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Parenting Behavior and Adolescent Conduct Problems: Reciprocal and Mediation Effects

Bruce Simons-Morton, Ed.D., M.P.H.,

Prevention Research Branch, DESPR, NICHD, NIH, 6100 Executive Blvd, 7B13M, Bethesda, MD 20892-7510, Mortonb@mail.nih.gov

Rusan Chen, Ph.D.,

Center for New Designs in Learning and Scholarship, Georgetown University 314, Washington, D.C. 20057, chenres@georgetown.edu

Laura Shaffer Hand, Ph.D., and

Augusta State University, 3109 Wrightsboro Rd., Augusta, GA 30904, lhand@aug.edu

Denise A. Haynie, Ph.D.M.P.H.

Prevention Research Branch, DESPR, NICHD, NIH, 6100 Executive Blvd, 7B13M, Bethesda, MD 20892-7510, haynied@exchange.nih.gov

Abstract

This research examined the relationship between parenting practices and adolescent conduct problems and the mediation of these relationships by two parent-adolescent relationship variables, conflict and psychological autonomy. Autoregressive latent trajectory (ALT) analyses were used to assess relationships over time between parent practices and adolescent conduct problems. Participants were 2,453 students recruited from 7 public middle schools and assessed 5 times between fall of 6th and 9th grades on the following measures: Parent Monitoring; Parent Knowledge; adolescent Psychological Autonomy; parent-adolescent Conflict; and adolescent Conduct Problems. Adolescent Conduct Problems and parenting practices were associated in both cross-sectional and prospective analyses. In time-lagged autoregressive modeling as a part of ALT analyses, adolescent Conduct Problems and parenting practices were reciprocally related from Time 1 to Time 2, but there after only Parent Monitoring was consistently associated with adolescent Conduct Problems over time. Adolescent Psychological Autonomy positively mediated the relationships between adolescent Conduct Problems and Parent Monitoring, but not the relationship between Parental Knowledge and Conduct Problems; while Conflict partially mediated the relationships between the slope of Conduct Problems and the slopes of both parenting behaviors and the relationship between the slopes of Conduct Problems and Psychological Autonomy. The findings provide evidence of reciprocal relationships between Conduct Problems and parenting behaviors and parent-teen relationship variables. Mediation analyses indicated relationships with Conduct Problems unmediated by Autonomy and partially mediated by Conflict. The findings provide support for the hypothesis that associations over time between parenting practices and adolescent Conduct Problems depend in part on the parent-adolescent relationship.

Keywords

Misconduct; aggression; anti-social behavior; social influence; latent growth modeling; autoregressive analyses

INTRODUCTION

Adolescent conduct problems include acts that violate established social rules or infringe on the rights of others (American Psychiatric Association, 1994). Examples of conduct problems are fighting, bullying, vandalism, deceitfulness, stealing, staying out late at night, and truancy. Early adolescent conduct problems increase the risk for future conduct problems (Fergusson, Lynskey, & Horwood, 1996), delinquency (Addington, Ruddy, Miller, DeVoe, & Chandler, 2002; Chung, Hill, Hawkins, Gilchrist, & Nagin, 2002), school failure and other negative social consequences (Capaldi & Shortt, 2003). The prevalence of conduct problems is high during early and middle adolescence relative to pre-adolescence and late adolescence (Addington et al., 2002; Capaldi & Shortt, 2003; Snyder & Sickmund, 1999) and consistently higher for boys than girls (Wiesner & Silbereisen, 2003). Notably, up to a third of early adolescents report having been in a fight, 7.4% report frequent bullying (Nansel, Overpeck, Pilla, Ruan, Simons-Morton, & Scheidt, 2001), and up to 6% report stealing (Snyder & Sickmund, 1999) in the past year. Because these behaviors are relatively prevalent, they can be particularly troublesome for families, schools, and communities (Capaldi & Shortt, 2003).

Parenting style and practices are associated with adolescent adjustment and problem behavior (Darling and Steinberg, 1994; Simons-Morton & Haynie, 2002; Ary et al., 1999; Capaldi & Shortt, 2003; Henry, Tolan, & Gorman-Smith, 2001). Darling and Steinberg (1994) have argued that lifetime parent style and adolescent characteristics (willingness to be socialized) influence child socialization, which greatly influence the effectiveness of proximal parenting practices on adolescent behavior and related outcomes. Clearly, parents who remain actively engaged as parents are going to be more effective than parents who disengage, but within this wide range, effectiveness of parenting practices is likely to depend in part on adolescent socialization, along with other factors (such as personality and other social and environmental influences) (Maccoby & Martin (1983). Accordingly, the adolescent children of parents who have consistently been both demanding and responsive are likely to respond favorably to parenting practices that attempt to manage adolescent behavior. Monitoring and other demanding behaviors, therefore, would be effective in managing adolescent behavior to the extent that they are consistent with previous experience and established as part of a trusting relationship.

