested the fit of the model across ethnicity and parental education levels, thus examining ethnicity and factors associated with SES separately and simultaneously. Because the direction of effects between parent academic involvement

and achievement and between school behavior problems and achievement remains elusive, we controlled for sixth-grade achievement so that we could begin to understand the role of parental involvement in relation to later behavior problems and achievement above and beyond the influence of prior achievement.

In assessing parent academic involvement, multiple perspectives, including those of teachers, parents, and students, are important. Suggesting unique but important perspectives, teacher, child, and parent reports of parent academic involvement have been found to be only modestly intercorrelated while being uniquely related to student achievement (Reynolds, 1991). Parental reports may be more accurate for some aspects of parental involvement; home involvement and teacher reports often provide valid assessments of involvement at school and parent-teacher relationships (Reynolds, 1991). Also, children's reports of parent academic involvement at home have been found to be more positively associated with achievement than have teacher and parent reports (Reynolds, 1991). Because of the importance of multiple perspectives, the current study includes teacher, parent, and adolescents' perspectives on parent academic involvement.

Method

Participants

The families in the present study were part of an ongoing, multisite longitudinal study of children's development (see Dodge, Bates, & Pettit, 1990; Pettit, Laird, Dodge, Bates, & Criss, 2001). Participants were originally recruited when the children entered kindergarten in 1987 or 1988 at three sites: Knoxville and Nashville, Tennessee, and Bloomington, Indiana. The procedure for sampling schools began with identifying public schools that served children from a range of neighborhoods in each of the three geographic sites, based on school data regarding the ethnic composition of the student body, the percentage of children receiving free or reduced-price lunch, and the projected rate of school dropout. In each site, multiple schools were identified to obtain a wide range of children on these dimensions, with explicit representation of high-risk schools in each community, at a rate of one third.

Parents in the selected schools were approached at random during kindergarten preregistration and asked if they would participate in a longitudinal study of child development. Because about 15% of children at the targeted schools did not preregister, such children's parents were also recruited on the first day of school by letter or by telephone. Of those asked to participate in kindergarten, approximately 75% agreed to participate and were representative of their respective schools (Dodge et al., 1990). Follow-up assessments were conducted annually through 11th grade. The original sample consisted of 585 families at the first assessment; 79% of the original sample provided data for the present analyses. Compared with the original sample of 585, the 463 families who constitute the present sample grades were of somewhat higher SES at kindergarten than those who were not included in this study, $t(568) = -2.11$, $p < .05$ ($M = 40.17$, $SD = 14.42$ and $M = 37.12$, $SD = 12.09$ for kindergarten SES for those included in the present study and those who were not, respectively) based on Hollingshead's (1979) index. However, they did not differ from the original sample in terms of ethnicity or other demographic characteristics.

The 463 families in the present investigation completed assessments when the adolescents (50% male) were in 7th, 8th, 9th, and 11th grades. Eighty-three percent of the sample were European American, 16% were African American, and 1% was from other ethnic groups. The Hollingshead (1979) index of SES in 7th grade ranged from 11 to 66 ($M = 38.86$, $SD = 13.20$). In 7th grade, the marital status of children's parents was as follows: 9% single, 3% cohabiting, 39% married, 2% separated, 38% divorced, 8% widowed.

During 7th grade, mothers and adolescents were interviewed in person by trained interviewers. Teachers of 7th and 8th grades were contacted and asked to complete a paper-and-pencil evaluation of each adolescent. In 11th grade, adolescents were interviewed in their home by trained interviewers. With parental permission, school records were viewed to obtain 6th- and 9th-grade achievement test scores and math and language arts (representing reading/English) grades. Adolescents, parents, and teachers were modestly compensated for their participation.

Measures

SES—SES was measured by three indicators from interviews with mothers when adolescents were in 7th grade: parental education, family income, and occupational status. Mothers reported on their own and, if a spouse was present, the spouse's level of education and type of work. Occupational status was coded according to Hollingshead (1979) criteria. Mothers also reported the family's annual income. A composite education variable and a composite occupation variable were created by averaging the level of education and the occupational status of the parents in the household. This was the education level or occupational status of just one parent if there was only one parent in the household.

We used parental education level as a comparison variable when we examined differences in the hypothesized relations across SES levels. Parents' education level was used as the marker of SES in these analyses because it was less confounded with ethnicity than occupational prestige or family income. Income and occupational prestige are less correlated with education level for African Americans than for European Americans (Billingsley, 1992; Darity, Myers, & Chung, 1998; Hacker, 1992). This is also true for the sample used in the present investigation. The correlation between ethnicity and education was $-.19$, compared with the correlation between ethnicity and income ($r = -.43$) and between ethnicity and occupational prestige ($r = -.34$). In addition, among indicators of SES, parental educational level is most strongly related to parenting and adolescents' achievement (Hoff, Laursen, & Tardiff, 2002; Kohl et al., 2000). Two groups (higher and lower education level) were created based on a median split on the average education level of the parents in the home using the Hollingshead codes of 1 to 6 years = 1, 7 to 9 years = 2, 10 to 11 years = 3, 12 years = 4, 13 to 15 years = 5, 16 to 17 years = 6, and 18+ years = 7. The lower education group had 208 families ($M = 3.81$, $SD = .67$; 74% European American, 26% African American). The higher education group included 255 families ($M = 5.82$, $SD = .71$; 93% European American, 7% African American).

Parent academic involvement—Because of the importance of multiple perspectives for assessing parent academic involvement (Kohl et al., 2000; Reynolds, 1991; Stevenson & Baker, 1987), assessments were obtained from teachers, adolescents, and mothers. In the spring of seventh grade, teachers completed the 21-item Parent–Teacher Involvement Questionnaire (The Conduct Problems Prevention Research Group, 1995; Kohl et al., 2000), which asks teachers to rate on 5-point scales how often they have phoned, written, or had face-to-face communication with the adolescent's parents, and discussed the adolescent's progress (e.g., “How often does the parent send things to school?” “How well do you feel you can talk to and be heard by this parent?”). Teachers have been found to be the most valid reporters of these types of parent academic involvement (Reynolds, 1991). Because most adolescents had multiple teachers, school personnel (usually the principal or school secretary) were asked to nominate the teacher most familiar with the adolescent (usually the language arts or homeroom teacher) to complete this measure. Items were averaged to create a scale. Although in middle and high school students have more than one teacher and it is unlikely that any knows a lot about an individual student, unless it is an extreme case, there was still variability in the responses ($M = 1.54$, $SD = 0.57$). See Table 1 for the means and standard deviations (on the diagonal) and Table 2 for the reliability coefficients for each scale.

