



HHS Public Access

Author manuscript

Psychol Violence. Author manuscript; available in PMC 2019 September 27.

Published in final edited form as:

Psychol Violence. 2018 ; 9(2): 196–208. doi:10.1037/vio0000207.

Developmental Changes in Deviant and Violent Behaviors from Early to Late Adolescence: Associations with Parental Monitoring and Peer Deviance

Gabriel J. Merrin, Ph.D.,

University of Victoria, Department of Psychology

Jordan P. Davis, Ph.D.,

University of Southern California, Suzanne Dworak-Peck School of Social Work, Department of Children, Youth, and Families

Daniel Berry, Ed.D., and

University of Minnesota, Institute of Child Development

Dorothy L. Espelage, Ph.D.

University of Florida, Department of Psychology

Abstract

Objective: The continuity of adolescent deviant and violent behaviors have serious implications for engagement in criminal activities in adulthood. The current study examined parenting and peer ecologies on the development of deviant and violent behaviors during adolescence.

Method: An accelerated longitudinal design was used to analyze the associations of parental monitoring and peer deviance on the trajectories of adolescent deviant and violent behaviors from Spring of 5th grade through Spring of 11th grade ($N = 1,162$). A series of multilevel models were fitted to the data using full information maximum-likelihood estimation. Between- and within-person associations were used to test the moderating effects of parental monitoring on the development of deviant and violent behaviors.

Results: Changes in deviant and violent behaviors were evident across adolescence. Support for the moderating effect of between- and within-person parental monitoring on the development of deviant and violent behaviors in adolescence was found. Two cross-level interactions among within-person peer deviance and between-person parental monitoring, and within-person parental monitoring and between-person peer deviance were found, suggesting support for the moderating effect of parental monitoring. Additionally, a significant interaction among between-person parental monitoring and between-person peer deviance indicated that individuals who reported lower levels of parental monitoring and higher levels of peer deviance reported the highest levels of deviant and violent behaviors, and adolescents who reported higher levels of parental monitoring and higher levels of peer deviance reported less positive growth.

Conclusion: The findings underscore the important role parents play in offsetting the adverse outcomes of having deviant friends.

Keywords

deviant and violent behaviors; parental monitoring; peer deviance; adolescence; growth model

Adolescence is a developmental period marked by increased deviant and antisocial behaviors (Moffitt, 2006). For most, engagement in antisocial activity desists as adolescents become young adults; however, for some individuals the continuity of deviant and violent behaviors during adolescence and young adulthood have significant implications for sustained engagement in criminal, violent, and delinquent behaviors in adulthood (Broidy et al., 2003; Moffitt, 1993; Moffitt, 2006). Several studies have examined social-ecological risk and protective factors and long-term behavioral and health consequences related to adolescent deviant and violent behaviors (Brook, Lee, Finch, Brown, & Brook, 2013; Loeber & Farrington, 1998, 2001; Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998; Loeber et al., 2003; Moffitt, 1993).

Family and peer ecologies are two prominent social domains that are often examined to understand the role of social-ecological risk and protective factors in the development of adolescent deviant and violent behaviors (Fletcher, Stenberg, & Williams-Wheeler, 2004; Trudeau, Mason, Randall, Spoth, & Ralston, 2012). Several studies find parental monitoring efforts to be an important buffer against peer influences on individual rates of deviant and violent behaviors (Galambos, Barker, & Almeida, 2003; Laird, Criss, Pettit, Dodge, & Bates, 2007; Trucco, Colder, & Wieczorek, 2011). The current study seeks to clarify and extend the existing parental monitoring literature by examining the moderating role of parental monitoring at both the within- and between-person levels of analysis from early to late adolescence. Partitioning variance at both the between- and within-person levels of analysis allows for a more detailed examination of the role parental monitoring and peer deviance play in the development of deviant and violent behaviors across adolescent development. Further, unlike most studies that focus on average differences between people, a within-person approach examines the extent to which individuals deviate from their own average levels over time, which is arguably a more meaningful level of analysis for studying developmental changes within individuals (Hoffman, 2015). A more robust understanding of the factors associated with the development and stability of deviant and violent behaviors during adolescence can inform intervention and prevention efforts.

Parental Monitoring, Peer Deviance, and Deviant and Violent Behaviors

The family context is an important social ecology within which individuals develop, learn, and model behaviors taught and reinforced by parents and other family members (Dishion & Patterson, 2006). One construct that has received much attention in the literature is parental monitoring. Parental monitoring is typically defined as knowing the whereabouts and activities of one's child and fostering positive communication to reduce the risk of deviant and antisocial behaviors (Stattin & Kerr, 2000). Parental monitoring has been found to be one of the strongest parenting practices associated with lower rates of adolescent deviant and

violent behaviors (Hoeve et al., 2009). Research has shown that parental monitoring practices can buffer the development of various individual outcomes including substance use and deviant and violent behaviors (Fosco, Stormshak, Dishion, & Winter, 2012; Hirschi, 2002; Kiesner, Poulin, & Dishion, 2010; Li, Feigelman, & Stanton, 2000).

The association between parental monitoring and deviant or aggressive behavior is not unidirectional in nature, but involves a dynamic and reciprocal association between parent and child. Studies that examine the transactional relations among parental monitoring and deviant and violent behaviors find that low monitoring habits are associated with increases in deviant and violent behaviors, while higher rates of deviant and violent behaviors are associated with decreases in parental knowledge and monitoring practices (Gault-Sherman, 2012; Laird, Pettit, Bates, & Dodge, 2008; Patterson, Reid, & Dishion, 1992). Further, early forms of deviant and violent behaviors have been found to undermine on-going parental monitoring efforts (Bullock & Dishion, 2002). Several studies have also examined the longitudinal associations between parental monitoring practices and the development of deviant and violent behaviors during adolescence. Barnes, Hoffman, Welte, Farrell, and Dintcheff (2006) found that adolescents with higher levels of parental monitoring had lower initial levels and a slower rate of change in alcohol misuse and delinquency. These findings highlight the dynamic nature of parental monitoring and deviant and violent behaviors across adolescence.

Although increased parental monitoring has been found to be associated with lower rates of deviant and violent behaviors, there has been some debate in the parenting literature regarding the utility of active monitoring strategies compared to parental knowledge (Kerr & Stattin, 2003). Stattin and Kerr (2000) note that child disclosure is one method used by parents to obtain knowledge about their child activities and whereabouts. These authors argue that child disclosure is a stronger predictor of deviant and problem behaviors than parental monitoring. However, in some cases, particularly among delinquent youth, adolescents may refuse to disclose details concerning their personal activities which limits the utility of child disclosure measures. Additionally, Stattin and Kerr's work has not been evaluated using a variety of samples like those youth at risk for deviancy. Further work is needed in this area to examine these differences among normative and at-risk samples. The current study uses a parental monitoring variable that includes several items that specifically assess behavioral indicators of active parental monitoring and items that assess parental knowledge.