Parents are socially obligated to control the behavior of their preadolescent children, teaching them how to behave, monitoring their behavior closely, applying appropriate consequences so that their children remain under control, and providing guidance, support, and external reinforcement while they gradually develop self control and become able to manage their own behavior (Maccoby, 1992). Adolescence, however, is a curious period when self control develops gradually and unevenly while adolescents experience greater independence from parents, increasing influence from peers and normative influences, and opportunities to engage in behavior independent from direct adult supervision. Parents are challenged to manage their adolescents' behavior while experiencing decreasing amounts of contact with them and diminishing sources of first-hand information about their behavior and activities. At issue is the effectiveness of various parent practices in managing adolescent behavior.

Among the range of relatively well defined parenting practices, close monitoring is frequently recommended as a means of preventing adolescent problem behavior (Dishion and McMahon, 1998). Indeed, substantial research has shown that poor parent management, typified by low involvement, inadequate monitoring, and poorly articulated expectations, have been associated with precocious substance use (Distefan, Gilpin, Choi, & Pierce, 1998; Jackson, Bee-Gates, & Henrickson, 1994; Sieving, Maruyama, Williams, & Perry, 1998; Steinberg, Fletcher, & Darling, 1994) and conduct problems (Ary et al., 1999; Chung, et al., 2002; Capaldi & Short, 2003; Fergusson et al., 1996; Wiesner & Silbereisen, 2003). However, closely monitoring

modern adolescents is not always an easy task for parents. Given the independence of today's adolescents, parents may depend less on their own surveillance efforts than on what their adolescent children reveal to them, either through thorough questioning or spontaneous divulgence.

Kerr and colleagues (Kerr and Stattin, 2003; Stattin and Kerr, 2000; Kerr, Stattin, and Trost, 1999) have argued that the effectiveness of parenting practices is likely to depend greatly on the parent-adolescent relationship. Accordingly, they argue, parent knowledge obtained through adolescent disclosure of information about themselves and their daily activities may be a better predictor of adolescent adjustment and behavior than parental monitoring of behavior because parents are largely dependent on voluntary disclosures by their adolescent children for information about their behavior (Kerr & Stattin, 2000). Further, they argue that many measures of monitoring include items that would be better categorized as parental knowledge than monitoring, and these knowledge items may largely explain relationships that are sometimes found between monitoring and child and adolescent behaviors. Kerr, Stattin, and Trost (1999) have demonstrated that parental knowledge about adolescents' daily activities, gained mainly from adolescents' spontaneous disclosure, is associated with adolescents' trust of their parents. In other research Kerr and Stattin found that child disclosure of information was negatively associated with delinquent behavior (Kerr and Stattin, 2000) and adolescents' perceptions of parental control were negatively associated with adolescent adjustment (Stattin and Kerr, 2000). The general idea is that the effectiveness of parental behaviors is likely to depend on the nature of the parent-teen relationship and measures of parent knowledge tend to reflect this relationship better than monitoring (Kerr and Stattin, 2000).

Parents must manage a delicate balance between controlling their children's behavior and allowing them to develop independence (Smetana, 1989). The complex relationship between behavioral control and psychological autonomy is the subject of great interest (Barber and Harmon, 2002). Psychological autonomy is a fundamental aspect of child development, related to aspects of self-control and related self processes, mastery motivation, and competence (Bridges, 2003; Maccoby & Martin, 1983). The development of psychological autonomy is largely the product of the child's interaction with the environment, of which parental granting of autonomy is one important contribution (Barber, 1997; Steinberg, 2001). Appropriate increases in psychological autonomy over the course of adolescent development would be consistent with positive parent-adolescent interaction and healthful adolescent development and behavior. It is of interest to determine if adolescents' perceptions of psychological autonomy mediate the relationship between parenting behaviors and adolescent conduct problems.

Negative aspects of the parent-child relationship typified by conflict might also influence the effects of parenting on adolescent behavior. Higher levels of parent-adolescent conflict may reflect a generally negative interaction that could have the effect of reducing parental influence. In the presence of conflict, for example, teens may be less likely to disclose voluntarily information about their behavior. In the absence of conflict adolescents' may be more likely to disclose information about their behavior leading to greater parental knowledge that parents can use to guide their adolescent child. Moreover, parental monitoring and expectations might be more effective in the relative absence of conflict.

