Parental Monitoring: An Examination of Antecedents and Bidirectional Associations With Child and Adolescent Conduct Problems

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Abstract

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Inadequate parental monitoring is widely recognized as a risk factor for the development of child and adolescent conduct problems. However, the majority of previous studies examining parental monitoring have largely measured parental knowledge, the outcome of parental monitoring, during middle and later adolescence. Therefore, it is unclear how parental monitoring (defined as parental solicitation and control) develops over time and what relationship this parenting behavior has with child and adolescent conduct problems. This study examined data from the Fast Track project, a multisite longitudinal study aimed at the development and prevention of conduct problems in children at-risk for these behaviors. Latent trajectory modeling (LTM) was used to examine growth in parental monitoring from Grades 4-5 and 7-11 as well as several proposed antecedents of this parenting behavior. The longitudinal relationship between parental monitoring and child conduct problems was examined through

bivariate LTMs and ALT models. There was little average growth in parental solicitation and control in these data, but evidence for significant variability in initial levels of, and growth in, these parenting behaviors was identified. Higher levels of parental solicitation and lower levels of parental control were associated with lower levels of child conduct problems. Evidence of bidirectional associations between parental solicitation (per child report) and child conduct problems was also identified. Moderation findings indicated that parental monitoring is particularly difficult to implement effectively in high-risk neighborhoods. Several early childhood antecedents of parental monitoring were also identified, suggesting potential targets for clinical interventions aimed at reducing child conduct problems.

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DEDICATION

To my parents, for teaching me the value of focus, hard work, and determination.
To my husband Michael, for his unconditional love and support.

Introduction

Parenting and Child Conduct Problems

Child and adolescent conduct problems define a broad range of behaviors, including aggression, oppositionality, delinquency, and antisociality. These behaviors are associated with several severe negative outcomes in later adolescence and adulthood, including school dropout, unemployment and criminal behavior (Fergusson & Horwood, 1998; Jessor, 1998; Loeber & Dishion, 1983). Several risk factors are implicated in the development of conduct problems in children and adolescents, including genetics, child temperament, parenting behaviors, peer relationships and environmental contexts (e.g., poverty, high-risk neighborhoods; Hinshaw & Lee, 2003). Of these, parenting behaviors have received the most research attention, as they are considered to be malleable and open to change through preventive interventions (McMahon & Kotler, 2008). Negative parenting behaviors shown to predict child conduct problems include low parental involvement, poor supervision, and harsh, inconsistent discipline (Loeber & Stouthamer-Loeber, 1986; Patterson & Stouthamer-Loeber, 1984; Stormshak, Bierman, McMahon, Lengua, & the Conduct Problems Prevention Research Group [CPPRG], 2000).

Parental monitoring has also been examined as a parenting behavior linked to the development of child and adolescent conduct problems. Parental monitoring is defined as "a set of correlated parenting behaviors involving attention to and tracking of the child's whereabouts, activities, and adaptations" (Dishion & McMahon, 1998, p. 61). Early studies on parental monitoring followed from clinical observations noting that parents of children with conduct problems often fail to supervise, track, and set rules regarding their children's behaviors and activities (Glueck & Glueck, 1950; Hirschi, 1969; McCord, 1979; Patterson, 1982; Patterson & Dishion, 1985; Patterson & Stouthamer-Loeber, 1984; Sampson & Laub, 1994; Weintraub &

Gold, 1991; Wilson, 1980). Since this early research, a multitude of studies have consistently identified a relationship between low levels of parental monitoring and high levels of child conduct problems (for a review, see Racz & McMahon, 2011).

However, research also indicates that parental monitoring decreases over time, particularly as children enter adolescence (Frick, Christian, & Wootton, 1999; Kerr & Stattin, 2003; Laird, Criss, Pettit, Bates, & Dodge, 2009; Larson, Richards, Moneta, Holmbeck, & Duckett, 1996; Pettit, Keiley, Laird, Bates, & Dodge, 2007; Smetana, 2008). This reduction is to be expected due to increasing adolescent autonomy and parent-adolescent conflict, both of which are hypothesized to disrupt the monitoring process (Laird, Marrero, & Sherwood, 2010; Masche, 2010). Despite this general decrease in the amount of parental monitoring over time, several researchers have observed that the link between this parenting behavior and child conduct problems tend to strengthen over time (Jacobson & Crockett, 2000; Laird, Pettit, Bates, & Dodge, 2003; Pardini, Fite, & Burke, 2008). This finding supports the importance of continued monitoring as a means to deter adolescents from conduct problems.

A Reconceptualization of Parental Monitoring

The seminal work by Stattin and Kerr (2000; Kerr & Stattin, 2000, 2003; Kerr, Stattin & Burk, 2010) criticized previous studies of parental monitoring, stating that researchers have actually assessed the end product of monitoring (i.e., knowledge gained about children and their activities), and therefore have not tapped into the actual active methods of monitoring. According to this viewpoint, the evidence linking parental monitoring to child conduct problems actually reflects the association between parental *knowledge* and these child behaviors. Stattin and Kerr hypothesized three possible sources of parental knowledge: (a) child disclosure (children tell parents about their activities spontaneously), (b) parental solicitation (parents ask

children and/or children's friends for information), and (c) parental control (parents use rules and restrictions to limit children's ability to engage in activities without informing their parents). Parental solicitation and control are considered to be active parental efforts to track children's activities and whereabouts, and according to Stattin and Kerr are defined as "parental monitoring."

Of these components, several studies have noted that parents gain most of their knowledge about their children's behavior, activities and whereabouts from child disclosure (Keijsers, Branje, VanderValk, & Meeus, 2010; Lahey, Van Hulle, D'Onofrio, Rodgers, & Waldman, 2008; Vieno, Nation, Pastore, & Santinello, 2009; Willoughby & Hamza, 2011). Given the important role of child disclosure, it could be argued that parental monitoring and parents' subsequent attainment of knowledge is largely a reflection of the quality of the parent-child relationship and not active parenting efforts. However, one study indicated that when parental monitoring (as measured by a composite score combining parental knowledge and solicitation) and parent-child relationship quality were modeled simultaneously, parental monitoring remained a strong predictor of decreases in child problem behavior (as measured by a composite score combining antisocial behavior, substance use, and deviant peer associations) over time (Fosco, Stormshak, Dishion, & Winter, 2012). Thus, even when considered within the context of a strong parent-child relationship, parental monitoring is still an important factor in explaining changes in child problem behaviors. Recent genetic studies have also identified a gene-environment interaction between *CHRM2* (a gene found to be broadly associated with externalizing behaviors) and parental knowledge, such that the relationship between this genotype and externalizing behaviors was particularly strong when parental knowledge was low (Dick et al., 2011).

In several studies, lower levels of parental control and child disclosure and higher levels of parental solicitation have been shown to predict higher levels of child conduct problems (Kerr & Stattin, 2000, 2003; Kiesner, Dishion, Poulin, & Pastore, 2009; Stattin & Kerr, 2000; Willoughby & Hamza, 2011). This finding regarding parental solicitation is surprising, given that researchers have previously assumed that this monitoring strategy would be associated with fewer conduct problems (e.g., Dishion & McMahon, 1998). However, the direction of this relationship is not clear, as it could be that the more parents ask children about their whereabouts and activities, the more likely children are to engage in problem behaviors. Alternatively, this finding could indicate that increased levels of parental solicitation are a reaction to children with previously high levels of behavior problems. Other studies have not replicated these results, documenting instead that higher levels of parental control and solicitation have direct effects on lower levels of child conduct problems (Brody, 2003; Fletcher, Steinberg, & Williams-Wheeler, 2004). Overall, an increasing number of studies have indicated that the various components of parental knowledge and monitoring are separate but related constructs, as they demonstrate differential prediction to child outcomes (e.g., Byrnes, Miller, Chen, & Grube, 2011; Keijsers, Frijns, Branje, & Meeus, 2009; Stattin & Kerr, 2000).

Despite wide use of the term "parental monitoring," there still remains little agreement regarding the definition of this construct. Additionally, while consistent evidence has identified a strong relationship between high levels of child disclosure and lower levels of child conduct problems, the findings regarding the associations between parental monitoring and child conduct problems are less clear (for a review, see Racz & McMahon, 2011). The contradictory findings regarding this relationship may be due to disparate operationalizations of parental monitoring (i.e., monitoring versus knowledge). Clear conceptualization and measurement of active parental

monitoring techniques (i.e., solicitation and control) is needed to clarify the link between these parenting behaviors and child and adolescent conduct problems.

Bidirectional Associations Between Parental Monitoring and Child Conduct Problems

Consistent with transactional models (Lytton, 1990; Pardini, 2008; Sameroff, 1975), perhaps the most likely explanation for the relationship between parental monitoring and child conduct problems is that parents and children influence each other in a dynamic, bidirectional manner. Given the traditional focus on parent effects coupled with recent work examining child effects (i.e., child disclosure), consideration of these bidirectional models is of paramount importance. However, only a handful of studies have included both child and parent effects, which would enable researchers to specifically examine these bidirectional processes.

The Child Development Project is one example of a study that has examined bidirectional associations (Laird et al., 2003). The authors found that decreases in knowledge were associated with increases in parent-reported delinquency over time. The findings also provided support for bidirectional associations, as lower knowledge predicted more delinquency 1 year later while more delinquency predicted less parental knowledge 1 year later. Furthermore, the addition of cross-lagged effects significantly improved the fit of the model, indicating that time-specific increases in parental knowledge predicted subsequent time-specific decreases in delinquency, over and above the underlying developmental trajectories. Other studies have also identified bidirectional effects, as higher levels of parental monitoring predicted fewer problem behaviors and more problem behaviors predicted lower parental monitoring in subsequent years (Pettit & Arsiwalla, 2008; Williams & Steinberg, 2011; Willoughby & Hamza, 2011).

In an additional study with a longitudinal sample of boys from ages 6 to 16, Pardini and colleagues (2008) found bidirectional associations between parental monitoring, as well as a

number of other parenting behaviors (e.g., positive reinforcement, physical punishment), and child conduct problems. Furthermore, child age moderated the bidirectional relationship between poor parental monitoring and teacher-reported conduct problems, as these associations strengthened as child age increased. These bidirectional findings may be interpreted as evidence that increased parental monitoring deters adolescents from conduct problems or that parents disengage from monitoring as children continue to engage in these behaviors in adolescence.

Whereas some studies have found significant cross-lagged effects between parental monitoring and child conduct problems, one study reported that these constructs are related to each other longitudinally, but not because of bidirectional effects (Kiesner et al., 2009). Rather, the authors argued that the links between these constructs reflect the concurrent correlations (i.e., at Time 1) and stability in these child and parent behaviors. In sum, the majority of the emerging evidence suggests that the influence of both parents and children needs to be considered in studies of parental monitoring and child and adolescent conduct problems. Continued use of statistically sophisticated techniques to more closely examine these bidirectional associations is an important direction for future research.

Antecedents of Parental Monitoring

An essential question for research on parental monitoring involves discovering why some parents engage in effective monitoring while others do not. Several antecedents of parental monitoring have been implicated, including a proactive parenting style (Pettit et al., 2007; Pettit & Laird, 2002; Pettit, Laird, Dodge, Bates, & Criss, 2001). Proactive parenting is defined as the use of anticipatory techniques to prevent children from developing later problematic behavior. Parents who endorse this “before-the-fact” approach to child conduct problems also have high

levels of knowledge, likely reflecting the fact that these parents value the importance of regulating and managing child behavior.

Early child conduct problems have been hypothesized as another antecedent of parental monitoring. It could be argued that parents respond to early manifestations of conduct problems by increasing their monitoring efforts in hopes of deterring children from continued negative behavior. Alternatively, it could also be the case that parents feel frustrated by these conduct problems and subsequently withdraw their efforts. These parents may "give up" as they feel powerless to change this early pattern of negative behavior. In support of the latter argument, several studies have shown that parental monitoring declines in response to child conduct problems (Burke, Pardini, & Loeber, 2008; Dishion, Nelson, & Bullock, 2004; Kerr & Stattin, 2003; Laird et al., 2009; Patrick, Snyder, Schrepferman, & Snyder, 2005; Willoughby & Hamza, 2011). High levels of knowledge have also been identified among proactive parents of children with a history of early conduct problems (Pettit & Laird, 2002). These findings highlight the importance of considering the influence of both parent and child factors on later parental monitoring.

In many of these discussions, the quality of the parent-child relationship is highlighted as a particularly important antecedent of parental monitoring (Crouter & Head, 2002; Dishion & McMahon, 1998; Kerns, Aspelmeier, Gentzler, & Grabill, 2001; Laird et al., 2010b; Stattin & Kerr, 2000). These authors suggest that the monitoring process will only be effective when it is conducted within the context of a supportive and positive parent-child relationship (Barerra, Biglan, Ary, & Li, 2001; Kerr, Stattin, & Trost, 1999; Pettit & Laird, 2002). In support of this argument, greater parental knowledge is associated with more parent-adolescent relationship enjoyment and more parental involvement (Laird et al., 2003). Furthermore, adolescent conduct

problems have been found to weaken the quality of the parent-child relationship. These reductions, in turn, partially mediated the relationship between low levels of parental knowledge and high levels of adolescent conduct problems.

In sum, several early parenting practices and child characteristics have been identified as antecedents of high levels of parental monitoring. However, more research is needed to identify additional factors that explain why some parents engage effectively in the monitoring process whereas others do not. Aside from determining the sources of these mean level differences, it will also be important to examine variations in the developmental course of parental monitoring. Although parental monitoring decreases during adolescence, the amount and timing of this decrease varies widely among families (Laird et al., 2009). Examining the predictors of this differential change over time is an important direction for future research.

Contextual Influences on Parental Monitoring

To fully understand the function of parental monitoring as a risk factor for the development of child conduct problems, these parenting behaviors must be placed within broader contextual factors that influence family functioning (Dishion & McMahon, 1998). For example, a handful of studies have identified differences among ethnicities, as Black parents tend to engage in less monitoring (as measured by a combination of items assessing parental knowledge, solicitation and control) than White parents (Pettit et al., 2007; Pinderhughes, Hurley, & CPPRG, 2008). However, the majority of studies have not found any significant ethnic differences, instead noting more similarities than differences in parental monitoring across different ethnic groups (Forehand, Miller, Dutra, & Chance; 1997; Laird, Marrero, & Sentse, 2010; Pardini et al., 2008). It is important to note, however, that the vast majority of studies on parental monitoring have examined samples composed mainly of White families. The inclusion of diverse samples to

fully examine similarities and differences in this parenting behavior among different ethnic groups is a crucial direction for future research.

Several researchers have reported that girls are monitored more than boys and that parents are more knowledgeable about their daughters than their sons (Dishion & McMahon, 1998; Jacobson & Crockett, 2000; Kerr & Stattin, 2000; Laird, Criss, Pettit, Dodge, & Bates, 2008; Neumann, Barker, Koot, & Maughan, 2010; Richards, Miller, O'Donnell, Wasserman, & Colder, 2004; Smetana & Daddis, 2002; Stattin & Kerr, 2000; Vieno et al., 2009; Willoughby & Hamza, 2011). This finding may reflect broader social concerns about girls' exposure to and engagement in conduct problems and antisocial behavior (Pettit et al., 2007). Several studies have also indicated that parental monitoring is more strongly associated with lower levels of delinquent behavior in girls than in boys (Pettit et al., 2001). This finding may be due to the fact that parents are more knowledgeable of girls' behavior, and are therefore better able adjust their level of monitoring accordingly. On the other hand, parents may work less diligently to change boys' conduct problems, since this behavior is viewed as more normative for boys than for girls (Hinshaw & Lee, 2003).

The effect of living in high-risk, inner-city neighborhoods (as characterized by high levels of poverty, crime, disorganization and unemployment) has also been considered, as high levels of parental monitoring could protect children from the inherent dangers observed in these neighborhoods (Dishion & McMahon, 1998; Jones, Forehand, Brody, & Armistead, 2003; Wilson, 1980). Alternatively, it is possible that low levels of parental monitoring would be expected in high-risk neighborhoods as various emotional, social and financial stressors may interfere with effective parenting (Ceballo & McLoyd, 2002). Accordingly, living in high-risk areas and attending high-risk schools (e.g., schools with high proportions of children living in

poverty, poor academic outcomes) has been shown to be a risk factor for low levels of parental monitoring (Kilgore, Snyder, & Lentz, 2000; Laird et al., 2009). Low socioeconomic status (SES) families have also been found to engage in lower levels of parental monitoring than high SES families (Crouter & Head, 2002; Neumann et al., 2010; Pettit & Laird, 2002; Pettit et al., 2001, 2007). Byrnes and colleagues (2011) found that mothers who perceived higher levels of neighborhood problems tended to use more rule-based monitoring strategies (i.e., parental control) with their children; however, these mothers also reported lower levels of knowledge of children's activities and whereabouts. These findings suggest that, within the context of risky neighborhoods, parental monitoring efforts may be particularly ineffective. Overall, a constellation of risk factors found in high-risk, impoverished neighborhoods (e.g., young motherhood, low education level, psychological distress, stressful life events, economic hardship) is particularly disruptive to the monitoring process (Klein, Forehand, & Family Health Project Research Group [FHPRG], 2000).

In sum, the accumulating evidence indicates that parental monitoring tends to vary depending on the context. These contextual variables indicate specific situations where parental monitoring may be most needed and beneficial. The findings summarized here suggest possible moderators (e.g., sex of the child, ethnicity, SES, living in high-risk neighborhoods) of the relationship between parental monitoring and conduct problems (Menaghan, 2003). Findings from these moderation analyses will help inform preventive and intervention techniques by identifying families most at risk for experiencing barriers to effective parental monitoring.

Goals of the Current Study

The purpose of this study was to explore how parental monitoring develops and how it is associated with child conduct problems over time. Continued use of inconsistent

conceptualizations of parental monitoring (e.g., labeling a measure "monitoring" when the items actually measure knowledge; combining items related to knowledge and monitoring in one measure) has muddled conclusions regarding the relationship between parental monitoring and child and adolescent conduct problems. Therefore, it is unknown if the findings documented in the extant literature will hold when parental monitoring is more specifically operationalized and measured. In keeping with Stattin and Kerr's (2000; Kerr & Stattin, 2000) reconceptualization, this study carefully defined parental monitoring as parental solicitation and control in order to clarify the contradictory findings resulting from the use of inconsistent terminology. Additionally, the vast majority of studies on parental monitoring have been conducted with adolescents (Crouter & Head, 2002). As a result, less is known about the association between parental monitoring and conduct problems during middle childhood. This study therefore examined this association beginning in middle childhood and continuing through adolescence (Grades 4-5 and 7-11). These specific grades were chosen because they aligned with assessments from the Fast Track project that fell within the developmental periods that were examined in this study. Additionally, selection of these age ranges allowed for examination of parental monitoring at a younger age (i.e., Grade 4, approximately 9-10 years old) and over a longer period of time (i.e., 7 years) than previous studies.

The current study had four goals. First, this study examined *how parental monitoring changes over time*. Consistent with the extant literature, it was hypothesized that parental monitoring would decrease over time in this sample. Additionally, the possibility of nonlinear change was considered, as parental monitoring may decline at a slower rate during the early adolescent years and decrease at a quicker rate during later adolescence due to expanding adolescent independence (Laird et al., 2003).

The second goal of this study was to explore several *antecedents of parental monitoring*, as very little is known about how and under what circumstances this parenting behavior develops. Analyses therefore examined if several early childhood factors (as measured in kindergarten) were associated with subsequent parental monitoring (in Grades 4-5 and 7-11). Hypothesized antecedents included low levels of early child conduct problems, high levels of parental warmth and involvement, and positive parent-child relationship quality. These characteristics may create an environment where parents regularly interact with their children and are therefore more able to actively track children's whereabouts and activities. Parent satisfaction and efficacy were additional hypothesized antecedents. Parents who feel frustrated, unmotivated and unable to parent effectively may engage in low levels of parental monitoring as their children move through middle childhood and adolescence. These individuals may feel ineffective as parents, leading them to "give up" and engage in lax parental monitoring. The final hypothesized antecedent was parents' broader involvement with children's education and teachers. Parents who consistently interact with their children's teachers and schools and involve themselves with their children's education may be more likely to express an interest in remaining involved and aware of children's activities and whereabouts outside of the classroom. Thus, these parents may be more likely to engage in broader monitoring behaviors in the future.

A third goal of this study was to examine the *relationship between parental monitoring and child and adolescent conduct problems over time*. Consistent with the literature, it was hypothesized that parental monitoring and child conduct problems would be related longitudinally. Specifically, it was expected that the underlying trajectories of parental monitoring and child conduct problems would be associated. It was also expected that initial levels of parental monitoring would predict changes in child conduct problems over time, such

that low levels of parental monitoring would be associated with an increase in child conduct problems over time. Similarly, initial levels of child conduct problems were hypothesized to be associated with changes in parental monitoring over time, such that high levels of child conduct problems would be related to a decrease in parental monitoring over time. Furthermore, evidence of bidirectional associations between parental monitoring and child conduct problems was expected, such that parental monitoring would be related to child conduct problems in the next year and child conduct problems would be related to parental monitoring in the next year. To test for bidirectional associations, these time-specific correlations were combined with the correlated trajectories of parental monitoring and child conduct problems. Therefore, this study examined if bidirectional associations were present in this sample, over and above what would be expected from the underlying trajectories of these constructs.

Fourth, this study examined the *influence of context* on parental monitoring and its relationship with child conduct problems. Sex, ethnicity, SES and neighborhood safety were examined as potential moderators of parental monitoring and its relationship with child conduct problems. Based on previous research, it was hypothesized that females, White children, children in higher SES families, and children living in safe neighborhoods would experience higher initial levels of monitoring and less of a decrease in monitoring over time when compared to males, Black children, children in lower SES families, and children living in unsafe neighborhoods. It was also expected that the relationship between parental monitoring and child conduct problems would be particularly strong for those groups that reported higher initial levels of, and less of a decrease in, parental monitoring over time.

Method

Participants

Fast Track project. Participants came from a community-based sample of children drawn from the Fast Track project, a longitudinal multisite investigation of the development and prevention of childhood conduct problems (CPPRG, 1992, 2000). Schools within four sites (Durham, NC; Nashville, TN; Seattle, WA; and rural Pennsylvania) were identified as high risk based on crime and poverty statistics of the neighborhoods that they served. Within each site, schools were divided into sets matched for demographics (size, percentage free or reduced lunch, ethnic composition), and the sets were randomly assigned to control and intervention groups. Using a multiple-gating screening procedure that combined teacher and parent ratings of disruptive behavior, 9,594 kindergarteners across three cohorts (1991-1993) from 55 schools were screened initially for classroom conduct problems by teachers using the Authority Acceptance (AA) score of the Teacher Observation of Classroom Adaptation-Revised (TOCA-R; Werthamer-Larsson, Kellam, & Wheeler, 1991; see Lochman & CPPRG, 1995 for more details regarding screening procedures). The AA scale of the TOCA-R includes 10 items asking teachers to rate the frequency of their students' behavior problems in the classroom. Those children scoring in the top 40% within cohort and site were then solicited for the next stage of screening for home behavior problems by their parents, using items from the Child Behavior Checklist (CBCL; Achenbach, 199l) and similar scales, and 91% agreed to participate (n = 3,274). The teacher and parent screening scores were then standardized and summed to yield a total severity-of-risk screen score. Children were selected for inclusion into the high-risk sample based on this screen score, moving from the highest score downward until desired sample sizes were reached within sites, cohorts, and groups. Deviations were made when a child failed to

matriculate in the first grade at a core school (n = 59) or refused to participate (n = 75) or to accommodate a rule that no child would be the only girl in an intervention group. The outcome was that 891 children (control = 446, intervention = 445) participated.

In addition to the high-risk sample of 891 children, a stratified normative sample of 387 children was identified to represent the population normative range of risk scores and was followed over time. This normative sample was selected from the control schools, such that 100 kindergarten children were selected at each site (except for Seattle, WA, where only 87 children were selected). Participants in the normative sample were stratified to represent the population according to race, sex, and level of teacher-reported behavior problems (10 children at each decile of the distribution of scores from the TOCA-R). The normative sample included a portion of high-risk control group children to the proportional degree that they were represented in the school population. Written consent from parents and verbal assent from children were obtained. Parents were paid for completing interviews, and intervention-group parents were paid for group attendance. The Institutional Review Boards of the participating universities approved all procedures.