The transition from middle to high school is a period when youth begin to spend less time with their parents and more time with their peers. This period is marked by increases in parent-child conflicts and adolescent engagement in antisocial and risk-taking behaviors (Arnett, 1999; Moffit, 1993). The change can create more opportunities for adolescents to interact with deviant peer groups and for peer groups to influence the development and behaviors of adolescents in turn (Snyder, 2002). Deviant peer affiliations have been linked to increases in individual rates of deviance including substance use (Galambos et al., 2003; Kiesner, et al., 2010; Laird et al., 2008; Simons, Chao, & Conger, 2001), and aggression over time (Barnes et al., 2006; Benson & Buehler, 2012; Fergusson, Swain-Campbell, & Horwood, 2002). These deviant peer groups can create the context, norms, and opportunities

for deviant and violent behaviors to play out (Farrell & Barnes 2000; Haynie & Osgood, 2005), and in many cases deviant adolescents may seek out or be sought after by deviant peer groups, further reinforcing individual engagement in deviant and violent behaviors (Scaramella, Conger, Spoth, & Simons, 2002; Vitaro, Tremblay, & Bukowski, 2001). Several studies have found that adolescents who engage in higher rates of deviant and violent behaviors typically spend large amounts of unsupervised time with friends who also engage in deviant and violent behaviors (Haynie & Osgood, 2005; Vitaro et al., 2001). Given the continuity and risk for continued engagement in deviancy, youth who exhibit high rates of deviant and violent behaviors and who remain affiliated with deviant peer groups warrant further investigation. Adolescents spend a great deal of time with both their parents and peers during this period of development resulting in the potential for overlap between the family and peer contexts on the development of deviant and violent behaviors, so it is important to consider the association between the development of parental monitoring and peer deviance together.

Disaggregating Within- and Between-Person Effects

Several studies have examined deviant peer affiliations and parental monitoring practices together, and have found parental monitoring to be an important moderator against the positive association between deviant peer affiliations and the development of adolescent deviant and violent behaviors (Barnes, Reifma, Farrell, & Dintcheff, 2000; Bowman, Prelow, & Weaver, 2006; Galambos, et. al., 2003; Kiesner, et. al., 2010; Laird, et. al., 2008; Van Ryzin, Fosco, & Dishion, 2012). Despite prior evidence on the moderating role of parental monitoring, many of the longitudinal studies examine average differences between people or how individuals differ from each other in relation to a grand mean over time (i.e., between-person; Barnes et al., 2000; Harris-McKoy & Cui, 2013; Van Ryzin et al., 2012). Few studies have considered how individuals differ from their *typical* levels; that is, how individuals vary in relation to their own mean over time (i.e., within-person). Failure to consider within-person differences systematically ignores how individuals change over time with respect to their own trajectory, which is arguably the most meaningful level of analysis for development (Hoffman, 2015). Understanding how individual rates of deviant and violent behaviors change from an individual's *typical* level (state-like) and over time (trait-like) can provide more detailed information about the continuity and discontinuity in the development of deviant and violent behaviors. For example, we examined whether time-specific changes in parental monitoring were associated with concurrent decreases in deviant and violent behaviors (state-like), and, at the same time, examined whether individuals with higher average rates of parental monitoring had lower rates of deviant and violent behaviors over time (trait-like). Within- and between-person levels of analyses hold different substantive meanings, and when examined together can assess the development of deviant and violent behaviors across different levels of analysis. Further, because within- and between-person levels carry different substantive meanings, the magnitude and direction of the effects of the within- and between-person variables have the potential to be different. To date, no study has examined the moderating effect of parental monitoring on the development of deviant and violent behaviors using a multilevel framework that spans both middle and high school.

Current Study and Hypotheses

The intersection of parenting and peer ecologies during adolescence occurs during a developmental stage in life where changes are frequent but normative. While several studies have investigated how parental monitoring and deviancy are related, few have sought to understand the how these constructs are related at both the within- and between-person levels of analysis. In the current study, we use a large sample of middle and high school students followed prospectively for five years to explore how parental monitoring may mitigate deviant peer affiliations effect on individual levels of deviant and violent behaviors. We hypothesize that (1) lower levels of between-person (e.g., one's *typical* level over time) parental monitoring will be predictive of higher initial levels and a higher rate of change in adolescent deviant and violent behaviors, and (2) higher levels of between-person peer deviance will be predictive of higher initial levels and a higher rate of change in adolescent deviant and violent behaviors. Further, we hypothesize that (3) on average, within-person (e.g., time-specific deviations from one's *typical* level) increases in parental monitoring will be associated with contemporaneous decreases in adolescent deviant and violent behaviors, and (4) increases in peer deviance will be associated with contemporaneous increases in adolescent deviant and violent behaviors. Finally, (5) we expect to find that parental monitoring will moderate the effects of peer deviance on adolescent deviant and violent behaviors at various levels of analyses.

Methods

Participants

Participants included 1,162 students sampled from 4 Midwestern middle schools in 5th, 6th, and 7th grade, subsequently followed longitudinally for five years. Schools were recruited from one school district in a Midwest city. Four principals were approached after district approval, and all four agreed to participate. The four middle schools selected for the study were the primary schools in the city, as such, they encompassed most of the students in the area. Further, these schools were racially diverse and included a range of social-economic statuses (SES). The sample included 30.2% White, 55.6% African American, 3.8 % Hispanic, and 10.4% other. The sample was 51.8% female and 48.2% male. At Wave 1 30.5% were in grade 5, 37.2% were in grade 6, and 32.3% were in grade 7. Student reports of mother and father education and free/reduced lunch were used as a proxy for social-economic characteristics of the sample. Approximately 42% of the mothers and 46% of fathers had a high school diploma or less, and 40% of parents graduated college or higher. Free/reduced lunch rates ranged from 60% to 73% in the current sample.

Procedures

Human subjects' approval was obtained by the University Institutional Review Board. Consent was obtained prior to data collection. Parental consent forms were sent to all students and parents, and were asked to sign and return the consent form only if they did not want their child to participate in the study. Student assent was obtained at each wave of data collection. Students completed the survey in school during standard school hours. Trained proctors obtained student assent, described the study, read the survey aloud (Waves 1 – 4

only, 5 and 6 read to themselves), and answered all student questions. Data collection waves were approximately six months apart. The survey took approximately 30 – 40 minutes to complete.

The current study used an accelerated longitudinal growth model, that partitioned variance at the within- and between-person levels of analyses, to examine the association between parental monitoring and peer deviance with the development of adolescent deviant and violent behaviors across ten waves (5th grade – 11th grade). As such, we expected missing data at various points given the planned missing design. This approach used six waves of data from three cohorts of students and treated them as ten waves from a single cohort of students using semester grade as the variable for time (See Supplemental Tables 1 & 2). That is, fifth grade students contributed six waves of data beginning in the spring of fifth grade and ending in the spring of ninth grade; sixth grade students contributed six waves of data beginning in the spring of sixth grade and ending in the spring of tenth grade; and seventh grade students contributed five waves of data beginning in the spring of seventh grade and ending in the spring of eleventh grade (see Supplemental Tables 1 & 2). It should be noted that Fall of 9th grade only had four individuals given the planned missing design. Therefore, we did not use this wave in the final analysis due to the low sample size. The design approach provided several advantages and allowed us to: (1) examine the continuity or discontinuity in the development of adolescent deviant and violent behaviors, (2) treat multiple cohorts as a single trajectory to model adolescent deviant and violent behaviors over a long period of time, (3) disaggregate predictors at the within- and between-person levels of analysis, which hold different substantive meaning, and (4) test the extent to which parental monitoring behaviors moderate the association between peer deviance and adolescent deviant and violent behaviors at multiple levels of analysis (within-person, between-person, and across-levels).