One source of parent-adolescent conflict is over the amount of psychological autonomy parents grant to their children (Smetana, 2002). While modest increases in conflict between parents and their children may be a normal or even desirable thing (Steinberg, 1990; Collins & Larson, 1992), increases in parental granting of adolescent psychological autonomy may minimize parent-adolescent conflict, thereby fostering a climate conducive to parental influence. In

general, parenting behaviors may have greater influence on adolescent behavior in the relative absence of conflict and higher levels of psychological autonomy. Similarly, to the extent that parent-teen conflict is modest and perceived psychological autonomy is relatively high teens may be less secretive and more communicative so that parents can be knowledgeable about their teen and better able to advise, guide, and manage their behavior.

Thus, various aspects of the adolescent-parent relationship may provide important contexts that influence the effectiveness of specific parenting practices. Of course, the issues are complicated by the likelihood of reciprocal parent-child relations where parent behavior may be as much a consequence of current and past child behavior as child behavior is a consequence of parent behavior (Kerr & Stattin, 2003; Patterson & Fisher, 2002). Substantial research confirms that as well as being a cause of child behavior problems, ineffectual parenting practices can also be the result of unresponsive and uncontrolled children (Patterson, Reid, & Dishion, 1992). Similar patterns may exist in normal relationships between parents and their children over time, with parents increasing monitoring in response to child conduct problems. Therefore, for a better understanding of the relationships between parenting and behavior, it is important to assess them over time.

The purpose of the present research is to examine the relationships between selected parenting practices and adolescent conduct problems and the extent to which these relationships are mediated by two aspects of the parent-adolescent relationship, conflict and psychological autonomy. The following research questions guide the analyses: (1) Are relationships between parenting behaviors and adolescent conduct problems reciprocal? (2) To what extent are parenting practices, parent-adolescent conflict, and adolescent psychological autonomy associated with adolescent conduct problems over time? (3) Do the relational variables of conflict and psychological autonomy mediate the relationships between adolescent conduct problems and parental monitoring and parental knowledge?

A relatively large number of youth from 7 middle public schools were assessed five times from 6th to 9th grade as part of a randomized trial (Simons-Morton, Haynie, Saylor, Crump, & Chen, 2004) and information was collected at each wave about conduct problems and perceptions about parenting practices. Autoregressive Latent Trajectory (ALT) modeling (Bollen & Curran 2004) was used to examine the trajectory of adolescent conduct problems over time and the bidirectional and interactive influences of selected parenting practices time-lagged models. Previous analyses of the data from this study demonstrated that parental monitoring and parent knowledge protected adolescents from initiation and progression of smoking (Simons-Morton et al., 2004) and drinking (Simons-Morton et al., 2005), but only when sustained over time. Moreover, these parenting behaviors provided both direct protective effects and indirect effects through moderation of increases in problem behaving friends. The current analyses examined the possible reciprocal relations of adolescents' development of conduct problems and parenting practices, including knowledge, monitoring, and psychological autonomy, and examines the mediation of the relationships between conduct problems and parenting practices of psychological autonomy and parent-child conflict.

METHOD

Design and Study Participants

The 7 middle schools in one Maryland school district were recruited and randomized, 3 to the treatment and 4 to the comparison control condition. Starting with the 1996 school year, two successive cohorts of 6th graders were recruited and surveyed in the fall and spring of the 6th grade (F6 and S6, respectively), the spring of the 7th grade (S7), the fall of the 8th grade (F8), and the fall of the 9th grade (F9). Students in the treatment schools were exposed to a classroom curriculum, The Going Places Problem Behavior Prevention Program, designed to increase

social skills and prevent substance use and other problems behaviors. School records indicate that 24% of students were enrolled in the national free or reduced-price school lunch program.

The population of interest included 2969 students (72% white, 18% black, and 10% other) eligible to participate in the Time 1 assessment, of whom 2651 (87.8%) provided consent while in the 6th grade. Of these, 9 became ineligible during the study by failing a grade and 110 were newly classified as special education, leaving a sample of 2532, 79 of whom moved out of the school district or missed multiple assessments, leaving a final sample of 2453. Compared with the final sample, study participants lost to follow up were significantly more likely to be black, live with only one parent, and to report drinking at least once in the last 30 days.

Questionnaires were administered by 2 trained proctors in classes of less than 30 students or during a make-up session. As required by the school district, classroom teachers remained to manage the classroom, but they were instructed not to circulate around the room or otherwise be involved in the conduct of the survey. To protect confidentiality, students completed and turned in a cover page that included name, survey identification number, birth date, and homeroom teacher's name that was kept separate from the questionnaires. The actual questionnaires had only a numerical identifier matching the one on the cover page. Study procedures were approved by the NICHD Institutional Review Board.