Sample description. The current study utilized data from the high-risk control and normative groups. Participants from the high-risk intervention sample were not included in this study. Because 79 of those recruited for the high-risk control group were also included as part of the normative sample, the final sample for the current analyses included 754 participants. Children were on average 6.55 years old (SD = .43) at the start of the Fast Track project. As would be expected given the higher prevalence of conduct problems documented among boys as compared to girls (Hinshaw & Lee, 2003), 57.8% of the sample was male. Reflecting the ethnic diversity in the populations at the four sites, the majority of the sample was either White (50%)

or Black (46%), with 4% of the sample representing other ethnic groups (i.e., Hispanic, Asian, Native American).

Procedure

Annual home interviews were conducted with primary caregivers (typically mothers) and children. Interviews began during the summer before children's entry to 1st grade and concluded 2 years after the child completed (or would have completed) 12th grade. Caregivers and children completed the interviews separately with two different interviewers over the course of approximately 2 hours. Measures given during these interviews assessed several domains, including parenting behaviors, child behavior problems, family functioning, parent-child relationship quality, peer relationships, academic achievement, and characteristics of the broader neighborhood. Specific measures from kindergarten, Grades 4-5 and 7-11 included in the current study are described below.

Measures

Demographics. Demographic information used for analyses included the sex of the child (0 = male, 1 = female), and race/urban status (0 = Urban White, 1 = Urban Black, 2 = Rural White). Due to the multi-site sampling design of the Fast Track project, race and urban/rural status were confounded, as virtually all of the Black participants lived in urban areas. In fact, less than 1% of the entire sample consisted of Black participants living in rural communities. Thus, for the current study, analyses examining ethnicity utilized a race/urban status variable representing three groups: urban Blacks (46.0%) urban Whites (24.2%), and rural Whites (25.7%). Other ethnic minorities were not included in these analyses due to the small sample sizes in these groups. Race/urban status was contrast coded for analyses.

Socioeconomic status. SES was first measured when children were in kindergarten with the Family Information Form, which was developed by the Fast Track project. SES scores were based on the formula developed by Hollingshead (1975), which calculates a score by multiplying the scale value for an occupation by a weight of five and the scale value for education by a weight of three and adding those two values together. Values for occupation and education level were based on Hollingshead's work.

Neighborhood safety. Parents' perceptions of the quality of the surrounding neighborhood were assessed when children were in kindergarten with the Neighborhood Safety subscale of the Neighborhood Questionnaire, which was developed by the Fast Track project. Items on this subscale asked parents about the frequency of crime and drug dealing in their community as well as the amount of police presence in the area. Internal consistency of this subscale was good (Cronbach's $\alpha = .81$).

Parental monitoring. Parental monitoring was measured with the Supervision Questionnaire, which was adapted from the Supervision/Involvement Scale of the Pittsburgh Youth Study (Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998). This measure was administered to both parents and children in Grades 4-5 and 7-11. Research has documented that parents and children often give markedly different ratings of levels of parental monitoring (Crouter & Head, 2002; Dishion & McMahon, 1998; Keijsers et al., 2010; Pettit et al., 2001). Therefore, both parent and child ratings were examined separately in analyses. The items on the Supervision Questionnaire asked parents and children to indicate the frequency with which parents engaged in a particular form of monitoring behavior (i.e., solicitation and control) as well as the amount of knowledge parents had regarding children's activities and whereabouts. This measure is on a 5-point scale ranging from "almost never" to "almost always."

To determine the degree of consistency between the Supervision Questionnaire and the components of parental monitoring as identified by Stattin and Kerr (2000; Kerr & Stattin, 2000), scores on the child- and parent-report versions of this measure were subjected to a confirmatory factor analysis (CFA) with maximum likelihood estimation. Parental solicitation and parental control were defined as the latent constructs, and a covariance matrix was analyzed. To scale the models, the loading of the first item on the latent constructs was fixed to 1.00. Two-factor (solicitation, control) and one-factor (solicitation and control combined) models were examined. Table 1 provides goodness-of-fit indicators of the models. Based on these models, the two-factor model fit well across all grades. The one-factor model, which combined the solicitation and control items into one active parental monitoring latent construct, fit poorly across all grades. The results of these one-factor and two-factor models suggested that parental solicitation and parental control should be kept separate as two distinct constructs. These findings are similar to other studies that have analyzed parental solicitation and control separately, thereby indicating that they are two separate but related constructs (e.g., Fletcher et al., 2004; Keijsers et al., 2009; Stattin & Kerr, 2000) Therefore, parental solicitation and parental control models were examined separately for all analyses. Table 2 provides the unstandardized and standardized loadings and standard errors for the two-factor confirmatory models of parental monitoring across all grades.

In terms of reliability coefficients, Cronbach's alpha across Grades 4-5 and 7-11 ranged from .66 to .77 for child-reported solicitation, .59 to .79 for parent-reported solicitation, .63 to .82 for child-reported control, and .59 to .77 for parent-reported control. These reliability statistics range from low to adequate; however, alpha coefficients tend to be low when very few items are included in a subscale (Cronbach, 1951). Therefore, it is not surprising to find low

Cronbach's alpha coefficients for the measures of parental monitoring included in this study, as the scales only included two to three items each.

Child conduct problems. Information on children's level of conduct problems was measured according to child report[1]. While children and adolescents may distort their responses to measures of conduct problems, self-report measures are considered a suitable and reliable way to assess these behavior problems (Hser, 1993; Johnson & Richter, 2004). Furthermore, self-reported measures of conduct problems and delinquent behaviors correlate strongly with official police records (Thornberry & Krohn, 2001). Child report of conduct problems in Grades 4-5 was assessed from the General Delinquency subscale of the Things That You Have Done questionnaire (TTYHD). This measure was largely derived from items from the National Youth Survey (Elliott, Huizinga, & Ageton, 1985) and asked children to report how many times they had ever engaged in a particular delinquent behavior (e.g., physical aggression, substance use) in the past year. Examples of items from the General Delinquency subscale include hitting others, stealing items from stores, skipping school and carrying a weapon. For Grades 7 through 11, child-reported conduct problems were assessed with the Self-Reported Delinquency (SRD; Elliot et al., 1985) measure. This measure is similar to the TTYHD measure described above, and asked children to report if and how many times they had committed a delinquent act in the past year. To ensure consistency between these two measures, only items similar across both the TTYHD and SRD measures were included in the study (i.e., items unique to the SRD or TTYHD (e.g., lied about age to get something, tried to cheat someone, stolen something from a car) were not included in analyses). Internal consistency of these subscales was adequate across grades (Cronbach's α ranged from .69 to .79).

As would be expected based on the low base rates of behavior problems in the general population (Nock, Kazdin, Hiripi, & Kessler, 2006, 2007), there was a high degree of positive skew and zero-inflation among the child-reported measure of conduct problems. Because these scales were significantly positively skewed (skewness between 2.11 and 3.79), scores on these conduct problems measures were log-10 transformed. After this transformation, skewness and kurtosis fell within acceptable ranges (between .52 and 1.18) as identified by Tabachnick and Fidell (2007).

Antecedents of parental monitoring. For the hypothesized antecedents, early child conduct problems were measured from the raw score of the parent-reported Externalizing broad-band scale of the CBCL (Achenbach, 1991). The reliability and validity of this subscale has been well documented. Internal consistency of the CBCL in this study was strong (Cronbach's alpha = .90). Parental warmth/involvement was measured with the Parent Questionnaire (derived from a scale developed by Strayhorn & Weidman, 1988). The Parent Questionnaire assessed the frequency of particular parent-child interactions as well as parental confidence in and ability to manage negative child behaviors. This measure is on a 4-point scale, ranging from "never" to "all the time" or "many times a day." The Warmth/Involvement subscale of this measure asked parents to report on how often they praised and engaged in activities with their children. Cronbach's alpha coefficient for this subscale was .76, indicating adequate internal consistency.

Parent satisfaction and efficacy were measured with the Being a Parent measure, which was adapted from the Parenting Sense of Competence Scale (Gibaud-Wallston & Wandersman, 1978, as cited in Johnston & Mash, 1989). The Being a Parent measure reduced the number of items from the Parenting Sense of Competence Scale, and therefore contains 12 items. The items were rewritten and shortened such that the questions were more easily understood while also

preserving their original meaning. The Parenting Satisfaction subscale measured parental feelings of anxiety, frustration and motivation. The Parenting Efficacy subscale assessed competence, capability and problem-solving abilities of parents. These subscales are on a 7-point Likert scale ranging from "strongly disagree" to "strongly agree." Internal consistency of these subscales was adequate (Cronbach's $\alpha = .74$ for Parenting Satisfaction and .76 for Parenting Efficacy).

Parental involvement with children's education and school was measured with the Parent's Involvement and Volunteering at School subscale of the Parent and Teacher Involvement scale, which was developed by the Fast Track project. Items on this subscale asked parents to report on their engagement with teachers and the overall education of their children (e.g., attend parent-teacher conferences, volunteer at the school). This subscale is measured on a 5-point Likert scale ranging from "never" to "more than once per week." Cronbach's alpha coefficient for this subscale was .79, indicating adequate internal consistency.

Parent-child relationship quality was assessed with the Quality of Parent-Child Relationship subscale of the Life Changes questionnaire (part of a larger Developmental History interview developed by Dodge, Bates, & Pettit, 1990). This subscale asked parents open-ended questions about their relationships with their children. The interviewer then rated and scored these responses on a 5-point scale ranging from "very negative relationship" to "very positive relationship." Internal consistency of this subscale was good (Cronbach's $\alpha = .87$).

Analysis Plan

Analyses were conducted in SPSS version 14.0 (for descriptive statistics) and Mplus version 6.1 (Muthén & Muthén, 2010). Means, standard deviations and intercorrelations for all study variables were examined. To account for the oversampling of high-risk children in the Fast

Track project, a probability weight based on group (normative vs. high-risk control) was previously calculated for all normative and high-risk control group participants (see Jones, Dodge, Foster, Nix, & CPPRG, 2002, for description of the creation and calculation of this weighting variable). All study analyses incorporated this weighting variable.

Covariates. Covariates in analyses included sex of the child, race/urban status, risk group (normative vs. high-risk control), SES, and neighborhood safety. These covariates were also examined as moderators within a multiple-group framework (except for risk group, as there were no specific hypotheses regarding differences in parental monitoring between these two groups). SES and neighborhood safety were mean centered in analyses to aid in later interpretations.

Missing data. As with any longitudinal study, there is a degree of missing data in the Fast Track project due largely to attrition. However, attrition throughout the course of the project has been relatively low, with participation rates around 80% at Grade 10 for the high-risk control and normative groups. Missing data were handled with full-information maximum likelihood (FIML) in Mplus (Muthén & Muthén, 2010). A maximum likelihood estimator that calculated robust standard errors (MLR) was used for analyses, which is an accepted approach to handling missing data when variables are non-normal (Asparouhov & Muthén, 2006; Little & Rubin, 2002; Satorra & Bentler, 2001).

For parental solicitation, amount of missing data across the 7 years included in this study ranged from 11.27% to 29.71% per parent report and from 14.99% to 31.03% per child report. For parental control, amount of missing data ranged from 20.42% to 30.64% per parent report and from 21.75% to 32.63% per child report. Across the 7 years, amount of missing data for child conduct problems ranged from 13.66% to 28.51%. Amount of missing data for the

antecedents of parental monitoring included in this study was very low, ranging from .001% to .01%.

Evidence of differential attrition by group (high-risk control vs. normative), race/urban status, sex of the child, SES, and neighborhood safety was examined. For parent-reported parental solicitation, children with missing data in 4th and 5th grades were more likely to be urban Black ($\chi^2_{4th}(2, N = 754) = 6.34, p < .05$; $\chi^2_{5th}(2, N = 754) = 6.63, p < .05$), and in 11th grade were more likely to be in the high-risk control group ($\chi^2(1, N = 754) = 7.16, p < .01$). Children with missing data on child-reported parental solicitation in Grade 10 were more likely to be male ($\chi^2(1, N = 754) = 5.13, p < .05$), and to be in the high-risk control group ($\chi^2(1, N = 754) = 3.91, p < .05$). Additionally, children with missing data on child-reported parental solicitation in Grade 5 were more likely to be urban Black ($\chi^2(2, N = 754) = 7.16, p < .05$).

For parent-reported parental control, children with missing data in 4th, 7th, and 11th grades were more likely to be urban Black ($\chi^2_{4th}(2, N = 754) = 6.49, p < .05$; $\chi^2_{7th}(2, N = 754) = 7.48, p < .05$; $\chi^2_{11th}(2, N = 754) = 6.10, p < .05$), Additionally, children with missing data on parent-reported parental control in 10th grade were more likely to be male ($\chi^2(1, N = 754) = 4.40, p < .05$) and in 11th grade were more likely to be in the high-risk control group ($\chi^2(1, N = 754) = 8.71, p < .01$). For child-reported parental control, children with missing data in 4th grade were more likely to be in the higher SES group ($\chi^2(1, N = 754) = 5.08, p < .05$) and children with missing data in the 5th grade were more likely to be urban Black ($\chi^2(2, N = 754) = 10.18, p < .01$) and living in safer neighborhoods ($\chi^2(1, N = 754) = 6.30, p < .05$). Additionally, children with missing data on child-reported parental control in 7th grade were more likely to be living in less safe neighborhoods ($\chi^2(1, N = 754) = 5.45, p < .05$).

In terms of child conduct problems, children with missing data in 4th and 5th grades were more likely to be urban Black (χ^2_{4th} (2, N = 754) = 7.20, p < .05; χ^2_{5th} (2, N = 754) = 7.85, p < .05), and in 11th grade were more likely to be in the high-risk control group (χ^2 (1, N = 754) = 4.43, p < .05). There were no other significant differences in attrition by group (high-risk control vs. normative), race/urban status, gender, SES, or neighborhood safety for any of the other parental monitoring, child conduct problems, or kindergarten antecedent variables. Overall, no systematic differences in attrition were noted for these various groups; however, more differential attention was observed for variables measured in 4th, 5th and 11th grades.

Latent trajectory modeling. To address the four goals of the proposed study, structural equation modeling (SEM)-based latent trajectory modeling (LTM) was utilized. In LTMs, the development of a variable is modeled as a constant or mean level (i.e., intercept) and as growth or rate of change (i.e., slope). This method also allows for the estimation of developmental trajectories that vary over individuals, thereby providing an examination of individual change over time (Curran & Hussong, 2003; Preacher, Wichman, MacCallum, & Briggs, 2008). This individual variability is modeled by the inclusion of variances around the intercept and slope factors. For all models in the current study, the intercept factor loadings were fixed to 1 and the linear slope factor loadings were fixed to 0, 1, 3, 4, 5, 6, and 7 for Grades 4, 5, 7, 8, 9, 10, and 11, respectively. Both parent- and child-report repeated measures were examined separately as indicators of the latent constructs. Thus, for each analysis several models with different indicators were examined to determine if a similar pattern of results appeared for both parent- and child-reported measures.

For the first goal examining how parental monitoring changes over time, unconditional univariate LTMs were fit to determine the shape of the trajectories of parental solicitation and

control (see Figure 1). Univariate LTMs were modeled separately for both parent- and child-reported parental solicitation and parental control. Specifically, analyses examined a two-factor LTM with the intercept and linear slope of parental solicitation and control as the latent constructs. The latent factors were allowed to covary. The latent intercept factor was set to Grade 4, representing the average initial level of parental solicitation and control at Grade 4 as well as the interindividual variation in that mean. The latent linear slope factor indicated the average linear growth/change in solicitation and control, and the interindividual variation from that average, over time (i.e., from Grade 4 to Grade 11). A quadratic slope (i.e., squaring the loadings of the linear slope factor) was also examined to account for any nonlinear change (i.e., acceleration or deceleration) over time in parental solicitation and control. Following the procedures outlined above, an unconditional univariate LTM was also conducted for child-reported conduct problems (see Figure 2). These univariate LTM analyses determined if the well-documented decrease in parental monitoring and increase in child conduct problems over time (e.g., Crouter & Head, 2002; Hinshaw & Lee, 2003; Kerr & Stattin, 2003; Pettit et al., 2007; Smetana, 2008) were replicated in the Fast Track sample.

To address the second goal regarding the antecedents of parental monitoring, conditional univariate LTMs were examined (see Figure 3). Covariates were not included in the conditional LTMs due to convergence problems when running the models and also to preserve model parsimony. The hypothesized antecedents were mean centered to aid in later interpretations. These centered variables were then entered as predictors of the parental solicitation and control intercept and slope latent factors. This analysis examined if the early childhood antecedents predicted initial levels of and changes in parental solicitation and control over time. Given the paucity of research examining antecedents of parental monitoring, specific hypotheses about

certain antecedents only predicting initial levels of or growth in parental solicitation and control were not indicated. Therefore, all paths from antecedents to the latent intercept and slope factors were estimated. Given that these antecedents included parent and child behaviors in kindergarten, and therefore likely reflected a broader system of parent-child interactions, the antecedents were allowed to correlate with each other in the model. These analyses were run separately for parent- and child-reported parental solicitation and control.

To address the third goal of this study, bivariate LTMs were conducted to examine the association between parental solicitation and control and child conduct problems (see Figure 4). Covariances added between the latent intercept factors and latent slope factors tested if initial levels of and growth in parental solicitation and control and child conduct problems were correlated. Paths from intercepts to slopes were also estimated to examine if initial levels of parental solicitation and control and child conduct problems predicted changes in child conduct problems and solicitation and control over time, respectively. Error terms for measures within the same measurement period (e.g., Grade 4 parental monitoring and Grade 4 child conduct problems) were allowed to covary. Four bivariate models were examined: (a) child-reported solicitation and child conduct problems, (b) parent-reported solicitation and child conduct problems, (c) child-reported control and child conduct problems, and (d) parent-reported control and child conduct problems. These analyses examined the relationship between the underlying developmental trajectories of parental solicitation and control and child conduct problems.

Autoregressive latent trajectory model. Following examination of the bivariate LTMs, autoregressive latent trajectory (ALT) modeling was used (Bollen & Curran, 2004; Curran & Bollen, 2001) to further explore the relationship between parental monitoring and child conduct problems as specified in the third goal. ALT models involve the simultaneous estimation of the

relationship between two constructs at the level of their underlying trajectories (i.e., autoregressive paths) and at the level of time-specific measures (i.e., cross-lagged correlations). A variation of this analysis was used by Laird and colleagues (2003), and is particularly appropriate for examination of bidirectional effects between parental solicitation and control and child conduct problems. In these models, bidirectional associations (as indicated by the cross-lagged correlations) are examined while controlling for the underlying trajectories of the constructs. These models are particularly useful given that cross-lagged effects may be difficult to detect when stability in the trajectories of the measured variables is high (Kiesner et al., 2009). However, it is important to note that ALT models are complex, and should therefore be built up from simpler models to determine if the added complexity enhances understanding of the particular construct under study. The analytical strategy for the ALT models examined in this study followed Bollen and Curran's (2004, 2006) recommendations and was modeled after the procedure utilized by Morin, Maïano, Marsh, Janosz, and Nagengast (2011).

For the current analyses, latent trajectory factors for parental solicitation and control and child-reported conduct problems were included in the ALT models as well as time-specific bidirectional relations and autoregressive paths between the repeated measures of each latent factor (see Figure 5). Specifically, the cross-lagged correlations examined if parental solicitation and control in one year predicted changes in child conduct problems in the next year (i.e., a parent effect) while controlling for growth in conduct problems over time. Similarly, these correlations determined if child conduct problems in one year predicted changes in parental solicitation and control in the next year (i.e., a child effect) while controlling for growth in parental solicitation and control over time. The autoregressive paths examined incremental prediction in parental monitoring and child conduct problems from one year to the next year,

while controlling for the overall underlying trajectory. As with the bivariate LTMs, four ALT models were conducted: (a) child-reported solicitation and child conduct problems, (b) parent-reported solicitation and child conduct problems, (c) child-reported control and child conduct problems, and (d) parent-reported control and child conduct problems. It is also important to note that the first measurement point in ALT models is treated as exogenous and is correlated with the latent intercept and slope factors (to avoid potential bias in estimates caused by "infinite regression"; Bollen & Curran, 2004, 2006). Therefore, the intercepts in the ALT models examined in this study represented the portion of the Grade 5 variable that was unexplained by the Grade 4 variable.

Although bivariate LTMs are not nested within ALT models, it is possible to estimate an ALT model in which the autoregressive and cross-lagged parameters are fixed to zero. This constrained ALT model is nested within the unconstrained ALT model, and is similar to a bivariate LTM. In this study, the constrained ALT model was then compared to the unconstrained ALT model to determine if the incorporation of cross-lagged and autoregressive parameters provided a better representation of the data. Following this model comparison, additional constraints were progressively added to the ALT to ensure that the final ALT model was the most parsimonious representation of the data. Several constraints were considered, including (a) fixing the variance of the slope factors to zero, (b) fixing the mean of the slope factors to zero, (c) removing the time-specific correlations between the repeated measures, (d) constraining the time-specific correlations to equality, (e) constraining the autoregressive parameters to equality across time periods, and (f) constraining the cross-lagged parameters to be equal. After this model testing was complete, the covariates were added to the final ALT model.

Moderation analyses. To examine the fourth goal regarding moderation, multigroup LTMs were conducted to determine if the models differed for particular groups or under certain conditions. Sex of the child, race/urban status, SES and neighborhood safety were examined as potential moderators of the univariate and bivariate LTMs. To examine the neighborhood safety variable in a multigroup framework, a median split was conducted to classify scores in the bottom 50% percent as reflecting "low neighborhood safety" and the top 50% as indicating "moderate to high neighborhood safety." For SES, a median split was also conducted to classify scores in the bottom 50% reflecting "low SES" and the top 50% representing "moderate to high SES." Multigroup modeling procedures were used to test for group differences by imposing parameter constraints on the univariate and bivariate LTMs and ALT models. Several constraints were considered, including setting the intercept mean, slope mean and covariances between slopes and intercepts to be equal between groups.

Assessing model fit. In evaluating model fit, a nonsignificant chi-square test indicates good fit; however, this statistic has been shown to be sensitive to sample size and the size of the correlations between variables, which leads to over-rejection of adequate models. Therefore, current practice emphasizes the importance of using additional fit statistics to assess model fit (Kline, 2005). The root-mean-square error of approximation (RMSEA), comparative fit index (CFI), Tucker-Lewis Index (TLI), and standardized root mean square residual (SRMR) were examined to evaluate the fit of all models conducted for the current study, as these indices have been shown to be most sensitive to model misspecification. For RMSEA values $\leq .06$ indicate close fit, for CFI and TLI values $\geq .90$ indicate adequate fit (although values greater than .95 are preferable), and for SRMR values $\leq .08$ indicate adequate fit (Hu & Bentler, 1999). However, Marsh, Hau and Wen (2004) indicate that it is important to take several factors into consideration

when evaluating model fit. They suggest that modification indices (which indicate areas of model misspecification) and residuals should be examined in addition to fit statistics to determine if the model is an adequate fit to the data.

For nested model tests, improvement in model fit was evaluated by examining $\Delta\chi^2$ and Bayesian information criteria (BIC) values. Simple χ^2- difference testing was contraindicated due to the use of the MLR estimator in the current analyses. Satorra-Bentler scaled χ^2- difference testing (Satorra & Bentler, 2001) corrects for inaccuracies when testing under conditions of non-normality. Therefore, all model comparisons in the current analyses utilized the Satorra-Bentler scaled χ^2- difference test.