During the winter when adolescents were in seventh grade, adolescents were asked eight questions developed for this study about their parents' involvement in educational activities at home, awareness of school progress, and relationships with teachers. Adolescents have been shown to be reliable reporters of these topics (Epstein & Sanders, 2002; Reynolds, 1991). Sample items include: "My parents know how I am doing in school." "My parents help me choose my classes in school." "My parents talk to me about things related to what I am doing in school." Items were rated on 5-point scales (1 = my parents never do this, 2 = my parents do this once in a while, 3 = my parents sometimes do this, 4 = my parents do this fairly often, 5 = my parents do this very often or always) and were averaged to create a scale.

Mothers responded to two items assessing whether they or their partner had attended a PTA meeting (or similar parent-school group) or an open house (or other school event for parents) in the last year. A composite variable was created to reflect whether parents had been involved in 0, 1, or 2 of these activities. The correlation between these two items was 0.48.

School behavior problems—Measures of school behavior problems were obtained in eighth grade from teacher reports of behavior. Teachers completed the Teacher Report Form of the Child Behavior Checklist (Achenbach, 1991). This measure contains 113 items describing behavior problems such as: "argues a lot," "destroys others' property," "gets in many fights," and "disrupts class discipline." Teachers responded on a 3-point scale indicating whether each behavior was true for the adolescent (0 = not true, 1 = somewhat or sometimes true, 2 = very true or often true). Three subscales of this measure were used in the current study: Social Problems (13 items), Attention Problems (20 items), and Aggression (25 items).

Academic achievement—Measures of adolescents' academic achievement were obtained from the school records, with parental permission, at the end of sixth and ninth grades. Students' grades (1 = F, 13 = A+) and percentiles on standardized tests in math and language skills were used in the current investigation.

Adolescent aspirations—Both educational and occupational aspirations were critical to account for students who are focused on going to college and students who may pursue a vocational path directly from high school. Information on adolescents' aspirations in the 11th grade was obtained from the Expectations/Aspirations measure that was developed for the Pittsburgh Youth Study (Loeber, Stouthamer-Loeber, van Kammen, & Farrington, 1991) to examine youths' aspirations and expectations for school, job, and life outcomes. For the current investigation, educational aspirations were measured from two items asking adolescents to report on their chances of graduating from high school and going to college ($r = .54$). Adolescents responded using a 4-point scale ranging from 1 (*very likely*) to 4 (*not likely at all*). An average of the items was used.

Occupational aspirations were assessed by asking adolescents to state the occupation they wished to have when they grew up. Adolescents are reliable reporters of their aspirations. There is agreement between adolescents' occupational aspirations and the occupations for which their mothers think they are best suited (Trice & McClellan, 1993, 1994) and after about age 14 adolescents begin to disregard occupations that are inconsistent with their values, competencies, and interests (Gottfredson, 1981; Trice, 1992; Trice & Hughes, 1995). Using these reported occupational titles, a prestige score was assigned from the Nakao-Treas (1994) prestige scale for each adolescent. The assignment of prestige scores to occupational titles is a long-standing and well-established method of quantifying occupations for social science research (cf. Castellino, Lerner, Lerner, & von Eye, 1998; Entwisle & Astone, 1994; Featherman & Hauser, 1977; Hauser, 1994; Mueller & Parcel, 1981) and was updated by Nakao and Treas to reflect newer occupations in technology and other fields, including more than 750 job titles. The scale ranges from panhandler (11) to surgeon (87). If a response did not have an

occupational title score but fit into a category heading, the category score was used. For example, the response of “artist” received the category score for “painters, sculptors, crafts-artists, and artist printmakers” (52). If the occupation title given did not fit into a category heading, the occupation closest to it was used. For example, the response of “anesthesiologist” received the score for “physician” (86). The latter types of decisions were based on discussion and consensus between two of the authors. If adolescents reported multiple occupational titles as their aspirations, the average score of the occupations was used; average scores were rounded to the nearest whole number.

Results

In general, many of the variables correlate significantly with others when the full sample is assessed (see Table 1). Among some significant associations, educational aspirations were more highly related to other variables in the model than were occupational aspirations in all instances. Moreover, some measures of parent academic involvement were correlated with achievement, but even in these cases, the correlations tended to be low. However, the behavior problems variables were significantly associated with achievement.

In all of the following analyses, we initially included geographic site (i.e., Nashville and Tennessee; Knoxville, and Bloomington, Indiana) as a covariate in the multivariate analyses of covariance (MANCOVAs) and incorporated it as two exogenous variables in the structural equation models (SEMs; to capture the three levels of the variable). The inclusion of site in these analyses did not change the substantive findings (e.g., the results that were significant remained significant, and those that were nonsignificant remained nonsignificant). Because we did not have hypotheses regarding the role that site would play in these analyses, the results reported do not include geographic site.

Before testing the fit of the hypothesized model, latent variables were constructed for SES, 7th-grade parent academic involvement, 8th-grade school behavior problems, 6th- and 9th-grade school achievement, and 11th-grade aspirations. All factor loadings between the measured indicators and their factors were significant (see Table 2).

The fit of the full model on the whole sample, including ethnicity (coded as 0 = European American and 1 = African American), SES, and sixth-grade school achievement as factors predicting each of the other latent constructs, was tested using SEM. Models were estimated using the missing data facility in Amos 4.0 (Arbuckle & Wothke, 1999). Amos uses full information maximum likelihood estimation (FIML) with missing data, which results in unbiased parameter estimates and appropriate standard errors when data are missing at random (MAR). FIML estimates are generally superior to those obtained with list-wise deletion or other ad hoc methods, even when the MAR assumption is not fully met (Schafer & Graham, 2002). The method also assumes continuous, multivariate normal measures, but it is robust to violations of this assumption (Chou & Bentler, 1995).

The results of the SEM indicated that the data fit the model adequately, comparative fit index (CFI) = .98, root mean square error of approximation (RMSEA) = .07; $\chi^2(146) = 562.70$, $p < .001$ (see Figure 2). CFI values greater than .90 suggest model acceptance (Hoyle & Panter, 1995). RMSEA values less than or equal to .05 indicate close fit, but a value of .07 is acceptable (Browne & Cudeck, 1993); this index reflects fit per degree of freedom and therefore is sensitive to the model's parsimony. The chi-square test measures absolute fit but is sensitive to sample size and slight departures of the data from the model (Bollen, 1989). Parent academic involvement at 7th grade was negatively related to 8th-grade behavior problems and positively related to 11th-grade aspirations. Contrary to our hypotheses, parent academic involvement was not directly related to 9th-grade achievement. However, behavior problems in 8th grade

were negatively related to 9th-grade achievement, suggesting an indirect relation between parent academic involvement and achievement through school behavior problems. In addition, 9th-grade achievement was highly and positively related to 11th-grade aspirations.

