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Father-Child Transmission of School Adjustment: A Prospective Intergenerational Study

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Abstract

The intergenerational transmission of school adjustment was explored in a sample of 213 children and their fathers. The fathers were participants in a longitudinal study that began when they were in the fourth grade, and their children have been assessed at the ages of 21 months and 3, 5, and 7 years. Two components of school adjustment were measured: academic achievement and peer relations. Results show that the fathers' academic achievement and peer relations were directly related to the same factors in their offspring even when the fathers' educational attainment and both the fathers' and the children's general cognitive abilities were included in the models. When potential mechanisms of intergenerational transmission were examined, father's age at the birth of the child, income, and educational expectations for the child were links in the transmission of academic achievement from one generation to the next. For peer relations across generations, income, inconsistent parenting, and educational expectations were links in transmission. Implications of these findings are considered, including the possibility that interventions to improve school adjustment in one generation might have significant and long-reaching effects for the next.

Keywords: academic achievement, educational attainment, fathers, intergenerational, school adjustment

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Educational attainment is one of the best predictors of occupational and income level in adulthood and is linked to a number of other outcomes, including mental and physical health (e.g., Hampson, Goldberg, Vogt, & Dubanoski, 2007; Ou & Reynolds, 2008). Educational attainment also appears to be highly transmissible across generations (e.g., Dubow, Boxer, & Huesmann, 2009; Pettit, Yu, Dodge, & Bates, 2009), making it a potential target for preventive interventions aimed at improving psychosocial outcomes. However, educational attainment is the final outcome of a more dynamic process of school adjustment across multiple years of school attendance. Research on whether and how school adjustment might be passed from one generation to the next is limited. If it could be established that school adjustment is transmissible and the paths of transmission elucidated, earlier and more malleable targets for preventive intervention could be identified. In the present study, we examined the transmission of school adjustment from one generation to the next in fathers from at-risk backgrounds—and their offspring—using prospective longitudinal data that covered the father’s middle and high school years and the children’s early childhood and early elementary years.

School Adjustment, Educational Attainment, and Psychosocial Outcomes

School adjustment is one of the most significant predictors of psychosocial outcomes throughout the school years and into adulthood. Positive academic and social behaviors predict fewer behavioral problems, less involvement with deviant peers, less likelihood of drug and alcohol abuse, and better educational attainment in adulthood (e.g., Buckner, Mezzacappa, & Beardslee, 2009; Fothergill et al., 2008; Mersky & Reynolds, 2007; Topitzes, Godes, Mersky, Ceglarek, & Reynolds, 2009). Positive school adjustment requires academic achievements, such as proficiency in reading and mathematics, that are clearly related to eventual educational

attainment (Duncan, et al., 2007). Additionally, positive peer relations in school have been linked to better academic engagement and performance over time (Furrer & Skinner, 2003; Wentzel, Barry, & Caldwell, 2004), whereas peer rejection predicts declining school adjustment and increasing problem behavior (Greenman, Schneider, & Tomada, 2009; Verroneau, Vitaro, Brendgen, Dishion, & Tremblay, 2010). Overall, better academic and social performance in school has been linked to lower rates of suspensions and behavioral referrals and decreased likelihood of early parenthood, substance abuse, and mental health problems in adolescence and adulthood (Fothergill et al., 2008; Mersky & Reynolds, 2007; Topitzes et al., 2009).

Children who show more positive school adjustment across their educational careers are also likely to have higher educational attainment in adulthood (e.g., Ou & Reynolds, 2008). There is a wealth of literature linking parental educational attainment to their children's outcomes—including the children's adjustment in school, reading abilities, and, ultimately, the children's own educational attainment (Davis-Kean, 2005; Haveman & Wolfe, 1995). Thus, educational attainment has far-reaching influence over the life chances of an individual and also over the lives of his or her offspring. Interventions with the goal of preventing school failure and associated problems in adults and their offspring might well focus on education attainment, perhaps by offering parents opportunities to increase their education (Magnuson, Sexton, & Davis-Kean, 2009). However, educational attainment is an outcome of a student's adjustment in school over the early life course. Thus, intervention focused on school adjustment at earlier ages might provide a more malleable and potentially more powerful source of influence over both the outcomes for that individual and those of the next generation.

Whereas numerous studies have shown that educational attainment appears to be transmissible across generations, research on the intergenerational transmission of school

adjustment is sparse. Cairns, Cairns, Xie, Leung, and Hearne (1998) found that mothers' academic competence, as measured by their proficiency at spelling and math during elementary and middle school, was comparable to that of their offspring on the same measures in elementary school. Similarly, Kaplan, Liu, and Kaplan (2001) found an association between mothers' negative experiences in middle school and those of her offspring even when maternal educational attainment was controlled. However, neither study examined both of the components of school adjustment discussed above. Additionally, they failed to account for the possibility that school adjustment might be associated across the generations because of similarities in the general cognitive abilities of the parent and child.

Both of the above mentioned studies focused on mothers in the intergenerational transmission of school adjustment. Research into the role that fathers play in their children's school adjustment has been a topic of growing interest over the past several years. In terms of influences on children's school adjustment, paternal sensitivity, support for early literacy, and involvement in their children's schooling appear to contribute to better achievement (McBride, Schoppe-Sullivan, & Ho, 2005; National Institute of Child Health and Human Development Early Child Care Research Network [NICHD ECCRN], 2008), better social skills and relationships with teachers (NICHD ECCRN, 2004), and greater enjoyment of school (Tan & Goldberg, 2009). Often these effects have been found to be independent of maternal behaviors (Tan & Goldberg, 2009). Particularly for children from low socioeconomic (SES) backgrounds, paternal involvement may be a protective factor, mediating the association between family instability and academic achievement (Somers et al., 2011). Other paternal characteristics, such as level of education and income, also influence children's school adjustment and appear to be more important than the same maternal characteristics (Dotterer, McHale, & Crouter, 2009;

Marks, 2008). In terms of intergenerational transmission, as is noted above, there has not yet been any work completed on whether and through what mechanisms school adjustment is transmitted from fathers to their children. The lack of information on such intergenerational transmission is a critical gap in understanding the role of parents in their children's educational development. Father's adult characteristics (such as educational attainment) and their behaviors related to their children's schooling (e.g., educational expectations) clearly influence their children's school adjustment. However, as is noted above, these behaviors and characteristics may be products of the fathers' own school adjustment, and understanding the role that their adjustment plays in transmission of maladjustment across generations could aid in preventive intervention efforts.

The first goal of the present study was to examine the intergenerational transmission of school adjustment as represented by academic achievement and peer relations. Using prospective longitudinal data, we examined the associations between fathers' school adjustment in middle and high school and the school adjustment of their children in early elementary school, controlling for the fathers' and children's general cognitive abilities and the father's educational attainment. As is noted above, the focus on fathers in the intergenerational transmission of school adjustment addresses a gap in the literature. Additionally, the participants in the present study were predominantly from working-class backgrounds. Much of the research on parental influences on school adjustment has featured higher-income samples (Chazan-Cohen et al., 2009), for whom the risks and consequences of poor school adjustment may be fewer.