Table 1. *Goodness-of-Fit Indicators of Confirmatory Factor Analyses (CFAs) for Parental Monitoring Across Grades*

	Parent Report					*Child Report*				
Model	χ^2	*df*	χ^2/df	*CFI*	*RMSEA*	χ^2	*df*	χ^2/df	*CFI*	*RMSEA*
4th Grade										
One-factor	64.21***	2	32.11	.65	.22	130.00***	5	26.00	.65	.20
Two-factor	0.08	1	0.08	1.00	.00	3.91	4	0.98	1.00	.00
5th Grade										
One-factor	91.40***	2	45.70	.62	.26	149.54***	5	29.91	.67	.21
Two-factor	0.42	1	0.42	1.00	.00	17.46**	4	4.37	.97	.07
7th Grade										
One-factor	84.65***	2	42.33	.69	.26	143.34***	5	28.67	.65	.21
Two-factor	0.57	2	0.29	1.00	.00	5.17	4	1.29	1.00	.02
8th Grade										
One-factor	104.76***	2	52.38	.65	.30	214.57***	5	42.91	.65	.27
Two-factor	0.12	1	0.12	1.00	.00	7.89	4	1.97	.99	.04
9th Grade										
One-factor	131.99***	2	66.00	.56	.33	151.53***	5	30.31	.68	.23
Two-factor	0.00	1	0.00	1.00	.00	4.56	4	1.14	1.00	.02
10th Grade										
One-factor	79.06***	2	39.53	.71	.26	271.15***	5	54.23	.53	.31

Table 1 continued. *Goodness-of-Fit Indicators of Confirmatory Factor Analyses (CFAs) for Parental Monitoring Across Grades*

Two-factor	0.29	1	0.29	1.00	.00	4.85	4	1.21	1.00	.02
11th Grade										
One-factor	210.38***	2	105.19	.49	.44	279.34***	5	55.87	.52	.32
Two-factor	5.77*	1	5.77	.99	.09	5.65	5	1.41	1.00	.02

Note. One-factor models combined parental solicitation and parental control into one factor; two-factor models kept parental solicitation and control separate.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2. *Unstandardized and Standardized Factor Loadings for Two-Factor Confirmatory Models of Parental Monitoring Across Grades*

Parental Solicitation, Parent Report							
Item	4th Grade	5th Grade	7th Grade	8th Grade	9th Grade	10th Grade	11th Grade
Parent discussed daily plans	1.00 (--) *.75*	1.00 (--) *.78*	1.00 (--) *1.00*[a]	1.00 (--) *.71*	1.00 (--) *.79*	1.00 (--) *.88*	1.00 (--) *.81*
Parent discussed daily activities	.58 (.31) *.57*	.64 (.25) *.63*	.50 (.04) *.59*	.95 (.35) *.83*	.80 (.17) *.73*	.68 (.16) *.68*	.92 (.19) *.82*
Parental Solicitation, Child Report							
Item	4th Grade	5th Grade	7th Grade	8th Grade	9th Grade	10th Grade	11th Grade
Parent discussed daily plans	1.00 (--) *.51*	1.00 (--) *.63*	1.00 (--) *.65*	1.00 (--) *.71*	1.00 (--) *.68*	1.00 (--) *.76*	1.00 (--) *.75*
Parent discussed daily activities	1.39 (.18) *.73*	1.21 (.12) *.81*	1.06 (.10) *.69*	1.08 (.08) *.80*	1.08 (.10) *.78*	.98 (.08) *.77*	1.00 (.09) *.80*
Parent discussed school	1.15 (.15) *.65*	.81 (.08) *.58*	.86 (.10) *.61*	.78 (.07) *.61*	.84 (.08) *.63*	.77 (.07) *.65*	.79 (.08) *.63*
Parental Control, Parent Report							
Item	4th Grade	5th Grade	7th Grade	8th Grade	9th Grade	10th Grade	11th Grade
Curfew on school nights	1.00 (--) *.94*	1.00 (--) *.66*	1.00 (--) *.82*	1.00 (--) *.83*	1.00 (--) *.73*	1.00 (--) *.68*	1.00 (--) *.82*
Curfew on weekends	.85 (.56) *.50*	1.96 (.67) *.79*	1.19 (.33) *.66*	1.25 (.51) *.65*	1.44 (.31) *.82*	2.08 (.58) *.91*	.94 (.21) *.69*
Parental Control, Child Report							

Table 2 continued. *Unstandardized and Standardized Factor Loadings for Two-Factor Confirmatory Models of Parental Monitoring Across Grades*

Item	4th Grade	5th Grade	7th Grade	8th Grade	9th Grade	10th Grade	11th Grade
Curfew on school nights	1.00 (--) *.95*	1.00 (--) *.74*	1.00 (--) *.85*	1.00 (--) *.84*	1.00 (--) *.84*	1.00 (--) *.91*	1.00 (--) *1.00*[a]
Curfew on weekends	.60 (.21) *.49*	1.04 (.44) *.66*	.80 (.23) *.60*	.93 (.15) *.73*	.94 (.17) *.67*	.92 (.17) *.73*	.79 (.03) *.70*

Note. Standard errors are presented in parentheses. Unstandardized loadings are presented in normal text, standardized loadings are presented in italics. All loadings were significant at $p < .001$.
[a]Residual variance for this variable was negative and not significant. Therefore, the residual variance was set to 0 for this analysis.

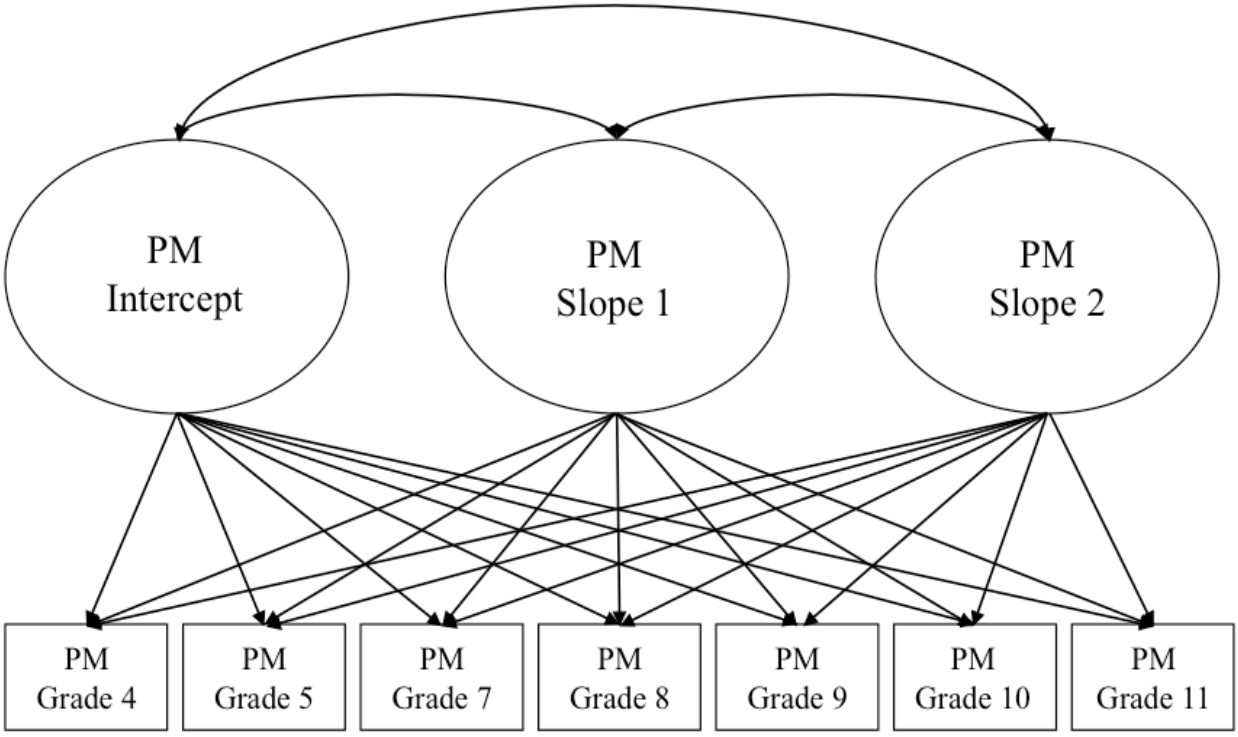

Figure 1. Unconditional univariate latent trajectory model (LTM) examining growth in parental monitoring over time. *Note*. PM = parental monitoring; PM Slope 1 = linear slope for parental solicitation, piecewise slope #1 for parental control; PM Slope 2 = quadratic slope for child-reported parental solicitation (no PM Slope 2 for parent-reported parental solicitation), piecewise slope #2 for parental control.

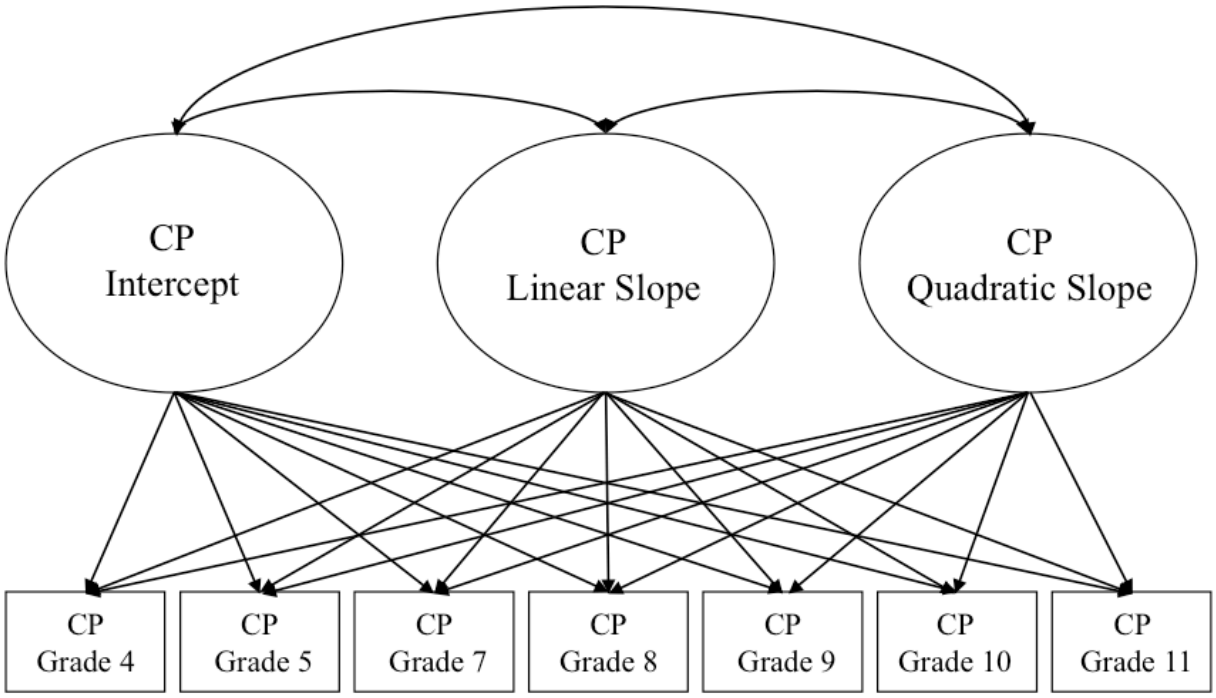

Figure 2. Unconditional univariate latent trajectory model (LTM) examining growth in child conduct problems over time. *Note*. CP = child conduct problems.

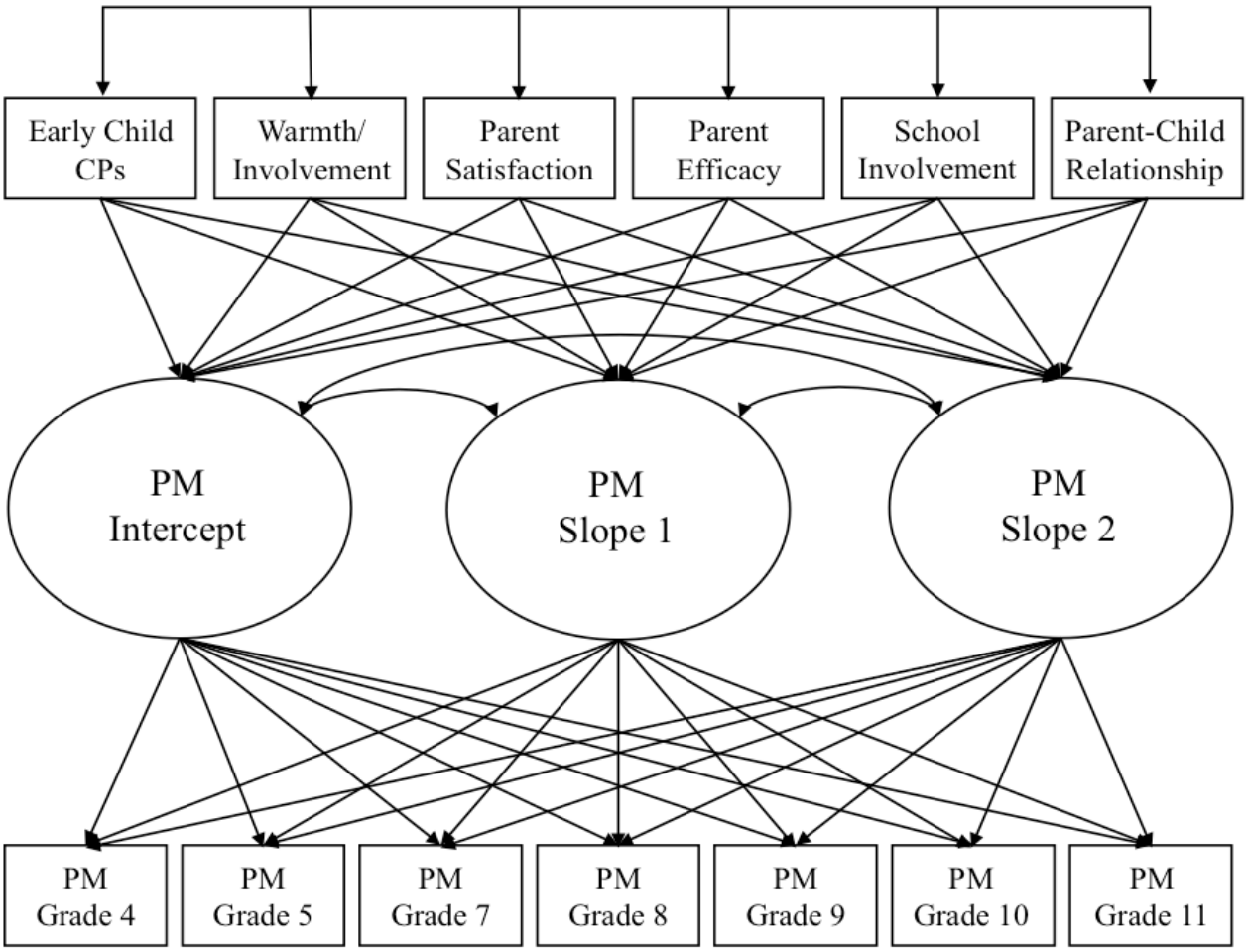

Figure 3. Conditional univariate latent trajectory model (LTM) with early childhood antecedents as predictors of the latent parental monitoring intercept and slope factors. *Note.* PM = parental monitoring; CPs = child conduct problems; PM Slope 1 = linear slope for parental solicitation, piecewise slope #1 for parental control; PM Slope 2 = quadratic slope for child-reported parental solicitation (no PM Slope 2 for parent-reported parental solicitation), piecewise slope #2 for parental control.

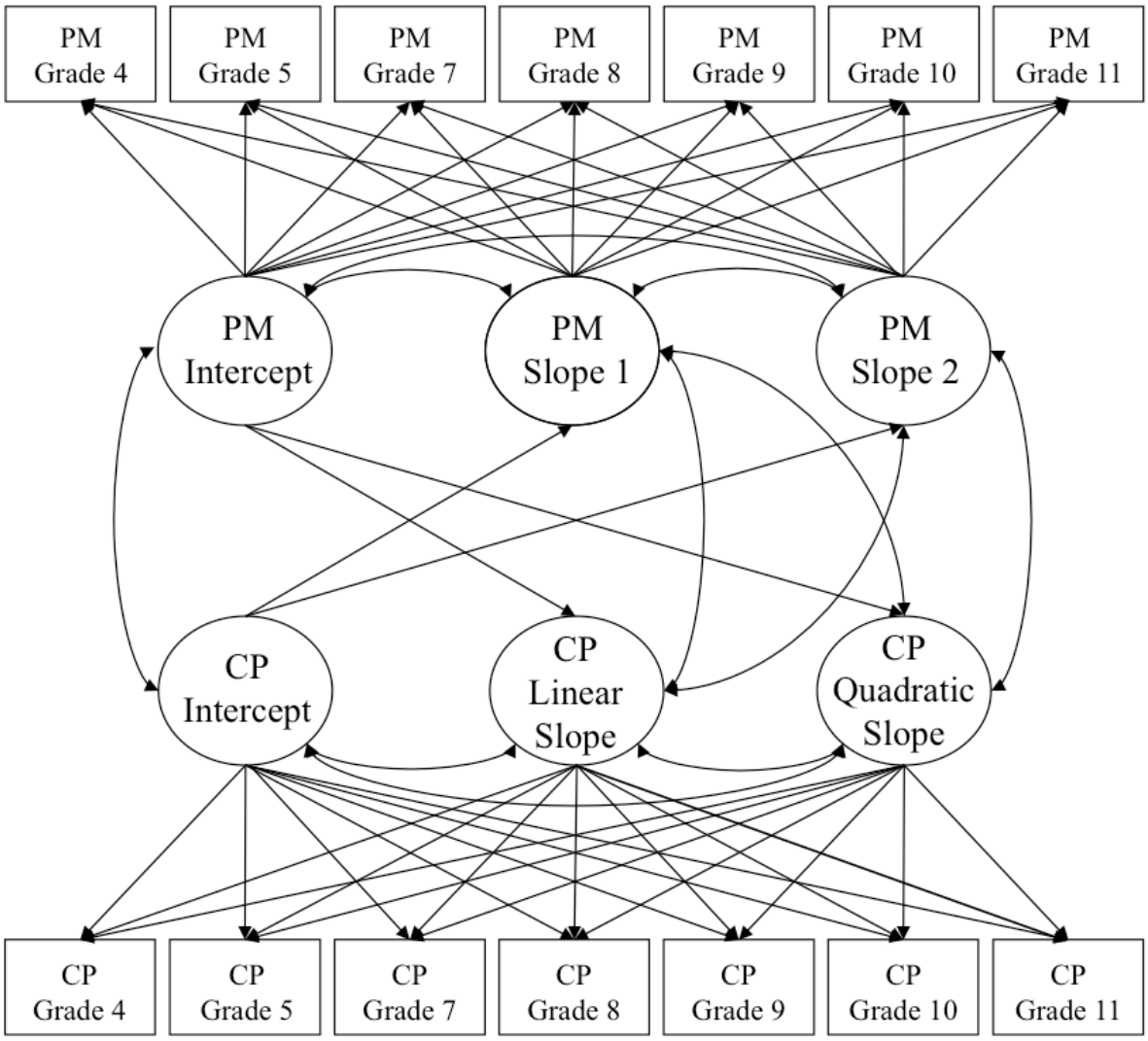

Figure 4. Bivariate latent trajectory model (LTM) examining correlated rates of change between parental monitoring and child conduct problems. *Note.* PM = parental monitoring; CP = child conduct problems; PM Slope 1 = linear slope for parental solicitation, piecewise slope #1 for parental control; PM Slope 2 = quadratic slope for child-reported parental solicitation (no PM Slope 2 for parent-reported parental solicitation), piecewise slope #2 for parental control.

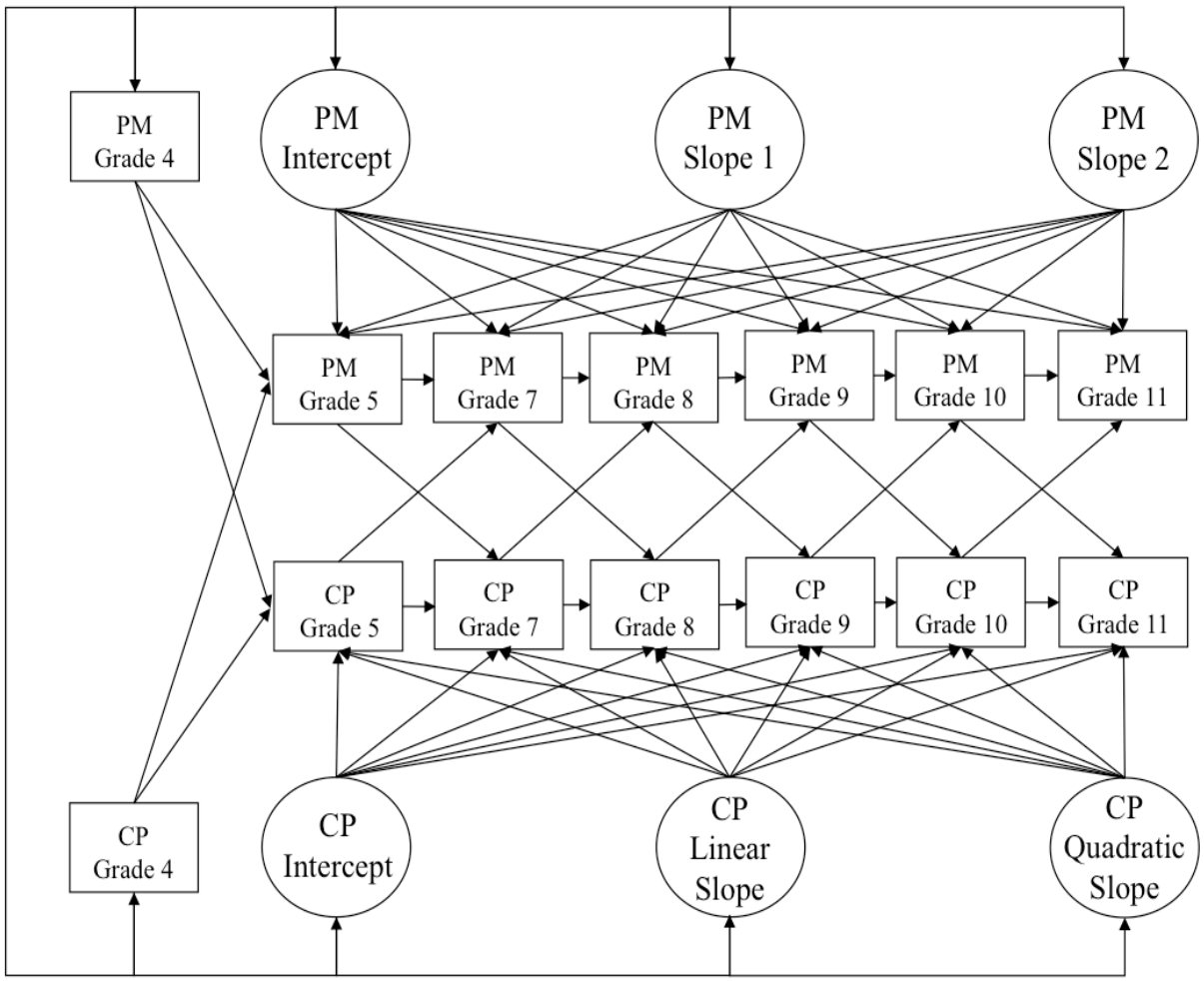

Figure 5. Autoregressive latent trajectory (ALT) model combining the developmental trajectories of parental monitoring and child conduct problems with cross-lagged correlations between the repeated-measures indicators. *Note.* PM = parental monitoring; CP = child conduct problems; PM Slope 1 = linear slope for parental solicitation, piecewise slope #1 for parental control; PM Slope 2 = quadratic slope for child-reported parental solicitation (no PM Slope 2 for parent-reported parental solicitation), piecewise slope #2 for parental control.

Results

Descriptive Statistics

The means and standard deviations of the variables included in the current study are presented in Table 3. The intercorrelations between parental monitoring and child conduct problem variables across all grades are presented in Table 4. These intercorrelations revealed more consistent associations between parental solicitation (according to both child and parent report) and child conduct problems than between parental control and child conduct problems. Specifically, significant correlations indicated that higher levels of parental solicitation were related to lower levels of child conduct problems. Of note, several significant correlations between parental control and child conduct problems were positive, indicating that higher levels of parental control were associated with higher levels of conduct problems. Table 5 provides the intercorrelations between parental monitoring and early childhood antecedent variables. These intercorrelations indicated that parent-reported monitoring, particularly parent-reported parental solicitation, was more consistently related to kindergarten antecedents than child-reported monitoring. Specifically, significant correlations indicated that higher levels of parent-reported parental solicitation were associated with lower levels of early child conduct problems and higher levels of parental warmth and involvement, parent efficacy, parent satisfaction, parental involvement with the child's school and education, and parent-child relationship quality.

Figures 6 and 7 provide line graphs of the observed means of parental solicitation and parental control per parent and child report at each grade. Mean difference testing indicated that children consistently reported lower levels of parental solicitation and control across all grades when compared to parents (*t*s range from 5.29 to 19.76, all *p*s < .001). Figure 8 presents a line

graph of the observed means of child conduct problems at each grade. Of the children in this sample, 86.5% engaged in one or more conduct problem at some point during the 7 years covered by this study. At Grade 4, 54.8% of children reported one or more conduct problem during the past year, with the most common conduct problems being physical aggression, physically attacking others, and throwing objects at others. Reflecting the decrease in conduct problems observed from Grade 4 to Grade 11 in this study, 45.6% of children in Grade 11 reported one or more conduct problem during the past year. The most common conduct problems reported in Grade 11 included truancy, stealing objects/avoiding paying for objects, and physical aggression.