Missing Data

A 95% participation rate was achieved at Wave 1. Retention rates varied between the waves because students had six opportunities to participate in the study. For example, students who did not participate in wave 2 were not excluded from subsequent waves of administration. Retention rates varied from 75% to 84% over time and across cohorts (5th grade – 7th grade). Retention rates were not calculated for participants in 8th grade at Wave 1 due to their single point of administration. The overall retention rate for the entire study was approximately 80%.

We used Little's missing completely at random (MCAR) test to examine missing data mechanisms and to determine whether the data were MCAR. The MCAR test was significant ($X^2 = 114.88$, $df = 30$, $p < .001$), and indicated that the data were not missing completely at random (Enders, 2010; Little, 1988). Although there is no explicit method to formally test the missing at random (MAR) assumption without knowing the values of the missing dependent variable (e.g., deviant and violent behaviors scores), we took various steps to examine the missing data patterns (Enders, 2010). For example, males had more missing data than females on parental monitoring ($X^2 = 18.82$, $df = 1$, $p < .001$), peer deviance ($X^2 = 17.71$, $df = 1$, $p < .001$), and deviant and violent behavior ($X^2 = 17.84$, $df =$

1, $p < .001$) variables over time. We therefore included gender as well as age and race in our model to adjust for potential bias due to missingness (Enders, 2010). Bias introduced by missing data associated with these variables (and our main effects) is adjusted for in our models. All models were fitted using Full Information Maximum Likelihood (FIML) to address missing data, and the Robust Maximum Likelihood (MLR) estimator to address non-normality in Mplus 7.4 (Muthén & Muthén, 1998–2012).

Measures

Deviant and Violent Behaviors.—This 8-item scale is based on Jessor and Jessor’s (1977) General Deviant Behavior Scale and asks students to report how many behaviors listed on the measure they took part in during the last year. Strong discriminant and convergent validity have been shown and assessed in various studies (Jessor & Jessor, 1977). For example, as expected, the deviant behavior scale was positively associated with substance use and bullying behaviors and negatively associated with academic achievement and caring behaviors. The scale consists of items such as, “*Got into a physical fight,*” “*Carried a knife or gun,*” and “*Damaged school or other property that did not belong to you.*” While several of the items assess general deviance, some items include aggressive acts like damaging school and other property, stealing from peers and stores, and getting into fights and carrying a weapon. Responses are recorded on a 5-point scale with options ranging from 1 (*Never*) through 5 (*10 or more times*). Cronbach’s alphas ranged from .81 – .87 across the six waves.

Parental Monitoring.—The Parental Monitoring/Supervision subscale from the Seattle Social Development Project (Arthur et al., 2002) was used to measure perceptions of established familial rules and perceived parental awareness regarding schoolwork and attendance, peer relationships, alcohol or drug use, and weapon possession. The current scale has been widely used to assess parenting behaviors and has shown strong discriminant and convergent validity (see Arthur et al., 2002). The subscale included 8 items measured on a 4-point Likert-type scale ranging from 0 (*Never*) through 3 (*Always*). Example items include, “*My family has clear rules about alcohol and drug use*” and, “*My parents ask if I’ve gotten my homework done.*” In the current study, Cronbach’s alphas ranged from .86 - .93 across the six waves.

Peer Deviance.—This 7-item scale (Institute of Behavioral Science, 1987) asks students to report how many of their friends engaged in delinquent behaviors in the past year, including: “*Hit or threatened to hit someone*”, “*Purposely damaged or destroyed property that did not belong to them*”, and “*Used alcohol.*” Responses are recorded on a 5-point Likert-type scale with options ranging from 0 (*None of Them*) through 4 (*All of Them*). The peer deviance scale has been widely used in past research and has shown strong discriminant and convergent validity (see Institute of Behavioral Science, 1987). Cronbach’s alphas ranged from .86 – .90 across the six waves.

Demographic Variables.—Demographic characteristics were determined through self-reports of gender, race, and age. Gender was coded such that male was the reference group. Race was coded such that White was the reference group. The race variable included White,

Black, and Other; all other races were included in the other category. Age was treated as a continuous variable.

Time and Cohort variables.—Time and Cohort were also predictors in our model. Time was scaled as semester, centered on spring of 5th grade. Semester grade was chosen for the measure of time because it conceptually reflects development in adolescent deviant and violent behaviors during the middle and high school years. Thus, the random intercept in our growth model represents variability in student levels of deviant and violent behaviors at spring of 5th grade.

Data Analytic Plan

An accelerated longitudinal design was employed using six waves of data from three cohorts and treated them as ten waves from one cohort. As an initial step, we tested for cohort differences or linkage (Miyazaki & Raudenbush, 2000). Testing for cohort differences indicates whether it is suitable to treat each of the three cohorts as part of one single developmental trajectory. Cohort was dummy coded such that 5th grade was the reference category. Specifically, we tested two nested models (See Table 1). The first included linear and quadratic effects for grade with random Level 2 intercept and slopes. We compared this to a model that included the Level 2 cohort coefficients and the interactions between linear and quadratic effects of grade by cohort. The cohort by time interactions were not significant suggesting that there were no cohort differences, indicating that it was suitable to proceed with the accelerated longitudinal design. Additionally, using a likelihood ratio test, the cohort model did not fit the data significantly better than the model without cohort effects ($LR = -420.0$, $df = 6$, $p = .99$), so we opted to use the more parsimonious model without the cohort variables (See Table 1). Estimates across the three cohorts are thus treated as one common developmental trajectory.

The level 2 time-invariant predictors were grand-mean-centered and referred to average between-person differences. The level 1 time-variant predictors were person-mean-centered and treated individuals as their own control thereby adjusting for all observed and unobserved time-invariant confounds while allowing for the partitioning of within-person variance.

We fitted a taxonomy of multilevel growth curve models (Singer & Willett, 2003). In a series of unconditional and conditional models, we first established plausible growth models for individuals' deviant and violent behaviors trajectories. In subsequent models, we tested our hypotheses by examining systematic groups of conditional growth models. We first tested the respective main-effect relations between parental monitoring and peer deviance with adolescent deviant and violent behaviors. To test the extent to which parental monitoring moderated the between- and within-person relations between peer deviance and deviant and violent behaviors, we subsequently added the respective within-level, between-level, and cross-level interaction terms to the model. Non-significant interactions were removed from the full model for parsimony. Nested models were evaluated for model fit using significant reductions in $-2 \log$ likelihood. Our final model is described in Equation 1.