Pathways in the Intergenerational Transmission of School Adjustment

As is noted above, understanding whether school adjustment is transmitted from fathers to their children might provide a very early point of intervention not only for the fathers but also

for the next generation. However, to obtain a more complete picture of that transmission and to identify more potential points at which to intervene in the process, it is necessary to go one step further and explore the mechanisms through which school adjustment might be transmitted from one generation to the next. Kaplan and colleagues (2001) found that mothers' negative school experiences decreased the likelihood that the mothers would be involved in their children's schooling, which in turn predicted their children's negative school adjustment. Although not conclusive, this suggests that at least some aspects of parental school adjustment may influence characteristics and behaviors that then contribute to their offspring's school adjustment.

In the present study, we sought to identify such characteristics and behaviors by testing an ecological model of the intergenerational transmission of school adjustment (see Figure 1) adapted from the Family-School Relationships Model (Ryan & Adams, 1995). This model provides a framework for conceptualizing associations between children's school outcomes and within-family processes and characteristics. Multiple levels representing different familial influences progress from more distal (and chronologically earlier) factors to the child's school outcomes. Moving from more proximal to more distal influences (from the right to the left of Figure 1), the child's school outcomes are influenced by school-focused parent-child interactions, general parent-child interactions, and social contextual factors affecting the family and parental characteristics. There are ongoing dynamic associations across these influences. More distal factors are expected to affect child outcomes, largely indirectly through more proximal factors, although direct effects from distal factors to the outcomes are also possible. A key part of the model is the distinction between general parenting factors, which have been found to be associated with the positive development and adjustment of youth, and parenting factors specific to school adjustment. In dynamic models of family factors related to other key aspects of

youth development (e.g., substance use), both general pathway and outcome-specific factors appear to be influential (Capaldi, Stoolmiller, Kim, & Yoerger, 2009).

In the present study, the direct and indirect influences were examined for four types of factors; namely, parent characteristics, the family context, general parent-child interactions, and school-focused parent-child interactions. As the primary focus is school adjustment, the parent characteristics level included two aspects of such adjustment across middle and high school; namely, academic achievement and peer relations.

Parental school adjustment is likely to influence a number of social-contextual factors both in their own lives and those of their future family. Parental educational attainment, as is noted above, has been shown to affect aspects of offspring academic achievement both directly and indirectly through effects on parental involvement in their children's schooling and academic development (Davis-Kean, 2005; Pettit et al., 2009). More specifically, paternal educational attainment has been found to influence children's interest in school (Dotterer et al., 2009). In the present study, educational attainment is used as a control variable in order to determine if parental school adjustment accounts for additional variance in predicting offspring school adjustment.

Paternal school adjustment was also expected to affect his future income level, which in turn would impact the school adjustment of offspring (see Sirin, 2005 for a recent meta-analytic review). Educational expectations for the child and parenting behaviors were hypothesized to be key mediators of this association (Baker, Mackler, Sonnenschein, & Serpell, 2001; Davis-Kean, 2005; Ritblatt, Beatty, Cronan, & Ochoa, 2002). School adjustment may also affect age at childbearing. Adolescents who become parents tend to have poorer school adjustment (Fergusson & Woodward, 2000; Young, Turner, Denny, & Young, 2004). In turn, the younger

the parents are at the birth of their child, the worse the child appears to fare in school both in terms of academic achievement and behavior (Levine, Pollack, & Comfort, 2001). This effect may be primarily because younger parents may have lower economic prospects and poorer parenting skills than older parents (Levine et al., 2001). In the present study, we tested the hypothesis that paternal school adjustment would affect his age at the birth of his child, which would in turn affect offspring school adjustment through parenting behaviors and expectations.

The next level of the model pertains to general parent-child interactions during early childhood that are not specifically about school but that may affect school readiness and school adjustment into the elementary school years and beyond. Positive parenting—characterized by warmth, supportiveness, sensitivity, and enjoyment of interactions with the child—appears to promote school readiness, in particular (Hill, 2001; Lunkenheimer et al., 2008), and greater school adjustment, in general (Vitaro, Brendgen, Larose, & Tremblay, 2005). For example, children of sensitive, supportive parents show better literacy skills (Lunkenheimer et al., 2008), and positive parenting in kindergarten predicts higher grades in high school (Gregory & Rimm-Kaufman, 2008). In contrast, inconsistent discipline may impact school adjustment negatively. In particular, it has been linked to difficulties in self-regulation and behavior problems (Eisenberg, Chang, Ma, & Huang, 2009; Lengua, Honorado, & Bush, 2006; Valiente, Lemery-Chalfant, & Reiser, 2007), ultimately interfering with the child's ability to focus their attention and behave appropriately in school. Inconsistent discipline also appears to be detrimental to social skills in school (Dodge, Greenberg, Malone, & The Conduct Problems Prevention Research Group, 2008).

Although researchers have not specifically examined the links between parents' school adjustment and their parenting skills, it seems likely that the same sets of skills that promote

positive school adjustment, specifically the abilities to attend to learning new materials and to get along well with others, may contribute to positive and consistent parenting. Relatedly, educational attainment has been linked to positive parenting (Gregory & Rimm-Kaufman, 2008). In the present study, paternal school adjustment was hypothesized to promote positive parenting and decrease inconsistent discipline. Positive parenting was then expected to increase school adjustment in offspring, whereas inconsistent discipline was expected to have the opposite effect.

In addition to general parenting, a key aspect of the model is parenting behavior specific to school adjustment. Parental educational expectations may be important in influencing children's school adjustment. Through communicating their expectations about how the children will perform in school, both academically and socially, parents may help to shape their children's own goal-setting behaviors, persistence, and achievement (Halle, Kurtz-Costes, & Mahoney, 1997; Spera, Wentzel, & Matto, 2009). Parental expectations and aspirations, in turn, appear to be influenced by their own educational experiences (Davis-Kean, 2005; Spera et al., 2009). The little research that has examined gender differences in parental educational expectations has not found differences in paternal and maternal expectations (Räty & Kasanen, 2010; Wentzel, 1998). It was predicted that paternal school adjustment would positively affect his educational expectations for his child, which would then positively affect the child's school adjustment.

Gender has been shown to affect school achievement, with girls tending to score higher in reading over time and boys scoring higher in math (Robinson & Lubienski, 2011). Studies of teacher and parental expectations regarding children's performance show that there may sometimes, although not always, be gender biases that favor girls (Herbert & Stipek, 2005; Robinson & Lubienski, 2011). Studies of parental expectations for overall educational attainment have been inconsistent, with some studies finding higher expectations for girls (e.g., Räty &

Kasanen, 2010) and some for boys (e.g., Wentzel, 1998). The focus of the present study was on transmission of school adjustment in general rather than on gender-specific patterns. However, gender was included as a covariate in the analyses, and its effects on general cognitive ability, school adjustment, and parental educational expectations were specifically examined on the basis of prior findings of gender differences.