Goal #1: Change in Parental Monitoring Over Time

The first goal of the current study was to examine how parental monitoring changed over time in this sample. To address this goal, univariate LTMs of parental solicitation, parental control, and child conduct problems were conducted. These univariate LTMs determined the shape of the growth trajectories, and examined initial levels of and growth in parental solicitation, parental control, and child conduct problems. Findings from the univariate LTMs were used to model the trajectories of parental monitoring and child conduct problems in the conditional, bivariate, and ALT frameworks. Table 6 provides model fit indexes for all univariate LTMs as well as model comparisons. Table 7 provides the standardized estimated intercepts and slopes for the univariate LTMs. For all univariate LTMs, all repeated measures were significant indicators of all latent factors (all ps < .001).

Univariate LTMs of parent- and child-reported parental solicitation. For parent-reported parental solicitation, the two-factor LTM with a linear slope provided a good fit to the

data. Addition of the quadratic slope factor did not significantly improve the fit of the model, as determined with χ^2- difference testing (see Table 6). The intercept factor was significant, indicating that initial levels of parent-reported parental solicitation were significantly different from zero. Significant variance around the intercept factor indicated significant individual heterogeneity around initial levels of parent-reported parental solicitation. The linear slope factor was not significant, indicating no average change in parent-reported parental solicitation over time. However, significant variance around this factor indicated significant variation in the rate of change in parent-reported parental solicitation. That is, for some children parental solicitation increased over time, whereas for others it decreased or remained stable. The slope and intercept factors were uncorrelated, indicating that the rate at which parent-reported parental solicitation changed from Grade 4 to Grade 11 was unrelated to the initial level of parental solicitation at Grade 4.

In terms of child-reported parental solicitation, the two-factor LTM with a linear slope provided an inadequate fit to the data. Addition of the quadratic slope factor significantly improved the fit of the model. This quadratic factor accounted for acceleration or deceleration in parental solicitation over time, and captured the nonlinear growth of child-reported parental solicitation observed in Figure 5. The intercept factor was significant, and significant variance around the intercept factor indicated significant variation in initial levels of child-reported parental solicitation. The linear and quadratic slope factors were not significant, indicating that on average children did not change in their levels of child-reported parental solicitation. Interpretation of slope factors was complicated given that the linear and quadratic slopes were confounded, as demonstrated by the high correlation between these two factors. Therefore, the

linear and quadratic slopes should not be interpreted separately. Significant variance around these slope factors indicated significant variation among children in the rate of change in child-reported parental solicitation, as for some children parental solicitation did not change over time, whereas for others it accelerated as it decreased (i.e., quickening of the decrease in parental solicitation), or decelerated as it increased (i.e., slowing of the increase in parental solicitation). The linear slope and intercept factors were significantly correlated; however, the quadratic slope and intercept factors were uncorrelated.

Univariate LTMs of parent- and child-reported parental control. In terms of parent-reported parental control, the two-factor LTM with a linear slope and three-factor LTM with a quadratic slope both provided a relatively poor fit to the data. Examination of the graph of the means of parent-reported parental control (see Figure 7) indicated that levels of parental control appeared to be stable from Grade 4 through Grade 7, with a slight decrease from Grade 8 through Grade 11 (i.e., during the high school years). Therefore, a piecewise growth model was examined to better capture this overall change in parent-reported parental control over time. The fit of this piecewise model was adequate, and showed an improvement over the linear and quadratic growth models (per χ^2- difference testing, fit statistics, and BIC as compared to the linear model). While the CFI and TLI fit statistics for this model are below the accepted cutoff criteria, examination of modification indices and residuals indicated no problematic model misspecification. Therefore, based on the recommendations from Hu and Bentler (1999) and Marsh, Hau and Wen (2004), this piecewise model was determined to be the best fitting model to the data. The intercept factor of this piecewise model was significant, and significant variance around the intercept factor indicated variation among children in initial levels of parent-reported

parental control. The two slope factors were not significant, indicating no average change in parent-reported parental control. Significant variance around the slope factors indicated significant variation among children in the rate of change in parent-reported parental control. Interpretation of slope factors was confounded by a significant negative correlation between the two factors; therefore, these slope factors should not be interpreted separately. The two slope factors were uncorrelated with the intercept factor.

For child-reported parental control, the two-factor LTM with a linear slope and three-factor LTM with a quadratic slope both provided an inadequate fit to the data. Examination of the graph of the means of parental control (see Figure 7) indicated a different shape of the child-reported growth curve than was observed for parent-reported parental control. Specifically, the rate of change in child-reported parental control appeared to decrease from Grade 4 through Grade 8, after which it appeared to level off from Grade 9 through Grade 11. Therefore, a piecewise growth model was examined to better capture this overall change in parent-reported parental control over time. While the CFI and TLI values are relatively low, examination of modification indices and residuals indicated no problematic model misspecification. Therefore, this piecewise model was determined to be the best fitting model to the data. The intercept factor of this piecewise model was significant, with significant heterogeneity around this average intercept. The first slope factor was significant, indicating an average decrease in child-reported parental control from Grade 4 through Grade 8. The second slope factor was not significant, indicating no average change in child-reported parental control from Grade 9 through Grade 11. Significant variance around these slope factors indicated significant variation among children in

the rate of change in child-reported parental control. The slope and intercept factors were uncorrelated, as were the first and second slope factors.

Univariate LTM of child conduct problems. In terms of child conduct problems, the two-factor LTM with a linear slope provided a relatively poor fit to the data. Addition of the quadratic slope factor significantly improved the fit of the model. The intercept factor was significant, and significant variance around the intercept factor indicated variation among children in initial levels of child conduct problems. The significant linear slope factor indicated that, on average, children decreased in their engagement in conduct problems over time. Significant variance in the linear slope factor indicated significant individual heterogeneity in the rate of change in child conduct problems. The quadratic slope factor was not significant, indicating that on average children's decrease in conduct problems did not show a deceleration or acceleration over time. The variance component of the quadratic factor was significant, suggesting that children differed in their degree of acceleration or deceleration over time. It is also important to keep in mind that these two slope factors cannot be interpreted separately given the high negative correlation between them, indicating that children with a more negative linear slope had a more positive quadratic slope. In other words, children who decreased more in their engagement in conduct problems over time decelerated less. The linear slope and intercept factors were significantly correlated, as were the quadratic slope and intercept factors, indicating that higher initial levels of conduct problems were related to accelerations in the decrease of child conduct problems over time.

Goal #2: Antecedents of Parental Monitoring

The second goal of the current study was to explore several hypothesized early childhood antecedents of parental monitoring. To address this second goal, conditional univariate LTMs of parental solicitation and parental control were conducted. These conditional LTMs explored the influence of the kindergarten antecedents on initial levels of and growth in parental solicitation and control. For all conditional univariate LTMs, all variances for intercept and slope factors were significant, indicating significant individual heterogeneity around the means of these factors. Additionally, all kindergarten antecedents were significantly correlated with each other (all *p*s < .001).

Conditional univariate LTMs of parent- and child-reported parental solicitation. The conditional univariate LTM for parent-reported parental solicitation provided a good fit to the data, χ^2 (53, N = 753) = 96.81, p < .001; CFI = .94, TLI = .93, RMSEA = .03, SRMR = .05. The intercept of parent-reported parental solicitation was significantly and positively predicted by parental warmth/involvement (b = .21, SE = .08, p < .01), parental involvement with children's education and school (b = .16, SE = .06, p < .01), and parent-child relationship quality (b = .20, SE = .05, p < .001). Specifically, higher initial levels of parent-reported parental solicitation were predicted by more parental warmth, more parental school involvement, and better parent-child relationship quality. The linear slope of parent-reported parental solicitation was significantly and negatively predicted by parental involvement with children's education and school (b = -.03, SE = .01, p < .05), indicating that more parental school involvement predicted decreases in parent-reported parental solicitation over time. No other kindergarten antecedents were significantly predictive of the intercept or slope of parent-reported parental solicitation.

The interpretation of the effect of parental involvement with children's education and school is complex as there are significant effects on both the intercept and slope factors of parent-reported parental solicitation. Therefore, these intercept and slope effects were probed following the guidelines provided by Preacher, Curran, and Bauer (2006). To probe these effects, the model-implied trajectory of parent-reported parental solicitation was computed at high (one standard deviation above the mean), medium (the mean) and low (one standard deviation below the mean) levels of parent school involvement. Parents at high levels of parental school involvement had initially higher levels of parental solicitation ($\mu = 4.39$, $\sigma = .20$, $p < .001$) than parents at medium ($\mu = 4.29$, $\sigma = .16$, $p < .001$) and low levels ($\mu = 4.18$, $\sigma = .12$, $p < .001$). However, the trajectories of parent-reported parental solicitation became progressively steeper with increasing values of parental school involvement. In fact, while the slope effects at medium and low levels of parental school involvement are negative (indicating decreases in parent-reported parental solicitation) but not significant, the slope effect at high levels of parental school involvement trended towards significance ($\mu = -.05$, $\sigma = .03$, $p = .09$). Therefore, while parents at high levels of parental school involvement had the highest initial levels of parental solicitation, they also showed more of a decrease in parental solicitation over time than parents at medium and low levels of parental school involvement.

The conditional univariate LTM for child-reported parental solicitation also provided a good fit to the data, χ^2 (43, $N = 753$) = 51.42, *ns*; CFI = .99, TLI = .98, RMSEA = .02, SRMR = .05. However, no kindergarten antecedents were significantly predictive of the intercept, linear slope, or quadratic slope factors of child-reported parental solicitation.

Conditional univariate LTMs of parent- and child-reported parental control. For parent-reported parental control, the fit of the conditional univariate LTM provided an adequate fit to the data, χ^2 (43, N = 753) = 58.94, p = .05; CFI = .91, TLI = .87, RMSEA = .02, SRMR = .06. However, no kindergarten antecedents were significantly predictive of the intercept or slope factors of parent-reported parental control.

The conditional univariate LTM for child-reported parental control also provided an adequate fit to the data, χ^2 (43, N = 753) = 71.92, p < .01; CFI = .91, TLI = .87, RMSEA = .03, SRMR = .05. The intercept of child-reported parental control was significantly and negatively predicted by parental satisfaction (b = -.16, SE = .06, p < .01), and parent-child relationship quality (b = -.21, SE = .09, p < .05). Specifically, higher initial levels of child-reported parental control were predicted by less parental satisfaction and lower parent-child relationship quality. The first slope of child-reported parental control (modeling the rate of change from Grade 4 through Grade 8) was significantly predicted by parental satisfaction (b = .05, SE = .02, p < .05). Additionally, the second slope of child-reported parental control (modeling the rate of change from Grade 9 through Grade 11) was significantly predicted by parental involvement with children's education and school (b = -.17, SE = .09, p = .05). These findings indicated that more parental satisfaction in kindergarten predicted increases in child-reported parental control from Grade 4 to Grade 8, while more parental school involvement predicted decreases in child-reported parental control from Grade 9 through Grade 11. No other kindergarten antecedents were significantly predictive of the intercept or slope factors.

To probe the effects of parental satisfaction on the intercept and slope factors, the model-implied trajectory of child-reported parental control was computed at high (one standard

deviation above the mean), medium (the mean) and low (one standard deviation below the mean) levels of parental satisfaction. Parents at high levels of parental satisfaction had initially lower levels of parental control ($\mu = 2.87$, $\sigma = .35$, $p < .001$) than parents at medium ($\mu = 3.06$, $\sigma = .28$, $p < .001$) and low levels ($\mu = 3.24$, $\sigma = .22$, $p < .001$). However, the trajectories of child-reported parental control from Grade 4 through Grade 8 became progressively steeper with increasing values of parental satisfaction. In fact, while the slope effects at low and medium levels of parental satisfaction were positive (indicating increases in child-reported parental control) but not significant, the slope effect at high levels of parental satisfaction was positive and significant ($\mu = .22$, $\sigma = .11$, $p = .05$). Therefore, while parents at high levels of parental satisfaction had the lowest initial levels of parental control, they also showed an increase in parental control over time. In contrast, parents at low and medium levels of parental satisfaction started high but did not change in their levels of parental control over time.

Goal #3: The Relationship Between Parental Monitoring and Child Conduct Problems

The third goal of the current study was to examine the relationship between parental monitoring and child conduct problems. To address this goal, several models were conducted. First, bivariate LTMs were conducted to determine if initial levels of parental monitoring and child conduct problems predicted changes in child conduct problems and parental monitoring over time, respectively. For all bivariate LTMs, all variances for intercept and slope factors were significant, indicating significant individual heterogeneity around the means of these factors. Table 8 presents the model fit statistics for all bivariate models.

ALT models were then conducted to examine autoregressive and cross-lagged effects between parental monitoring and child conduct problems. These models allowed for the

examination of the bidirectional relationship between parental monitoring and child conduct problems by estimating cross-lagged parameters. Additionally, these models included autoregressive parameters between the time points of each variable. As such, each time point in the bivariate ALT models represented an additive function of the prior time point of the variable, plus the prior time point of the second variable, plus random error.

Following Bollen and Curran's (2004, 2006) recommendations, several model-building procedures were followed to ensure appropriate estimation of the ALT models. First, bivariate autoregressive models were conducted to determine the autoregressive structure of parental monitoring and child conduct problems. However, it is important to note that the bivariate autoregressive models did not take into account the developmental trajectories of the variables. The ALT models, on the other hand, allowed for the estimation of autoregressive and time-specific associations between measures while also accounting for developmental processes. As seen in Table 8, the model fit statistics for the bivariate autoregressive models were relatively poor when compared to the fit statistics for the bivariate LTMs and ALT models, suggesting the importance of considering the trajectories of these developmental processes when examining the relationship between parental monitoring and child conduct problems. Therefore, specific results from the bivariate autoregressive models are not reported here.

Next, univariate ALT models were conducted for parental solicitation, parental control, and child conduct problems separately to examine the ALT structure of these constructs. The univariate ALT models were estimated by adding autoregressive paths from one year to the next year to the best fitting univariate LTMs. Equality constraints on the autoregressive terms were

examined for each model to examine stability in these constructs over time. This constrained model was compared to an unrestricted univariate ALT model.

Finally, on the basis of the findings from the univariate ALT models, bivariate ALT models were examined. Nested bivariate LTM models were conducted and compared to the initial unconstrained bivariate ALT models to determine if the incorporation of cross-lagged and autoregressive parameters provided a better representation of the data. The nested LTM models all provided a significantly worse fit to the data when compared to the bivariate ALT models (see Table 8), indicating that the ALT models were the best fitting models for the data. Constraints were then progressively added to the bivariate ALT models, and constraints that did not produce a significant decrease in model fit were retained to identify the most parsimonious ALT models. For all bivariate ALT models, latent parameter estimates are presented in Tables 9 and 10 and autoregressive and cross-lagged parameter estimates are presented in Tables 11 and 12.

Bivariate LTMs of parent- and child-reported parental solicitation and child conduct problems. The bivariate LTM examining parent-reported parental solicitation and child conduct problems provided an adequate fit to the data. The latent growth factors of parent-reported parental solicitation were not significantly correlated. The latent growth factors of child conduct problems were significantly associated, such that the intercept of child conduct problems was related to the linear slope (r = -.54, p < .001) and the quadratic slope (r = .43, p < .001) of child conduct problems. As with the univariate LTMs, the linear and quadratic slope factors were highly correlated (r = -.96, p < .001), indicating that these two factors should not be interpreted separately. Therefore, higher initial levels of child conduct problems were associated with a decrease in child conduct problems that accelerated over time. Results indicated significant

associations between initial levels of parent-reported parental solicitation and initial levels of child conduct problems (r = -.27, p < .01), such that higher initial levels of parent-reported parental solicitation were related to lower initial levels of child conduct problems. No significant associations between change in parental solicitation and change in child conduct problems were identified. The cross-lagged predictions were not significant in this model, such that initial levels of parental solicitation and child conduct problems did not predict a change in child conduct problems and parental solicitation over time, respectively.

The bivariate LTM examining child-reported parental solicitation and child conduct problems provided a good fit to the data. The latent growth factors of child-reported parental solicitation were significantly associated, such that the intercept of parental solicitation was related to the linear slope (r = -.36, p < .01) but not to the quadratic slope (r = .21, *ns*) of parental solicitation. As with the univariate LTMs, the linear and quadratic slope factors of parental solicitation were highly correlated (r = -.95, p < .001), indicating that these two factors should not be interpreted separately. The latent growth factors of child conduct problems were also significantly associated, such that the intercept of child conduct problems was related to the linear slope (r = -.45, p < .001) and to the quadratic slope (r = .33, p < .01) of child conduct problems. The linear and quadratic slope factors of child conduct problems were also highly correlated (r = -.95, p < .001). Results indicated significant associations between initial levels of child-reported parental solicitation and initial levels of child conduct problems (r = -.43, p < .001), such that higher initial levels of child-reported parental solicitation were related to lower initial levels of child conduct problems. No significant associations between change in parental solicitation and change in child conduct problems were identified. The cross-lagged prediction

from the intercept of child-reported parental solicitation to the linear growth in child conduct problems was significant (b = .08, SE = .04, p < .05), such that higher initial levels of parental solicitation predicted a higher slope, or less of a decline in child conduct problems over time (given that the mean of the linear slope factor for child conduct problems was negative, μ = -1.46, σ = .60). However, it is important to note that the interpretation of this cross-lagged prediction is confounded by the high correlation between the linear and quadratic slopes of child conduct problems; therefore, this prediction should not be interpreted independently of the quadratic slope. No other cross-lagged predictions were significant.

Bivariate LTMs of parent- and child-reported parental control and child conduct problems. The bivariate LTM examining parent-reported parental control and child conduct problems provided an adequate fit to the data. The variance of the first slope factor for parental control was constrained to zero due to estimation problems and given that this variance was not significant. Neighborhood safety was also removed as a covariate from this analysis due to estimation problems and the fact that this variable was not significantly related to any of the intercept or slope factors. The latent growth factors of parent-reported parental solicitation were not significantly correlated. The latent growth factors of child conduct problems were significantly associated, such that the intercept of child conduct problems was related to the linear slope (r = -.54, p < .001) and the quadratic slope (r = .40, p < .001) of child conduct problems. As with the univariate LTMs, the linear and quadratic slope factors were highly correlated (r = -.95, p < .001), indicating that these two factors should not be interpreted separately. Therefore, higher initial levels of child conduct problems were associated with a decrease in child conduct problems that accelerated over time. No significant associations

between initial levels of or changes in parent-reported parental control and initial levels of or changes in child conduct problems were indicated. The cross-lagged predictions were not significant in this model, indicating no prediction of change over time in child conduct problems and parent-reported parental control from initial levels of parental control and child conduct problems, respectively.

The bivariate LTM examining child-reported parental control and child conduct problems provided an adequate fit to the data. The variance of the second slope factor for parental control was constrained to zero due to estimation problems and given that this variance was not significant. The latent growth factors of child-reported parental solicitation were not significantly correlated. The latent growth factors of child conduct problems were significantly associated, such that the intercept of child conduct problems was related to the linear slope (r = -.53, p < .001) and the quadratic slope (r = .39, p = .001) of child conduct problems. Additionally, the linear and quadratic slope factors of child conduct problems were highly correlated (r = -.95, p < .001), indicating that these two factors should not be interpreted separately. Therefore, higher initial levels of child conduct problems were associated with a decrease in child conduct problems that accelerated over time. No significant associations between initial levels of or changes in parent-reported parental control and initial levels of or changes in child conduct problems were indicated. However, there was a significant association between the first slope factor of child-reported parental control (modeling growth from Grade 4 through Grade 8) and the linear (r = -.27, p = .01) and quadratic slopes (r = .31, p < .01) of child conduct problems. This finding indicated that a higher slope (or less of a decline, given that the first slope factor was negative, μ = -.29, σ = .19) in child-reported parental control from Grades 4 through Grade 8

was related to a lower slope (or more of a decline, given that the linear slope factor was negative, $\mu = -1.46$, $\sigma = 1.49$) in child conduct problems that accelerated over time. The cross-lagged predictions were not significant in this model, indicating no prediction of the slopes of child conduct problems and child-reported parental control from the intercepts of parental control and child conduct problems, respectively.

Univariate ALT models. For parent-reported parental solicitation, the unrestricted univariate ALT model fit the data very well, χ^2 (43, N = 701) = 63.97, $p < .05$; CFI = .97, TLI = .97, RMSEA = .03, SRMR = .07, and demonstrated an improvement in fit over the constrained model (setting the autoregressive effects to be equal), $\Delta\chi^2$ (5) = 31.87, $p < .001$. Findings indicated significant autoregressive effects from Grades 5 to 7 (b = .17, SE = .07, $p < .05$), Grades 7 to 8 (b = .11, SE = .05, $p < .05$) and from Grades 8 to 9 (b = .11, SE = .05, $p < .05$). No other autoregressive effects were significant. These autoregressive effects must be interpreted within the context of the LTM, as higher levels of parent-reported parental solicitation at Grades 5, 7 and 8 incrementally predicted higher levels of parental solicitation at Grades 7, 8 and 9, respectively, over and above what was expected based on the individual trajectory of parent-reported parental solicitation.

The unrestricted univariate ALT model for child-reported parental solicitation fit the data very well, χ^2 (43, N = 668) = 44.89, p = .17; CFI = .99, TLI = .98, RMSEA = .02, SRMR = .03. Difficulties in convergence for the constrained univariate ALT model indicated that the unrestricted model was preferable. The variance of the quadratic slope factor was constrained to zero due to estimation problems and given that this variance was not significant. Findings indicated significant autoregressive effects from Grades 5 to 7 (b = .26, SE = .07, $p < .001$),

Grades 7 to 8 (b = .29, SE = .06, p < .001), from Grades 8 to 9 (b = .26, SE = .06, p < .001), and Grades 9 to 10 (b = .15, SE = .07, p < .05). No other autoregressive effects were significant. Again these autoregressive effects represented incremental prediction, over and above what was expected based on the individual trajectory of child-reported parental solicitation.

For parent-reported parental control, the unrestricted univariate ALT model did not improve the fit over the constrained model, $\Delta\chi^2$ (5) = 7.58, p = .18. The constrained univariate ALT model provided an adequate fit to the data, χ^2 (42, N = 672) = 82.41, p < .001; CFI = .82, TLI = .76, RMSEA = .04, SRMR = .07. The variance of the first slope factor was constrained to zero due to estimation problems and given that this variance was not significant. Findings indicated significant autoregressive effects with equality constraints (b = .12, SE = .05, p < .05). For child-reported parental control, the unrestricted univariate ALT model did not demonstrate an improvement in fit over the constrained model, $\Delta\chi^2$ (5) = 7.00, p = .22. The constrained univariate ALT model provided a good fit to the data, χ^2 (42, N = 664) = 64.67, p < .05; CFI = .94, TLI = .91, RMSEA = .03, SRMR = .05. The variance of the intercept factor was constrained to zero due to estimation problems. Findings indicated significant autoregressive effects with equality constraints (b = .08, SE = .04, p < .05). As with the univariate ALT models for parental solicitation, these autoregressive effects must be interpreted within the context of the LTMs, over and above what would be expected based on the individual trajectories of child- and parent-reported parental control.

The unrestricted univariate ALT model for child conduct problems provided an adequate fit to the data, χ^2 (34, N = 668) = 88.78, p < .001; CFI = .89, TLI = .82, RMSEA = .05, SRMR = .07. Difficulties in convergence for the constrained univariate ALT model indicated that the

unrestricted model is preferable. However, no significant autoregressive effects were indicated in this analysis, suggesting no incremental prediction of child conduct problems from one year to the next year over and above what would be expected from the underlying trajectory.

Bivariate ALT models of parent- and child-reported parental solicitation and child conduct problems. For parent-reported parental solicitation, difficulties in convergence indicated that the variances of the linear slope and quadratic factors for child conduct problems should be fixed to zero. The final bivariate ALT model for parental solicitation also included constraints on the slope factor of parental solicitation (mean and variance were fixed to zero), and fixed the time-specific correlations between parental solicitation and child conduct problems to zero. Covariates were then added to this final ALT model, and this model fit the data well (see Table 8). Findings from this ALT model indicated that the intercepts (in ALT models, the portion of Grade 5 measures left unexplained by Grade 4 measures) of parental solicitation and child conduct problems were significantly different from zero, with significant individual heterogeneity in initial levels. Additionally, the intercept of parent-reported parental solicitation was significantly and negatively associated with the intercept of child conduct problems, such that higher initial levels of parental solicitation were associated with lower initial levels of child conduct problems (see Table 9). All autoregressive effects for parent-reported parental solicitation and child conduct problems were significant, indicating incremental prediction of these measures at one year from the previous year, over and above what was expected based on the individual trajectories. However, no consistent cross-lagged effects were identified in this model, indicating no significant reciprocal associations between parent-reported parental solicitation and child conduct problems (see Table 11).