Measures—The surveys included items related to misconduct, peer and parent influences, and demographic variables. For all scales, a higher score indicates a higher level of that variable.

Background Variables: Gender was coded 1 for female and 0 for male, and race was coded 1 for white and 0 for others including African American/Black, Hispanic, Native Hawaiian/Pacific Islander, American Indian/Alaskan Native, Asian.

Adolescent Conduct Problems: Conduct Problems was assessed by an index of items asking how often in the past year the youth had been in a physical fight, been in a physical fight in which someone got hurt, bullied or picked on someone younger or weaker, carried a weapon, stole something from a person or store, or marked something with graffiti.

Parenting Practices: The investigators employed extensive pilot testing and factor analytic procedures to develop reliable student report measures of perceived parental knowledge, expectations, and monitoring (Simons-Morton, et al., 1999). **Parental Knowledge** included six items adapted from Hetherington, Clingempeel, Anderson, Deal, Stanley-Hagan, Hollier, & Linder (1992) that focused on how much the parent knows (almost nothing, a little, a lot) about the teen's friends, activities, interests, health habits, free time, and school. **Parental Monitoring** was assessed with four items asking if they strongly agree, disagree, agree, or strongly disagree that they have a parent or guardian who "would find out if I misbehaved at school; checks up to see if I have done what they told me; expects me to work hard at school; and believes in having rules and sticking to them". **Psychological Autonomy** was assessed by 7 items adapted from Burger and Armentrout (1971) that asked the study participants if they strongly agree, agree, disagree, or strongly disagree that they have a parent who, "likes me the way I am; respects my opinions; takes my ideas seriously, gives reasons for the rules and decisions that involve me; really listens to what I have to say; encourages me to speak up for myself; aggress with me a lot of the time". **Parent-adolescent Conflict** was assessed by four items adapted from Robin and Foster (1989) that asked if they strongly agree, agree, disagree, or strongly disagree that they have a parent who "is hard to get along with; with whom I am often angry; gets angry with me almost every day; easily loses his/her temper with me".

Analyses—Analyses were conducted on a sample that combined the treatment and control groups. The Going Places intervention was effective in preventing smoking progression, reducing outcome expectations for smoking, and reducing growth in friends who smoke, but did not have a significant effect on Conduct Problems (Simons-Morton et al., 2004). Combining both groups in the analysis substantially increased statistical power and more fully represented the natural history of Conduct Problems.

Schools were assigned to treatment groups. To test the school effect at baseline, we conducted an ANOVA comparing CP at 6th grade fall across the 7 schools and found no significant difference, with $F(6, 2198) = 1.62, p = 0.14$. Therefore, school was not included in subsequent analyses.

Autoregressive Latent Trajectory Analyses (ALT, Bollen & Curran, 2004) was conducted using MPlus (Muthen & Muthen, 2004, version 3) to evaluate the reciprocal relationships between selected parent practicing and adolescents' CP over time. The ALT approach combines the benefits of traditional autoregressive analysis (e.g., Kessler & Greenberg, 1981) and latent trajectory analysis (also called latent growth curve analysis, Muthen & Curran, 1997) to assess the relations of time-varying variables with longitudinal data. Autoregressive models are appropriate for time-lagged effects where the previous level of one measure may be associated with the subsequent level on that or another measure. We used the autoregressive models as a part of ALT analysis to estimate whether previous measures on parent practicing and adolescents' Conduct Problems had effects on the next measures within the period of study. Latent trajectory analysis may reveal dynamic relations of two variables over time by capturing the developmental shapes of the trajectories. We used the latent trajectory analysis as a part of ALT models to assess dynamic relations between parent practicing and Conduct Problems. In summary, with ALT analysis we were able to appraise both time-lagged and dynamic influences of the relationships between parent practicing variables and adolescent Conduct Problems.

The mediating effects of conflict and psychological autonomy were estimated by employing the methodology recommended by Cheong, MacKinnon & Khoo (2003) within the framework of latent trajectory analysis. Specifically, the direct effect was evaluated with the path from the slope of a parent variable to the slope of Conduct Problems, and the indirect effect was estimated with the slope of the mediator specified between the slopes of parent variable and Conduct Problems. A full mediator was identified if the indirect effects are significant without a significant direct effect. A partial mediator was determined where both direct and indirect effects were significant.

Since the ALT approach is in the theoretical context of Structural Equation Modeling (SEM), the SEM fit indices were used to evaluate the ALT models. The overall fit indices include the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI) and the Root Mean Square of Approximation (RMSEA). CFI and TLI ≥ 0.9 are generally considered acceptable and RMSEA < 0.05 is regarded as good and < 0.08 is acceptable (McDonald & Ho, 2002). Missing values were estimated using the Maximum Likelihood method offered by MPlus Version 3 based on the assumption of missing at random (MAR) allowing inclusion in the analyses of most participants (Little & Rubin, 2002).