Equation 1:

Level 1:

$$Deviant/ViolentBehaviors_{ij} = \beta_{0i} + \beta_{1i}(Time)_{ij} + \beta_{2i}(Time)_{ij}^2 + \beta_{3i}(Monitor_{ij} - \overline{Monitor}_i) + \beta_{4i}(\overline{PeerDeviance}_{ij} - \overline{PeerDeviance}_i) + \varepsilon_{ij}$$

(1)

Level 2:

$$\beta_{0i} = \gamma_{00} + \gamma_{01}(Gender)_i + \gamma_{02}(Age)_i + \gamma_{03}(Black)_i + \gamma_{04}(Other)_i + \gamma_{05}(\overline{Monitor})_i + \gamma_{06}(\overline{PeerDeviance})_i + \gamma_{07}(\overline{Monitor} * \overline{PeerDeviance})_i + \zeta_{0i} \quad (2)$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11}(Gender)_i + \gamma_{12}(Age)_i + \gamma_{13}(Black)_i + \gamma_{14}(Other)_i + \gamma_{15}(\overline{Monitor})_i + \gamma_{16}(\overline{PeerDeviance})_i + \gamma_{17}(\overline{Monitor} * \overline{PeerDeviance})_i + \zeta_{1i} \quad (3)$$

$$\beta_{2i} = \gamma_{20} + \gamma_{21}(Gender)_i + \gamma_{22}(Age)_i + \gamma_{23}(Black)_i + \gamma_{24}(Other)_i + \gamma_{25}(\overline{Monitor})_i + \gamma_{26}(\overline{PeerDeviance})_i + \gamma_{27}(\overline{Monitor} * \overline{PeerDeviance})_i + \zeta_{2i} \quad (4)$$

$$\beta_{3i} = \gamma_{30} + \gamma_{31}(\overline{PeerDeviance})_i + \zeta_{3i} \quad (5)$$

$$\beta_{4i} = \gamma_{40} + \gamma_{41}(\overline{Monitor})_i + \zeta_{4i} \quad (6)$$

$$\begin{bmatrix} \zeta_{0i} \\ \zeta_{1i} \\ \zeta_{2i} \\ \zeta_{3i} \\ \zeta_{4i} \end{bmatrix} \sim N \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{bmatrix} \begin{bmatrix} \sigma_0^2 & \sigma_{01} & \sigma_{02} & \sigma_{03} & \sigma_{04} \\ \sigma_{10} & \sigma_1^2 & \sigma_{12} & \sigma_{13} & \sigma_{14} \\ \sigma_{20} & \sigma_{21} & \sigma_2^2 & \sigma_{23} & \sigma_{24} \\ \sigma_{30} & \sigma_{31} & \sigma_{32} & \sigma_3^2 & \sigma_{34} \\ \sigma_{40} & \sigma_{41} & \sigma_{42} & \sigma_{43} & \sigma_4^2 \end{bmatrix}, \varepsilon_{ij} = \sim N(0, \sigma_\varepsilon^2) \quad (7)$$

Results

Descriptive Statistics

Means and standard deviations for deviant and violent behaviors, parental monitoring, and peer deviance for each semester grade are presented in Table 2. Growth in deviant and violent behaviors increased during middle school (5th to 8th grade) peaking in 8th grade. In high school (9th to 11th grade), average levels of deviant and violent behaviors decreased each consecutive year. Changes in average deviant and violent behaviors scores were consistent with a quadratic effect of growth in which levels of deviant and violent behaviors taper off by 11th grade. Parental monitoring showed fluctuating patterns over time showing the lowest average levels during 8th and 11th grade and the highest levels during 6th and 9th grade. Consistent with quadratic growth, as students progressed through middle school peer deviance increased, and during high school peer deviance decreased. Correlations are presented in Table 3.

Preliminary Model Results

Preliminary models.—Preliminary models suggested support for several of our hypotheses. Table 4 displays a taxonomy of six nested models and are labeled Model 1 to Model 6, respectively. We began by fitting a taxonomy of unconditional growth models to establish a plausible model for the population average deviant and violent behaviors growth function. First, we fitted an unconditional means model or null model to the data and obtained an intraclass correlation of .50 that indicated that approximately 50% of the total variance in adolescent deviant and violent behavior was between people, with the remaining 50% of variance within people. In addition, using the final model, we rechecked whether there was a cohort effect between the three cohorts (5th, 6th, and 7th grade) and again found no significant differences ($LR = 41.52$, $df = 36$, $p = .243$).

Between-person effects and deviant and violent behaviors trajectories.—Table 4 (Model 4) presents the between-person predictors and demographic covariates. Regarding sex, on average, females reported lower engagement in deviant and violent behaviors over time ($b = -.079$, $p < .001$). This corresponded to a .04 standard deviation decrease in deviant and violent behaviors for females. Age ($b = -.003$, $p = .84$) and race variables of African American ($b = .009$, $p = .87$) and Other ($b = -.008$, $p = .71$) were not significant. There was evidence that higher levels of average parental monitoring tended to show comparatively lower levels of deviant and violent behaviors over time ($b = -.389$, $p < .001$). This corresponded to a standardized effect of approximately $-.20$ and indicated that a one standard deviation increase in parental monitoring was associated with a .20 standard deviation decrease in deviant and violent behaviors. Individuals who reported higher levels of between-person peer deviance showed comparatively higher levels of deviant and violent behaviors over time ($b = .385$, $p < .001$). This corresponded to a standardized effect of .53, which indicated that a one standard deviation increase in peer deviance was associated with a .53 standard deviation increase in deviant and violent behaviors. There were also significant interactions with between-person parental monitoring and quadratic time, suggesting the magnitude of the between-person relations varied across time ($b = .015$, $p < .01$).

A statistically significant interaction (Model 6) among between-person parental monitoring and between-person peer deviance provided evidence for the moderating effect of parental monitoring on individual rates of deviant and violent behaviors ($b = -.570, p < .001$). The interaction is most clearly displayed in Figure 1, which presents four prototypical trajectories of individuals in the sample with different combinations of high and low parental monitoring and peer deviance. Individuals who reported having both high (+1 Standard Deviation) levels of peer deviance and parental monitoring had trajectories with lower rates of adolescent deviant and violent behaviors than individuals who reported low parental monitoring and high peer deviance. Individuals in the low (–1 Standard Deviation) parental monitoring and low peer deviance groups had the second lowest initial rates of adolescent deviant and violent behaviors and growth over time, while, individuals with high parental monitoring and low peer deviance had trajectories associated with the lowest initial rates of adolescent deviant and violent behaviors; however, rates for these individuals increased over time. The level 2 interaction was not significant with linear or quadratic growth; thus, the effect of the interaction was constant across time and people. All four simple slopes were significant.