For child-reported parental solicitation, difficulties in convergence indicated that the variances of the linear slope and quadratic factors for parental solicitation and child conduct problems should be fixed to zero. In addition to the constraints on the linear and quadratic slope factors, the final bivariate ALT model for parental solicitation included constraints on the slope factor of child conduct problems (mean fixed to zero) as well as equality constraints on the cross-lagged effects. Covariates were then added to this final ALT model, and this model fit the data well (see Table 8). Findings from this ALT model indicated that the intercepts of parental solicitation and child conduct problems were significantly different from zero, with significant individual heterogeneity in initial levels (see Table 9). All autoregressive effects for child-reported parental solicitation and child conduct problems were significant, indicating incremental prediction of these measures at one year from the previous year, over and above what was expected based on the underlying growth processes. Significant negative cross-lagged effects were also found, indicating that more child conduct problems in one year were predicted by less child-reported parental solicitation one year earlier, over and above what would be expected from the underlying growth trajectories. Likewise, more child-reported parental solicitation was predicted by fewer child conduct problems one year earlier, over and above the underlying trajectories (see Table 11). This finding provides support for reciprocal associations, and suggests the presence of both parent and child effects in the relationship between child-reported parental solicitation and child conduct problems.

Bivariate ALT models of parent- and child-reported parental control and child conduct problems. For parent-reported parental control, difficulties in convergence indicated that the variances of the slope factors for parental control and child conduct problems should be

fixed to zero. In addition to the constraints on the slope factors, the final bivariate ALT model for parent-reported parental control included constraints on the slope factor of child conduct problems (mean fixed to zero), as well as equality constraints on the cross-lagged effects from parental control to child conduct problems. The time-specific correlations between the residuals of parental control and child conduct problems were also fixed to zero. Covariates were then added to this final ALT model, and this model provided an adequate fit to the data (see Table 8). While the CFI and TLI values are relatively low, examination of modification indices and residuals indicated no problematic model misspecification. This finding was also consistent with the lower CFI and TLI values indicated in the univariate LTMs for parental control. Findings from this ALT model indicated that the intercepts of parental control and child conduct problems were significantly different from zero, with significant individual heterogeneity in initial levels (see Table 10). The autoregressive effects for parent-reported parental control were significant except at Grades 4, 5, and 7, indicating incremental prediction in parent-reported parental control at later years over an above what was expected based on the growth trajectory. Of note, this finding is consistent with the first slope factor of the piecewise growth model, which captured no average change in parent-reported parental control from Grade 4 through Grade 7. All autoregressive effects for child conduct problems were significant, indicating incremental prediction over and above what was expected based on the individual trajectory. No significant cross-lagged effects were identified in this model, indicating no reciprocal associations between parent-reported parental control and child conduct problems (see Table 12).

For child-reported parental control, difficulties in convergence indicated that the variances of the slope factors for parental control and child conduct problems should be fixed to

zero. In addition to the constraints on the slope factors, the final bivariate ALT model for child-reported parental control included constraints on the slope factor of child conduct problems (mean fixed to zero), as well as equality constraints on the cross-lagged effects from parental control to child conduct problems. The time-specific correlations between parental control and child conduct problems were also fixed to zero. Covariates were then added to this final ALT model, and this model provided an adequate fit to the data. While the CFI and TLI values are relatively low, examination of modification indices and residuals indicated no problematic model misspecification. Findings from this ALT model indicated that the intercepts of parental control and child conduct problems were significantly different from zero, with significant individual heterogeneity in initial levels. The first slope of child-reported parental control was also significantly different from zero, indicating an average decrease in child-reported parental control from Grade 4 through Grade 8 (see Table 10). The autoregressive effects for child-reported parental control were significant except at Grade 4, indicating no incremental prediction in parental control from Grade 4 to Grade 5 over and above what was expected based on the growth trajectory. All autoregressive effects for child conduct problems were significant, indicating incremental prediction over and above what was expected based on the individual trajectory. No consistent cross-lagged effects were identified in this model, indicating no reciprocal associations between child-reported parental control and child conduct problems.

Goal 4: The Influence of Context on Parental Monitoring and Its Relationship with Child Conduct Problems

The fourth goal of the current study was to examine the influence of context (i.e., sex of the child, race/urban status, SES, and neighborhood safety) on parental monitoring and its

relationship with child conduct problems. In other words, the fourth goal aimed to examine potential moderators of parental solicitation and control and their relationships to child conduct problems. To address this fourth goal, moderation analyses were first conducted with multigroup models of the univariate LTMs described previously. Several constraints were considered, including setting the intercept and slope factors and covariances between factors to be equal between groups. Any constraints that did not significantly worsen the fit of the model were retained.

Next, to determine if sex of the child, race/urban status, SES, or neighborhood safety moderated the relationship between parental monitoring and child conduct problems, multigroup models using the bivariate LTMs and ALT models described previously were conducted. Several constraints were considered, including setting the cross-lagged paths and inter-construct covariances of intercept and slope factors (e.g., covariance between the intercepts of parental solicitation and child conduct problems) to be equal between groups. Any constraints that did not significantly worsen the fit of the model were retained. Based on these analyses, no evidence of moderation of any of the ALT models was identified in this study. Therefore, the specific results from the multigroup ALT models are not presented here.

Moderators of parent- and child-reported parental solicitation. For parent-reported parental solicitation, no significant differences between males and females were indicated. Significant differences in the intercept of parent-reported parental solicitation were identified for race/urban status, neighborhood safety, and SES. Specifically, higher initial levels of parent-reported parental solicitation were reported for rural White children ($\mu = 4.35$, $\sigma = .05$, $p < .001$) and urban White children ($\mu = 4.27$, $\sigma = .07$, $p < .001$) when compared to urban Black children

($\mu = 3.90$, $\sigma = .06$, $p < .001$). Additionally, higher initial levels of parent-reported parental solicitation were found for safer neighborhoods ($\mu = 4.23$, $\sigma = .05$, $p < .001$) and higher SES children ($\mu = 4.26$, $\sigma = .05$, $p < .001$) as compared to unsafe neighborhoods ($\mu = 3.97$, $\sigma = .06$, $p < .001$) and lower SES children ($\mu = 3.89$, $\sigma = .05$, $p < .001$), respectively.

No significant differences between males and females or between high and low SES children were found for child-reported parental solicitation. Significant differences in the slopes of child-reported parental solicitation were identified for race/urban status and neighborhood safety. Specifically, the linear slopes for urban White and urban Black children were negative ($\mu_{\text{urban White}} = -.05$, $\sigma_{\text{urban White}} = .05$, *ns*; $\mu_{\text{urban Black}} = -.08$, $\sigma_{\text{urban Black}} = .05$, *ns*), while the linear slope for rural White children was positive ($\mu_{\text{rural White}} = .01$, $\sigma_{\text{rural White}} = .04$, *ns*). Additionally, the quadratic slope for rural White children was larger ($\mu_{\text{rural White}} = .07$, $\sigma_{\text{rural White}} = .003$, *ns*) than for urban White and Black children ($\mu_{\text{urban White}} = .01$, $\sigma_{\text{urban White}} = .01$, *ns*; $\mu_{\text{urban Black}} = .01$, $\sigma_{\text{urban Black}} = .01$, *ns*). However, it is important to note that none of these slopes were significant, indicating no average change in child-reported parental solicitation for any of the race/urban status groups. The linear slope of child-reported parental solicitation was also found to differ by neighborhood safety, such that significant decreases in parental solicitation were found for unsafe neighborhoods ($\mu = -.83$, $\sigma = .03$, $p < .01$), while no linear changes in child-reported parental solicitation were indicated for safe neighborhoods ($\mu = -.03$, $\sigma = .03$, *ns*).

Moderators of parent- and child-reported parental control. For parent-reported parental control, no significant differences between males and females or between low and high SES children were indicated. Significant differences in the slopes of parent-reported parental control were identified for race/urban status and neighborhood safety. Specifically, the first slope

(modeling growth from Grade 4 through Grade 7) was not significant for any of the race/urban status groups, indicating no average change in parental control during these grades. However, the second slope (modeling growth from Grade 8 through Grade 11) was not significant for urban White children ($\mu = .003$, $\sigma = .03$, *ns*) and rural White children ($\mu = .04$, $\sigma = .04$, *ns*), but was significant for urban Black children ($\mu = -.13$, $\sigma = .04$, $p < .001$). This finding indicated no change in parental control for White children, but a significant average decrease in parental control for Black children during later grades. In terms of neighborhood safety, the first slope was not significant for either safe or unsafe neighborhoods. However, the second slope was significant for unsafe neighborhoods ($\mu = -.13$, $\sigma = .03$, $p < .001$) but was not significant for safe neighborhoods ($\mu = -.01$, $\sigma = .03$, *ns*), indicating that parental control decreased during the later grades for children living in unsafe neighborhoods but not for children living in safer neighborhoods.

For child-reported parental control, significant differences in intercepts were indicated for race/urban status, such that rural White children had lower initial levels of child-reported parental control ($\mu = 3.39$, $\sigma = .13$, $p < .001$) than urban White ($\mu = 3.73$, $\sigma = .14$, $p < .001$) and urban Black children ($\mu = 3.891$, $\sigma = .11$, $p < .001$). Significant differences in intercepts were also identified for neighborhood safety, such that higher initial levels of parental control were found for children in unsafe neighborhoods ($\mu = 3.90$, $\sigma = .09$, $p < .001$) as compared to children in safe neighborhoods ($\mu = 3.53$, $\sigma = .10$, $p < .001$). Significant differences in intercepts also indicated higher initial levels of parental control for low SES children ($\mu = 3.93$, $\sigma = .09$, $p < .001$) as compared to high SES children ($\mu = 3.52$, $\sigma = .10$, $p < .001$).

Additionally, significant differences in the slopes of child-reported parental control were identified for sex, race/urban status, neighborhood safety, and SES. Specifically, the first slope (modeling growth from Grade 4 through Grade 8) was significant for males ($\mu = .08$, $\sigma = .03$, $p < .001$) but not for females ($\mu = -.01$, $\sigma = .03$, *ns*), indicating that parental control increased during earlier grades for males but not for females. The second slope (modeling growth from Grade 9 through Grade 11) was not significant for either males or females. For race/urban status, the first and second slopes were not significant for White children, but were significant for Black children ($\mu_{slope\ 1} = -.10$, $\sigma_{slope\ 1} = .04$, $p < .001$; $\mu_{slope\ 2} = -.24$, $\sigma_{slope\ 2} = .07$, $p < .001$), indicating no average change in child-reported parental control for White children but a significant decrease for Black children over time, with a larger decline during the later grades for those children. For neighborhood safety, significant differences in the first slopes indicated that child-reported parental control decreased during the earlier grades for children in unsafe neighborhoods ($\mu = -.12$, $\sigma = .03$, $p < .001$) but did not change for children in safe neighborhoods ($\mu = .03$, $\sigma = .03$, *ns*). The second slopes were not significant for either safe or unsafe neighborhoods, indicating no average change in child-reported parental control during the later grades. For SES, significant differences in the first slopes indicated that parental control decreased during the earlier grades for low SES children ($\mu = -.09$ $\sigma = .03$, $p < .01$) but not for high SES children ($\mu = .00$, $\sigma = .03$, *ns*). The second slopes of child-reported parental control were not significant for either high or low SES children.

Moderators of the relationship between parent- and child-reported parental solicitation and child conduct problems. For the bivariate LTM of parent-reported parental solicitation and child conduct problems, no significant group differences were identified. For the

bivariate LTM of child-reported parental solicitation, significant differences were identified based on race/urban status. Specifically, the cross-lagged prediction from the intercept of child-reported parental solicitation to the linear and quadratic slope factors of child conduct problems was significant for urban White children (b_{linear} = .65, *SE* = .23, $p < .01$; $b_{quadratic}$ = -.08, *SE* = .03, $p < .01$) but was not significant for urban Black or rural White children. These results must be interpreted within the context of the significant negative relationship between the linear and quadratic slopes of child conduct problems. Therefore, this result indicated that higher initial levels of child-reported parental solicitation predicted a higher slope (or less of a decline, given that the linear slope factor for child conduct problems was negative), in child conduct problems that showed less of an acceleration over time (given that the quadratic slope factor for child conduct problems was positive), but only for urban White children. No other significant group differences were identified for child-reported parental solicitation.

Moderators of the relationship between parent- and child-reported parental control and child conduct problems. For parent-reported parental control, significant differences were indicated based on SES. Specifically, the cross-lagged prediction from the intercept of child conduct problems to the second slope (modeling the rate of change from Grade 8 through Grade 11) of parental control was significant for lower SES children (*b* = -.88, *SE* = .44, $p < .05$) but not for higher SES children. Therefore, this result indicated that higher initial levels of child conduct problems predicted a lower slope (or less of an increase, given that the second slope factor was positive) in parent-reported parental control, but only for lower SES children. No other significant group differences were identified for parent-reported parental control.

For child-reported parental control, significant sex differences indicated that the association between the first slope factor of child-reported parental control (modeling growth from Grade 4 through Grade 8) and the linear and quadratic slope of child conduct problems was significant for females (r_{linear} = -.39, $p < .01$; $r_{quadratic}$ = .39, $p < .01$) but not for males. Interpreted within the context of the high correlation between the linear and quadratic slope factors of child conduct problems, this result indicated that a higher slope (or less of a decline, given that the linear slope factors were negative) in child-reported parental control from Grades 4 through Grade 8 was related to a lower slope (or more of a decline) in child conduct problems that accelerated over time, but only for females. No other significant group differences were identified for child-reported parental control.

Table 3. *Means and Standard Deviations of Kindergarten Antecedents, Parental Solicitation, Parental Control, and Child Conduct Problems*

Variable	K Mean *(SD)*	4th Grade Mean *(SD)*	5th Grade Mean *(SD)*	7th Grade Mean *(SD)*	8th Grade Mean *(SD)*	9th Grade Mean *(SD)*	10th Grade Mean *(SD)*	11th Grade Mean *(SD)*
Neighborhood safety	33.44 *(9.91)*							
Early child conduct problems	14.90 *(8.69)*							
Parental warmth/ involvement	2.53 *(.52)*							
Parent satisfaction	4.06 *(1.19)*							
Parent efficacy	5.58 *(.79)*							
Parent school involvement	1.72 *(.64)*							
Parent-child relationship	3.49 *(.75)*							
Parental solicitation (PR)		4.06 *(.77)*	3.88 *(.82)*	4.07 *(.85)*	3.98 *(.83)*	3.99 *(.85)*	4.10 *(.82)*	4.04 *(.89)*
Parental solicitation (CR)		3.56 *(1.01)*	3.62 *(.97)*	3.42 *(.94)*	3.44 *(.94)*	3.44 *(.92)*	3.49 *(.93)*	3.51 *(.92)*
Parental control (PR)		4.62 *(.75)*	4.61 *(.76)*	4.59 *(.78)*	4.62 *(.76)*	4.57 *(.84)*	4.53 *(.88)*	4.31 *(1.14)*
Parental control (CR)		3.59 *(1.28)*	3.90 *(1.18)*	3.54 *(1.23)*	3.40 *(1.34)*	3.45 *(1.27)*	3.40 *(1.36)*	3.32 *(1.44)*
Child conduct problems[a]		1.19 *(1.68)*	1.23 *(1.54)*	0.97 *(1.72)*	0.97 *(1.82)*	1.34 *(2.10)*	1.03 *(1.84)*	0.91 *(1.55)*

Note. K = kindergarten, PR = parent report, CR = child report.
[a] Raw scores are presented here. Log-10 transformations were applied for all analysis to correct for positive skewness of the conduct problems measures.

Table 4. *Intercorrelations Between Parental Solicitation and Control and Child Conduct Problems Across Grades*

Variable		CPs Grade 4	CPs Grade 5	CPs Grade 7	CPs Grade 8	CPs Grade 9	CPs Grade 10	CPs Grade 11
Solicitation (4th)	PR	-.04	-.09*	-.07	-.12**	-.06	-.07	-.01
	CR	-.11**	-.11*	-.08*	-.12**	-.03	-.06	-.05
Control (4th)	PR	-.04	-.01	-.02	-.06	.00	.01	-.03
	CR	-.01	.05	.08	.02	.16***	.10*	.11*
Solicitation (5th)	PR	-.14***	-.16***	-.13**	-.06	-.05	.04	.03
	CR	-.09*	-.06	-.16***	-.06	-.04	-.04	-.11*
Control (5th)	PR	-.03	-.07	.00	.01	.06	.07	.07
	CR	.06	-.03	.01	.08	.10*	.03	-.09
Solicitation (7th)	PR	-.16***	-.20***	-.12**	-.09*	-.06	-.03	.02
	CR	-.10*	-.05	-.23***	-.06	.00	.00	-.08
Control (7th)	PR	-.05	-.01	.01	.03	-.01	.06	.03
	CR	.00	.01	-.05	-.04	.01	-.04	-.04
Solicitation (8th)	PR	-.14**	-.15**	-.17***	-.14**	-.15**	-.13**	-.10*
	CR	-.13**	-.08	-.22***	-.16***	-.12**	-.06	-.07
Control (8th)	PR	-.05	-.07	.00	-.02	-.02	.01	.00
	CR	-.02	-.03	-.15**	-.07	-.01	-.04	-.06
Solicitation (9th)	PR	-.11*	-.14**	-.19***	-.15**	-.16***	-.11*	-.06
	CR	-.08	-.12**	-.24***	-.17***	-.13**	-.11*	-.09*
Control (9th)	PR	-.09*	-.13**	-.06	-.05	-.04	.01	-.02
	CR	-.02	-.07	-.11*	-.09*	-.04	-.05	-.05

Table 4 continued. *Intercorrelations Between Parental Solicitation and Control and Child Conduct Problems Across Grades*

Solicitation (10^{th})	PR	-.14**	-.18***	-.18***	-.15**	-.11*	-.10*	-.04
	CR	-.14**	-.14**	-.23***	-.12**	-.12**	-.12**	-.08
Control (10^{th})	PR	-.03	-.07	.00	-.02	-.03	.05	.01
	CR	-.10*	-.14**	-.12**	-.10*	-.04	-.06	-.06
Solicitation (11^{th})	PR	-.07	-.13**	-.11*	-.16**	-.16***	-.11*	-.08
	CR	-.09	-.13**	-.18***	-.16**	-.11*	-.19*	-.05
Control (11^{th})	PR	-.11*	-.13**	-.08	-.04	-.14**	-.05	-.07
	CR	-.07	-.10*	-.17***	-.12**	-.13**	-.12**	-.08

Note. CPs = child conduct problems, PR = parent report, CR = child report.
*$p < .05$, **$p < .01$, ***$p < .001$.

Table 5. *Intercorrelations Between Parental Solicitation and Control and Kindergarten Antecedents Across Grades*

Variable		Early child CPs	Parent warmth/ involvement	Parent efficacy	Parent satisfaction	Parent school involvement	Parent-child relationship
Solicitation (4th)	PR	-.04	.25***	.12**	.17***	.22***	.22***
	CR	-.03	.07	.12**	.06	.12**	.07
Control (4th)	PR	-.01	.07	.02	.02	.09*	.10*
	CR	-.02	-.01	.04	-.04	.03	-.03
Solicitation (5th)	PR	-.14***	.25***	.09*	.15***	.29***	.25***
	CR	-.06	.10*	.11**	.04	.09*	.06
Control (5th)	PR	.00	.13**	.09*	.09*	.09*	.10*
	CR	.01	.07	.13**	-.04	.05	-.02
Solicitation (7th)	PR	-.13**	.28***	.13**	.21***	.24***	.28***
	CR	-.08	.05	.12**	.10*	.09*	.16***
Control (7th)	PR	-.05	.03	.04	.06	.10*	.05
	CR	-.06	.03	.06	.02	.03	-.01
Solicitation (8th)	PR	-.15***	.26***	.11*	.25***	.16***	.21***
	CR	-.07	.11*	.12**	.06	.06	.09*
Control (8th)	PR	.04	.09*	.07	.06	.08	.09*
	CR	-.11**	.04	.04	.10*	.01	.02
Solicitation (9th)	PR	-.17***	.23***	.07	.18***	.11**	.24***
	CR	.12**	.09*	.11**	.15***	.10*	.12**
Control (9th)	PR	-.14**	.14**	.06	.12**	.10*	.16***
	CR	-.01	-.02	-.01	.07	-.01	.01

Table 5 continued. *Intercorrelations Between Parental Solicitation and Control and Kindergarten Antecedents Across Grades*

Solicitation (10^{th})	PR	-.18***	.21***	.07	.24***	.10*	.24***
	CR	-.11*	.10*	.13**	.10*	.09*	.15***
Control (10^{th})	PR	-.01	.14**	.07	.05	.11*	.10*
	CR	-.10*	-.01	.04	.06	-.09*	.03
Solicitation (11^{th})	PR	-.04	.21***	.10*	.07	.15**	.22***
	CR	-.06	.12**	.14**	.09*	.10*	.09*
Control (11^{th})	PR	-.04	.08	.08	.04	.05	.07
	CR	-.05	.03	.05	.08	-.06	.06

Note. CPs = child conduct problems, PR = parent report, CR = child report.
*$p < .05$, **$p < .01$, ***$p < .001$.