Goals of the Study

The present study had two main goals. The first was to determine if the school adjustment of primarily working-class fathers in middle and high school affected the second-grade school adjustment of their offspring, controlling for paternal educational attainment and the general cognitive functioning of the parents and children. The second goal was to examine pathways by which school adjustment might be transmitted across the generations. Consistent with our conceptual model, the effects of paternal school adjustment on parent-child interactions were expected to be at least partially mediated through social contextual factors. In turn, parent-child interactions were expected to partially mediate the effects of both paternal school adjustment and social contextual factors on offspring's school adjustment.

Method

Participants

Participants were 110 men (Generation 2; G2) and their 213 male and female children (Generation 3; G3). The men, along with their parents (Generation 1; G1), were originally recruited to participate in a longitudinal study of individual, family, and community-risk factors for antisocial and substance use behaviors (the Oregon Youth Study or OYS). G2 youths were recruited from the fourth-grade classrooms of schools in neighborhoods with higher levels of juvenile crime for a medium-sized metropolitan area in the Pacific Northwest. Two hundred and

six youths and their families originally agreed to participate (74% of eligible youths). The youths and their G1 parents were predominantly European American (90%), reflecting the population of the area at the time, and were largely working class in SES (Hollingshead, 1975).

The G3 children of the G2 men were recruited to a study of the intergenerational transmission of risk (the Three Generational Study or 3GS). All children and cohabitating stepchildren of G2 men were originally eligible to participate in the study. Because of budgetary constraints, participation was later limited to the first two children born to the G2 men per biological mother. Assessments of G3 occurred at age 21 months (Time 1 of 3GS [T1]) and at ages 3 (Time 2 [T2]), 5 (Time 3 [T3]), and 7 (Time 4 [T4]) years. Because G3 children continued to be recruited to the 3GS as they were born, G3 sample sizes differ by assessment year. For the present study, only G3 offspring who were eligible for participation in the T4 assessment as of July 2010, and who had participated at one or more of the previous timepoints, were included in the analyses. This resulted in a sample of 213 G3 children (99 males) of 110 G2 fathers, 189 of whom were biological offspring of the G2 fathers, 22 of whom were stepchildren, and 2 of whom were adopted. Forty of the G2 fathers had 1 child in the current sample, 42 had 2 children, 24 had 3 children, 3 had 4 children, and 1 had 5 children in the current sample. (As is described in greater detail below, standard errors were adjusted in Mplus to account for the fact that some fathers had multiple children in the sample).

Procedure

G2 fathers. The G2 fathers and their G1 parents were interviewed on an annual basis. Information was collected via structured interviews, questionnaires, and coded parent-child interaction tasks and home observations. Additionally, the G2 youths' teachers completed questionnaires, and school records were collected and coded. In the present study, G1 parent

report, G2 self-report, and teacher reports were utilized from Years 3, 5, and 7 of the OYS that corresponded to Grades 6, 8, and 10, respectively, for G2. These timepoints were selected because measures of school adjustment across these years were similar. Additionally, some of the youths dropped out of school after Grade 10, and some became fathers. Thus, in order to maximize the numbers of G2 fathers with data at each timepoint and to ensure that measures of G2 school adjustment occurred prior to the first assessment of G3, Grade 10 was used as the final G2 school adjustment timepoint.

G3 offspring. Assessments of the G3 offspring and their parents included structured interviews, questionnaires, and coded parent-child interaction tasks. Interviewers and coders completed ratings of the parent-child interactions. Additionally, once the children were in school, teachers were asked to complete questionnaires, and school records were collected and coded.

Measures

Construct development. In this study, as in other studies with this sample, multimethod, multi-informant constructs were formed from individual scales. These constructs were then used in path analyses. Scales were formed using individual items on measures, and constructs were formed using the average of standardized scales. All items in scales and scales in constructs had to show item-total correlations of .20 or higher, and the scale or construct had to have a standardized item alpha of .60 or higher (Patterson & Bank, 1986).

G2 school adjustment. As is noted above, school adjustment was measured by two domains: academic achievement and peer relations. The construct for *G2 academic achievement* encompassed the G2's self-report, the G1 parents' reports, teacher reports, and school records. At Grades 6 and 8, the G2 youth rated his own academic achievement on the 6-item scale of scholastic competence from the Self-Perception Profile for Children (Harter, 1985; standardized

$\alpha = .82$ at both timepoints). At Grade 10, the same scale from the Self-Perception Profile for Adolescents (Harter, 1988) was used (standardized $\alpha = .79$). At all timepoints, the G1 parents completed the 10-item Academic Performance Scale of the Child Behavior Checklist (Achenbach, 1991a). As G1 mothers' and fathers' scores were significantly associated at each timepoint ($r_s = .75$ to $.77$), they were averaged within timepoint to produce one parent indicator of G2 youth academic achievement. At each timepoint, teachers completed the Teacher Report Form (Achenbach, 1991b), and the 5-item Academic Performance Scale was used in the academic achievement construct. At Grade 6, two teachers completed ratings for each G2 youth; for this and all other Grade-6 teacher measures described below, an average of the teacher ratings was used. From school records, one item indicating whether the youth was receiving any special education services was coded "yes" (1) or "no" (0) at each timepoint. The indicators were all standardized and then averaged within each timepoint to produce academic achievement constructs at Grades 6, 8, and 10 (standardized $\alpha_s = .76, .77,$ and $.73,$ respectively). All three of these constructs were then combined to produce an overall G2 academic achievement construct (standardized $\alpha = .89$).

The *G2 peer relations* construct included the youths' reports on the 3-item Social Acceptance Scale of the Self-Perception Profile for Children (Harter, 1985; standardized $\alpha_s = .80$ at Grades 6 and 8) and the Self-Perception Profile for Adolescents (Harter, 1988; standardized $\alpha = .80$ at Grade 10). Additionally, mother and father reports on the 17-item peer-preferred behaviors of the Walker McConnell Scale of Social Competence and School Adjustment (Walker & McConnell, 1988) were used (standardized $\alpha = .93$ for each parent at all timepoints). Because the reports were significantly and positively associated at all timepoints ($r_s = .46 - .56$), the mother and father scores were averaged at each timepoint. Finally, two teacher-report items

were used. The first was the 17-item peer-preferred behaviors scale from the Walker McConnell Scale of Social Competence and School Adjustment (standardized α s = .96, .90, and .94 at Grades 6, 8, and 10, respectively). The second was an item asking teachers to indicate on a scale of 1 “Very few – less than 25%” to 5 “Almost all – more than 75%” what proportion of the G2 youth’s peers liked and accepted him. At Grade 10, teachers were asked to report separately for the G2 youth’s male and female peers, and these two items were averaged because they were highly associated ($r = .90$). The indicators were all standardized and averaged within each timepoint to produce peer relations constructs at Grades 6, 8, and 10 (standardized α s = .70, .70, and .67, respectively), and these were then averaged to produce an overall peer relations construct (standardized $\alpha = .80$).