RESULTS

Average Conduct Problems increased from the beginning of 6th grade to the Spring Semester of 7th grade, and then declined in the 9th grade, as shown in Table 1. Average values for Parental Involvement, Parental Monitoring, and Psychological Autonomy declined over time, while

Parent-Adolescent Conflict increased somewhat. Linear models fit the data better than curvilinear models in all cases and were used for final analyses.

Autoregressive Analyses

Autoregressive models as a part of ALT models assessing bidirectional relationships between parenting behaviors and adolescent Conduct Problems are shown in Figure 1, revealing consistent concurrent relationships, but inconsistent and complex time-lagged relationships. Conduct Problems at one time was associated with Conduct Problems at the next time through 8th grade. Curiously, Parent knowledge was associated from time to time, but Parent Monitoring was not. In cross-lagged comparisons, there were consistent reciprocal effects from the Fall of 6th grade (F6) to the spring of 6th grade (S6) with negative relationships in both directions. Conduct Problems was negatively associated with parenting behavior from F6 to S6 and positively associated with Parental Knowledge from F8 to F9. Over time, Parent Monitoring was consistently and negatively associated with subsequent Conduct Problems.

Latent Trajectory Analyses

Table 2 shows the results of the latent trajectory analysis as a part of ALT models showing the relationships over time with adolescent Conduct Problems and parenting practices and the parent-teen relationship variables, with adolescent gender, SES, race, and treatment status specified as covariates. The models fit the data well, with CFI > .99, TLI > .98, and RMSEA ≤ .26 in all cases. Shown in the fifth column in Table 2, the intercepts of the parenting variables and adolescent Psychological Autonomy were negatively associated, while Conflict was positively with the intercept of Conduct Problems. Shown in the sixth and seventh (next to last) columns, none of the intercepts were associated with the slope of Conduct Problems and the intercept of Conduct Problems was not associated with any of the other variables. Shown in the last column the slope of Conduct Problems was negatively associated with the slope of each parent variables and adolescent Psychological Autonomy and positively associated with the slope of parent-adolescent Conflict. The latent trajectory model (also called parallel process model in this specification by Muthen and Curran, 1997) showing the relationships between Parent Knowledge and Adolescent CP are shown in Figure 2. Among control variables, white vs. other race was negatively associated with the intercept of Conduct Problems and the slope of Parent Knowledge, and intervention was positively associated with the slope of Parent Knowledge. With these variables controlled, the intercepts and slopes of Conduct Problems and Parent Knowledge were strongly and negatively associated.

Mediation of Effects

Table 3 presents a latent trajectory model evaluating Psychological Autonomy as a mediator of the relationship between the slopes of parenting behaviors and Conduct Problems following the methodology recommended by Cheong, MacKinnon & Khoo (2003). The models fit the data well, with CFI ≥ 0.96; TLI ≥ 0.94, and RMSEA ≤ 0.044. The fifth column in Table 3 shows the direct negative relationship of the slope of each parent variable with the slope of Conduct Problems and the positive direct relationship between Conflict and Conduct Problems. The next to last column shows the positive relationship between the slope of Psychological Autonomy and the slopes of both parenting behaviors and the negative relationship with the slope of Conflict. Shown in the last column are the relationships of the slopes of Conduct Problems and Psychological Autonomy, which were positive for Parental Monitoring, but not significant for Parent Knowledge and Conflict. Because both direct and indirect effects were significant, with a decline in the association between the slope of Parent Monitoring and the slope of Conduct Problems (compare relationships in Tables 2 and 3), the findings show partial mediation by Psychological Autonomy of the relationships between Conduct Problems and Parental Monitoring. However, no mediation by Autonomy of the relationships between Parent

Knowledge and Conduct Problems was evident. The relationships between the slopes of Parental Knowledge and Conduct Problems with Autonomy as a possible mediator are shown in Figure 3.

Shown in Table 4 is a latent trajectory model evaluating Parent-Adolescent Conflict as a mediator of the relationship between the slopes of parenting behaviors and adolescent CP. The models fit the data well, with $CFI \geq 0.96$; $TLI \geq 0.95$, and $RMSEA \leq 0.041$. As shown in the fifth column the direct relationship between the slope of Conduct Problems and both parent behaviors were negative and the relationship with the slope of Psychological Autonomy was not significant. The indirect effects were shown in last two columns. The slope of each parenting behavior and adolescent Psychological Autonomy was negatively associated with Conflict. The last column shows the significant positively relationships between the slope of Conflict and the slope of adolescent Conduct Problems for both each parent variables and Psychological Autonomy. These findings for the parent variables, with significant indirect effects and significant but diminished direct relationships are consistent with an effect of partial mediation. For Psychological Autonomy the significant indirect effects and non-significant direct effect are consistent with full mediation of the relationships between Psychological Autonomy and Conflict. Moreover, as shown in Table 4, Conflict fully mediated the relationship between Autonomy and Conduct Problems.