Within-person changes in parental monitoring, peer deviance, and deviant and violent behaviors.—Preliminary models indicated that, on average, within-person increases in parental monitoring were associated with contemporaneous decreases in adolescent deviant and violent behavior ($b = -.139, p < .001$; Table 4 Model 4). That is, on average, when individuals reported higher parental monitoring than *typical* levels they also reported lower rates of deviant and violent behaviors. A standardized effect of $-.06$ indicated that a one standard deviation increase in within-person parental monitoring was associated with a $.06$ standard deviation decrease in deviant and violent behaviors. Furthermore, main effects of within-person peer deviance indicated that at time points when individuals reported having more deviant peers than their *typical* amount, they also reported higher rates of deviant and violent behaviors ($b = .142, p < .001$; Table 4 Model 4). In standardized units, one standard deviation increase in within-person peer deviance was associated with a $.16$ standard deviation increase in deviant and violent behaviors.

To further investigate our hypothesis of the moderating effect of parental monitoring, we conducted two cross-level interactions that included: (1) within-person parental monitoring with between-person peer deviance and (2) within-person peer deviance with between-person parental monitoring. The interaction between within-person parental monitoring and between-person peer deviance ($b = -.202, p < .01$; Table 4 Model 5) indicated that the association among between-person peer deviance on adolescent deviant and violent behaviors decreases per unit increase in within-person parental monitoring. As depicted in Figure 2, individuals with high between-person peer deviance at low levels of within-person parental monitoring had the highest rates of deviant and violent behaviors. That is, on average, at time points that individuals reported higher parental monitoring than their *typical* level, they reported lower rates of deviant and violent behaviors at the same occasion; however, this relationship was stronger among individuals with higher average levels of peer deviance (between-person). The simple slope of parental monitoring at high ($b = -0.27, SE$

= 0.06 $p < .001$) levels of between-person peer deviance was significant, however, not at low levels ($b = -0.04$, $SE = 0.06$ $p = .447$).

Figure 3 displays the cross-level interaction among within-person peer deviance and between-person parental monitoring ($b = -.462$, $p < .001$; Table 4 Model 5). This interaction indicated that the effect of within-person peer deviance becomes less positive per unit increase in between-person parental monitoring. However, the magnitude of the within-person peer deviance effect on contemporaneous increases in deviant and violent behaviors was significantly less for the high parental monitoring group ($b = .04$, $SE = 0.02$, $p = .042$) compared to the low parental monitoring group ($b = 0.25$, $SE = 0.02$ $p < .001$), though both simple slopes were significant. These two cross-level interactions provided evidence consistent with the presence of a moderating effect of parental monitoring on the positive relation peer deviance has on the development of adolescent deviant and violent behaviors.

Discussion

The current study examined the within-person (time-variant) and between-person (time-invariant) associations between parental monitoring and peer deviance on the development of adolescent deviant and violent behaviors from early to late adolescence. This study extends the current literature by using a multilevel framework that partitioned variance at the within- and between-person levels of analyses, providing a more detailed examination of the moderating role of parental monitoring on the development of deviant and violent behaviors across adolescence.

Parental Monitoring, Peer Deviance, and Deviant and Violent Behaviors

As expected, and in line with the extant literature, average parental monitoring decreased over time as participants aged (Pettit, Keiley, Laird, Bates, & Dodge, 2007). Our findings showed that parental monitoring was associated with lower levels of deviant and violent behaviors. Consistent with our hypotheses, individuals who reported higher average rates of parental monitoring reported lower individual rates of deviant and violent behaviors during middle and high school. This finding supports past research that has found positive relations between parental monitoring and adolescent deviant and violent behaviors (Dishion & Patterson, 2006; Hoeve et al., 2009), and further extends this research by examining within-person associations. Controlling for one's average level of parental monitoring, within-person findings suggest that at time points when individuals reported higher rates of parental monitoring than their *typical* level, they reported lower levels of deviant and violent behaviors. This finding suggests that parents who increase monitoring habits respective to their child's *typical* levels may help reduce their children's engagement in deviant and violent behaviors. Similar findings have been found in a study that examined the within-person associations between parental monitoring and time spent in criminogenic settings (Janssen, Dekovi, & Bruinsma, 2014).

Further, our findings suggest that individuals with more deviant peers engaged in more deviant and violent behaviors. Research has found similar positive associations between peer deviance and deviant and violent behaviors (Fergusson et al., 2002; Keenan, Loeber, Zhang, Stouthamer-Loeber, & Van Kammen, 1995). However, our study extended the current

literature by examining the association at the within-person level which carries a different substantive meaning. That is, when individuals reported higher levels of peer deviance than their *typical* levels, they also reported higher levels of deviant and violent behaviors. Irrespective of the number of deviant friends, time specific increases in deviant peer affiliations were associated with increases in deviant and violent behaviors. This finding suggests that reducing the number of deviant friends or addressing deviance within the peer group may also reduce individual rates of deviant and violent behaviors for individuals.

Parental Monitoring as a Moderating Construct

Our primary goal was to examine the extent to which parental monitoring moderated the association between peer deviance and deviant and violent behaviors. Our findings suggest that parental monitoring is an important moderator in the association between peer deviance and adolescent deviant and violent behaviors. The four trajectories highlight differences in varying levels of parental monitoring and peer deviance in the association of deviant and violent behaviors from Spring of 5th grade to the Spring of 11th grade. The trajectories with low levels of peer deviance reported the lowest rates of deviant and violent behaviors over time. Specifically, individuals with high parental monitoring and low peer deviance showed the lowest initial rates of deviant and violent behaviors; however, around 8th grade the slope increased steadily ending at similar levels as the high parental monitoring and high peer deviance trajectory. This finding suggests that high rates of parental monitoring may be associated with negative outcomes among individuals who do not engage with deviant peers. These individuals may interpret the monitoring behaviors as intrusive or unwarranted and may respond by engaging in higher rates of deviant and violent behaviors. This finding is in line with some prior research that has found parental monitoring to be associated with increases in deviant and violent behaviors (Barber, 1996; Barber & Olsen, 1997). The low parental monitoring and low peer deviance trajectory had the second lowest rates of deviant and violent behaviors, although by Spring of 11th grade they reported the lowest rates of deviant and violent behaviors. This trajectory may characterize normative trends in engagement in deviant and violent behaviors that peak in 8th grade and subsequently decline during high school. One of the more important findings from this study was the moderating role of parental monitoring in the context of high peer deviance. Individuals who reported lower levels of parental monitoring and higher levels of peer deviance reported the highest individual rates of deviant and violent behaviors across all four trajectories. Specifically, the low parental monitoring and high peer deviance trajectory reported the highest initial levels and growth over time in deviant and violent behaviors, with rates of deviant and violent behaviors peaking at Spring of 7th grade and subsequently declining across high school. The moderating role of parental monitoring was most evident in the trajectory that included individuals that reported high parental monitoring and low peer deviance. These individuals reported the second highest rates of deviant and violent behaviors over time, although compared to the low parental monitoring and high peer deviance group the rates of deviant and violent behaviors were significantly lower over time. These results support prior research that examines the moderating role of parental monitoring (Barnes et al., 2006; Van Ryzin et al., 2012), and extends them by testing the moderation at various levels of analysis (cross-level). The findings underscore the important role parents play in mitigating the

development of deviant and violent behaviors, particularly in the context of high deviant peer affiliations.