The generalizability of the model was also tested across gender. The stacked SEM constraining the measurement and structural paths to be equal across gender fit just as well as the model in which these paths were free to vary across gender, $\Delta\chi^2(29) = 41.31, ns$. Thus, we concluded that the hypothesized relations were similar across gender. Remaining analyses collapsed across gender.

Are the Relations Similar Across Parental Education Levels?

To examine mean differences and the extent to which the hypothesized relations were generalizable across varying parental education levels, we calculated four MANCOVAs (one for each group of endogenous variables, controlling for ethnicity) and a stacked SEM to determine whether the paths among the constructs were equal across higher and lower education groups. As shown in Table 3, the omnibus *F* tests were significant for each of the MANCOVAs. Univariate tests showed that families with higher parental education were more involved in adolescents' schooling based on mothers' and teachers' reports, even after controlling for ethnicity, but not from adolescents' perspectives. Based on a more in-depth examination of the pattern of endorsement of each item between the groups, parent academic involvement activities associated with parent-teacher contact, such as stopping by the school, writing the teacher, and having been invited to visit, were endorsed similarly across parental education levels, based on teachers' and adolescents' reports. However, items reflecting parent-teacher relationships, including similar goals between parents and teachers and level of comfort communicating with parent, showed greater endorsement by teachers of adolescents from the higher parental education group compared with the lower parental education group.

The results of the MANCOVAs also indicated that adolescents from families with higher parental education had fewer behavior problems (social, attention, and aggression) based on teachers' reports, and higher achievement levels, based on test scores and grades. Finally, adolescents with parents with higher education levels had higher educational aspirations but not work aspirations. In sum, all mean-level differences favored adolescents from families with higher parental education levels.

To examine the interrelations among the variables across parental education groups, correlations were calculated separately for higher and lower education families (see Table 4). There were a few important distinctions that were evident between the groups. Parent academic involvement was related to educational aspirations for the lower education group. In addition, although behavior problems correlated significantly with most other variables for the high education group, they were primarily associated with achievement and educational aspirations in the lower education group. Occupational aspirations seemed to be more related to sixth-grade achievement in the lower education group but related more to ninth-grade achievement for the higher education group. Occupational aspirations correlated with ethnicity only for the higher education group.

To test whether the hypothesized model fit the data equally across parental education levels (controlling for ethnicity and sixth-grade achievement), a stacked SEM procedure was used where a model constraining measurement and structural models to be equal across parental education groups was compared with a model where the factor loadings and structural paths were allowed to vary. We found that the fit of the model in which measurement and structural paths were constrained to be equal across education groups was significantly worse than the fit of the model in which these paths were unconstrained, $\Delta\chi^2(26) = 62.57, p < .001$, suggesting that the hypothesized model did not fit the data equally well across parental education groups.

The unconstrained model did fit the data (CFI = .98, RMSEA = .06), $\chi^2(202) = 581.26, p < .001$.

The models for the higher and lower parental education groups are presented in Figure 3. For the higher parental education group (top of Figure 3), parent academic involvement at 7th grade was negatively related to 8th-grade adolescents' behavioral problems, which were, in turn, associated with lower 9th-grade school achievement levels. School achievement in 9th grade was positively and highly associated with 11th-grade aspirations. Parent academic involvement at 7th grade did not have a direct effect on 9th-grade school achievement or 11th-grade aspirations, suggesting an indirect effect between parent academic involvement and aspirations through school behavior and achievement. One interpretation for the nonsignificant direct effect is that there was not much variance in aspirations for the higher parental education group. However, the variances were fairly similar for the higher and lower education groups. For educational aspirations, the standard deviations were .64 for the higher parental education group and .78 for the lower parental education group. For occupational aspirations, the standard deviations were 11.09 for the higher parental education group and 13.11 for the lower parental education group.

For the lower parental education group (shown at the bottom of Figure 3), parent academic involvement was positively related to 11th-grade aspirations but not to 8th-grade behavior problems or 9th-grade achievement. However, 6th-grade achievement was both directly related to 9th-grade achievement and indirectly related to 9th-grade achievement through 8th-grade behavior problems. Similar to the higher education group, 8th-grade behavior problems were negatively associated with 9th-grade achievement. However, 9th-grade achievement and 11th-grade aspirations were unrelated. Looking across parental education groups, parent academic involvement was related to fewer school behavior problems for the higher education group, but it affected aspirations only for the lower education group. The relation between school behavior and achievement was similar across groups.

Are the Relations Similar Across Ethnicities?

In the stacked SEM comparing families with higher and lower parental education levels, some of the pathways between ethnicity and the other constructs were significant, suggesting that mean levels, and perhaps relations among the variables, may be different across ethnic groups. In the present sample, as with many samples, ethnicity is confounded with the SES indicators, and thus the SES factors were controlled in analyses examining ethnic differences. To examine ethnic differences in mean levels of each indicator variable of our latent constructs, four MANCOVAs (controlling an average of mothers' and fathers' education level, household income, and an average of mother and father occupation) were calculated. The omnibus *F* tests were significant for school behavior problems and school achievement. Even after the SES indicators were controlled, African Americans scored lower on standardized tests for math and language arts and they had lower grades in math, but there were no differences in language grades (see Table 5). There were no ethnic-differences in school behavior problems (teachers' report) based on the univariate tests, although the omnibus *F* test was significant. In addition, there were no differences across ethnic groups in mean levels of parent academic involvement or aspirations.

To determine whether the hypothesized pathways among parent academic involvement, school behavior problems, achievement, and aspirations were similar across ethnic groups, regression analyses following Baron and Kenny's (1986) procedures for testing moderation were used. The much smaller sample size for African Americans ($n = 74$) precluded using the stacked SEM used for the analyses across parental education levels. Therefore, to test differences in the hypothesized relations across ethnicity, the indicators for each latent construct were standardized and averaged to create a single score for each latent construct. A dummy variable

was created for ethnicity (0 = European American, 1 = African American) and interaction terms between ethnicity and each of the centered independent variables were created. Separate hierarchical regression analyses were conducted for each hypothesized path in the model, controlling for sixth-grade school achievement and SES (i.e., parental education, family income, occupational status), except in analyses in which the SES main effect and interaction were of interest (Step 1). After the main effect was in the model (Step 2), the interaction term was added to the model (Step 3). If the interaction term significantly increased the amount of variance explained (i.e., a significant ΔR^2) and the regression coefficient for the interaction term was significant, it was concluded that the relation between the independent and dependent variables differed across ethnicity. Aiken and West's (1991) method for interpreting interactions by calculating simple slopes was used to determine the relation between the variables for each ethnic group.