DISCUSSION

This study employed autoregressive latent trajectory analyses to examine the associations over time between adolescent Conduct Problems and two parent practices, and the mediating mechanism of two measures of the parent-adolescent relationship, psychological autonomy and conflict. A number of studies have identified unidirectional parent influences on adolescent problem behaviors (Capaldi & Shortt, 2003; Dielman, Butchart, & Shope, 1993; Dishion, Capaldi, Spracklen et al., 1995b; Henry et al., 2001; Wills & Cleary, 1999), but no studies could be found employing the unique advantages of autoregressive latent trajectory analyses to examine possible bidirectional effects over time on parent practice and adolescent Conduct Problems with a public-school sample. Because conduct problems are relatively common during early adolescence and problematic for parents, school officials, and adolescents, themselves, it is useful to examine the relationship between parent and parent-teen relationship influences over time on Conduct Problems.

In autoregressive analyses, Parent Knowledge was associated from time to time, but Parent Monitoring was not, suggesting that the former was a more stable and consistent measure and Parent Monitoring may be more likely to vary according to adolescent behavior or other factors. However, in bi-directional cross-lagged analyses the most consistent reciprocal relationships were negative associations from Time 1 (beginning of 6th grade) to Time 2 (end of 6th grade) between parent behaviors and Conduct Problems, suggest that the first year of middle school may be a particularly important time in parent child relationships, as suggested by Eccles and colleagues (Eccles, Midgeley, Wigfield, et al., 1993). However, the only consistent relationships over time were the negative associations between Parental Monitoring and Conduct Problems, where Parent Monitoring at each time was negatively associated with Conduct Problems at the next time, consistent with substantial literature showing that parent monitoring protects against adolescent problem behavior (Dishion & McMahon, 1998)

The ALT analyses of the relationships of the variable slopes showed substantial negative relationships over time between parent practices and Conduct Problems, although no predictive effects of the intercepts of parent or relationship variables were evident. The relationship between the slope of Parent Knowledge and the slope of Conduct Problems was somewhat greater than the relationship between the slope of Parent Monitoring and the slope of Conduct

Problems, but both relationships were significant. These relationships are consistent with research showing significant protective effects of positive parenting practices against problem behaviors (Dishion & McMahon, 1998; Ary et al, 1999; Capaldi et al, 2003) and consistent with previous analyses of this data set (Simons-Morton, Chen, Abroms, & Haynie, 2004; Simons-Morton et al., 2005). However, these analyses provided no new information about how the relationship of parenting behaviors to adolescent behaviors may operate or be affected.

ALT analyses also showed a negative over time relationship between the slope of Conduct Problems and the slope of adolescent Psychological Autonomy, consistent with the concept that increased psychological autonomy reflects a positive parent-child relationship and is protective against problem behaviors (Barber, 1997). However, this finding can be viewed as consistent with the notion that parents may be more likely to grant increased Psychological Autonomy to adolescents who refrain from conduct problems or that parents are likely to grant less psychological autonomy to adolescents who engage in Conduct Problems.

The ALT analyses, however, mediational analyses provided new information about how relationships with adolescent Conduct Problems may be mediated by parent-adolescent relationship variables. Specifically, mediational analyses showed that Psychological Autonomy partially mediated the relationships between Conduct Problems and Parent Monitoring, but did not mediate the relationship between Parent Knowledge and Conduct Problems. The obvious interpretation of these findings is that the relationship between Parent Monitoring and Conduct Problems is dependent on the extent of adolescent Psychological Autonomy, while the relationship between Parent Knowledge and Conduct Problems is not. This finding is consistent with the idea that the effectiveness of parenting behaviors depends on parent-teen relationship (Kerr & Stattin, 2003; Stattin & Kerr, 2000). Specifically, as Kerr and Stattin (2003) suggest, parent knowledge accrues from adolescent voluntary disclosure and measures of this variable reflect aspects of the parent-adolescent relationship, making these useful measures for assessing parent behavior.