Table 6. *Model Fit Indexes and Model Comparisons of Univariate LTMs of Parental Solicitation and Control and Child Conduct Problems*

Model	Model fit indexes							Model comparison	
	χ^2	*df*	CFI	TLI	RMSEA	SRMR	BIC	$\Delta\chi^2$	Δdf
Parental solicitation (PR)									
1. Linear LTM	87.13***	53	.96	.95	.03	.05	8138.83		
2. Quadratic LTM	69.98**	43	.97	.95	.03	.04	8166.71	17.09	10
Parental solicitation (CR)									
1. Linear LTM	108.46***	53	.90	.88	.04	.08	9561.66		
2. Quadratic LTM	52.64	43	.98	.98	.02	.05	9511.54	52.81***	10
Parental control (PR)									
1. Linear LTM	132.61***	53	.66	.60	.05	.08	9081.58		
2. Quadratic LTM	89.63***	43	.80	.71	.04	.07	9057.23	44.45***	10
3. Piecewise LTM	81.27***	43	.84	.76	.04	.07	9039.83	54.16***	10
Parental control (CR)									
1. Linear LTM	137.59***	53	.77	.72	.05	.08	12249.28		
2. Quadratic LTM	90.53***	43	.87	.81	.04	.06	12214.09	45.19***	10
3. Piecewise LTM	85.73***	43	.88	.83	.04	.05	12205.65	50.46***	10
Child CPs									
1. Linear LTM	121.10***	54	.88	.86	.04	.07	5890.00		
2. Quadratic LTM	73.72**	43	.95	.92	.03	.05	5845.39	43.70***	10

Note. PR = parent report, CR = child report, LTM = latent trajectory model. Model comparisons are compared to the first linear LTM.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 7. *Estimated Factor Means, Variances, and Covariances of the Univariate LTMs of Parental Solicitation and Control and Child Conduct Problems*

	Solicitation (PR)		Solicitation (CR)		Control (PR)		Control (CR)		Child CPs	
Parameter	Std. Est.	*SE*	Std. Est.	*SE*	Std. Est.	*SE*	Std. Est.	*SE*	Std. Est.	*SE*
Factor means										
INT	7.67***	0.52	5.42***	0.55	13.46***	3.08	7.14***	1.81	1.19***	0.09
LIN	0.17	0.10	-0.10	0.09					-0.18*	0.08
QUAD			0.11	0.09					0.14	0.09
P #1					-0.04	0.18	-0.21*	0.10		
P #2					-0.10	0.09	0.06	0.10		
Factor variance										
INT	0.76***	0.05	0.96***	0.03	0.85***	0.10	0.67***	0.17	0.76***	0.05
LIN	0.97***	0.03	0.96***	0.03					0.82***	0.08
QUAD			0.98***	0.02					0.78***	0.10
P #1					0.76**	0.25	0.97***	0.03		
P #2					0.83***	0.07	0.95***	0.03		
Factor covariance										
INT↔LIN	-0.22	0.15	-0.39**	0.12					-0.54***	0.09
INT↔QUAD			0.22	0.13					0.40***	0.11
LIN↔QUAD			-0.95***	0.02					-0.95***	0.02
INT↔P #1					0.27	0.83	-0.17	0.35		

Table 7 continued. *Estimated Factor Means, Variances, and Covariances of the Univariate LTMs of Parental Solicitation and Control and Child Conduct Problems*

INT↔P #2		-0.02	0.27	-0.62	0.39	
P #1↔P #2		-0.67*	0.29	-0.23	0.15	

Note. PR = parent report, CR = child report, CPs = conduct problems, INT = intercept, LIN = linear slope, QUAD = quadratic slope, P #1 = piecewise slope #1, P #2 = piecewise slope #2, Est. = unstandardized model estimate, Std. Est. = standardized model estimate.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 8. *Model Fit Indexes and Comparisons for Bivariate LTMs and ALT Models of Parental Solicitation and Control and Child Conduct Problems*

Model	Indexes of model fit							Model comparison	
	χ^2	*df*	CFI	TLI	RMSEA	SRMR	BIC	$\Delta\chi^2$	Δdf
Solicitation (PR) and CPs									
1. Bivariate LTM	219.92***	132	.94	.92	.03	.05	13988.95	--	--
2. Bivariate autoregressive	210.80***	60	.87	.81	.06	.11	14906.13	--	--
3. ALT, full model	58.88	55	1.00	1.00	.01	.04	14588.13	--	--
4. ALT, nested LTM	244.76***	79	.86	.84	.06	.08	14833.76	186.05***	24
5. Final ALT model with constraints	76.93	68	.99	.99	.01	.05	14544.95	17.14	13
6. Final ALT model with constraints and covariates	217.59***	122	.93	.91	.03	.08	14052.51	--	--
Solicitation (CR) and CPs									
1. Bivariate LTM	168.90**	119	.96	.94	.03	.05	15374.85	--	--
2. Bivariate autoregressive	170.71***	60	.89	.84	.05	.10	16006.70	--	--
3. ALT, full model	97.43**	59	.96	.94	.03	.05	15850.56	--	--
4. ALT, nested LTM	309.69***	83	.78	.76	.06	.11	16159.89	200.40***	24
5. Final ALT model with constraints	112.30**	72	.96	.95	.03	.06	15793.24	13.31	13
6. Final ALT model with constraints and covariates	214.02***	120	.92	.89	.03	.06	15445.88	--	--
Control (PR) and CPs									
1. Bivariate LTM	201.57***	116	.90	.86	.03	.06	14937.68	--	--
2. Bivariate autoregressive	164.28***	60	.84	.76	.05	.09	15704.25	--	--

Table 8 continued. *Model Fit Indexes and Comparisons for Bivariate LTMs and ALT Models of Parental Solicitation and Control and Child Conduct Problems*

3. ALT, full model	110.93***	59	.92	.88	.04	.07	15594.83	--	--
4. ALT, nested LTM	281.58***	83	.70	.67	.06	.10	15818.09	160.74***	24
5. Final ALT model with constraints	123.83***	73	.92	.91	.03	.07	15524.43	11.46	14
6. Final ALT model with constraints and covariates	239.83***	113	.84	.78	.04	.07	15016.27	--	--
Control (CR) and CPs									
1. Bivariate LTM	224.85***	124	.90	.85	.04	.06	18020.28	--	--
2. Bivariate autoregressive	139.78***	60	.90	.85	.04	.08	18655.51	--	--
3. ALT, full model	99.85***	59	.95	.92	.03	.06	18580.41	--	--
4. ALT, nested LTM	308.59***	83	.72	.69	.06	.12	18885.68	198.96***	24
5. Final ALT model with constraints	112.23**	73	.95	.94	.03	.06	18511.36	11.52	14
6. Final ALT model with constraints and covariates	220.91***	113	.88	.84	.04	.07	18051.75	--	--

Note. PR = parent report, CR = child report, CPs = child conduct problems, LTM = linear trajectory model, ALT = autoregressive linear trajectory. Model comparisons are compared to the ALT, full model (model #3).
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 9. *Latent Parameter Estimates from ALT Models for Parental Solicitation and Child Conduct Problems*

	Parent report		Child report	
Parameter	Est. *(SE)*	Std. Est.	Est. *(SE)*	Std. Est.
Factor means				
Intercept-S	3.38 (.19)	7.98***	3.16 (.38)	7.38***
Linear-S			-0.34 (.19)	-2.87
Quadratic-S			0.04 (.02)	3.68
Intercept-CP	0.80 (.34)	4.31*	0.45 (.07)	2.40***
Linear-CP	-0.07 (.18)	-1.01		
Quadratic-CP	0.00 (.02)	-0.19		
Factor variances				
Intercept-S	0.15 (.03)	0.82***	0.12 (.03)	0.68***
Intercept-CP	0.03 (.01)	0.73***	0.03 (.01)	0.82***
Factor covariances				
Intercept-S ↔ Intercept-CP	-0.02 (.01)	-0.29*	-0.01 (.01)	-0.13

Note. ALT = autoregressive latent trajectory, S = parental solicitation, CPs = conduct problems, Est. = unstandardized model estimate, Std. Est. = standardized model estimate.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 10. *Latent Parameter Estimates from ALT Models for Parental Control and Child Conduct Problems*

	Parent report		Child report	
Parameter	Est. *(SE)*	Std. Est.	Est. *(SE)*	Std. Est.
Factor means				
Intercept-C	4.75 (.48)	15.83***	3.96 (.33)	7.24***
Slope 1-C	-0.23 (.20)	-4.42	-0.33 (.09)	-3.59*
Slope 2-C	-0.28 (.24)	-2.91	0.09 (.15)	0.52
Intercept-CP	0.25 (.10)	1.40*	0.28 (.06)	1.59***
Factor variances				
Intercept-C	0.07 (.02)	0.76***	0.21 (.07)	0.71***
Intercept-CP	0.03 (.01)	0.91***	0.03 (.01)	0.93***
Factor covariances				
Intercept-C ↔ Intercept-CP	-0.01 (.01)	-0.14	-0.02 (.02)	-0.22

Note. ALT = autoregressive latent trajectory, C = parental control, CPs = conduct problems, Est. = unstandardized model estimate, Std. Est. = standardized model estimate.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 11. *Autoregressive and Cross-lagged Parameter Estimates from ALT Models for Parental Solicitation and Child Conduct Problems*

	Parent report		Child report	
Parameter	*b (SE)*	*β*	*b (SE)*	*β*
Autoregressive parental solicitation effects				
Grade 4→Grade 5	.16 (.05)	.15**	.23 (.07)	.23***
Grade 5→Grade 7	.22 (.05)	.23***	.28 (.05)	.26***
Grade 7→Grade 8	.17 (.05)	.17***	.31 (.05)	.34***
Grade 8→Grade 9	.19 (.05)	.19***	.32 (.05)	.33***
Grade 9→Grade 10	.22 (.05)	.21***	.27 (.06)	.27***
Grade 10→Grade 11	.22 (.05)	.20***	.22 (.07)	.23**
Autoregressive child conduct problems effects				
Grade 4→Grade 5	.30 (.07)	.32***	.36 (.06)	.37***
Grade 5→Grade 7	.11 (.06)	.11	.13 (.05)	.14**
Grade 7→Grade 8	.42 (.10)	.37***	.39 (.08)	.35***
Grade 8→Grade 9	.38 (.08)	.37***	.38 (.07)	.36***
Grade 9→Grade 10	.40 (.07)	.43***	.36 (.06)	.39***
Grade 10→Grade 11	.31 (.09)	.34***	.27 (.08)	.29**
Cross-lagged effects				
Grade 4-S→Grade 5-CP	-.09 (.05)	-.12	-.04 (.01)	-.07*
Grade 5-S→Grade 7-CP	-.07 (.03)	-.10*	-.04 (.01)	-.07*
Grade 7-S→Grade 8-CP	-.05 (.03)	-.07	-.04 (.01)	-.07*
Grade 8-S→Grade 9-CP	-.03 (.03)	-.03	-.04 (.01)	-.06*
Grade 9-S→Grade 10-CP	-.01 (.03)	-.02	-.04 (.01)	-.06*
Grade 10-S→Grade 11-CP	.01 (.05)	.01	-.04 (.01)	-.07*
Grade 4-CP→Grade 5-S	-.10 (.07)	-.07	-.04 (.01)	-.03*
Grade 5-CP→Grade 7-S	-.12 (.07)	-.09	-.04 (.01)	-.02*
Grade 7-CP→Grade 8-S	-.06 (.07)	-.04	-.04 (.01)	-.03*

Table 11 continued. *Autoregressive and Cross-lagged Parameter Estimates from ALT Models for Parental Solicitation and Child Conduct Problems*

Grade 8-CP→Grade 9-S	-.03 (.06)	-.02	-.04 (.01)	-.03*
Grade 9-CP→Grade 10-S	-.06 (.06)	-.05	-.04 (.01)	-.03*
Grade 10-CP→Grade 11-S	-.32 (.11)	-.22**	-.04 (.01)	-.03*

Note. ALT = autoregressive latent trajectory, S = parental solicitation, CPs = conduct problems. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 12. *Autoregressive and Cross-lagged Parameter Estimates from ALT Models for Parental Control and Child Conduct Problems*

	Parent report		Child report	
Parameter	*b (SE)*	*β*	*b (SE)*	*β*
Autoregressive parental control effects				
Grade 4→Grade 5	.02 (.07)	.02	.08 (.07)	.08
Grade 5→Grade 7	.09 (.07)	.08	.13 (.04)	.13**
Grade 7→Grade 8	.16 (.10)	.16	.24 (.06)	.22***
Grade 8→Grade 9	.24 (.07)	.25***	.33 (.07)	.34***
Grade 9→Grade 10	.28 (.06)	.26***	.33 (.07)	.31***
Grade 10→Grade 11	.34 (.09)	.27***	.29 (.07)	.27***
Autoregressive child conduct problems effects				
Grade 4→Grade 5	.36 (.06)	.37***	.36 (.06)	.37***
Grade 5→Grade 7	.13 (.05)	.13*	.12 (.05)	.12*
Grade 7→Grade 8	.40 (.09)	.36***	.40 (.09)	.36***
Grade 8→Grade 9	.39 (.07)	.37***	.39 (.07)	.37***
Grade 9→Grade 10	.37 (.06)	.40***	.36 (.07)	.39***
Grade 10→Grade 11	.27 (.08)	.29***	.27 (.08)	.29***
Cross-lagged effects				
Grade 4-C→Grade 5-CP	.01 (.02)	.02	.00 (.01)	.01
Grade 5-C→Grade 7-CP	.01 (.02)	.02	.00 (.01)	.01
Grade 7-C→Grade 8-CP	.01 (.02)	.02	.00 (.01)	.01
Grade 8-C→Grade 9-CP	.01 (.02)	.02	.00 (.01)	.01
Grade 9-C→Grade 10-CP	.01 (.02)	.02	.00 (.01)	.01
Grade 10-C→Grade 11-CP	.01 (.02)	.02	.00 (.01)	.01
Grade 4-CP→Grade 5-C	-.02 (.08)	-.02	-.11 (.16)	-.05
Grade 5-CP→Grade 7-C	.13 (.10)	.08	.22 (.14)	.10
Grade 7-CP→Grade 8-C	.01 (.07)	.01	-.41 (.16)	-.16*

Table 12 continued. *Autoregressive and Cross-lagged Parameter Estimates from ALT Models for Parental Control and Child Conduct Problems*

Grade 8-CP→Grade 9-C	-.06 (.07)	-.04	-.05 (.14)	-.02
Grade 9-CP→Grade 10-C	-.03 (.08)	-.02	-.01 (.13)	-.01
Grade 10-CP→Grade 11-C	-.19 (.15)	-.10	-.17 (.13)	-.06

Note. ALT = autoregressive latent trajectory, C = parental control, CPs = conduct problems.
* $p < .05$, ** $p < .01$, *** $p < .001$.

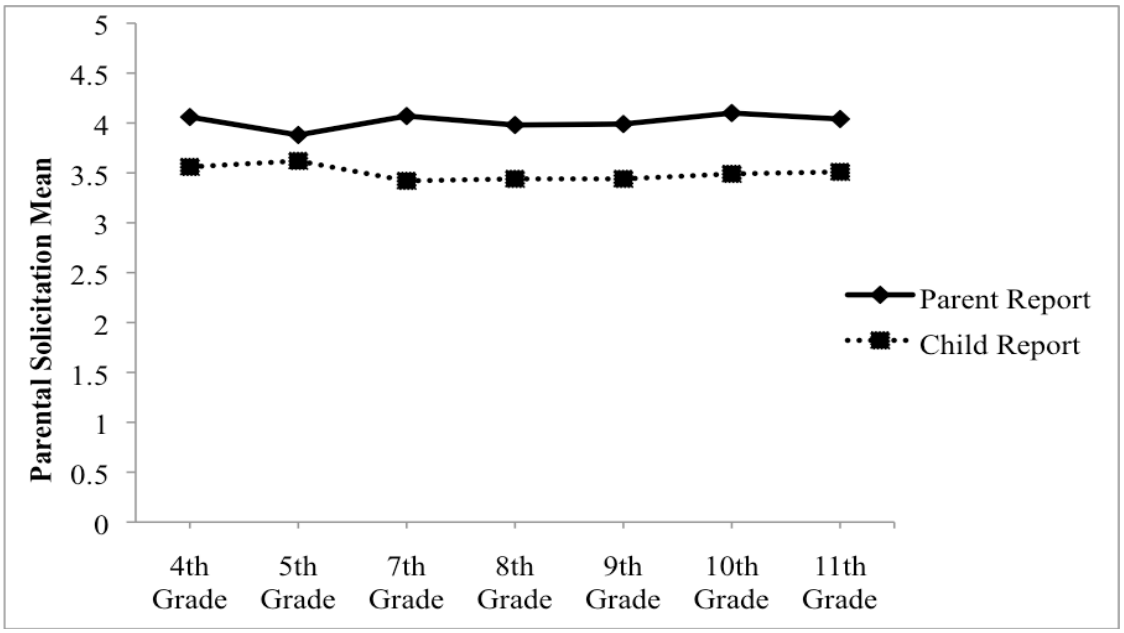

Figure 6. Graph of means of parent- and child-reported parental solicitation across all grades.

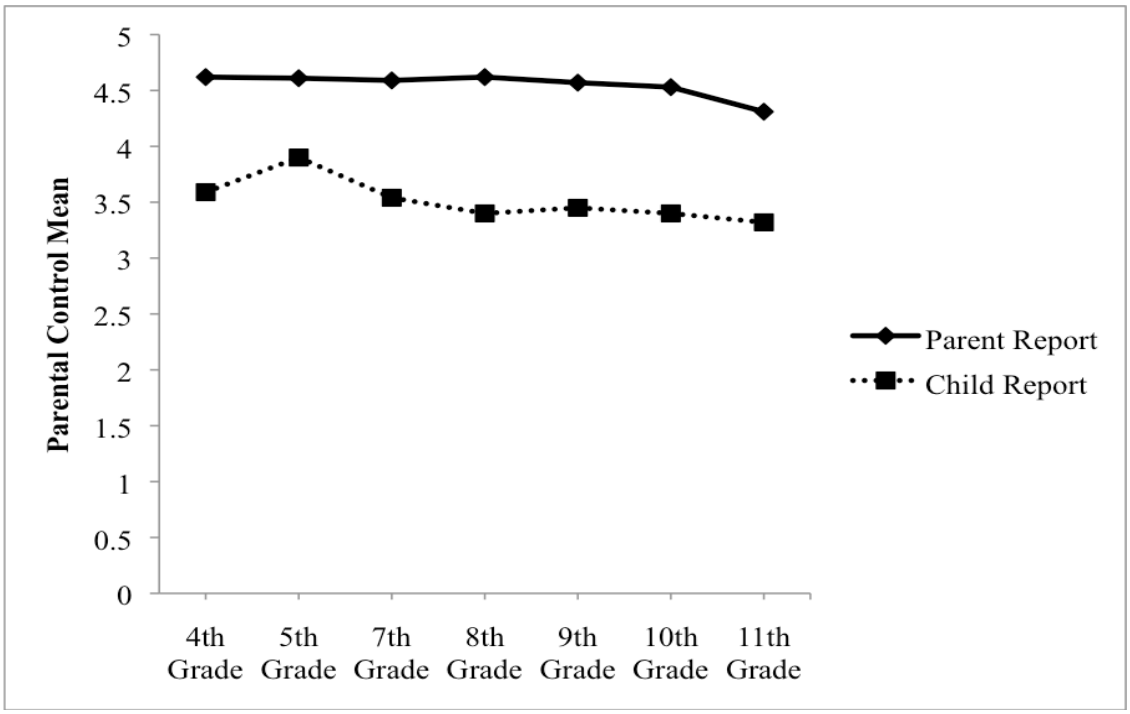

Figure 7. Graph of means of parent- and child-reported parental control across all grades.

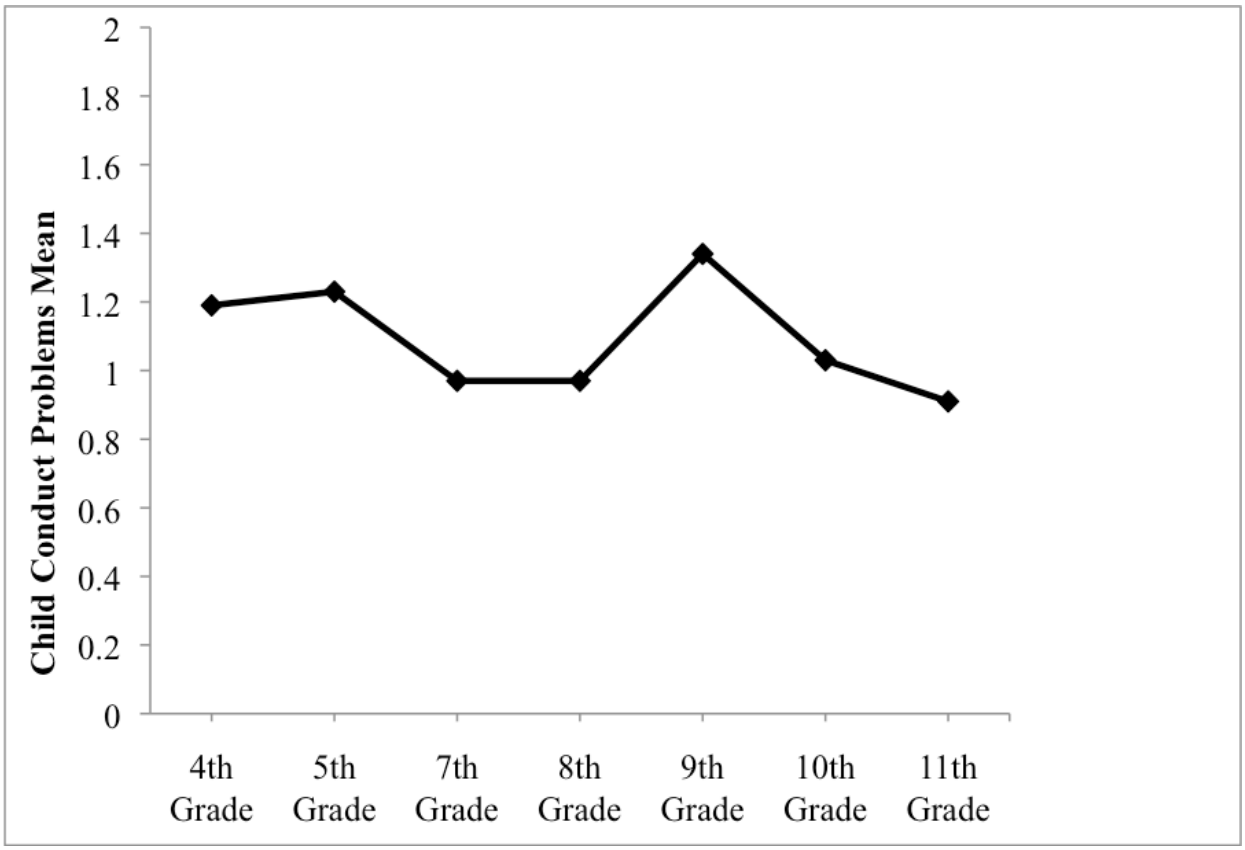

Figure 8. Graph of means of child conduct problems across all grades.

Discussion

The goals of this study were to examine the developmental trajectories of parental monitoring (defined as parental solicitation and parental control) and to investigate the longitudinal relationship between parental monitoring and child and adolescent conduct problems. This study also sought to identify early childhood antecedents of parental monitoring. As such, findings from this study highlighted early precursors of effective parental monitoring. Moderators of parental monitoring and its relationship with child conduct problems were also examined. Moderation analyses determined if parental monitoring might be particularly important for different groups of children (i.e., females, Black children, low SES children, and children living in unsafe neighborhoods).

Development of Parental Monitoring During Middle Childhood and Adolescence

The findings from this study add to the accumulating evidence regarding the different components of parental monitoring identified in Stattin and Kerr's (2000; Kerr & Stattin, 2000) seminal work. Consistent with several previous studies (e.g., Fletcher et al., 2004; Keijsers et al., 2009; Stattin & Kerr, 2000), findings from the CFAs conducted in this study suggested that parental solicitation and parental control are two separate constructs. The findings from the univariate LTMs also indicated the importance of examining parental solicitation and parental control separately. In this study, the growth curves of parental solicitation and parental control appeared very different from each other, suggesting that these constructs develop differently over time. Specifically, parental solicitation appeared to be relatively stable over time, whereas parental control appeared to decrease in middle childhood and early adolescence (per child report). Taken together, the findings from this study as well as other studies in the literature

indicate that parental solicitation and parental control should be examined separately in future studies of parental monitoring.

Additionally, univariate LTMs indicated nonlinear growth in parental solicitation and control (with the exception of parent-reported parental solicitation). Only a few previous studies have directly examined nonlinear change in parental monitoring (Keijsers et al., 2009; Laird et al., 2003), and in conjunction with the current findings suggest that the possibility of nonlinear growth should be considered in future studies. For all univariate LTMs, the intercept factors were significantly different from zero. However, the slope factors for the univariate LTMs were not significantly different from zero (with the exception of child-reported parental control which found an average decrease from Grade 4 through Grade 8), indicating no average change in parental solicitation or control in this study. Therefore, this study failed to replicate the decrease in parental monitoring documented in many previous studies (e.g., Kerr & Stattin, 2003; Laird et al., 2009; Larson et al., 1996; Pettit et al., 2007; Smetana, 2008). However, this study did find a significant decrease in child conduct problems. Findings from this study also indicated that children who decreased more in their engagement in conduct problems over time decelerated less. Interpretation of this finding is consistent with studies indicating that the majority of children who display conduct problems tend to desist in this behavior over time (i.e., Hinshaw & Lee, 2003; Moffitt, 1993; Nagin & Tremblay, 1999, 2001). It is also important to note the significant individual heterogeneity around the intercept and slope factors for all univariate LTMs. This finding indicates that initial levels and rates of change in parental solicitation, parental control, and child conduct problems varied significantly among the children in this sample. For example, some children may have started at a high level of parental solicitation in

Grade 4 that decreased significantly over time, whereas other children may have started at a high level that remained stable over time.

Moderation analyses of the univariate LTMs demonstrated some support for the hypotheses regarding group differences in parental solicitation and control. Lower initial levels of parental solicitation (per parent report) were identified for urban Black children, lower SES children, and children living in unsafe neighborhoods. Additionally, decreases in child-reported parental solicitation over time were found for children living in unsafe neighborhoods. Higher initial levels of parental control (per child report) were indicated for children living in urban areas, low SES children, and children living in unsafe neighborhoods. Additionally, decreases in parental control were identified for Black children, children living in unsafe neighborhoods and low SES children (during the earlier grades and according to child report only). This study did not find any evidence of sex differences in the univariate LTMs of parental monitoring (aside from a decrease in child-reported parental control for males during earlier grades), indicating that in this sample, males and females tended to receive similar levels of parental monitoring over time. This finding is consistent with some studies indicating a similar pattern of results for both sexes (e.g., Kerr & Stattin, 2000; Keijsers et al., 2010; Stattin & Kerr, 2000), but is inconsistent with other studies identifying sex differences (e.g., Jacobson & Crockett, 2000; Laird et al., 2008; Pettit et al., 2001; Smetana & Daddis, 2002; Willoughby & Hamza, 2011).

The moderation findings regarding parental solicitation indicated that this parenting behavior may be particularly difficult to implement in high-risk areas, and are consistent with studies that have identified lower parental monitoring among Black children and children living in unsafe neighborhoods (Laird et al., 2009; Pettit et al., 2001, 2007). Of note, a similar pattern

of findings regarding neighborhood safety was identified in a previous study utilizing data from the Fast Track project (Pinderhughes et al., 2008). Findings regarding parental control in the current study indicated that families living in high-risk neighborhoods might initially utilize this parenting strategy to protect their children; however, various psychosocial stressors may make it difficult for these families to consistently implement this parenting strategy throughout the course of childhood and adolescence (Dishion & McMahon, 1998).