Consistent with the results based on the SEM analysis with the full sample, parent academic involvement was negatively related to behavior problems and positively related to aspirations but not related to achievement. The addition of the interaction terms in these analyses did not significantly increase the amount of variance explained, nor were the regression coefficients for the interactions terms significant (see Table 6). Based on these analyses, we concluded that the relations between parent academic involvement and school behavior and between parent academic involvement and aspirations were similar across ethnicity. However, the relation between parent academic involvement and ninth-grade achievement did vary by ethnicity after controlling for sixth-grade achievement and SES. The interaction term was significant (see Table 6). The calculation of the simple slopes suggests that the relation between parent academic involvement and ninth-grade achievement was stronger and positive for African Americans (simple slope = 0.10) compared with European Americans (simple slope = -0.03). There were two other ethnic differences that emerged in the hypothesized relations. First, the positive relation between family SES and ninth-grade achievement was stronger for African Americans than for European Americans after controlling for sixth-grade achievement (simple slopes = .10 and .30 for European American and African American adolescents, respectively). Second, the negative relation between school behavior problems and achievement was stronger for African Americans than for European Americans after controlling for sixth-grade achievement and SES (simple slopes = -.25 and -.34 for European Americans and African Americans, respectively). Although most of the relations were not significantly different across groups, the differences found were in the strength of the relation between constructs and not the direction of effect. In each case, the relation was stronger for African Americans than for European Americans.

Discussion

Based on our findings, parent academic involvement matters across middle and high school years, despite previous research that suggests that it declines between elementary and secondary school levels (e.g., Eccles & Harold, 1996). However, it seems to function differently across SES background (i.e., parental education level) and ethnicity. Among families with lower parental education levels, parent academic involvement increases adolescents' educational and career aspirations—they desire to be upwardly mobile. However, parent academic involvement is not effective in changing school behavior or achievement for children of these parents. Thus, parent academic involvement increases aspirations without necessarily improving the prerequisites (i.e., school behavior and achievement levels) of reaching the educational and occupational aspirations. In contrast, theories pertaining to the influence of parent academic involvement on achievement and later aspirations through improving school behavior were supported among families with higher parental education levels. That is, for these families, parent academic involvement was related to school behavior problems and, in turn, achievement and aspirations, suggesting social control mechanisms (e.g.,

McNeal, 1999). Across ethnicity, parent academic involvement was more strongly related to achievement for African Americans than for European Americans. It is surprising that the only significant direct relation between parental involvement and achievement (not aspirations) was for the African American sample, which suggests that parent academic involvement functions differently for African Americans compared with European Americans. For European American families, there may be many factors that support achievement, rendering parent academic involvement less influential as a unique factor. However, for African Americans, parent academic involvement and advocacy may be more salient because these families are more likely to be in a context where there several factors that may detract from achievement (Ogbu, 1985). In addition, it is possible that African Americans and European Americans engage in their children's schooling for different purposes.

For families with lower parental education levels, parent academic involvement was directly associated with higher aspirations, but it was not related to school behavior problems or achievement. Parents from lower SES backgrounds may not feel comfortable with or capable of assisting their children with their schoolwork (Conger, Ge, Elder, Lorenz, & Simons, 1994; Elder & Caspi, 1988). Therefore, low-SES parents may not become involved in their children's schooling in ways that enhance or change school behavior or performance, but their involvement may communicate their expectations for their adolescents' future success and upward mobility. Similarly, Jordan and Plank (2000) found that the lack of guidance and support for parents was the primary reason talented, low-income, middle school students were less likely to attend college, despite their parents' aspirations and involvement. The current findings also support previous research showing that it is more difficult for parents of lower SES backgrounds to influence positively their children's education (Trusty, 1999). Trusty (1999) suggested that this may be, in part, because children from lower SES backgrounds may model their parents' lower levels of educational attainment, and low-SES families have not experienced the benefits associated with educational success. In a related manner, the link between academic achievement and future occupational success may be less clear for low-SES families. This conclusion is consistent with the nonsignificant relation between achievement and aspirations for the lower parental education sample, whereas it was significant and positive in the higher parental education sample and is similar to the findings in other research (e.g., Mao, 1995).

For families with higher parental education levels, 7th-grade parent academic involvement was not directly related to achievement or aspirations. However, it was associated with fewer school behavior problems at 8th grade, which was, in turn, related to 9th-grade achievement and 11th-grade aspirations. These findings are consistent with the notion of indirect, rather than direct, effects of parent academic involvement on achievement and aspirations. Previous research demonstrating that higher SES families are more efficacious in their interactions with schools and are more effective advocates for their children's academic needs (e.g., Lareau, 2003; Yonezawa, 2000) is also consistent with our findings. Although parents of middle- and high-school-age adolescents may not directly influence achievement, they do so indirectly by changing the school context (i.e., children's behavior and potentially other aspects of the school experience). As discussed regarding lower SES families, adolescents from higher SES families may model their parents' positive educational experiences (Trusty, 1999). Parents who have higher SES typically have higher prestige occupations and thus may serve as role models for their child's own occupational aspirations. Adolescents witness firsthand the benefits of high achievement and high aspirations and the relation between achievement and occupational success, which may enhance achievement motivation and aspirations for their future. Overall, these findings suggest that parent academic involvement may serve different purposes and may be interpreted differently across SES (Lareau, 1996; Lichter, 1996).

The relations between parent academic involvement and aspirations, both direct and indirect, add to a growing body of literature on the longer term benefits of parents' involvement in adolescents' academic lives, especially as it relates to the future. Our significant association between parents' involvement in schooling and aspirations, but not achievement, is consistent with research indicating that parents have an influence on matters regarding further education, career choice, and financial matters, despite the fact that there is generally a decrease in the amount of time adolescents spend with their parents (Lerman & Ooms, 1988).

Apart from aspirations as an outcome, our findings inform the more often examined relation between parent academic involvement and achievement. Demonstrating an indirect pathway of influence, our findings show that parent academic involvement is associated with school behavior and, in turn, achievement. Although a direct relation between parent academic involvement and achievement has been established in previous research (Grolnick, Ryan, & Deci, 1994; Hill, 2001; Hill & Craft, 2003), most of these studies were conducted with younger children. Overall, parental involvement in school often declines during adolescence (Eccles & Harold, 1996); therefore, it is likely a less salient factor for adolescents' achievement. Increased parent academic involvement in adolescence may conflict with other important aspects of adolescent development including the need for autonomy, independence, and detachment from family (Anderson & Keith, 1997; Jodl, Michael, Malanchuk, Eccles, & Sameroff, 2001). Moreover, parents may feel less qualified to assist their adolescents with their schooling as academic subjects become more difficult (Eccles & Harold, 1996). Alternatively, few parents stop caring about their adolescents' education when they graduate from elementary school. To reconcile these competing goals, they may find ways to become involved in less direct, more developmentally appropriate ways.