Social contextual factors. The G2 father’s age at the birth of the G3 child was calculated using the child’s and the father’s birth dates. The father’s *maximum gross annual income* level during the child’s preschool years (ages 20 – 36 mos) was determined from his self-report on a scale of 1 “less than \$4,999” to 9 “more than \$50,000”. Maximum income was used in order to account for the fact that income might fluctuate over time.

General parent-child interactions of G2 fathers and G3 children during early childhood. *Positive parenting* was measured using father report on two measures. Positive feelings about parenting and toward the child were assessed using the 10-item Pleasure in Parenting Scale (Fagot, 1995) on which the fathers reported on the amount of pleasure they felt in 10 routine activities with their children (e.g., eating together, bathing, playing) on a 5-point scale from 1 “dislike” to 5 “enjoy very much”. Items were averaged to produce one score at both the 21-month (standardized $\alpha = .83$) and 36-month (standardized $\alpha = .80$) assessments of the children. Paternal warmth and positive reinforcement was assessed using the Parent Daily Report

(Chamberlain & Reid, 1987). On this 23-item measure, fathers are asked to report if their children engaged in a range of positive and negative behaviors in the past 24 hours, and if so, how the fathers responded. Parental responses are then coded into a number of categories including verbal and physical positive encouragement. The proportion of positively encouraging responses that the father had made to child behaviors in the past 24 hours was calculated for both the 21- and 36-month assessment points. Finally, interviewer ratings of paternal warmth and responsiveness during parent-child interaction tasks were calculated. Interviewers indicated on a scale of 1 “almost never” to 5 “almost always” how often the parent was responsive to the child, soothed the child if the child was upset, acknowledged the child’s feelings, watched the child with enjoyment, and had positive interactions with the child. The scales had high internal consistency at both the 21-month (standardized $\alpha = .80$) and the 36-month (standardized $\alpha = .86$) assessment timepoints. All of the scales from both assessment timepoints were standardized and averaged to produce one measure of parental positivity during the preschool years (standardized $\alpha = .68$).

Inconsistent discipline was measured using two scales from the Discipline Questionnaire (Capaldi, 1995), a parent report measure of typical discipline practices. The first of these was the poor discipline implementation scale. Using a 5-point scale (1 “Never or almost never” to 5 “Always or almost always”), fathers answered a series of seven questions on their discipline implementation such as “How often do you let your child get away with things you feel should have been punished?”. The low confidence in discipline scale included five items such as “How often when you discipline your child does s/he ignore the punishment?” answered on a 5-point scale. Both scales were scored so that higher scores indicated poorer consistency of discipline. Standardized alphas for both scales were acceptable (.63 and .62 for poor discipline

implementation and .62 and .72 for low confidence in discipline at the 21- and 36-month assessments, respectively). Within timepoints, the two scales were significantly positively associated ($r_s = .61$ and $.60$ at the 21- and 36-month assessments, respectively). Thus, at each timepoint the two scales were combined to form one inconsistent discipline composite. The inconsistent discipline composites for the 21- and 36-month assessments were significantly positively associated ($r = .53, p < .001$) and were thus averaged to form one indicator of inconsistent parenting during the preschool years.

School-focused parent-child interactions. Within this domain, the *G2 father's educational expectations for G3* were measured at the 7-year assessment via the father's report of how far he expected his child to progress in school on a 1-item measure. Fathers could choose from a range of answers: 1 "Grades 0-8", 2 "Grades 9-11", 3 "Grade 12", 4 "1-3 years of college", and 5 "4 or more years of college". Other studies have used similar 1-item measures of parental educational expectations (Trusty & Pirtle, 1998; Wentzel, 1998).

G3 school adjustment. As for the *G2's fathers' school adjustment*, the *G3 children's school adjustment* was measured by academic achievement and peer relations. As much as possible, identical or similar measures to those used to measure the *G2 father's school adjustment* were used when measuring the school adjustment of their offspring. Measures were taken from the 7-year assessment when the children were typically in Grade 2. *Academic achievement* was indexed using parent and teacher report and school records. Both the *G2 fathers* and the *G2 mothers* completed the 10-item School Competence Scale of the Child Behavior Checklist (Achenbach, 1991a). Because the mother and father reports were significantly positively associated ($r = .69, p < .001$), they were averaged. Teachers completed the Teacher Report Form (Achenbach, 1991b), and the 5-item Academic Performance Scale of this measure

was used. Finally, one item indicating whether the child had received any special education services at school in the past year was used in the construct. All of the scales and items were standardized and averaged to produce an overall academic achievement construct (standardized $\alpha = .73$).

As was done for the G2 fathers, *peer relations* were measured using mother and father report on the 17-item peer-preferred behaviors scale of the Walker McConnell Scale of Social Competence and School Adjustment (Walker & McConnell, 1988; standardized α s = .93. and .94 for mothers and fathers, respectively). The two reports were significantly associated ($r = .27$, $p < .001$) and were averaged to produce one parent score. For each child, the teacher report on the 17-item peer-preferred behaviors of the Walker McConnell Scale (standardized $\alpha = .94$) was also used. Finally, as for the G2 fathers, teachers completed an item to indicate on a scale of 1 “Very few – less than 25%” to 5 “Almost all – more than 75%” what proportion of the G3 child’s peers liked and accepted the child. The parent and teacher scores were then standardized and averaged to produce the overall G3 peer relations construct (standardized $\alpha = .63$).

Control variables. The *G2 father’s educational attainment* during his G3 offspring’s preschool years was measured by his self-report on a 1-item measure of the highest level of education that he had attained on a scale of 1 “Grade 8 or less” to 10 “Master’s degree or PhD”. The *G2 father’s general cognitive ability* was measured using the average of his scaled scores on the vocabulary and block design subscales of the Wechsler Adult Intelligence Scales-Revised (WAIS-R; Wechsler, 1981) that was administered when he was approximately ages 22-23 years. The subscales have a mean of 10 and a standard deviation of 3. The *G3 child’s general cognitive ability* was measured using the Mental Development Index of the Bayley Scales of Infant Development-Second Edition (BSID-II; Bayley, 1993) that was administered at the 21-month

assessment. The index has a mean score of 100 and a standard deviation of 15. *Gender* was coded “0” if the child was a boy and “1” if the child was a girl.

Data Analysis Plan

Descriptive analyses and correlational analyses are presented first. These are followed by path analyses using Mplus (Muthén & Muthén, 1998-2010) that utilizes full information maximum likelihood (FIML) to maximize information from data with missing values. In addition, using the complex sample analysis option, models were estimated using maximum likelihood with robust standard errors, which computes standard errors and a χ^2 test statistic that is robust to the nonindependence of sibling data (Muthén & Muthén, 2004). The first path model tested the hypothesis that academic achievement and peer relations are directly transmitted across generations—i.e., that the academic achievement and peer relations of the G2 father in middle and high school would predict those of his child in elementary school, controlling for the father’s educational attainment, the child’s gender, and the general cognitive abilities of the father and the child. The next path model tested potential pathways through which the G2 father’s academic achievement and peer relations influenced his child’s academic achievement and peer relations, including social contextual factors, general parent-child interactions, and school-specific parent-child interactions. In order to minimize the number of paths and to find the most parsimonious models, for both of the models, an iterative process was utilized in which the full models were trimmed of paths with significance levels of $p > .10$. The resulting trimmed models were compared to the full models using nested χ^2 comparisons. If the trimmed models did not differ significantly from the full models, they were used as the final models. For the final model examining potential mediational pathways, the significance of each mediating path was tested using Mplus (Muthén & Muthén, 1998-2010). These tests can accommodate paths involving

multiple mediators, and the resulting Z scores estimate the total effect of the entire path.