Across levels, we found that individuals that reported higher average levels of parental monitoring (between-person) over time were less affected by time-specific increases in peer deviance (within-person) on individual rates of deviant and violent behaviors. Said differently, when adolescents were in environments with more deviant peers than their *typical* levels they reported higher individual rates of deviant and violent behaviors; however, this positive association was mitigated for adolescents that had parents that consistently monitored their behavior. Similarly, at time points when individuals reported higher parental monitoring than their *typical* levels they also reported lower rates of deviant and violent behaviors. However, this association was particularly strong for individuals that reported higher average levels of peer deviance over time. Individuals that consistently affiliated with large numbers of deviant peers reported higher average rates of deviant and violent behaviors, however, at time points when they reported higher levels of parental monitoring than their own average levels, they reported lower levels of deviant and violent behaviors. This more nuanced examination suggests that high levels of parental monitoring over time helps to moderate time specific increases in peer deviance on increases in deviant and violent behaviors. As such, individuals with high levels of peer deviance over time may benefit more from time specific increases in parental monitoring in reducing deviant and violent behaviors.

Limitations

The current study has several limitations that should be noted. First, the present study relied solely on self-report data with single reporters which may have inflated the relations among the constructs (e.g., parental monitoring and deviant and violent behaviors). Multiple reporters would have provided a more robust examination of the development of deviant and violent behaviors during adolescence. Second, this study used a low-risk sample regarding average rates of deviant and violent behaviors. Current findings should be replicated with more high-risk samples that have higher average rates of adolescent deviant and violent behaviors. Third, the sample consisted of students from one Midwestern county, as such, the generalizability of the findings are geographically limited. Fourth, the reciprocal associations among parental monitoring, peer deviance, and deviant and violent behaviors were not assessed in the current study. It may be the case that deviant and violent behaviors are associated with changes in parental monitoring behaviors or peer deviance. For example, deviant and violent behaviors may be associated with increases in parental monitoring efforts. Accordingly, future research should further examine the directionality of these associations particularly at the within-person level using multilevel cross-lagged models like the Auto-regressive Latent Trajectory model with structured residuals (ALT-SR; Berry & Willoughby, 2016). Fifth, the current study only examined one dimension of parenting (e.g., parental monitoring) and does not examine other parenting constructs (e.g., parental warmth and attachment). Similarly, this study only examined the role of the parents in actively monitoring, setting limits, and seeking information about their child. Different combinations of parenting efforts make it difficult to tease apart differences between monitoring, limit setting, and knowledge. In addition, another dimension this study does not address is the

extent to which child disclosure to parents may influence parental knowledge and monitoring habits (Kerr & Stattin, 2003).

Clinical and Policy Implications

Notwithstanding these limitations, the current study provides important insight into the relation between parenting and peer ecologies on the development of deviant and violent behaviors during adolescence that has implications for both practice and theory. In practice, the findings can influence prevention efforts by considering the role of parental monitoring to offset the effects of peer deviance on the development of deviant and violent behaviors. Our study found that parental monitoring strategies can moderate the development of deviant and violent behaviors in the context of high levels of deviant peer affiliations. Programs that focus on youth who are at risk may look to use parenting strategies as a way of reducing the influence of deviant peer groups as in the case of Multisystemic therapy (MST). Treatment models like MST that are designed to treat youth with extreme forms of antisocial behavior focus heavily on the role of parents and the family (Henggeler, 1997a; LaFavor & Randall, 2012). The home-based model leverages the role of parents to provide treatment in the individual's natural home environment. Interventions that focus on multiple domains like parents have found success in reducing delinquent and deviant and violent behaviors (Henggeler, 1997b). These efforts help youth disengage from deviant peer affiliations and reduce engagement in deviant and violent behaviors. Studies show that increased time spent with peers doing unstructured activities is associated with higher rates of deviant and violent behaviors (Haynie & Osgood, 2005). An important step for reducing the development of deviant and violent behaviors is to remove the deviant peer affiliations that are influencing the behavior of the individual. In addition, increased parental monitoring efforts, particularly in the context of high deviant peer affiliations, may find success in reducing individual engagement in deviant and violent behaviors.

A new flexible framework, namely the vigilant care framework, emphasizes the need to adjust parental involvement based on the severity of the situation has found some success. The vigilant care framework teaches parents to identify warning signals based on their child's behaviors and increase or decrease involvement (Omer, Satran, & Driter, 2016). The different levels of the framework (e.g., open attention, focused attention, and active protection) provide a range of guidelines that help parents decide when to use caring attitudes versus taking an authoritative stance depending on the situation and its consequences. Our findings suggest that a dynamic framework like vigilant care may find success due to its flexibility. For example, individuals that have higher parental monitoring and low peer deviance showed increases in deviant and violent behaviors over time. This may indicate that these adolescents require more caring attitudes rather than authoritative strategies, whereas individuals with low parental monitoring and high peer deviance may require authoritative strategies that include active protection.

Research Implications

The examination of within- and between-person differences has implications for research and theory as well. The methodological approach contributes to our understanding of the influence of parenting and peer ecologies on the development of deviant and violent

behaviors that is not possible with current methodological designs that focus solely on average differences between people over time. For example, we found that within-person peer deviance on adolescent deviant and violent behaviors varied as a function of between-person parental monitoring. If the magnitude of the relation among within-person peer deviance and deviant and violent behaviors is, in fact, stronger for individuals with lower average levels of parental monitoring, as this study suggests, then the underlying mechanism driving the development of deviant and violent behaviors during adolescence may be different for individuals with different levels of parental monitoring. The current results indicate that individuals with high levels of parental monitoring are less influenced by time specific changes in peer deviance as it relates to the development of their own deviant and violent behaviors.

Conclusions

The current study offers a unique glimpse into the relations between parental monitoring and peer deviance on the development of adolescent deviant and violent behaviors from early to late adolescence by examining both time-variant and time-invariant associations. Findings from this study show that parenting and peer ecologies are important contributors to the early development of deviant and violent behaviors among middle and high school students. This study adds to the conceptual understanding of deviant and violent behaviors and further informs risk in parenting and peer domains.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

The author(s) declared receipt of the following financial support for the research, authorship, and/or publication of this article: Funded by Centers for Disease Control and Prevention #1U01/CE001677 (Espelage, PI). The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