Across ethnicity, the relation between parent academic involvement and achievement was stronger for African Americans than for European Americans. This is consistent with and extends research on ethnic variations in the role of parent academic involvement conducted with elementary school samples to middle and high school (e.g., Hill, 2001; Hill & Craft, 2003). In these studies, parent academic involvement seemed to function differently for African Americans compared with European Americans. Involvement at school, which is largely what our study assessed, was unrelated to school performance for European Americans but positively related to achievement for African Americans (Hill, 2001; Hill & Craft, 2003). For example, because of perceived or actual discrimination, African American parents may have a greater distrust for schools and may monitor schools rather than collaborate with them (Lareau, 2003; Lightfoot, 1978). Even as previous research has shown that similar school behaviors are often interpreted more negatively when exhibited by African American students than when exhibited by European American students (Ferguson, 1998), African American parents may respond more often by defending the student's behavior or questioning the teacher than by collaborating with the teacher. In addition to helping adolescents achieve in school, involvement at school by African American parents may counteract some stereotypes that teachers may have about African American students and achievement and may communicate to students and teachers that they value education (Epstein & Dauber, 1991; Lareau, 2003).

Taken together, results of the present study demonstrate that parent academic involvement makes a difference in the lives of middle and high school students. One limitation of our study, however, is that, as with most studies of parent academic involvement, our study used measures that are often more appropriate for elementary school parent academic involvement (e.g., attendance at PTA meetings, sending things to school). It is plausible that long-standing measures of parent academic involvement may not reflect the nature of parents' involvement in adolescents' schooling (Hill & Taylor, 2004). Additional research is needed to develop more developmentally appropriate measures of parent academic involvement. In addition, there are various reasons parents become involved in their child's schooling and various types of

involvement. For example, involvement in the PTA and other school functions is different from frequent contact with a child's teacher and principal because of child misconduct. For some parents, high levels of involvement signify problem behavior as opposed to involvement in more positive situations. The present investigation was not able to distinguish these types of involvement. Moreover, the idea that all involvement is not equal underscores the importance of having appropriate measures of involvement that reflect the various types of involvement parents may have in their children's schooling.

Although we did not find direct relations between parent academic involvement and achievement, relations between involvement and aspirations were demonstrated. It is possible that our assessment of parent academic involvement, especially including the adolescents' report of involvement in educational activities at home and with course selection, may have captured the types of involvement that make a difference for educational and occupational aspirations more so than for academic achievement. Although the factor loadings for the adolescent measure of involvement were lower than those for the teacher and mother reports, conceptually we believed that this measure was important to include. The adolescents may in fact have a perspective that is unique from teacher and parent reports, but based on our findings, what the adolescents perceive as involvement was also important for their career and educational aspirations. Moreover, our data were consistent with Reynolds (1991) who reported only a modest association among child, parent, and teacher reports of parents' involvement in schooling, suggesting that adolescents' perspectives are indeed unique. However, Reynolds also reported that it was children's reports of parent academic involvement that were positively related to achievement, more so than parent and teacher reports. Taken together, it is clear that students may have a unique perspective on their parents' involvement in their schooling, but it is an important one nonetheless.

Although the findings in the present study are compelling and add to a growing body of literature in this area, there are some additional limitations that should be mentioned. First, the African American sample was substantially smaller than the European American sample. This prohibited separate testing of the entire model simultaneously, given the number of parameters to be tested. Although we included ethnicity as a predictor, future research with larger sample sizes might explore separate models to delineate further differences between African American and European American families, as well as other ethnic groups not examined here. Second, our measure of parent academic involvement included multiple perspectives, but our measure of mothers' perspective was limited. A more complete measure from the mothers' perspective, especially of involvement at home, would strengthen our research. Moreover, although mothers, adolescents, and teachers reported on both parents, future research should consider fathers' own as well as other significant caregivers' perspectives on involvement in schooling. Third, although our findings are consistent with the premise of social control as an underlying mechanism, we did not measure it directly but measured what is often the result of social control (i.e., school behavior). Fourth, other causal pathways beyond the scope of the current investigation should be explored. For example, adolescent attitudes, perceived competence, and motivational factors have been reported to be associated with achievement and may be influenced by parent academic involvement. Furthermore, research has shown that parental expectations for their children's performance influence youths' own perceptions of competence, which can subsequently affect their achievement (e.g., Eccles, Wigfield, Harold, & Blumenfeld, 1993; Phillips, 1987). Finally, our data could not address variations in school policies and practices as they relate to parent academic involvement. Previous research has shown that school policies and practices affect parent academic involvement (Epstein & Sanders, 2002).

Despite these limitations, the longitudinal, multimethod design of the present study has provided some of the first evidence of how parent academic involvement may affect

adolescents' school behavior, achievement, and aspirations across the adolescent period from 6th to 11th grades. Variations across ethnicity and SES factors are consistent with ecological (Bronfenbrenner, 1979) and developmental systems models (Ford & Lerner, 1992) that posit that adolescent development occurs not in isolation within one context (i.e., family) or another context (i.e., school) but rather occurs within an interconnected system, including family and school. Moreover, demographic background may change how parent academic involvement functions to promote school performance. These findings suggest that if we are to understand the factors that may influence adolescents' achievement and aspirations, it is important to examine aspects of the parental, school, and demographic contexts, as well as the relations among them.