Preliminary analyses that included only the biological children in path models produced results that were not significantly different than those including all the children; therefore, both biological and nonbiological children were included in all analyses.

Results

Descriptive and Correlational Analyses

On average, the G2 fathers were age 23.45 years ($SD = 3.18$ yrs) at the birth of their G3 children in the present study. The median G2 maximum annual income level during the child's preschool years was \$25,000 to 29,999. One percent of fathers thought that their children would complete Grades 9-11 only, 23% thought that their children would progress as far as completing high school, 28% thought their children would complete 1 to 3 years of college, and 48% thought that their children would complete 4 or more years of college. In terms of the highest level of education that they had attained by the time that their children were preschool aged, 26% of the fathers had not completed high school; 67% had attained a General Educational Diploma (GED), finished high school, or completed a high school diploma program; and 7% had attained either a 2- or a 4-year college degree. On measures of general cognitive abilities, the G2 fathers had an average score of 9.60 ($SD = 2.26$) on the combined vocabulary and block design subscales of the WAIS-R (Wechsler, 1981), which is very close to the mean score of 10 for the subscales. The G3 children had an average score of 88.11 ($SD = 12.86$) on the Mental Development Index of the BSID-II (Bayley, 1993), which is within one standard deviation of the index mean score of 100. Thus, both fathers and children showed average general cognitive abilities.

Correlational analyses between all of the measures are presented in Table 1. Within both generations, academic achievement and peer relations were significantly positively correlated.

Across generations, both G2 academic achievement and G2 peer relations were significantly positively associated with both G3 academic achievement and G3 peer relations. The G2 father's academic achievement during middle and high school was significantly associated with all of the hypothesized predictors. His peer relations were also significantly associated with all of the proposed predictors except his age at his child's birth. In turn, the proposed predictors were significantly associated with almost all of the indicators of G3's school adjustment. Inconsistent parenting was not significantly associated with G3 academic achievement, although it was negatively associated with G3 peer relations. Turning to the control variables, G2's educational attainment was significantly associated with all of the indicators of his school adjustment and his child's academic achievement. G2's general cognitive ability was significantly associated only with his academic achievement. Finally, G3 children's general cognitive abilities were significantly associated with both their academic achievement and their peer relations but not with their fathers' school adjustment. G3's gender was significantly positively associated with academic achievement and peer relations showing that girls tended to have higher scores on both domains of school adjustment. Fathers also had significantly higher educational expectations for girls.

Path Analyses

To test the first hypothesis that the school adjustment of the G2 fathers in middle and high school would be directly related to the elementary school adjustment of their offspring, a model was run in which school adjustment for both generations was represented by academic achievement and peer relations. The father's educational attainment, his general cognitive ability and that of his child, and the child's gender were included as control variables. As is noted above, models were trimmed in an iterative process until only paths with $p < .10$ were included.

The trimmed model (pictured in Figure 2) showed acceptable fit, $\chi^2 = 16.68$, $df = 17$, $p = .48$, CFI = 1.00, TLI = 1.01, RMSEA = .00. The fit of the trimmed model did not significantly differ from that of the full model, $\chi^2_{\text{Difference}} = 5.12$, $df = 8$, $p = ns$; therefore, it was retained as the final model. As predicted, the G2 father's academic achievement had a significant direct effect on that of his G3 offspring. Similarly, G2's peer relations had a significant direct effect on G3's peer relations. Only the G2 father's peer relations were significantly positively associated with his educational attainment in the model. Additionally, his educational attainment was not significantly associated with his offspring's school adjustment and the paths were not included in the final model. In terms of general cognitive ability, the father's cognitive ability was significantly associated with his academic achievement only. The cognitive ability of the G3 offspring was predictive of both measures of the child's school adjustment. Finally, gender was significantly positively associated with both domains of school adjustment indicating that girls showed better adjustment. Gender was not significantly associated with general cognitive ability; therefore, this path was not included in the final model.

Having shown that both measures of G2 school adjustment showed direct associations with those same measures in G3, the next goal of the study was to explore possible indirect pathways by which school adjustment might be transmitted. To address this goal, a model was analyzed in which the associations between the G2 measures of school adjustment, a number of variables hypothesized to be predictive of offspring school adjustment, and G3 school adjustment were tested. Covariances between potential mediators were allowed when significant. The trimmed model pictured in Figure 3 showed acceptable fit, $\chi^2 = 38.50$, $df = 50$, $p = .88$, CFI = 1.00 TLI = 1.07, RMSEA = .00. The fit of the trimmed model did not significantly differ from that of the full model, $\chi^2_{\text{Difference}} = 15.68$, $df = 20$, $p = ns$.

In the model, the direct associations between the measures of the G2 father's school adjustment and those of his offspring were no longer significant. All possible mediated paths from the G2 father's academic and peer relations to those of his children were tested. For associations between G2's academic achievement and that of G3, there were two specific indirect paths. First, the G2 father's academic achievement was significantly and positively related to his age at his G3 child's birth and subsequently to the child's academic achievement ($z = 2.16, p < .05$). In the second indirect path, the G2 father's academic achievement was significantly positively associated with his income, which was in turn positively associated with his educational expectations for his child. These educational expectations were then positively associated with the G3 child's academic achievement ($z = 1.78, p = .08$). Although the second indirect path from G2's to G3's academic achievement through income and educational expectations was marginally significant, total indirect effects of these two indirect paths were significant ($z = 2.53, p < .05$).

Similar to the indirect path from G2 to G3 academic achievement, there was a marginally significant path from G2 to G3 peer relations that included G2 income and educational expectations for the child ($z = 1.66, p = .10$). There was also a marginally significant indirect path from G2 to G3 peer relations ($z = 1.62, p = .11$) that involved a positive association between G2 peer relations and income. Income was negatively associated with inconsistent parenting, which was in turn negatively associated with G3's peer relations. Although each indirect path was only marginally significant, combined effects of both indirect paths were significant ($z = 2.04, p < .05$). Finally, there was a significant indirect path from the G2 father's peer relations to his child's academic achievement that included income and educational expectations for the child ($z = 2.17, p < .05$).

Turning to the control variables, G2's general cognitive ability was positively associated with both his academic achievement and his child's general cognitive ability. The child's general cognitive ability was positively associated with both measures of the child's school adjustment. Gender was positively associated with the G3 child's academic achievement as well paternal expectations for educational attainment. Girls scored higher on both measures.