References

- Allen JP, Hauser ST, Bell KL, & O'Connor TG (1994). Longitudinal assessment of autonomy and relatedness in adolescent-family interactions as predictors of adolescent ego development and self-esteem. *Child Development*, 65(1), 179–194. doi: 10.2307/1131374 [PubMed: 8131646]
- Arnett JJ (1999). Adolescent storm and stress, reconsidered. *American Psychologist*, 54(5), 317–326. doi:10.1037/0003-066x.54.5.317 [PubMed: 10354802]
- Arthur MW, Hawkins JD, Pollard JA, Catalano RF, & Baglioni AJ (2002). Measuring risk and protective factors for substance use, delinquency, and other adolescent problem behaviors: The communities that care youth survey. *Evaluation Review*, 26(6), 575–601. doi: 10.1177/019384102237850 [PubMed: 12465571]
- Barber BK (1996). Parental psychological control: Revisiting a neglected construct. *Child Development*, 67(6), 3296–3319. doi: 10.2307/1131780 [PubMed: 9071782]
- Barber BK, & Olsen JA (1997). Socialization in context: Connection, regulation, and autonomy in the family, school, and neighborhood, and with peers. *Journal of Adolescent Research*, 12(2), 493–515. doi:10.1177/0743554897122008

- Barnes GM, Hoffman JH, Welte JW, Farrell MP, & Dintcheff BA (2006). Effects of parental monitoring and peer deviance on substance use and delinquency. *Journal of Marriage and Family*, 68(4), 1084–1104. doi:10.1111/j.1741-3737.2006.00315.x
- Barnes GM, Reifma AS, Farrell MP, & Dintcheff BA (2000). The effects of parenting on the development of adolescent alcohol misuse: A six-wave latent growth model. *Journal of Marriage and the Family*, 62(1), 175–186. doi:10.1111/j.1741-3737.2000.00175.x
- Benson M, & Buehler C (2012). Family process and peer deviance influences on adolescent aggression: Longitudinal effects across early and middle adolescence. *Child Development*, 83(4), 1213–1228. doi:10.1111/j.1467-8624.2012.01763.x [PubMed: 22497273]
- Berry D, & Willoughby MT (2016). On the practical interpretability of cross-lagged panel models: Rethinking a developmental workhorse. *Child Development*.
- Bowman MA, Prelow HM, & Weaver SR (2007). Parenting behaviors, association with deviant peers, and delinquency in African American adolescents: A mediated-moderation model. *Journal of Youth and Adolescence*, 36(4), 517–527. doi:10.1007/s10964-006-9117-7
- Broidy LM, Nagin DS, Tremblay RE, Bates JE, Brame B, Dodge KA, Fergusson D, Horwood JL, Loeber R, Laird R, Lynam DR, Moffitt TE, Pettit GS, Vitaro F (2003). Developmental trajectories of childhood disruptive behaviors and adolescent delinquency: A six-site, cross-national study. *Developmental Psychology*, 39(2), 222–245. doi:10.1037/0012-1649.39.2.222+ [PubMed: 12661883]
- Brook JS, Lee JY, Finch SJ, Brown EN, & Brook DW (2013). Long-term consequences of membership in trajectory groups of delinquent behavior in an urban sample: violence, drug use, interpersonal, and neighborhood attributes. *Aggressive Behavior*, 39(6), 440–452. doi:10.1002/ab.21493 [PubMed: 23813412]
- Bullock BM, & Dishion TJ (2002). Sibling collusion and problem behavior in early adolescence: Toward a process model for family mutuality. *Journal of Abnormal Child Psychology*, 30(2), 143–153. [PubMed: 12002395]
- DeVore ER, & Ginsburg KR (2005). The protective effects of good parenting on adolescents. *Current Opinion in Pediatrics*, 17(4), 460–465. doi:10.1097/01.mop.0000170514.27649.c9 [PubMed: 16012256]
- Dishion TJ, & McMahon RJ (1998). Parental monitoring and the prevention of child and adolescent problem behavior: A conceptual and empirical formulation. *Clinical Child and Family Psychological Review*, 1, 61–75. doi:10.1037/e495502006-010
- Dishion TJ, & Patterson GR (2006). The development and ecology of antisocial behavior in children and adolescents In Cicchetti D, & Cohen DJ (Eds.), *Developmental Psychopathology*, Vol 3: Risk, disorder, and adaptation (pp. 503–541). Hoboken, NJ: Wiley. doi:10.1002/9780470939406.ch13
- Enders CK (2010). *Applied missing data analysis*. Guilford Press.
- Farrell MP, & Barnes GM (2000). Family stress and adolescent substance abuse In McKenry P and Price SJ (eds.), *Family and change: Coping with stressful life event and transitions* (pp. 208–228). Thousand Oaks, CA: Sage.
- Fergusson DM, Swain-Campbell NR, & Horwood LJ (2002). Deviant peer affiliations, crime and substance use: A fixed effects regression analysis. *Journal of Abnormal Child Psychology*, 30(4), 419–430. [PubMed: 12108769]
- Fletcher AC, Steinberg L, & Williams-Wheeler M (2004). Parental influences on adolescent problem behavior: Revisiting Stattin and Kerr. *Child Development*, 75(3), 781–796. doi:10.1111/j.1467-8624.2004.00706.x [PubMed: 15144486]
- Fosco GM, Stormshak EA, Dishion TJ, & Winter CE (2012). Family relationships and parental monitoring during middle school as predictors for early adolescent problem behavior. *Journal of Clinical Child & Adolescent Psychology*, 41(2), 202–213. doi:10.1080/15374416.2012.651989 [PubMed: 22417193]
- Galambos NL, Barker ET, & Almeida DM (2003). Parents do matter: Trajectories of change in externalizing and internalizing problems in early adolescence. *Child Development*, 74(2), 578–594. doi:10.1111/1467-8624.7402017 [PubMed: 12705574]