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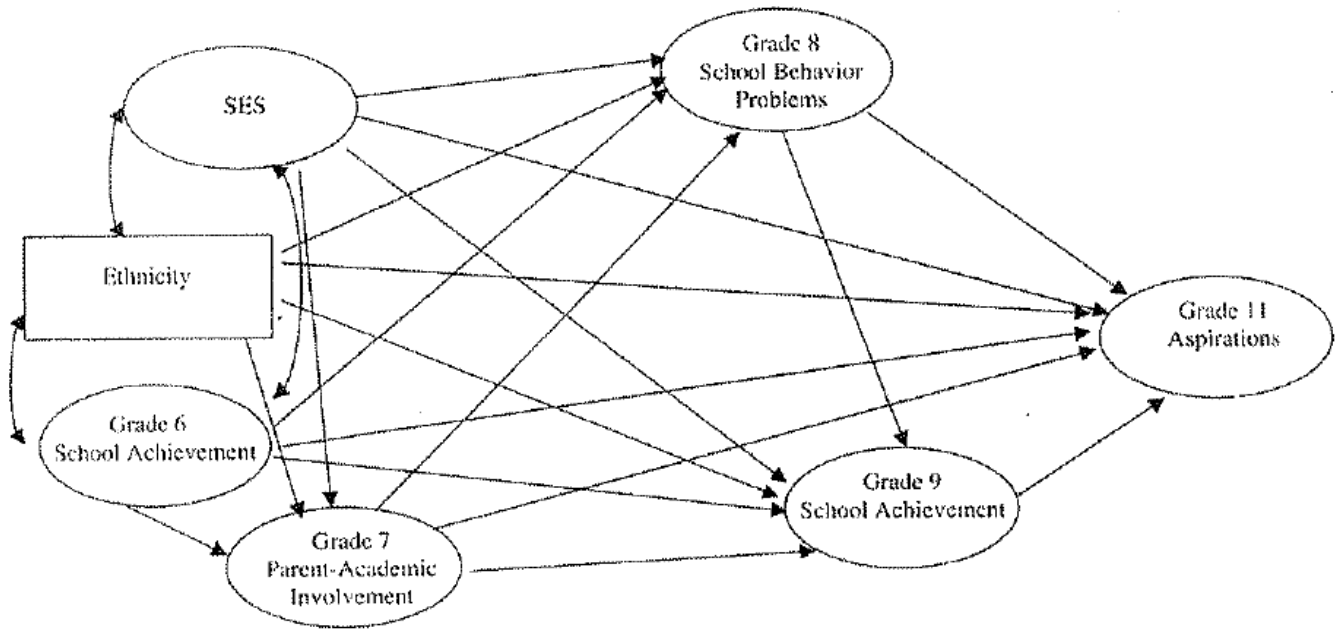


Figure 1.
Conceptual model.

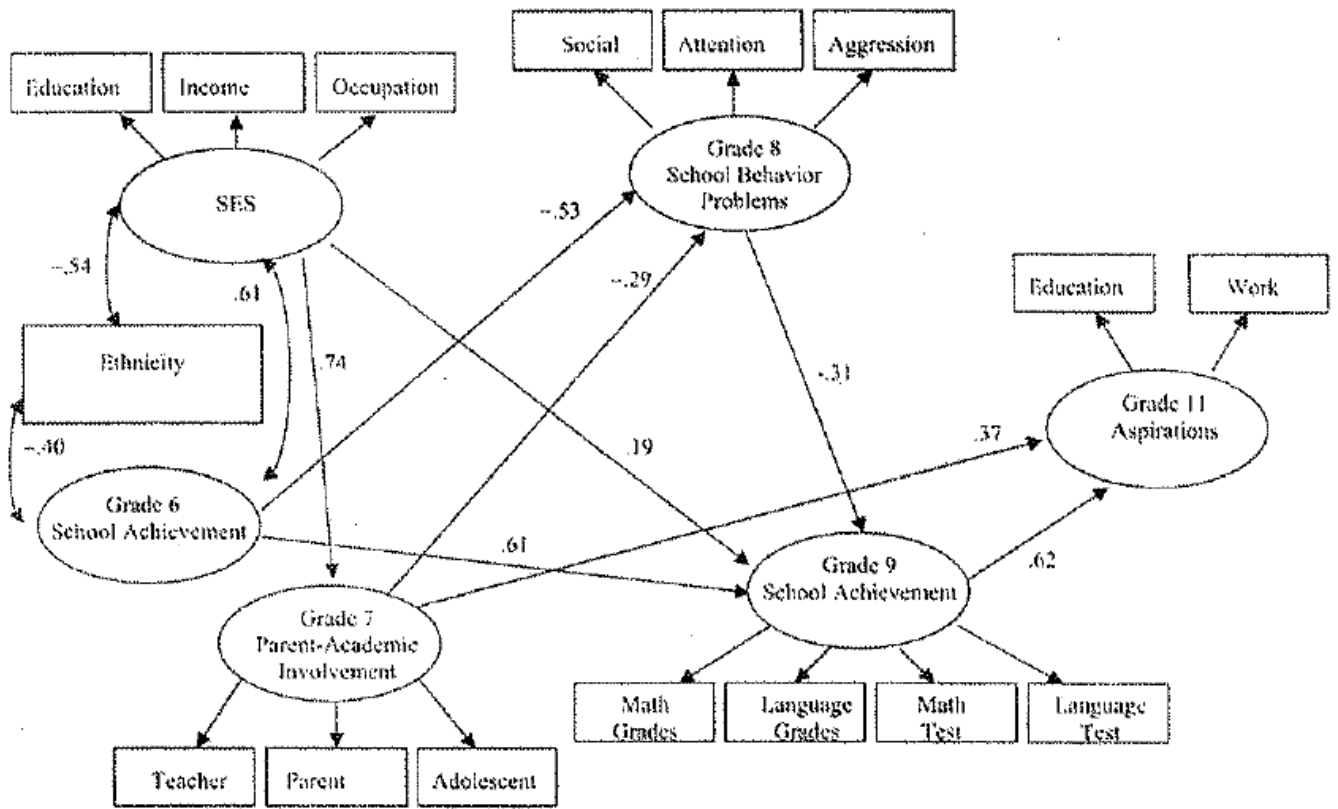


Figure 2. Standardized path coefficients of the structural equation model for the full sample. Only significant paths are shown.