Discussion

Adjustment in school exerts long-ranging effects on an individual's economic and occupational opportunities, as well as his or her psychosocial functioning into adulthood (Buckner et al., 2009; Fothergill et al., 2008; Topitzes et al., 2009). Using a sample of working-class men and their children, this study demonstrated that two aspects of school adjustment—academic achievement and peer relations—in one generation affect those same aspects in the next generation, even when accounting for parental educational attainment and parent and child general cognitive ability. This suggests that the intergenerational transmission of school adjustment is not simply because of similarities in the cognitive abilities of parents and children. Nor can it be attributed to parental educational attainment. In fact, the father's educational attainment was not significantly directly associated with either the academic achievement or the peer relations of his offspring. Rather, his academic and social behaviors while in school were more predictive of the same behaviors in his offspring. This suggests that improving the school functioning of youths may have long-ranging effects into the future, not only on the youth's adult outcomes but also those of his (or her) children. As such, efforts to improve school adjustment may be cost effective in ways typically not imagined, as they could have cascading effects across generations and multiple offspring.

In order to influence the school adjustment of the next generation, it is important to

understand potential pathways through which school adjustment in one generation might affect that in another. Using a model based on the Family School Relationships Model (Ryan & Adams, 1995), this study specified two levels of variables that might be affected by parental school adjustment and might, in turn, impact offspring school adjustment. Whereas bivariate results indicated that a range of these variables were associated with both the fathers' and the children's school adjustment, multivariate modeling highlighted the father's age at the birth of his child as a mediator of the association between the parent's academic achievement and that of the child. It is not surprising that youths with poor academic achievement might have children at earlier ages. Feeling that their opportunities in school are limited, some youths might make an earlier transition into adulthood by leaving school, obtaining full-time jobs, or starting families (Dishion, Poulin, & Medici Skaggs, 2000).

Early parenting may have negative effects on offspring, such as poor school adjustment, through its negative impacts on occupational and income opportunities (Jaffee, Caspi, Moffitt, Belsky, & Silva, 2001). In the present study, early parenthood was directly associated with the child's academic achievement, even when income and educational attainment were controlled in the model. This suggests that early parenthood may serve as a marker for background factors in the youths' lives that contribute both to the likelihood of early parenting and to poor outcomes for their offspring (Levine et al., 2001). For example, early parenting might represent a willingness to engage in risky behavior, such as precocious and unprotected sexual activity, and such risk taking may subsequently interfere with offspring functioning either directly as the parent potentially places the child in inappropriate situations or indirectly as the parent fails to teach the child appropriate skills.

As predicted, social contextual variables, specifically the father's income, were affected

by both aspects of G2 school adjustment. Income was then linked to child school adjustment through effects on parent-child interactions. For example, the father's income was positively associated with his educational expectations for his child, a school-related parent-child interaction. In turn, educational expectations were positively associated with both academic achievement and peer relations in G3. Fathers with better economic prospects might have higher expectations for their children because they know that they will be able to provide for higher education for their children (Grinstein-Weiss, Hun Yeo, Irish, & Zhan, 2009). They also have more resources to provide preschool learning experiences and supplemental educational activities once the child is in school (Crosnoe, Mistry, & Elder, 2002; Davis-Kean, 2005), which might affect their expectations for the child.

The association between higher parental expectations for education and better school adjustment in the children is consistent with theories that high parental expectations might lead children to set high goals and to be more persistent at reaching those goals (Davis-Kean, 2005; Spera et al., 2009). Higher parental expectations are also linked to greater parental involvement in school, which positively influences achievement (Sy & Schulenberg, 2005). Parental involvement in school was not measured in the present study, but future research could examine potential associations between such involvement, parental school adjustment, income, and educational expectations for the child. It should be noted that in the present study parental expectations for education were measured at Grade 2; thus, the parents were likely to have had information about the children's prior school performance on which to base their expectations.

Income was also negatively associated with inconsistent parenting, a more general parent-child interaction that was negatively associated with the children's peer relations. One might expect that parents who are under economic stress might not practice efficacious

parenting. Indeed, this finding is consistent with the research of Dodge and colleagues (2008) in which, using a dynamic cascading model, they found that adverse social context, represented in part by low SES, was predictive of inconsistent parenting that in turn was linked to poor social skills at school. The current model adds the information that the father's poor peer relations while he was in school are antecedents to low income, poor parenting, and poor peer relations in his offspring.

As is noted, the findings that a number of social contextual and parent-child interaction factors were significant predictors of the child's school adjustment are consistent with past literature. What has been added by the present study is the linkage between those factors and the fathers' school adjustment prior to the births of his children. The identification of aspects of the father's school adjustment as the first potential links in the paths from his subsequent social-contextual milieu and parenting to his child's school adjustment provides valuable information about early prevention opportunities. Additionally, it provides a powerful rationale for intervening with youths who are struggling academically and socially in middle and high school: Such intervention might positively impact not only the life of that youth but also the lives of his children.

Limitations and Future Directions

This study utilized multi-informant, multimethod prospective longitudinal data spanning two generations. As such, it represents an improvement over past studies of the transmission of school adjustment. However, some limitations should be noted. Some of the scales showed alphas that were above the criterion of .60 but fell between .60 and .70. Often this was because of the fewer number of items in these scales. However, the fact that the scales were combined into composites should lessen the effects of lower reliability scores. Additionally, the father's

educational expectations for the child were measured by only one item. Although this is not uncommon in measuring educational expectations for children (Trusty & Pirtle, 1998; Wentzel, 1998), it would have been preferable to have more items. Although all of the fathers who had contact with their children were included in this study, fathers who never had contact with their children were not included here nor were their children. Prior work with this sample suggests that such fathers more often displayed the highest risk characteristics (Fagot, Pears, Capaldi, Crosby, & Leve, 1998). Thus, there is some restriction of range in the present sample.

Additionally, the sample was composed of fathers from working-class backgrounds, 26% of whom did not complete high school and only 7% of whom pursued post-secondary education. Thus, the generalizability of these results to middle- and upper-class samples may be limited. The fathers were primarily Caucasian, so generalizability to other ethnic groups also may be limited. However, this study's focus on lower SES, less-educated men and their offspring is important because both groups may be at risk for poor school adjustment and other psychosocial problems. Identifying potential points of intervention for these families may help to break intergenerational cycles of risk. Finally, there was no information about the mothers' school adjustment available because prospective longitudinal data were gathered on the fathers only. Future work should focus on examining the intergenerational transmission of school adjustment for both mothers and fathers with a focus on determining if the parents have differential effects on offspring adjustment.

Overall, this study demonstrated that parental adjustment in middle and high school can have far-reaching effects on the school adjustment of the next generation. These effects are not explained simply by parental educational attainment or by parent and child cognitive abilities. Rather, a number of other factors—including income, the father's age at the birth of his child, his

educational expectations for his child, and aspects of his parenting—all contribute to continuity from one generation to the next. Although there was continuity across generations, it did not fully explain G3's school adjustment, indicating that children may show differential school adjustment from their fathers or discontinuity. Thus, there is opportunity for improvement across generations. A number of interventions have been shown to be effective for improving the educational outcomes of at-risk youth, both early in their educational careers and later (e.g., Connell, Dishion, Yasui, & Kavanagh, 2007; Ou & Reynolds, 2008; Pungello et al., 2010). The results of the present study underscore the importance of such efforts. Intervention to improve an individual's school adjustment may positively influence his income, parenting, and, ultimately, the school adjustment of the next generation.