Early Childhood Antecedents of Parental Monitoring

Several early childhood antecedents of parental solicitation and control were identified in this study. Differential prediction of initial levels of and growth in parental solicitation and parental control from the antecedents again highlights the importance of examining these two components of parental monitoring separately. In this study, more parental warmth and better parent-child relationship quality predicted higher initial levels of parental solicitation per parent report. Parental involvement with children's education and school significantly predicted both initial levels of and rates of change in parent-reported parental solicitation, as parents at high levels of school involvement had the highest initial levels of parental solicitation but also had the steepest decrease in this parenting behavior over time. Better parent-child relationship quality predicted higher initial levels of parental control per child report, while more parental involvement with children's education and school predicted decreases in child-reported parental control during later grades (Grade 9 through Grade 11). Parental satisfaction predicted both initial levels of and rates of change in child-reported parental control, as parents at high levels of parental satisfaction had the lowest initial levels of parental control but also had the steepest increase in this parenting behavior over time. The findings regarding parental school

involvement and parental satisfaction may also reflect regression to the mean, as parents at the highest or lowest levels of parental monitoring may tend to move closer to mean levels of this parenting behavior at subsequent measurements.

The identified antecedents of parental solicitation may create an environment where parents interact frequently with children and feel effective in their parenting efforts, thereby enhancing initial levels of parental solicitation. Additionally, these early childhood antecedents may enhance child disclosure, thereby increasing parental knowledge. As such, it may be that parents do not need to continue to engage in high levels of monitoring when child disclosure is high, as parents do not need to use active parental monitoring techniques in order to obtain information regarding their children's whereabouts and activities. This possibility may explain the decrease in parental solicitation and control that was predicted by high levels of parental school involvement in kindergarten. Given the important role that child disclosure plays in parental knowledge (Crouter & Head, 2002; Keijsers et al., 2009; Soenens, Vansteenkiste, Luyckx, & Goossens, 2006; Stattin & Kerr, 2000; Willoughby & Hamza, 2011), it is important to include child disclosure in future studies of parental monitoring to examine the interplay between this child behavior and parental monitoring.

The findings regarding antecedents of parental control indicate that parents may initially engage in high levels of this monitoring strategy to compensate for difficulties during early parenting (i.e., less satisfaction and poor parent-child relationship quality). As evidenced by the findings at low and medium levels of parental satisfaction, these difficulties may extend into middle childhood and adolescence, thereby rendering parents incapable of changing their parenting behaviors. Indeed, parents at high levels of parental satisfaction (indicating parents

who feel pleased and motivated in their parenting) might have not initially utilized parental control in their parenting, but were able to enhance their use of this parental monitoring strategy over time as children entered adolescence. Pettit and Laird (2002) also suggested that high levels of parental control might counteract a lack of parental involvement, providing additional evidence for parental monitoring as a compensatory parenting strategy. It is also important to consider that increases in parental control during middle childhood and into adolescence may not be appropriate, as this parenting behavior may infringe on normative increases in adolescent autonomy (Kerr & Stattin, 2010; Laird et al., 2010b; Masche, 2010). Therefore, parents who feel ineffective in their parenting and have a negative relationship with their children may be more likely to increase their use of this potentially invasive strategy as they are unsure of their parenting efforts or lack an understanding of their children's need for independence.

It is important to note that better parent-child relationship quality at kindergarten was a significant predictor of higher initial levels of both parental solicitation and control. This finding underscores the important influence of the quality of the relationship between parents and children starting at a young age. Consistent with the extant literature, this finding supports the proposition that a supportive and positive parent-child relationship is a key factor in the parental monitoring process (Crouter & Head, 2002; Dishion & McMahon, 1998; Laird et al., 2010b; Pettit & Laird, 2002; Stattin & Kerr, 2000). While this antecedent (as well as the majority of other kindergarten antecedents) did not predict any growth in parental monitoring over time, it is important to note that overall no average growth in parental solicitation and control was identified in this study. Therefore, there was little to predict in terms of the rate of growth in parental monitoring.

The Relationship Between Parental Monitoring and Child Conduct Problems

The findings from the current study also contribute to the growing literature on the longitudinal relationship between parental monitoring and child conduct problems. Correlational analyses indicated that higher parental solicitation was related to lower levels of child conduct problems, while (for some correlations) higher parental control was related to higher levels of conduct problems. These findings are surprising in that they are inconsistent with other studies of parental monitoring that have identified a positive relationship between parental solicitation and child conduct problems and a negative relationship between parental control and conduct problems (Keijsers et al., 2009; Kerr & Stattin, 2003; Kiesner et al., 2009; Stattin & Kerr, 2000; Willoughby & Hamza, 2011). However, a few studies have indicated that higher levels of parental solicitation are associated with lower levels of conduct problems (Dishion & McMahon, 1998; Fletcher et al., 2004; Laird et al., 2010a). Additionally, the direction of this finding regarding parental control is not clear, as it may be that parents are reacting to higher levels of conduct problems by increasing their monitoring efforts, or that children are reacting negatively to higher levels of control. Following this viewpoint, children may view parental control as invasive and overly controlling, leading to negative feelings of being controlled as well as a range of adjustment problems (Kerr & Stattin, 2000). Children may therefore react to this intrusion by engaging in even more conduct problems. The source of this inconsistency in findings regarding the relationship between parental monitoring and child conduct problems may be due to conflicting operationalizations of parental solicitation and control and to differing analytical methods used to examine this relationship.

Furthermore, the results from this study contribute to recent advances in understanding the bidirectional and reciprocal associations between parents and children. The use of bivariate LTMs and ALT models allowed for the examination of cross-lagged effects between parental monitoring and child conduct problems, over and above what would be expected from the underlying growth trajectories. These models were also able to examine potential child- and parent-effects on later parent and child behavior.

The bivariate models of parental monitoring and child conduct problems generally indicated no significant relationship between initial levels of parental monitoring and child conduct problems and growth in child conduct problems and parental monitoring, respectively. This finding may be due in part to the lack of growth in parental solicitation and parental control in this study. However, the bivariate LTMs did indicate a significant negative relationship between initial levels of parental solicitation and child conduct problems, such that higher initial levels of parental solicitation were associated with lower initial levels of child conduct problems. This finding confirms the correlational results described earlier. However, the direction of this finding is not clear, as it could indicate that children initially tend to engage in fewer conduct problems when their parents ask them about their whereabouts and activities, as they know their parents will solicit information about their behavior. In this sense, parental solicitation could prevent children's engagement in child conduct problems. On the other hand, this finding could indicate that parents initially engage in more solicitation with children who are not engaging in high levels of conduct problems, as these children may be more forthcoming with information. Additionally, parents of children with high levels of conduct problems may refrain from soliciting information from their children, as they are worried about the type of information they

will obtain. In this sense, parental solicitation could be a reaction to children's level of conduct problems.

No significant associations between initial levels of parental control and child conduct problems were identified in this study. However, the rate of change in child-reported parental control was related to the rate of change in child conduct problems, such that less of a decrease in parental control during earlier grades (Grade 4 through Grade 8) was related to a greater decrease in child conduct problems that accelerated over time. While still identifying a relationship between decreases in parental control and decreases in child conduct problems, this finding also indicates that a slower decrease in parental control is related to a faster decrease in child conduct problems over time. On the one hand, this finding may suggest that when parents slowly remove their control efforts during middle childhood, thereby providing greater autonomy to emerging adolescents, children tend to more rapidly decrease their engagement in problematic behaviors. On the other hand, it could be that parents respond to decreases in child conduct problems by slowly relaxing their implementation of rules and providing more autonomy to their children. Taken together with the correlation results indicating some significant positive relationships between parental control and child conduct problems, the findings from this study indicate that parental control may not be an effective parenting strategy to use in targeting child conduct problems during middle childhood and into adolescence. Rather, it appears that providing children with increasing independence and autonomy during this time is associated with decreases in child conduct problems.

It could be assumed that this finding regarding parental control and child conduct problems would not hold for children exhibiting high levels of conduct problems. Specifically,

children who are already engaging in high levels of conduct problems may take advantage of this increased independence by engaging in even more problematic behavior. This proposition is supported by several studies showing that parental monitoring declines in response to child conduct problems (Burke et al., 2008; Dishion et al., 2004; Kerr & Stattin, 2003; Laird et al., 2009). In this sense, it may be that among children with high levels of conduct problems, decreases in parental control would be associated with a slower decrease (or potentially with an increase) in child conduct problems. To explore this possibility, moderation analyses were conducted with the bivariate LTM of child-reported parental control and child conduct problems to examine potential group differences between the normative and high-risk control groups. However, no significant group differences were identified in this analysis, suggesting that decreases in parental control were associated with decreases in child conduct problems among children exhibiting higher levels of conduct problems and among those engaging in more normative levels of conduct problems.

To further examine the relationship between parental monitoring and child conduct problems, ALT models were conducted to examine autoregressive and cross-lagged effects while accounting for the underlying developmental trajectories of these constructs. Autoregressive effects from the univariate ALT models indicated higher levels of parental solicitation and parental control at one year as predicted from the previous year, over and above what was expected based on the underlying growth trajectory. These autoregressive effects suggest stability in parental monitoring over time. Results from the bivariate ALT models generally indicated no significant cross-lagged effects for parent-reported parental solicitation and parent- and child-reported parental control, suggesting no time-specific bidirectional associations

between these parenting behaviors and child conduct problems. Rather, these models are consistent with Kiesner and colleague's (2009) interpretation that the association between parental monitoring and child conduct problems reflects the concurrent correlations (i.e., at Time 1) and stability in these child and parent behaviors.

However, significant cross-lagged effects were identified for child-reported parental solicitation, indicating that higher levels of parental solicitation in one year predicted lower levels of conduct problems in the next year, over and above what would be expected based on the underlying growth trajectories and autoregressive effects. Similarly, higher levels of child conduct problems in one year predicted lower levels of parental solicitation in the next year, over and above the underlying trajectories and autoregressive effects. Consistent with several other studies (Laird et al., 2003; Pardini et al., 2008; Willoughby & Hamza, 2011), these bidirectional findings may be interpreted as evidence that increased parental monitoring in one year deters children and adolescents from conduct problems in the next year, or that parents disengage from monitoring as children and adolescents increase their engagement in these behaviors. As such, this study provides some support for reciprocal associations between parental solicitation and child conduct problems, and indicates that parents and children influence each other in a bidirectional manner. These bidirectional associations suggest that short-term interventions seeking to improve parental solicitation in one year might be effective in deterring child and adolescent conduct problems in the next year.

In interpreting the ALT models, it is important to keep in mind the presence of nonlinear growth in this study. Nonlinear ALT models are not preferred, as it is often necessary to constrain parameters of interest (i.e., intercept and slope variances) to resolve problems in

convergence (Morin et al., 2011). These constraints were necessary in this study, and therefore may impact the interpretation of these models. These constraints were not ideal, particularly given the presence of significant variances around the intercept and slope factors for the univariate and bivariate LTMs. Therefore, the ALT models examined in this study should be interpreted cautiously, given that these models do not account for significant variability around the intercept and slope factors of parental solicitation, parental control and child conduct problems.

Moderation analyses of the bivariate LTMs and ALT models in the current study revealed few significant group differences in the relationship between parental monitoring and child conduct problems. Specifically, for urban White children, higher initial levels of child-reported parental solicitation predicted less of a decline in child conduct problems that slowly accelerated over time. Parental solicitation did not predict any changes in child conduct problems for Black children. Taken together with the identification of lower initial levels of parental solicitation among Black children, this finding supports the hypotheses regarding race/urban status as a moderator.

Additionally, higher levels of child conduct problems predicted less of an increase in parent-reported parental control during the later grades (Grade 8 through Grade 11) for low SES children only. This finding suggests that, for families living in impoverished conditions, parents are less able to intensify their monitoring efforts in response to higher levels of child conduct problems. This difficulty in altering parenting behaviors as needed depending on the behavior of children may be due to several risk factors found in impoverished families, including low education levels, psychological distress, and stressful life events (Klein et al., 2000). As such,

these families may lack the skills and available resources needed to engage in more effective parenting behaviors in order to manage challenging and problematic child behaviors.

Furthermore, the relationship between child-reported parental control and child conduct problems (which indicated that less of a decrease in parental control during earlier grades was related to a greater decrease in child conduct problems that accelerated over time) was found to be significant for females only. This finding is consistent with other studies indicating that parental monitoring is more strongly associated with lower levels of delinquent behavior in girls than in boys (Kerr, Stattin, & Pakalniskiene, 2008; Pettit et al., 2001, 2007). On the one hand, this sex difference may indicate that females' behavior is more responsive to increased autonomy as provided through decreased parental control. On the other hand, this finding may suggest that parents are more willing to relax their control over their female children than their male children in response to decreased conduct problems. Overall though, moderation analyses indicated more similarities than differences in the relationship between parental solicitation and control and child conduct problems among the groups included in this study.

Strengths and Limitations of the Current Study

This study addressed several of the limitations of the existing literature on parental monitoring identified by Racz and McMahon (2011), and as such contributes to and extends research on parental monitoring as reconceptualized by Stattin and Kerr (2000; Kerr & Stattin, 2000). The strengths of the current study include the use of a longitudinal design with a large, multisite sample and with multiple informants (parents and children). The incorporation of a high-risk control group is an additional strength, as previous studies of parental monitoring have mainly included normative community samples of children. Continued incorporation of high-risk

and clinical samples is an important direction for future research, as it is possible that parental monitoring may appear very different for children who engage in clinically significant levels of conduct problems as compared to children who exhibit elevated but not clinical levels of this behavior (Capaldi, 2003).

An additional strength of this study is the examination of the relationship between parental monitoring and child conduct problems at an earlier age (i.e., Grade 4) than the majority of previous studies, which have mainly examined parental monitoring during adolescence (e.g., starting in Grade 8 or 9). Previous longitudinal studies have typically examined parental monitoring over the course of a few years (usually 2 to 3 years). Therefore, an additional strength of this study is the investigation of parental monitoring over the course of 7 years and across different developmental periods (i.e., middle childhood through adolescence). Only a handful of other longitudinal studies on parental monitoring have included several waves of data (e.g., Laird et al., 2009; Pardini et al., 2008; Pettit et al., 2001, 2007; Pinderhughes et al., 2008). Therefore, this study contributes to the field's continued understanding of this parenting behavior over time and its longitudinal relationship with child conduct problems. Additionally, the use of statistically sophisticated techniques (i.e., LTMs, ALT models) in this study allowed for the careful examination of the longitudinal relationship between parental monitoring and child conduct problems.

An additional strength of this study is the inclusion of both parent- and child-report measures. Many previous studies have utilized single-reporter measures (usually from the child/adolescent), thereby obscuring potentially important differences in rates of parental monitoring by parent and child report. Only a handful of studies have included both parent and

child reports of parental monitoring, which allows for examination of differences between reporters (e.g., De Los Reyes, Goodman, Kliewer, & Reid-Quiñones, 2010; Keijsers et al., 2010; Laird et al., 2010a; Pettit & Laird, 2002; Stattin & Kerr, 2000). Consideration of these potential reporter differences is important, especially given that children's and parents' reports of parental monitoring are remarkably inconsistent (Cottrell et al., 2003; Crouter & Head, 2002; Dishion & McMahon, 1998; Pettit et al., 2001). Consistent with these previous studies, results from the current study indicated important differences by parent and child report in the shapes of the growth curves of parental monitoring, as well as in the longitudinal relationship between parental monitoring and child conduct problems. There is also some argument in the literature regarding whether parent or child reports provide the most accurate and unbiased account of parental monitoring (Fletcher et al., 2004). It is therefore important that researchers consider obtaining both parent and child reports of parental monitoring in order to examine potential differences between these reporters.

However, despite the inclusion of both parent- and child-reported measures in this study, a parent-reported measure of child conduct problems was not available in the Fast Track data for all of the years included in this study. As such, models including child-reported parental monitoring and child conduct problems may have introduced potential bias in interpretation due to common source and method variance. This limitation also did not allow for a full examination of dual-reporter models. Therefore, it is unknown if a similar pattern of results would appear if parent-reported child conduct problems were included in the bivariate models examined in this study. Future research should continue to incorporate both child- and parent-reported measures to explore potential differences in parental monitoring between these reporters. The use of

measurement models will be particularly important in order to appropriately account for measurement error in these dual-reporter models.

Additional limitations of the current study include the lack of a measure of child disclosure. This child behavior is considered an important aspect of parental knowledge (Kerr & Stattin, 2000; Stattin & Kerr, 2000), and inclusion of this behavior may highlight how children contribute to the monitoring process. However, no measure to adequately assess child disclosure was available in the Fast Track data. An additional limitation includes the change in the measure of child conduct problems between Grades 5 and 7. While the TTYHD and SRD measures are conceptually similar and address many of the same behaviors, there is a possibility that change in child conduct problems over time may in part reflect this change in the measurement of this behavior.

Lastly, the items included as indicators of parental solicitation and parental control were not ideal measures of parental monitoring. The individual items included in the parental solicitation measure in this study focused on parents discussing daily activities with their children, while the individual items included in the parental control measure focused on the presence of a curfew for children and adolescents. When compared to the items included in Stattin and Kerr's (2000) measure of parental monitoring, the measures in this study are missing potentially important aspects of this parenting behavior (e.g., soliciting information from the parents of children's friends, needing to obtain permission to go out with friends, parents requiring an explanation when children are out late). However, the selection of items to measure parental monitoring in this study was limited by the data that were available in the preexisting Fast Track project dataset. This limitation may explain some of the differences in the findings

reported in this study as compared to previous studies of parental monitoring. This limitation also highlights the need for psychometric studies to identify a well-established measure of parental monitoring that incorporates all of the important components of this parenting behavior. Standardized and consistent measurement of parental monitoring may help resolve some of the terminology issues afflicting this area of research.

Clinical Implications and Future Directions

Despite these limitations, the findings from this study have important implications for understanding the role that parental monitoring plays in deterring children and adolescents from conduct problems. The results from the current study may assist in the early identification of families at-risk for developing poor parental monitoring or who may need to engage in higher levels of parental monitoring than other families due to various contextual factors. Specifically, moderation analyses indicated lower levels of parental monitoring among Black families, lower SES families, and families living in unsafe neighborhoods. Given the many risk factors associated with living in impoverished, urban and risky neighborhoods, these families may find it difficult to engage in effective parental monitoring. Therefore, it may be particularly important to target this population with intervention programs designed to enhance effective parental monitoring.

The findings from the current study also have implications for the development of interventions targeting child conduct problems. As such, these findings suggest that parental solicitation is an important parenting behavior that may influence decreases in child conduct problems over time. The presence of bidirectional associations between parental solicitation (according to child report) and child conduct problems suggests that interventions targeting

effective use of parental solicitation may lead to changes in child conduct problems in the next year, indicating the potential utility of short-term interventions addressing this parenting behavior. Current findings also suggest that interventions that help parents slowly decrease their use of parental control over time may also be effective in targeting child conduct problems, particularly for females. Moderation analyses also consistently indicated that interventions specifically enhancing parental monitoring in Black families might be particularly important.

Several existing broad parenting interventions target improvements in parental monitoring. Examples include the Family Check-Up (FCU; Dishion, Nelson, & Kavanagh, 2003), Parent Management Training-Oregon Model (PMTO; Patterson, Forgatch, & DeGarmo, 2010, and Multisystemic Therapy (MST; Henggeler et al., 1986). In addition to these broader interventions, "Informed Parents and Children Together" (ImPACT) is an intervention program specifically designed to increase Black parents' knowledge about adolescent health risk behaviors (i.e., substance use, sexual activity; Li et al., 2002; Stanton et al., 2000). Future studies should continue to examine parental monitoring as a change mechanism through which prevention and intervention programs produce reductions in problematic behavior in children and adolescents.

Findings from this study also have important implications for the development of preventive interventions. The antecedents of parental monitoring examined in this study suggest several early childhood factors that may be targeted to help parents develop appropriate and effective initial levels of parental monitoring. As such, preventive interventions should consider targeting improvements in parental warmth/involvement, parental satisfaction, parental involvement with the child's school and education, and parent-child relationship quality in order

to encourage the development of later parental monitoring. Enhancements in these early childhood factors may influence later effective implementation of parental monitoring. Consistent with this interpretation, previous research also suggests that intervention programs targeting improvements in the parent-child relationship may be particularly effective (Hayes, Hudson, & Matthews, 2007).

This study also highlights the important role of the broader family context on parenting behaviors. Parental monitoring is considered to be a component of a system of family interactions, and yet only a handful of studies have considered how this context affects parental knowledge and monitoring (Dishion & McMahon, 1998; Kerr et al., 1999; Pettit & Laird, 2002; Stattin & Kerr, 2000). In this regard, researchers need to consider that these parenting behaviors are likely associated with several family factors, including relationship quality, warmth and involvement. Furthermore, the entire family context needs to be examined, and as such, future research should attempt to include mothers and fathers as well as siblings and other important family members (Crouter & Head, 2002). Additional factors that may influence both parental monitoring and child conduct problems include parental motivation and ability to implement effective parenting behaviors, parent and child psychopathology, and family conflict (Burke et al., 2008; Jones et al., 2003; Pettit & Laird, 2002; Wootton, Frick, Shelton, & Silverthorn, 1997). In future studies, these factors could be examined either as antecedents of parental monitoring or as moderators of the relationship between parental monitoring and child conduct problems.

When considering the influence of broader family factors on parenting behaviors, it is also important to consider the personality and temperament of the child. In particular, consideration of callous-unemotional traits is of paramount importance given research

highlighting the important role of this personality trait in child conduct problems (Frick, Cornell, Barry, Bodin, & Dane, 2003; Wootton et al., 1997). Indeed, one recent study (Muñoz, Pakalniskiene, & Frick, 2011) indicated that parents of children high on callous-unemotional traits reported significant decreases in parental monitoring over time. Additionally, use of parental control did not enhance parental knowledge of children's activities and whereabouts for those children who were high on callous-unemotional traits. Moderation of the relationship between parental monitoring and child conduct problems by other personality traits (e.g., narcissism, resistance-to-control; Bates, Pettit, Dodge, & Ridge, 1998) is an important area for future research.

Future studies should also consider the incorporation of peer influences on the relationship between parental monitoring and child conduct problems. Inclusion of peer influences and associations with deviant peers may be particularly important given evidence that low parental monitoring in childhood is associated with greater involvement with deviant and delinquent peers in adolescence (Snyder, Dishion, & Patterson, 1986). Furthermore, there is a well-established correlation between deviant peer associations and adolescent engagement in antisocial and delinquent behavior (for a review, see Bagwell, 2004). For example, Laird and colleagues (2008) suggested that when parents are highly knowledgeable, adolescents might be less likely to establish contact with deviant peers who subsequently introduce adolescents to new and increasing levels of conduct problems. As such, associations with deviant peers may mediate the relationship between parental monitoring and child conduct problems. Additional research is needed to identify other potential mechanisms of the relationship between parental monitoring and child conduct problems.

Conclusion

In conclusion, this study contributes to the growing literature on parental monitoring and its relationship with child conduct problems. By closely following the definition of parental monitoring as proposed by Stattin and Kerr (2000; Kerr & Stattin, 2000), this study also attempted to clarify important terminology issues. As such, findings indicated that parental solicitation and parental control are two separate but related parenting constructs, which demonstrated differential prediction to child and adolescent conduct problems. Therefore, it is imperative that future studies of parental monitoring continue to carefully operationalize the constructs under study. The findings from the current study also suggested that the relationship between parental monitoring and child conduct problems is more reflective of the concurrent correlations (i.e., at Grade 4) and stability in these constructs over time. However, significant bidirectional associations between child-reported parental solicitation and child conduct problems were identified in this study. This study also highlighted the importance of considering the broader family context when examining parenting behavior, as several early childhood factors were predictive of later parental monitoring. Moderation analyses also revealed that various psychosocial stressors might make it difficult for families in high-risk areas (i.e., urban, unsafe and impoverished neighborhoods) to effectively implement parental monitoring techniques during childhood and adolescence. Therefore, preventive interventions should consider targeting early components of family life as well as contextual risk factors in order to encourage the development of effective parental monitoring during middle childhood and adolescence. Continued empirical work on parental monitoring will therefore help inform

therapeutic strategies that can be employed to prevent the development and growth of child and adolescent conduct problems.

End Note

[1] A parent-reported measure of child conduct problems was also examined for inclusion in the current study. However, the only parent report measure of conduct problems in the Fast Track data that was available at all years examined in this study was the Parent Daily Report (PDR; Chamberlain & Reid, 1987), which asked parents to report on children's daily conduct problems over the course of 3 days. This measure does not adequately capture the number of conduct problems children engaged in during the past year. The PDR also did not correlate with any of the parental monitoring measures included in this study. For these reasons, it was decided not to include the Parent Daily Report in the current study.