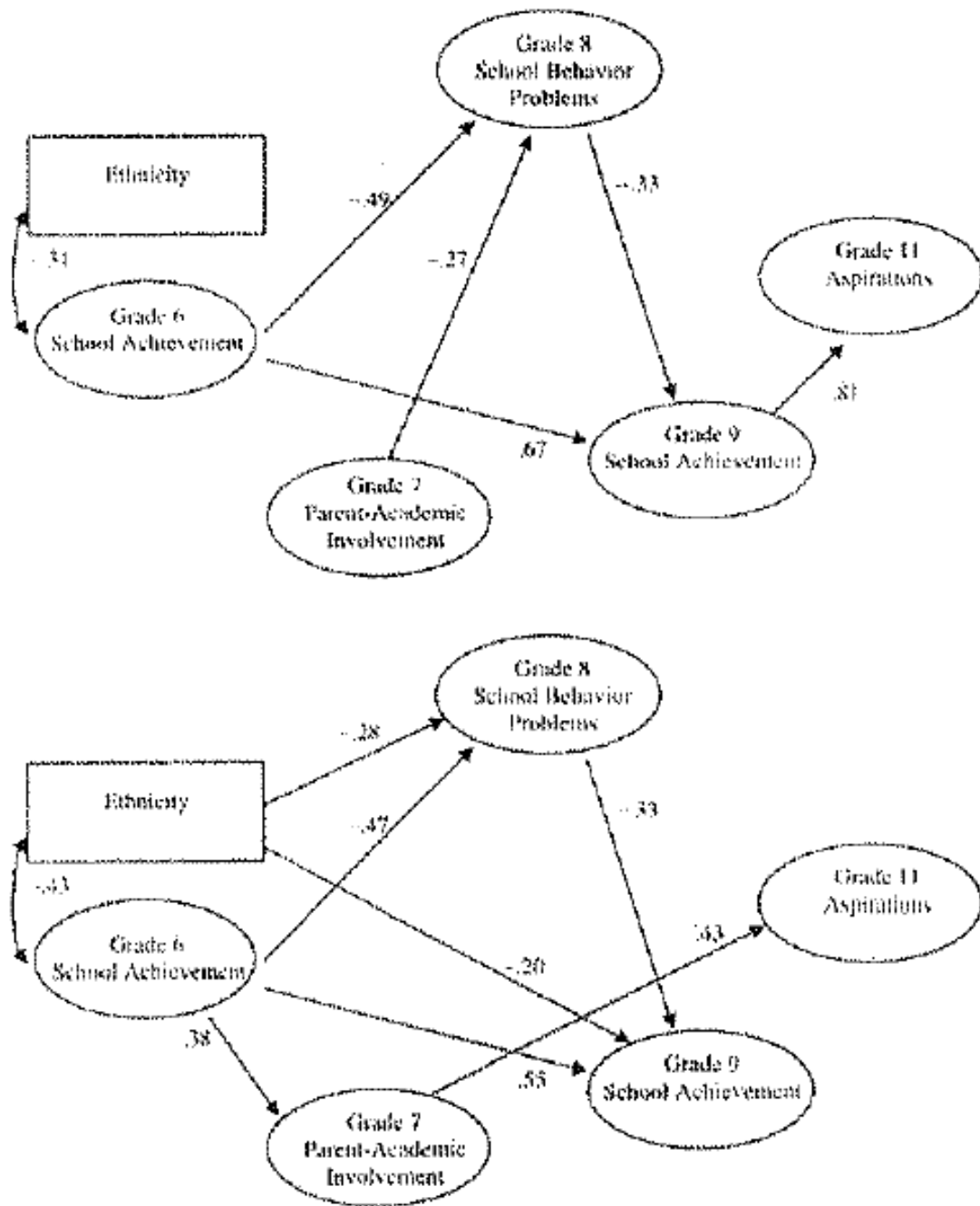


Figure 3. Stacked structural equation model comparing high- and low-socioeconomic families based on parents' education level. Standardized path coefficients for significant paths are shown first for the higher parental education group, then for the lower parental education group.

Table 2
Standardized Factor Loadings for Measurement Model Using Full Sample

Factor	Indicator	Measure	Factor loading	Scale alpha
SES	Education	Family Information Form	.76	.91
	Income	Family Information Form	.82	
	Occupation	Family Information Form	.77	
Parent academic involvement	Teacher rating	Parent - Teacher Involvement Questionnaire	.54	.48 ^d
	Mother rating	Parent interview	.48	
	Adolescent rating	Adolescent interview	.31	
School behavior problems	Social	Teacher Report Form	.75	.81
	Attention	Teacher Report Form	.91	
	Aggression	Teacher Report Form	.80	
School achievement (Grade 6/Grade 9)	Math grades	School records	.76/.59	<i>b</i>
	Language grades	School records	.66/.64	
	Math test	School records	.87/.87	
	Language test	School records	.83/.87	
Aspirations	Education	Expectations/aspirations measure	.87	.54 ^d
	Work	Prestige Scale	.32	

Note: All factor loadings were significant.

^a Two-item measure, correlation is given.

^b One-item measure, no alpha available.

Table 3
Multivariate Analyses of Covariance Examining High- Versus Low-Education Differences in Observed Variables, Controlling for Ethnicity

Variable	High education <i>M (SD)</i>	Low education <i>M (SD)</i>	Pillai's <i>F</i>	Univariate <i>F</i>
Parent academic involvement			6.51***	
Teacher rating	1.64 (0.52)	1.44 (0.62)		5.06*
Mother rating	1.58 (0.63)	1.22 (0.82)		15.70***
Adolescent rating	3.55 (0.67)	3.53 (0.74)		0.01
School behavior problems			3.14*	
Social	1.43 (2.31)	2.03 (2.92)		5.04*
Attention	6.22 (7.45)	9.25 (8.93)		9.37**
Aggression	4.76 (8.22)	7.84 (10.99)		4.74*
School achievement			3.71**	
Math grades	9.45 (3.33)	7.66 (4.11)		8.68**
Language grades	9.67 (3.31)	7.94 (3.93)		8.18**
Math test	77.34 (19.43)	68.03 (23.49)		6.35*
Language test	80.18 (18.35)	70.72 (22.03)		6.73*
Aspirations			3.76*	
Education	4.64 (0.66)	4.36 (0.77)		6.42*
Work	61.97 (11.11)	60.05 (13.11)		2.84

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 4
Correlations Among Variables for the Sample Split Into High- Versus Low-Education Groups

	Ethnicity	Parent educ	Income	Parent occup	G6 math	G6 language	G6 math total	G6 lang total	PI-teacher	PI-mother
Ethnicity	.07 (.26)	-.19**	-.43***	-.34***	-.15*	-.17**	-.32***	-.27***	-.20***	.02
Parent educ	.26 (.44)	5.82 (.71)	.37***	.47***	.25***	.20**	.26***	.28***	.21***	.13*
Income	-.32***	3.81 (.67)	5.58 (2.59)	.53***	.33***	.35***	.37***	.36***	.23**	.12
Parent occup	.50***	.53	3.35 (2.71)	.50	.17**	.20**	.26***	.27**	.22***	.08
G6 math	.32***	.45***	5.60 (2.08)	3.34 (2.02)	10.10 (2.82)	.63***	.59***	.58***	.13	.01
G6 language	-.31***	.14*	.31***	.21**	8.24 (3.23)	10.58 (2.80)	.43***	.50***	.19**	.08
G6 math total	.27***	.16*	.44***	.26***	.61***	8.90 (3.22)	73.67 (26.57)	.76***	.08	.04
G6 lang total	.42***	.25***	.35***	.21**	.50***	.42***	56.11 (28.82)	74.30 (23.71)	.11	.05
PI-teacher	.35***	.20**	.29***	.18**	.18*	.20**	.12	56.68 (26.81)	1.66 (.51)	.14*
PI-mother	.11	.21**	.27***	.17*	.17*	.20**	.19*	.08	1.42 (.61)	1.56 (.67)
PI-child	-.02	.12	.19**	-.04	.05	.05	.16	-.02	.19*	1.20 (.83)
Social	-.02	-.12	-.04	-.11	-.14	-.21**	-.13	-.16*	-.10	-.12
Attention	-.02	-.12	-.09	-.01	-.39***	-.42***	-.32***	-.33**	-.09	.22**
Aggression	.06	-.24	-.17*	-.11	-.20**	-.34	-.20*	-.23**	-.12	.23**
G9 math	-.18*	.10	.18**	.04	.45***	.23**	.46***	.35***	.12	-.04
G9 language	-.28***	.03	.39***	.13	.51***	.41***	.45***	.56***	.08	.08
G9 math total	-.39***	.24**	.45***	.25***	.45***	.37***	.64***	.42***	.00	.13
G9 lang total	-.46***	.13	.35***	.21*	.51***	.46***	.63***	.54***	.01	.16
Educ aspir	-.17*	.30	.27***	.18**	.38***	.29***	.36***	.25**	.22***	.32***
Occup aspir	-.01	.11	.09	.19*	.29***	.24**	.13	.07	.03	.14