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Table 1. *Correlations between Hypothesized Predictors, G2 and G3 School Adjustment Indicators and Control Variables*

	1	2	3	4	5	6	7	8	9	10	11	12
1. G2 Academic achievement	--											
2. G2 Peer relations	.39**	--										
3. G3 Academic achievement	.21**	.16*	--									
4. G3 Peer relations	.21**	.18*	.43**	--								
5. G2 Maximum income	.36**	.36**	.25**	.24**	--							
6. G2 Age at child's birth	.22**	.08	.31**	.23**	.46**	--						
7. G2 Positive parenting	.19*	.29**	.18*	.18*	.31**	.34**	--					
8. G2 Inconsistent parenting	-.16*	-.24**	-.09	-.18*	-.29**	-.23**	-.35**	--				
9. G2 Educational expectations	.16*	.22**	.31**	.25**	.27**	.02	.26**	-.04	--			
10. G2 Educational attainment	.22**	.28**	.16*	.12 [†]	.35**	.12	.18*	-.15*	.21*	--		
11. G2 General cognitive ability	.52**	.09	.14 [†]	.08	.15*	.13 [†]	.10	-.05	.18*	.15*	--	
12. G3 General cognitive ability	.15 [†]	.10	.36**	.30**	.24**	.16*	.06	-.01	.11	.13	.17*	--
13. G3 Gender	.03	-.06	.24**	.23**	.11	.10	.02	-.07	.20*	.01	.12 [†]	.14 [†]

[†]p < .10. *p < .05. **p < .01.

Figure 1. Intergenerational model of school adjustment.

G2 Middle and high school

G3 Preschool

G3 Grade 2

Parent characteristics

Social contextual factors

General and school-focused parent-child interactions

Child school outcomes

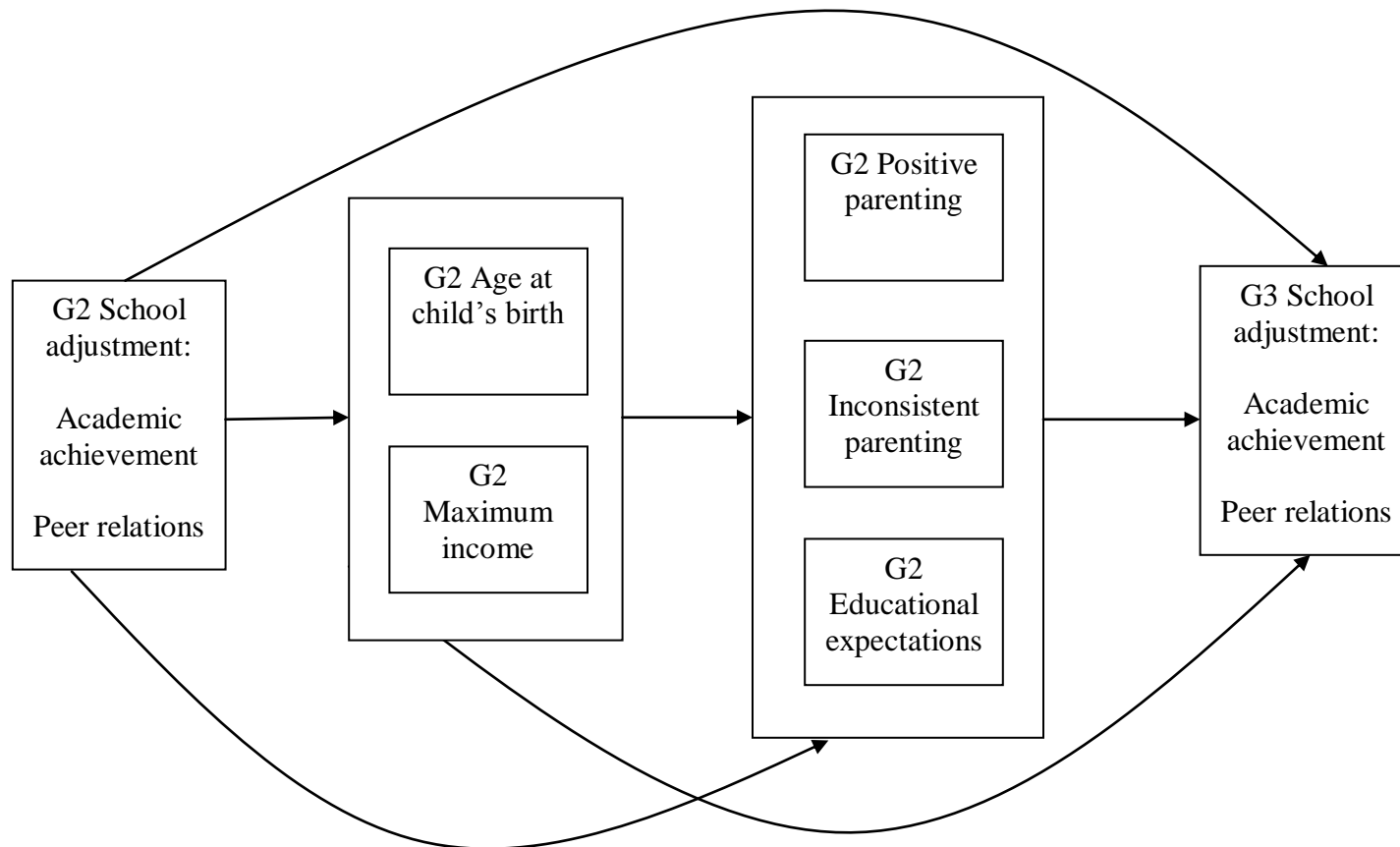
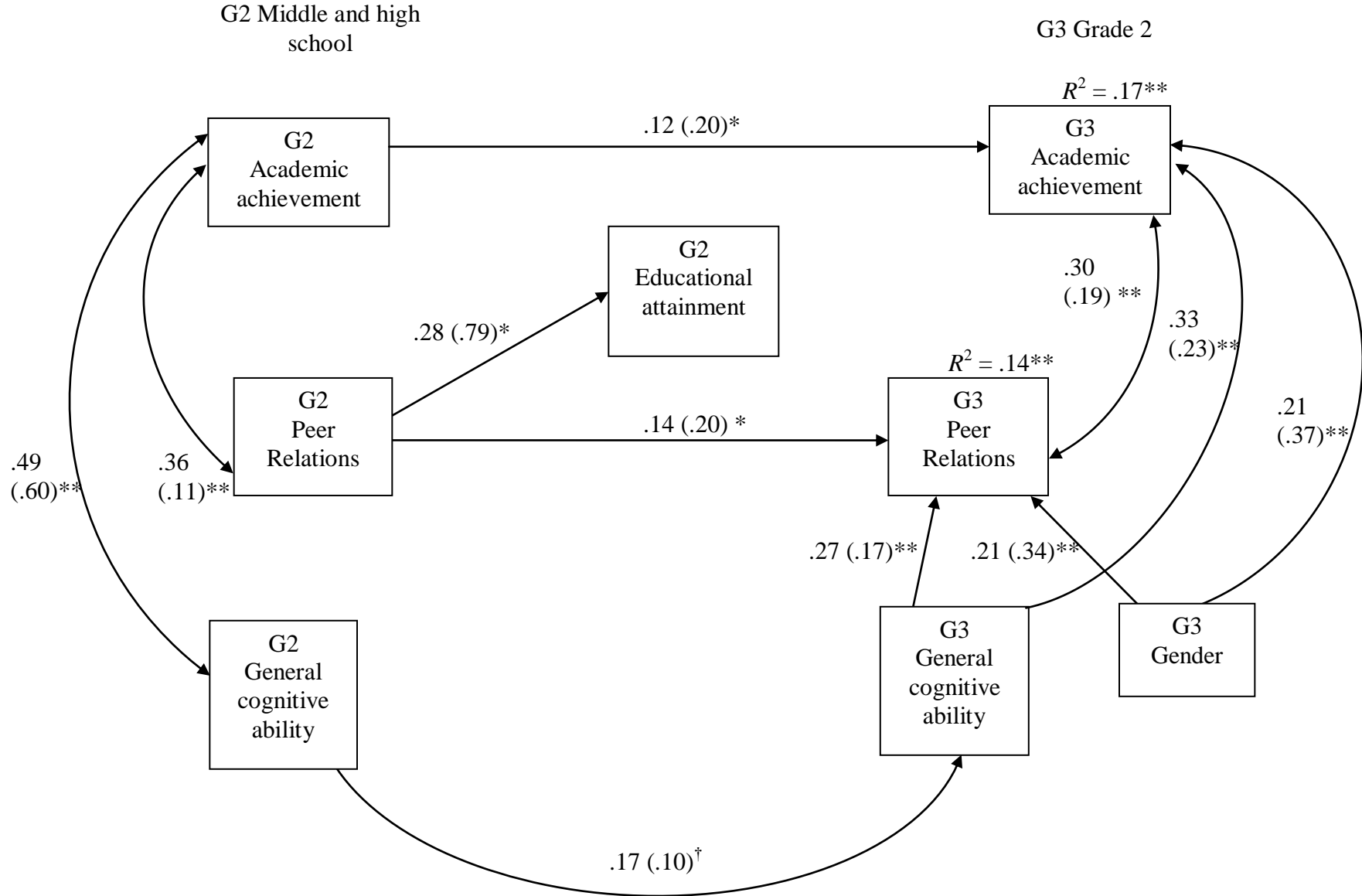