Analyses of the mediation of relationships by parent-adolescent Conflict provided a different picture. Conflict partially mediated the over time relationships between each parenting practice and Conduct Problems, in each case reducing the magnitude of the direct relationships, particularly between Parental Monitoring and Conduct Problems. Our findings suggest that relatively greater conflict may reduce the effectiveness of parenting practices with respect to adolescent conduct problems. Conflict would be expected to mediate the relationship between parenting practices and conduct problems to the extent that conflict represents distrust between parents and teens or it is the product of parental reactions to conduct problems. One possible explanation for why Conflict mediated the relationship between Parent Knowledge and Conduct Problems is that some conduct problems are rebellious and anti-authoritarian and telling parents or otherwise allowing parents to find out about their conduct may itself be an act of rebellion. In general, the findings are consistent with the hypothesis that Conflict undermines the negative over time relationships between parent practices and adolescent behavior. Notably, Conflict fully mediated the negative relationship between Psychological Autonomy and Conduct Problems, suggesting that increases in Autonomy during adolescence may not protect against Conduct Problems in the context of higher levels of parent-adolescent Conflict. This finding provides additional support for the hypothesis that parent-adolescent conflict may undermine the effectiveness of parenting behaviors and also damage other aspects of the parent-adolescent relationship.

Much of the research on problem adolescents has emphasized the salient role of parental monitoring (Brown, Mounts, Lamborn, & Steinberg, 1993; Dishion & McMahon, 1998; Steinberg et al., 1994; Vazconi & Flannery, 1997). As a measure of parental attention and supervision, monitoring provides direct behavioral control over exposure to opportunities for

misconduct or unacceptable behavior (Dishion & McMahon, 1998). Monitoring would be expected to be associated with parent-imposed consequences for misconduct and has frequently been associated with positive child and adolescent outcomes (Dishion & McMahon, 1998). Our findings provide additional support for the protective effects of parental monitoring, but the relationship between monitoring and conduct problems was partially mediated by psychological autonomy and conflict, suggesting that the effectiveness of monitoring may depend on aspects of the parent-child relationship. Similarly, the findings also provide support for the hypothesis that a measure of parent knowledge was negatively associated with conduct problems over time and this relationship was not mediated by parent-adolescent conflict, probably because the measure reflects aspects of the parent-teen relationship, as suggested by Kerr and colleagues (1999 Kerr and colleagues (2000)).

The strengths of the study include a relatively large cohort of early adolescents, multiple measures of parenting behavior and adolescent-parent relations, four or five longitudinal assessments conducted during 6th to 9th grade, and the use ALT analyses. The findings are limited by the regional sample and the assessment of a limited number of parent behaviors and parent-adolescent relationship variables as part of a program evaluation study. However the results provide new information about parent influences on Adolescent Conduct Problems that emphasize the important protective effects of authoritative parenting practices when maintained during early adolescence.

The analyses provide support for the following conclusions: (1) Bidirectional relationships between parenting practices and adolescent Conduct Problems were observed, but these relationships were not consistent; (2) parenting practices were negatively associated with adolescent Conduct Problems over time; and (3) the partial mediation by psychological autonomy of the relationship between adolescent Conduct Problems and Parent Monitoring, but not between adolescent Conduct Problems and Parent Knowledge, provides support for the hypotheses that Parent Knowledge may be independently associated with adolescent behavior because it takes into account aspects of the parent-adolescent relationship. Ultimately, the findings are consistent with the broader concept that the effects of parenting practices on adolescent behavior depend at least in part on the context of the parent-adolescent relationship.

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Figure 1. Time-Lagged Bidirectional Influences as Part of Autoregressive Latent Trajectory Model Showing Relations between Adolescent Conduct Problems and Parent Knowledge and Parent Monitoring from 6th to 9th Grade (n = 2,453)

Note: ACP: Adolescent Conduct Problems; PK: Parent Knowledge; PM: Parent Monitoring; * $p < 0.05$; ** $p < 0.01$.

Figure 2. Parallel Process Model as Part of Autoregressive Latent Trajectory Model Showing Dynamic Relationships between Parent Knowledge and Adolescent Conduct Problems from 6th to 9th Grade (n = 2,453)

^a: fixed loading.

^b: time interval from initial assessment by year.

Note: CP: Conduct Problems: Adolescent; PK: Parent Knowledge

CFI = 0.992, TLI = 0.981; RMSEA = 0.026; * $p < 0.05$, ** $p < 0.01$

Bold lines with coefficients indicate significance paths

Figure 3. Latent Growth Curve Analysis of Psychological Autonomy as a Mediator for the Effect of Parent Knowledge on Adolescent Conduct Problem from 6th to 9th Grade (n = 2,453)

^a: fixed loading.

^b: time interval from initial assessment by year.