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Strayhorn, J. M., & Weidman, C. S. (1988). A parenting practices scale and its relation to parent and child mental health. *Journal of the American Academy of Child and Adolescent Psychiatry, 27,* 613-618.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Allyn & Bacon.

Thornberry, T. P., & Krohn, M. D. (2001). The development of delinquency: An interactional perspective. In S. O. White (Ed.), *Handbook of youth and justice* (pp. 289-305). New York: Plenum.

Vieno, A., Nation, M., Pastore, M., & Santinello, M. (2009). Parenting and antisocial behavior: A model of the relationship between adolescent self-disclosure, parental closeness, parental control, and adolescent antisocial behavior. *Developmental Psychology, 45,* 1509-1519.

Weintraub, K. J., & Gold, M. (1991). Monitoring and delinquency. *Criminal Behaviour and Mental Health, 1,* 268-281.

Werthamer-Larsson, L., Kellam, S.G., & Wheeler, L. (1991). Effect of first-grade classroom environment on shy behavior, aggressive behavior, and concentration problems. *American Journal of Community Psychology, 19,* 585–602.

Williams, L. R., & Steinberg, L. (2011). Reciprocal relations between parenting and adjustment in a sample of juvenile offenders. *Child Development, 82*, 633-645.

Willoughby, T., & Hamza, C. A. (2011). A longitudinal examination of the bidirectional associations among perceived parenting behaviors, adolescent disclosure and problem behavior across the high school years. *Journal of Youth and Adolescence, 40,* 463-478.

Wilson, H. (1980). Parental supervision: A neglected aspect of delinquency. *British Journal of Criminology, 20*, 203-235.

Wootton, J. M., Frick, P. J., Shelton, K. K., & Silverthorn, P. (1997). Ineffective parenting and childhood conduct problems: The moderating role of callous-unemotional traits. *Journal of Consulting and Clinical Psychology, 65,* 301-308.

Curriculum Vita

Sarah Jensen Racz

EDUCATION

2005-2012 **University of Washington, Seattle, WA**
Graduate Program in Child Clinical Psychology
Doctor of Philosophy, August 2012
Minor in Quantitative Psychology, March 2009
Graduate Advisor: Robert J. McMahon, Ph.D.

July 2011-June 2012 **Clinical Internship, Kennedy Krieger Institute and the Johns Hopkins University School of Medicine (JHUSOM)**
Department of Behavioral Psychology, APA Accredited
Leadership Education in Neurodevelopmental & Related Disabilities (LEND) Trainee
Training Director: Jen Crockett, Ph.D., BCBA
Rotations: Child and Family Therapy Clinic, Behavior Management Clinic

2008 **University of Washington, Seattle, WA**
M.S. in Child Clinical Psychology
Thesis: *Risky Behavior in Affluent Youth: An Examination of the Prevalence of and Consequences Related to Engaging in Multiple Problem Behaviors*

1999 – 2003 **Cornell University, Ithaca, NY**
B.A. in Psychology, with Distinction

HONORS AND AWARDS

Distinguished Teaching Award for Graduate Students in Psychology 2010, University of Washington

Society for Research in Child Development Student Travel Award 2009

Wagner Memorial Travel Fund Award 2007, University of Washington

Dean's List Spring 2000, Fall 2001, Fall and Spring 2002, Fall and Spring 2003 (Cornell University)

City of Ithaca Recognition as a Distinguished Citizen

Senior Recognition Award from Cornell Public Service Center

RESEARCH EXPERIENCE

October 2010-June 2012 **Dissertation,** Department of Psychology, University of Washington, Seattle, WA
Parental Monitoring: An Examination of Antecedents and Bidirectional Associations With Child and Adolescent Conduct Problems
Dissertation Chair: Robert J. McMahon, Ph.D.

Analysis of data collected as part of the Fast Track Project. Study aims include examination of the structure of parental monitoring over the course of seven years, the early childhood antecedents of this parenting behavior, and the longitudinal relationship between parental monitoring and child conduct problems.

January 2010-June 2011 **Graduate Research Assistant,** Emergence of Adolescent Substance Use and the Externalizing Spectrum, NIDA grant RC1DA028248-01, University of Washington, Seattle, WA
Supervisors: Kevin M. King, Ph.D., Robert J. McMahon, Ph.D.

Lead author on a research paper conducted within the larger aims of the research grant. Assisted with conceptualization and completion of other research projects. Helped with preparation of papers for publication, posters for national conferences, and progress reports for funding agency. Conducted literature reviews and participated in weekly lab meetings.

July-Sept 2005, 2006, 2007; Jan-March 2006, 2007 **Graduate Research Assistant,** University of Washington, Fast Track Project, Seattle, WA
Supervisor: Robert J. McMahon, Ph.D.

Assisted with preparation of Fast Track manuals for publication and helped complete literature reviews for research presentations. Located court records, helped maintain contact with study participants, assisted with data entry and other needed lab tasks, and helped with collection of DNA records via saliva.

June 2003 – July 2005 **Postbaccalaureate Intramural Research Training Award Fellow,** National Institute of Child Health and Human Development, Bethesda, MD
Supervisors: Yael Orbach, Ph.D., Michael Lamb, Ph.D., Stephen Suomi, Ph.D.

Coded, entered, and assisted with analysis of data collected for use in various studies of allegedly sexually abused children who have been interviewed utilizing the NICHD Investigative Protocol. Conducted literature searches, assisted in preparation of papers for publication and presentations, and contributed to discussions regarding the development of studies. Assisted with demonstrations and conducted practice sessions during a two-week coding seminar on the content analysis of children's accounts in forensic interviews.

June 2002 – August 2004 **Undergraduate Research Assistant,** Human Development Department, Cornell University, Ithaca, NY
Supervisors: Catherine Bradshaw, Ph.D., James Garbarino, Ph.D., Cindy Hazan, Ph.D.

Contributed to research on potential factors mediating the relationship between negative childhood experiences and later aggression and mental health problems. Assisted with collection, coding, entering, and analyzing of data.

Helped prepare grant submissions, papers for publication and presentations at conferences.

PUBLICATIONS

Racz, S. J., & McMahon, R. J. (2011). The relationship between parental knowledge and monitoring and child and adolescent conduct problems: A 10-year update. *Clinical Child and Family Psychology Review, 14,* 377-398. doi: 10.007/s10567-011-0099-y

Racz, S. J., McMahon, R. J., & Luthar, S. S. (2011). Risky behavior in affluent youth: An examination of the prevalence of and consequences related to engaging in multiple problem behaviors. *Journal of Child & Family Studies, 20*, 120-128. doi: 10.1007/s10826-010-9385-4

Smith, R. E., Fagan, C., Wilson, N. L., Chen, J., Corona, M., Nguyen, H., **Racz, S.**, & Shoda, Y. (2011). Internet-based approaches to collaborative therapeutic assessment: New opportunities for professional psychologists. *Professional Psychology: Research and Practice, 42,* 494-504. doi: 10.1037/a0025392

Wu, J., King, K. M., Witkiewitz, K., **Racz, S. J.**, McMahon, R. J., & the Conduct Problems Prevention Research Group. (2011). Item analysis and differential item functioning of a brief conduct problem screen. *Psychological Assessment.* Advance online publication. doi: 10.1037/a0025831

MANUSCRIPTS UDER REVIEW / IN PREPARATION

King, K. M., Luk, J. W., Wu, J., Witkiewitz, K., **Racz, S. J.,** McMahon, R. J., & the Conduct Problems Prevention Research Group. (invited to revise and resubmit). The co-occurrence of externalizing behaviors during childhood: Factor structure and invariance over time. *Journal of Abnormal Child Psychology.*

King, K. M., Luk, J. W., Wu, J., Witkiewitz, K., **Racz, S. J.,** McMahon, R. J., & the Conduct Problems Prevention Research Group. (in preparation). The externalizing spectrum from childhood to young adulthood: Longitudinal relations within an integrated developmental model.

Racz, S. J., Cruz, R., Luk, J. W., & King, K. M. (in preparation). Dimensions of self-regulation mediate the effects of parenting behaviors on substance use and problems among late adolescents.

Racz, S. J., King, K. M., Wu, J., Witkiewitz, K., McMahon, R. J., & the Conduct Problems Prevention Research Group. (invited to revise and resubmit). The predictive utility of a

brief kindergarten screening measure of child behavior problems. *Journal of Consulting and Clinical Psychology.*

CONFERENCE PRESENTATIONS

King, K., M., Luk, J. W., Wu, J., Witkiewitz, K., **Racz, S. J.,** McMahon, R. J., & the Conduct Problems Prevention Research Group. (2012, March). The externalizing spectrum from childhood to young adulthood: Longitudinal relations within an integrated developmental model. Paper presented at the 2012 Society for Research in Adolescence biennial meeting, Vancouver, Canada.

Racz, S. J., McMahon, R. J., & the Conduct Problems Prevention Research Group. (2012, March). Antecedents of parental monitoring during middle childhood and adolescence. Poster presented at the 2012 Society for Research in Adolescence biennial meeting, Vancouver, Canada.

King, K. M., Wu, J., **Racz, S. J.,** Witkiewitz, K., McMahon, R. J., & the Conduct Problems Prevention Research Group. (2011, March). The externalizing spectrum and substance use: Hierarchical structures across development. Paper presented at the 2011 Society for Research in Child Development biennial meeting, Montreal, Quebec.

Racz, S. J., McMahon, R. J., Pinderhughes, E. E., & the Conduct Problems Prevention Research Group. (2011, March). Gender and ethnicity as moderators of the relationship between parental monitoring and child behavior problems. Poster presented at the 2011 Society for Research in Child Development biennial meeting, Montreal, Quebec.

Wu, J., Hitch, J., Witkiewitz, K., King, K., **Racz, S. J.**, McMahon, R. J., & the Conduct Problems Prevention Research Group. (2010, November). Externalizing behaviors over time: Implications for prevention and treatment. Poster presented at the meeting of the Association of Cognitive and Behavior Therapies, San Francisco, CA.

Racz, S. J., King, K. M., Wu, J., Witkiewitz, K., McMahon, R. J., & the Conduct Problems Prevention Research Group. (2010, May). Predicting elementary, middle and high school risk behaviors from kindergarten screening data. Poster presented at the 2010 Association for Psychological Science annual meeting, Boston, MA.

Racz, S. J., McMahon, R. J., & Luthar, S. S. (2009, April). Parenting as a moderator of the relation between maladaptive narcissism and conduct problems in affluent youth. Poster presented at the 2009 Society for Research in Child Development biennial meeting, Denver, CO.

Racz, S. J., McMahon, R. J., & Luthar, S. S. (2009, April). The relation of maladaptive narcissism to conduct problems and substance use in affluent youth. Poster presented at the 2009 Society for Research in Child Development biennial meeting, Denver, CO.

Jensen, S. A., McMahon, R. J., Hitchings, J. E., & Luthar, S. S. (2006, November). Risky behaviors in affluent youth. Poster presented at the 2006 Association for Behavioral and Cognitive Therapies annual meeting, Chicago, IL.

Mendoza, M. M., **Jensen, S. A.**, Daniels, I. M., Orbach, Y., & Lamb, M. E. (2005, May). Exploring children's responses to yes/no and forced-choice prompts in forensic interviews. Poster presented at the 2005 American Psychological Society annual meeting, Los Angeles, CA.

Bradshaw, C. P., **Jensen, S. A.**, & Hazan, C. (2004, March). The association between perceived rejection and aggressive behavior: Mechanisms in the cycle of violence. Poster presented at the 2004 Society for Research on Adolescence biennial meeting, Baltimore, MD.

DeBoard, R., Orbach, Y., Mendoza, M., **Jensen, S.**, Pipe, M-E., & Lamb, M. E. (2004, March). An analysis of interviews in which children did not make allegations of suspected sexual abuse. Poster presented at the 2004 American Psychology-Law Society annual meeting, Scottsdale, AZ.

Bradshaw, C. P., **Jensen, S. A.**, & Hazan, C. (2003, August). The influences of relational schemas on information-processing and reactive aggression. Poster presented at the 2003 American Psychological Association annual meeting, Toronto, Ontario.

Bradshaw, C. P., **Jensen, S. A.**, & Hazan, C. (2003, April). Social information-processing in adolescents at-risk for problems with aggression. Poster presented at the 2003 Society for Research in Child Development biennial meeting, Tampa, FL.

CLINICIAL EXPERIENCE

July 2011 – June 2012 **Predoctoral Intern,** Kennedy Krieger Institute and the Johns Hopkins University School of Medicine, Baltimore, MD
Training Director: Jen Crockett, Ph.D., BCBA
Supervisors: Gina Richman, Ph.D., Caroline DuCoin, Psy.D., Susan Perkins-Parks, Ph.D., Reagan Kinnear, Ph.D.

Completed a one-year, APA accredited clinical internship. Training rotations (6 months each) included the Child and Family Therapy Clinic (July – December 2011) and Behavior Management Clinic (January – June 2012). Conducted individual and family therapy sessions with families and children aged 2-18. Patients and their families reside within Baltimore City and surrounding counties and receive Medical Assistance (MA). Diagnoses included ADHD, disruptive behavior disorders, mood disorders, learning and intellectual disabilities, and developmental delays. Utilized various theoretical orientations, including behavioral, cognitive behavioral, and family systems.

June 2009 – **Practicum Student,** Child Psychology Northwest, Seattle, WA

June 2011 Supervisor: Deborah Hill, Ph.D.

Conducted neuropsychological evaluations with children and adolescents to assist with diagnostic and treatment planning. Client diagnoses included intellectual disability, various learning disabilities and language disorders, developmental coordination disorder, ADHD and various mood and behavioral disorders. Utilized various assessment batteries, including intellectual, academic, cognitive, executive functioning, language, sensory-motor and socio/emotional functioning. Reviewed relevant records in preparation for evaluations and assisted with parent intake and feedback conferences. Wrote integrated and detailed reports of evaluation results. Participated in weekly individual supervision.

Dec 2006 – June 2011 **Staff Therapist,** University of Washington Psychological Services and Training Center, Seattle, WA
Supervisors: Ronald Smith, Ph.D., Corey Fagan, Ph.D., Beverly Norfleet, Psy.D., Yumi Hiraga, Ph.D., Fransing Daisy, Ph.D., Charles Huffine, M.D.

Provided individual psychotherapy to adolescent and adult clients from a variety of ethnic backgrounds using cognitive behavioral therapy (CBT), behavioral therapy, motivational interviewing, stress management, interpersonal orientations, sleep hygiene and mindfulness techniques. Presenting problems included depression, dysthymia, adjustment disorders, anxiety, ADHD, family of origin issues, marital problems, interpersonal issues, and emotional awareness problems. Completed intake and termination summaries, detailed progress notes and case conceptualizations. Provided feedback on MMPI, MCMI, and other test administration outcomes (e.g., Beck Depression Inventory, State-Trait Anxiety Inventory). Participated in weekly individual and group supervision.

Sept 2008 - June 2009 **Practicum Student,** Parenting Clinic, School of Nursing, University of Washington, Seattle, WA
Supervisors: Jamila Reid, Ph.D., Carolyn Webster-Stratton, Ph.D.

Served as a co-therapist on a 20-week manualized group-based intervention program for six children, ages 4 through 7, diagnosed with ADHD (The Incredible Years Training Series). Weekly groups consisted of teaching children about social skills, problem solving, anger management, and emotion regulation. Multiple modes of instruction were used, including circle time, small group art activities, and coached interactive play between peers. Participated in weekly group consultation meetings to assist in treatment planning. Also co-led an 8-week parent training program and a one-day teacher training program, assisted with one day of the summer school portion of the intervention program, and conducted intellectual and achievement assessments with children in the clinic.

May 2008 - August 2010 **Clinical Research Associate,** Center for Clinical and Translational Research, Seattle Children's Hospital, Seattle, WA
Supervisor: Kelly Schloredt, Ph.D.

Conducted structured diagnostic evaluations with children and adolescents and their parents to assist with implementation of a Behavioral Activation treatment program for children and adolescents with depression. Evaluation tools included the Kiddie-Schedule for Affective Disorders and Schizophrenia (K-SADS), Children's Depression Rating Scale (CDRS), Social Competence Scale, and a range of parent- and youth-reported symptom inventories. Participated in reliability training for the administration and coding of evaluation tools.

Sept 2007 – Sept 2008 **Practicum Student,** Neuropsychological Consultation Service, Seattle Children's Hospital, Seattle, WA
Supervisor: David Breiger, Ph.D.

Conducted assessments with patients referred from the Inpatient Psychiatry Unit (IPU). Trained on and utilized various assessment batteries, including cognitive screening tools and measures of executive functioning and socio/emotional functioning. Reviewed medical and school records in preparation for test administration. Wrote reports to assist a multidisciplinary treatment team with case conceptualization and treatment planning. Participated in weekly individual supervision.

July 2004 – July 2005 **Court Appointed Special Advocate,** CASA for Children of DC, Washington, DC

Trained as a community volunteer to represent children in cases of abuse or neglect in the District of Columbia Family Court System. Met with children and their foster families on my assigned case once a week and communicated with other parties regularly. Delivered monthly reports to Family Treatment Court regarding the best interests of the children.

Aug 2002 – May 2003 **Student Intern,** Department of Psychology, Cornell University, Ithaca, NY
Supervisor: Harry Segal, Ph.D.

Participated in a two-semester intensive field placement course. Assigned to a day treatment program for emotionally and behaviorally troubled children. Provided classroom assistance for six 8th grade boys and participated in therapeutic classroom assignments. Participated in weekly individual supervision.

Aug 2001 – Aug 2002 **Trainee,** Empathy Assistance and Referral Services (EARS), Cornell University, Ithaca, NY

Weekly training in person-centered (Rogerian) therapy for use in peer counseling.

CLINICAL TRAINING

Jan – July 2012	Parent-Child Interaction Therapy Seminar, Kennedy Krieger Institute, Baltimore, MD Trainers: Reagan Kinnear, Ph.D., Susan Perkins-Parks, Ph.D.
July – Aug 2011	Neuropsychology Seminar, Kennedy Krieger Institute, Baltimore, MD Training Director: Jen Crockett, Ph.D., BCBA
Sept 2011 – April 2012	Leadership Education in Neurodevelopmental & Related Disabilities (LEND) Training Director: Bruce K. Shapiro, M.D.
Feb 2009	Suicide Prevention 2-Day Workshop, University of Washington, Seattle, WA Trainer: Marsha Linehan, Ph.D.
Sept 2008	Dina Dinosaur Child Program for small group therapy, Parenting Clinic, University of Washington, Seattle, WA Trainers: Jamila Reid, Ph.D., Trilby Cohen, M.A.
March-June 2007	Course: Behavioral Family Therapy, University of Washington, Seattle, WA Course Instructor: Robert J. McMahon, Ph.D.
Sept-Dec 2006	Course: Cognitive Behavioral Treatments for Depression, University of Washington, Seattle, WA Course Instructors: Corey Fagan, Ph.D., & David Pantalone, Ph.D.

TEACHING EXPERIENCE

July 2010	**Invited Guest Lecturer,** University of Washington, Seattle, WA Course: Psychology 410: Child and Adolescent Behavior Disorders Lecture Topic: Treatments for Attention-Deficit/Hyperactivity Disorder
Sept 2009 – June 2010	**Lead Departmental Teaching Assistant,** Psychology Department, University of Washington, Seattle, WA Organized and conducted orientation for incoming first year graduate students, consulted with TAs on teaching issues, solicited and compiled graduate student feedback of professors in the department, and co-taught Psychology 537: Teaching in Psychology. Organized and led workshops on teaching issues and various departmental milestones.
Sept-Dec 2009	**Instructor,** Psychology 315: Understanding Statistics in Psychology, University of Washington, Seattle, WA Supervisor: Laura Little, Ph.D.

Responsible for course organization and content, lectured four times a week, created homework assignments and quizzes/exams, organized materials for sections and maintained course website and grades. Created grading rubrics and assisted with grading exams. Supervised two Teaching Assistants.

June-Aug 2009 **Instructor,** Psychology 209: Fundamentals of Psychological Research, University of Washington, Seattle, WA
Supervisor: Michael Passer, Ph.D.

Responsible for course organization and content, lectured three times a week, created homework assignments and exams, organized materials for sections and maintained course website and grades. Created grading rubrics and supervised two Teaching Assistants.

Sept 2008 - June 2009 **Teaching Assistant Fellow,** Psychology 209: Fundamentals of Psychological Research, University of Washington, Seattle, WA
Supervisors: Beth Kerr, Ph.D., Michael Passer, Ph.D., Jacob Leonesio, Ph.D.

Responsible for organizing Psychology 209 Teaching Assistants, conducting a brief orientation to the course for new Teaching Assistants, and creating materials for use during sections and labs. Also maintained course grades and website and helped with assignment design and exam preparation. Guest lectured once a quarter.

Sept 2008 - June 2009 **Grader,** Psychology 305: Abnormal Psychology, University of Washington, Seattle, WA
Supervisor: Alexia Giblin, Ph.D., LMHC

Assisted with grading case conceptualization papers submitted by undergraduates. Responsible for training and establishing grading reliability with two Teaching Assistants utilizing an established grading rubric.

Jan-March 2008 & June-Aug 2008 **Teaching Assistant,** Psychology 315: Understanding Statistics in Psychology, University of Washington, Seattle, WA
Supervisors: James Ha, Ph.D., Dana Nelson, Ph.D.

Responsible for teaching two discussion sections each week, prepared section material, maintained course grades, conducted exam review sessions, and graded quizzes and exams. For Summer 2008, created homework keys, updated materials for use with Excel 2007 and maintained course website.

Sept-Dec 2007	**Teaching Assistant,** Psychology 345: Social Psychology, University of Washington, Seattle, WA Supervisor: Jonathon Brown, Ph.D. Responsible for teaching two discussion sections each week, prepared section material, maintained course grades, conducted exam review sessions, and graded papers and weekly quizzes.
June-Dec 2007	**Graduate Writing Assistant,** Psychology Writing Center, University of Washington, Seattle, WA Supervisor: Patricia Loesche, Ph.D. Conducted half-hour tutoring sessions with undergraduates focused on assisting with scientific writing, organization of ideas, grammar and APA style. Maintained daily records of Psychology Writing Center use by undergraduates.
Sept-Dec 2006 & March-June 2007	**Teaching Assistant,** Psychology 305: Abnormal Psychology, University of Washington, Seattle, WA Supervisor: Alexia Giblin, Ph.D., LMHC Responsible for teaching two discussion sections each week, prepared section materials, maintained grades, graded papers and group presentations, and conducted review sessions.
March-June 2006 & March-June 2008	**Teaching Assistant,** Psychology 209: Fundamentals of Psychological Research, University of Washington, Seattle, WA Supervisor: Patricia Loesche, Ph.D. Responsible for teaching two discussion sections and two lab sections each week, helped prepare material for those sections, maintained course grades, wrote examination questions, and conducted exam review sessions.
Sept-Dec 2005	**Teaching Assistant,** Psychology 101: Introduction to Psychology, University of Washington, Seattle, WA Supervisor: James Phillips, Ph.D. Maintained course grades, supervised examinations, wrote examination questions, and helped conduct weekly review sessions. Co-taught one lecture.
September 2005	Participated in the University of Washington TA Conference on Teaching & Learning, Seattle, WA

COMPUTER SKILLS

SPSS statistical package ▪ MPlus statistical program ▪ LISREL 8.80 ▪ R ▪ AMOS 5.0 ▪ HLM 6.04 ▪ Sigma Plot ▪ Endnote ▪ Microsoft Office ▪ Adobe Photoshop ▪ Adobe Acrobat Professional 6.0

PROFESSIONAL AND HONOR SOCIETIES

Society for Research in Child Development, Student affiliate (2008-present)

American Psychological Association, Division 53 (Society of Clinical Child and Adolescent Psychology), Student affiliate (2006-present)

Association for Psychological Science, Student affiliate (2004-present)

Psi Chi, National Honor Society in Psychology (2003-present)

Order of Omega Greek Honor Society (2002-present)

National Society of Collegiate Scholars (2001-present)

DEPARTMENTAL SERVICE

Sept 2009 – June 2010	**Graduate Student Representative,** Improvement and Evaluation of Teaching Committee, Psychology Department, University of Washington, Seattle, WA
Sept 2006 – June 2009	**Graduate Student Representative,** Guthrie Prize Committee, Psychology Department, University of Washington, Seattle, WA
Fall 2005	**Tutor,** Center of Learning and Undergraduate Enrichment (CLUE) for Psychology 101, University of Washington, Seattle, WA