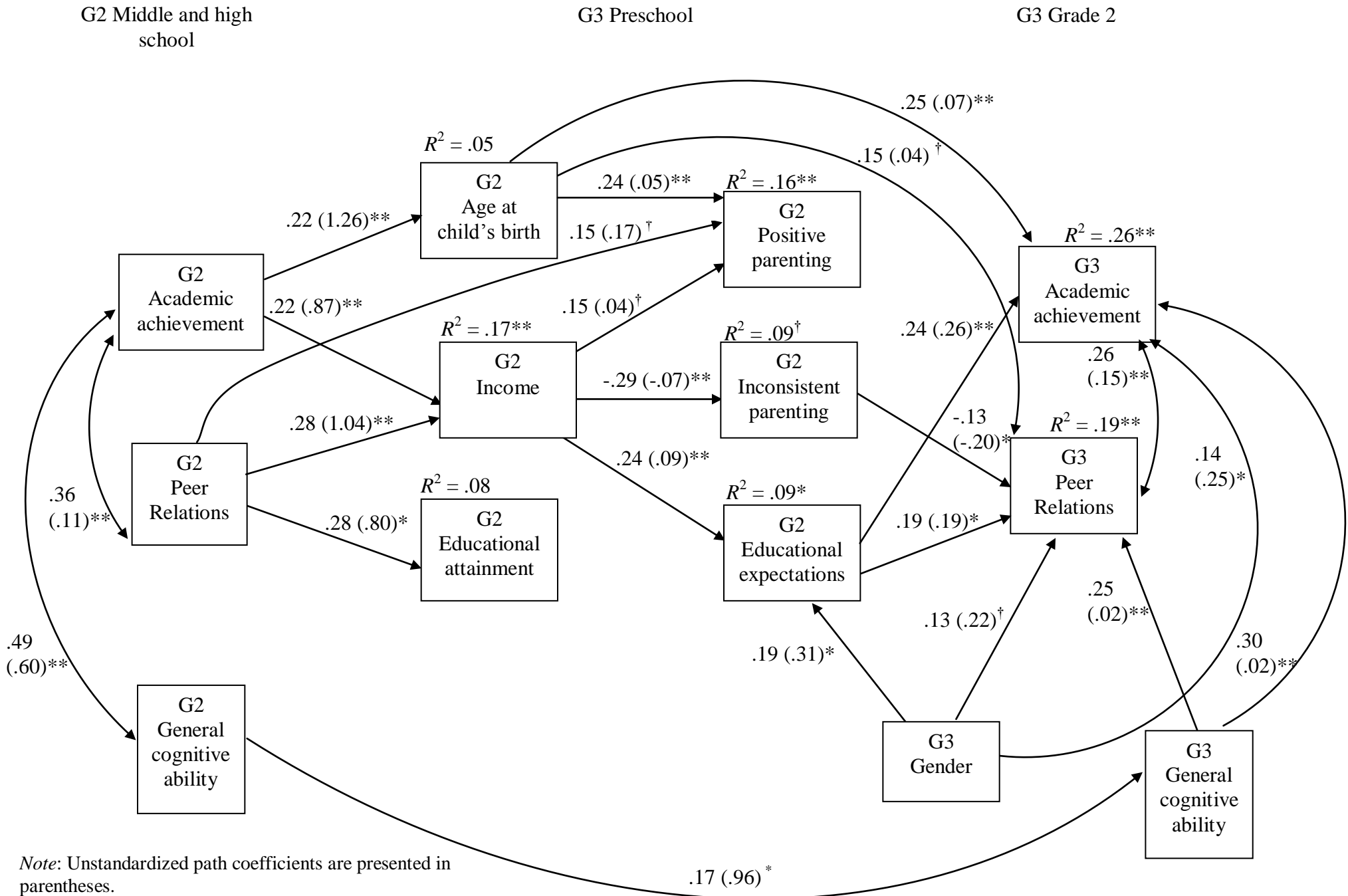
Figure 2. Path model of intergenerational transmission of school adjustment.



Note: Unstandardized path coefficients are presented in parentheses.

[†] $p < .10$. * $p < .05$. ** $p < .01$.

Figure 3. Path model of mediators of intergenerational transmission of school adjustment.



Note: Unstandardized path coefficients are presented in parentheses.

$^\dagger p < .10$. $* p < .05$. $** p < .01$.