Note: CP: Conduct Problems; PK: Parent Knowledge; PA: Psychological Autonomy

CFI = 0.961, TLI = 0.944; RMSEA = 0.044; * $p < 0.05$, ** $p < 0.01$

Bold lines with coefficients indicate significance paths

Table 1
Means and standard deviations (n = 2453)

Variable (# items; scale range; alpha ¹)	T1		T2		T3		T4		T5 ²	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Conduct Problems (6; 0–6; .73–.78)	1.1	1.5	1.3	1.5	1.4	1.5	1.5	1.5	1.3	1.5
Parent Knowledge (6; 6–24; .79–.82)	16.3	2.4	15.9	2.4	15.6	2.4	15.3	2.6	15.1	2.6
Parent Monitoring (4; 4–16; .66–.72)	14.4	1.9	14.1	1.9	13.8	2.1	13.6	2.1	NA	NA
Parent-teen conflict (4; 4–16; .82–.84)	8.1	3.2	8.5	3.3	8.9	3.2	9.1	3.2	NA	NA
Psychological Autonomy (7; 7–28; .82–.84)	24.3	3.8	23.3	4.5	22.6	4.7	22.2	4.6	NA	NA

Notes:
¹ range across data collections;
² n = 2258 for 9th grade assessment; T1 = Fall of 6th grade; T2 = Spring of 6th grade; T3 = Spring of 7th grade; T4 = Spring of 8th grade; T5 = Fall of 9th grade; NA = not available

Table 2
Autoregressive Latent Trajectory (ALT) Models Showing Relationships between Parenting Practice and Adolescent Conduct Problems from 6th to 9th Grade (n = 2,453)

Parent Behaviors/P-T Relationship	CFI	TLI	RMSEA	PB/P-T Relationship Intercept	PB/P-T Relationship Intercept to CP slope	CP Intercept to PB/P-T Relationship Slope	PB/P-T Relationship Slope with CP Slope
Parent Knowledge	.992	.981	.026	-.36**	-.01	-.15	-.48**
Parent Monitoring	.995	.987	.021	-.36**	-.09	-.09	-.19**
Adolescent Psychological Autonomy	.995	.986	.024	-.38**	-.04	-.08	-.30**
Parent- Adolescent Conflict	.999	.999	.008	.43*	-.01	-.12	.30**

Note. Coefficients adjusted for Gender, SES, race, and Treatment Group. Standardized estimates are presented;

* p<.05;

** p<.01.

PB: Parent Behavior; P-T: Parent-Teen; CP: adolescent Conduct Problems

CFI: Comparative Fit Index; TLI: Tucker-Lewis Index; RMSEA: Root Mean Square Error of Approximation.

Table 3

Latent Growth Curve Analyses Evaluating Psychological Autonomy (PA) as a Mediator for the Effects of Parenting Behaviors on Adolescent Conduct Problems (CP) from 6th to 9th Grade (n=2,453)

Parent Behaviors/P-T Relationship	CFI	TLI	RMSEA	PB/P-T Relationship Slope to CP Slope	PB/P-T Relationship Slope to PA Slope	PA Slope to CP Slope
Knowledge	.96	.94	.044	-.32**	.64**	-.07
Monitoring	.97	.95	.041	-.11*	.58**	-.25**
Conflict	.97	.95	.042	.25*	-.75**	-.10

Notes. Coefficients adjusted for Gender, SES, race, and Treatment Group. Standardized estimates are presented;

* p<.05;

** p<.01.

PB: parent behavior; P-T: parent-teen; PA: Psychological Autonomy; CP: Conduct Problems

CFI: Comparative Fit Index; TLI: Tucker-Lewis Index; RMSEA: Root Mean Square Error of Approximation.

Table 4
Latent Growth Curve Analyses Evaluating Parent-Teen Conflict as a Mediator of the Effects of Parenting Behaviors on Adolescent Conduct Problems (CP) from 6th to 9th Grade (n=2,453)

Parent Behaviors/P-T Relationship	CFI	TLI	RMSEA	PB/P-T Relationship Slope to CP Slope	PB/P-T Relationship Slope to CP slope	P-T Conflict Slope to CP Slope
Knowledge	.96	.95	.041	-.33**	-.38**	.18**
Monitoring	.97	.95	.037	-.16**	-.30**	.30**
Autonomy	.97	.96	.041	-.11	-.65**	.28**

Note. Coefficients adjusted for Gender, SES, race, and Treatment Group. Standardized estimates are presented;

* p<.05;
** p<.01.

PB: parent behavior; P-T: parent-teen; CP: conduct problems

CFI: Comparative Fit Index; TLI: Tucker-Lewis Index; RMSEA: Root Mean Square Error of Approximation.