	PI-child	Social	Attention	Aggression	G9 math	G9 language	G9 math total	G9 lang total	Educ aspir	Occup aspir
Ethnicity	.02	.17*	.27***	.38***	-.26***	-.19**	-.03	-.08	-.17**	.16*
Parent educ	.14*	-.10	-.20***	-.16**	.09	.14*	.23***	.27***	.13	.01
Income	.21**	-.29*	-.38***	-.33***	.29***	.34***	.19*	.18*	.37***	-.04
Parent occup	-.08	.16*	-.28***	-.25***	.23***	.25***	.09	.15*	.30***	.05
G6 math	.08	-.30***	-.47***	-.29***	.42***	.43***	.46***	.45***	.32***	.03
G6 language	.09	-.31***	-.45***	-.25***	.43***	.48***	.29***	.44***	.41***	.02
G6 math total	.09	-.25***	-.42***	-.35***	.42***	.32***	.67***	.64***	.47***	.08
G6 lang total	.03	-.26***	-.49***	-.38***	.45***	.41***	.51***	.69***	.50***	.18*
PI-teacher	.24***	-.25***	-.25***	-.21**	.10	.13	.05	.09	.21***	.02
PI-mother	.15*	-.08	-.06	-.07	-.08	.03	-.04	.01	.09	.08
PI-child	3.54 (.67)	-.17*	-.12	-.14	-.13	.03	.04	.03	.08	.05
Social	3.47 (.75)	1.42 (2.30)	.64	.57***	-.26***	-.26***	-.35***	-.41***	-.28***	.17*
Attention	-.02	2.02 (2.91)	6.18 (7.44)	.66	-.52***	-.52***	-.41***	-.48***	-.46***	-.14

	Ethnicity	Parent educ	Income	Parent occup	G6 math	G6 language	G6 math total	G6 lang total	PI-teacher	PI-mother
Aggression	-.07	.68***	9.29 (8.99) .74***	4.70 (8.16)	-.37***	-.25***	-.35***	-.38***	-.23***	-.07
G9 math	.07	-.13	-.32***	7.82 (10.94) -.12	9.30 (3.41)	.50***	.30***	.27***	.52***	.06
G9 math	.01	-.09	-.36***	-.16	7.04 (4.13) .58***	9.63 (3.30)	.25***	.34***	.49***	.03
G9 math total	.18	-.20*	-.41***	-.33	.37***	7.42 (3.99) .32***	75.98 (20.97)	.79***	.45***	.22***
G9 lang total	.07	-.09	-.38***	-.19*	.25**	.35***	.80***	78.56 (20.23)	.53***	.22**
Educ aspir	.18*	-.32***	-.44***	-.37***	.41***	.33***	.38***	67.66 (23.06) .18*	4.66 (.64)	.23***
Occup aspir	.01	-.14	.11	-.04	.12	.22*	.11	.05	4.33 (.78) .26***	62.02 (11.09) 60.05 (13.11)

Note. Correlations above the diagonal refer to the high-education group, and correlations below the diagonal refer to the low-education group. Educ = education; occup = occupation; lang = language; PI = parental involvement; aspir = aspirations; G6 = Grade 6; G9 = Grade 9.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

All tests were two-tailed.

Table 5
Multivariate Analyses of Covariance Examining Ethnic Differences in Observed Variables

Variable	African American <i>M (SD)</i>	European American <i>M (SD)</i>	Pillai's <i>F</i>	Univariate <i>F</i>
Parent academic involvement			1.80	
Teacher rating	1.28 (0.71)	1.60 (0.55)		0.05
Mother rating	1.12 (0.89)	1.43 (0.70)		0.50
Adolescent rating	3.52 (0.71)	3.53 (0.71)		4.80*
School behavior problems			4.74**	
Social	1.84 (2.97)	1.76 (2.59)		3.82
Attention	10.43 (9.01)	7.49 (8.21)		0.07
Aggression	10.87 (13.36)	5.49 (8.93)		1.44
School achievement			5.13**	
Math grades	5.59 (3.64)	9.18 (3.60)		11.69**
Language grades	6.47 (3.73)	9.39 (3.59)		3.15*
Math test	57.15 (26.59)	75.50 (19.78)		4.34*
Language test	58.44 (25.08)	78.25 (18.51)		9.59**
Aspirations			1.33	
Education	4.10 (0.91)	4.54 (0.69)		0.13
Work	61.73 (14.10)	60.56 (11.77)		2.11

Note. Analyses controlled for education, income, and occupation; reported means are unadjusted.

* $p < .05$.

** $p < .01$.

Table 6
Summary of the Hierarchical Regression Analyses Examining the Effect of Ethnicity for Each Path in the Model, Controlling for Sixth-Grade Achievement and Socioeconomic Status (SES)

Predictor	Criterion	Interaction			ΔF
		β	t	ΔR^2	
SES	Parental involvement	.01	0.10	.00	0.01
SES	Behavior problems	.04	0.40	.00	0.16
SES	9th-grade achievement	.20***	3.10	.01	9.63***
SES	Aspirations	.08	0.91	.00	0.83
Parental involvement	Behavior problems	-.10	-1.63	.01	2.65**
Parental involvement	9th-grade achievement	.13***	2.64	.01	6.99***
Behavior problems	Aspirations	-.01	-0.19	.00	0.03
Behavior problems	9th-grade achievement	.09*	2.02	.01	4.06*
Achievement	Aspirations	-.09	1.39	.01	1.93
	Aspirations	-.15	-1.94	.01	3.77

Note. Sixth-grade SES was controlled except where SES and the interaction with SES were of interest.

* $p < .05$.

** $p < .01$.