- Gault-Sherman M (2012). It's a two-way street: The bidirectional relationship between parenting and delinquency. *Journal of Youth and Adolescence*, 41(2), 121–145. doi:10.1007/s10964-011-9656-4 [PubMed: 21431892]
- Harris-McKoy D, & Cui M (2013). Parental control, adolescent delinquency, and young adult criminal behavior. *Journal of Child and Family Studies*, 22(6), 836–843. doi:10.1007/s10826-012-9641-x
- Haynie DL, & Osgood DW (2005). Reconsidering peers and delinquency: How do peers matter?. *Social Forces*, 84(2), 1109–1130. doi:10.1353/sof.2006.0018
- Henggeler SW (1997a). *Juvenile justice bulletin -- Treating serious antisocial behavior in youth: The MST approach*. Washington, DC: U.S. Department of Justice, Office of Juvenile Justice and Delinquency Prevention. doi:10.1037/e379712004-006
- Henggeler SW (1997b). The development of effective drug abuse services for youth In Egertson JA, Fox DM, & Leshner AI (Eds.), *Treating drug abusers effectively* (pp. 253–279). New York, NY: Blackwell Publishers.
- Hirschi T (2002). *Causes of delinquency*. New Brunswick, N.J.: Transaction Publishers.
- Hoeve M, Dubas JS, Eichelsheim VI, van der Laan PH, Smeenk W, & Gerris JRM (2009). The relationship between parenting and delinquency: A meta-analysis. *Journal of Abnormal Child Psychology*, 37, 749–775. [PubMed: 19263213]
- Hoffman L (2015). *Longitudinal analysis: Modeling within-person fluctuation and change*. New York, NY: Routledge.
- Institute of Behavioral Science (1987). *Youth Interview Schedule: Denver Youth Survey*. Boulder, CO: University of Colorado.
- Janssen HJ, Dekovi M, & Bruinsma GJ (2014). Parenting and time adolescents spend in criminogenic settings: a between-and within-person analysis. *British Journal of Criminology*, 54, 551–567. doi: 10.1093/bjc/azu032
- Jessor R, & Jessor SL (1977). *Problem behavior and psychosocial development: A longitudinal study of youth*. New York, NY: Academic.
- Keenan K, Loeber R, Zhang Q, Stouthamer-Loeber M, & Van Kammen WB (1995). The influence of deviant peers on the development of males' disruptive and delinquent behavior: A temporal analysis. *Development and Psychopathology*, 7, 715–726. doi:10.1017/S0954579400006805
- Kerr M & Stattin H (2003). Parenting of adolescents: Action or reaction? In Crouter AC & Booth A (Eds.), *Children's influence on family dynamics: The neglected side of family relationships* (pp. 121–151). Mahwah, NJ: Lawrence Erlbaum.
- Kiesner J, Poulin F, & Dishion TJ (2010). Adolescent substance use with friends: Moderating and mediating effects of parental monitoring and peer activity contexts. *Merrill-Palmer Quarterly*, 56(4), 529–556. doi:10.1353/mpq.2010.0002 [PubMed: 21165170]
- LaFavor T, & Randall J (2012). Multisystemic family therapy. *Family Therapy Review: Contrasting Contemporary Models*. doi:10.4324/9780203103197
- Laird RD, Criss MM, Pettit GS, Dodge KA, & Bates JE (2008). Parents' monitoring knowledge attenuates the link between antisocial friends and adolescent delinquent behavior. *Journal of Abnormal Child Psychology*, 36(3), 299–310. doi:10.1007/s10802-007-9178-4 [PubMed: 17874291]
- Li X, Feigelman S, & Stanton B (2000). Perceived parental monitoring and health risk behaviors among urban low-income African-American children and adolescents. *Journal of Adolescent Health*, 27(1), 43–48. doi:10.1016/s1054-139x(99)00077-4 [PubMed: 10867351]
- Little RJ (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, 83(404), 1198–1202. doi:10.2307/2290157
- Loeber R, & Farrington DP (Eds.). (1998). *Serious and violent juvenile offenders: Risk factors and successful interventions*. Thousand Oaks, CA: Sage. doi:10.4135/9781452243740
- Loeber R, Farrington DP, Stouthamer-Loeber M, Moffitt TE, Caspi A, White HR, ... & Beyers JM (2003). The development of male offending In Thornberry T & Krohn M (Eds.), *Taking stock of Delinquency* (pp. 93–136). New York: Springer.

- Loeber R, Farrington DP, Stouthamer-Loeber M, & Van Kammen WB (1998). *Antisocial Behavior and Mental Health Problems: Explanatory Factors in Childhood and Adolescence*. Mahwah, NJ: Lawrence Erlbaum.
- Miyazaki Y, & Raudenbush SW (2000). Tests for linkage of multiple cohorts in an accelerated longitudinal design. *Psychological Methods*, 5(1), 44–63. doi:10.1037/1082-989x.5.1.44 [PubMed: 10937322]
- Moffitt TE (1993). Adolescence-limited and life-course-persistent antisocial behavior. A developmental taxonomy. *Psychological Review*, 100(4), 674–701. doi:10.1037/0033-295x.100.4.674 [PubMed: 8255953]
- Moffitt TE (2006). Life-course persistent versus adolescence-limited antisocial behavior In Cicchetti D, & Cohen DJ (Eds.), *Developmental Psychopathology: Risk, disorder, and adaptation* (vol. 3, pp. 570–598, 2nd ed.). New York, NY: Wiley. doi:10.1002/9780470939406.ch15
- Muthén LK, & Muthén BO (1998–2014). *Mplus User's Guide*. Seventh Edition Los Angeles, CA: Muthén & Muthén.
- Omer H, Satran S, & Driter O (2016). Vigilant care: An integrative reformulation regarding parental monitoring. *Psychological Review*, 123(3), 291–304. [PubMed: 26845385]
- Patterson GR, Reid JB, & Dishion TJ (1992). *Antisocial boys: A social interactional approach*. Eugene, OR: Castalia.
- Pettit GS, Keiley MK, Laird RD, Bates JE, & Dodge KA (2007). Predicting the developmental course of mother-reported monitoring across childhood and adolescence from early proactive parenting, child temperament, and parents' worries. *Journal of Family Psychology*, 21(2), 206. doi: 10.1037/0893-3200.21.2.206. [PubMed: 17605543]
- Scaramella LV, Conger RD, Spoth R & Simons RL (2002). Evaluation of a social contextual model of delinquency: A cross-study replication. *Child Development*, 73(1), 175–195. doi: 10.1111/1467-8624.00399 [PubMed: 14717251]
- Singer JD & Willett JB (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. New York, NY: Oxford University Press.
- Silk JS, Morris AS, Kanaya T, & Steinberg L (2003). Psychological control and autonomy granting: Opposite ends of a continuum or distinct constructs?. *Journal of Research on Adolescence*, 13(1), 113–128. doi:10.1111/1532-7795.1301004
- Snyder J (2002). Reinforcement and coercion mechanisms in the development of antisocial behavior: Peer relationships In Reid JB, Patterson GR, & Snyder J (Eds.), *Antisocial behavior in children and adolescents: A developmental analysis and model for intervention* (pp. 101–122). Washington, DC: American Psychological Association. doi:10.1037/10468-005
- Stattin H, & Kerr M (2000). Parental monitoring: A reinterpretation. *Child Development*, 71(4), 1072–1085. doi:10.1111/1467-8624.00210 [PubMed: 11016567]
- Trucco EM, Colder CR, & Wieczorek WF (2011). Vulnerability to peer influence: A moderated mediation study of early adolescent alcohol use initiation. *Addictive Behaviors*, 36(7), 729–736. doi:10.1016/j.addbeh.2011.02.008 [PubMed: 21420241]
- Trudeau L, Mason WA, Randall GK, Spoth R, & Ralston R (2012). Effects of parenting and deviant peers on early to mid-adolescent conduct problems. *Journal of Abnormal Child Psychology*, 40(8), 1249–1264. doi:10.1007/s10802-012-9648-1 [PubMed: 22648200]
- Van Ryzin MJ, Fosco GM, & Dishion TJ (2012). Family and peer predictors of substance use from early adolescence to early adulthood: An 11-year prospective analysis. *Addictive Behaviors*, 37(12), 1314–1324. doi:10.1016/j.addbeh.2012.06.020 [PubMed: 22958864]
- Vitaro F, Tremblay RE, Bukowski WM (2001). Friends, friendships, and conduct disorders In Hill J & Maughan B (Eds.), *Conduct disorder in childhood and adolescences* (pp. 346–378), Cambridge, MA: Cambridge University Press. doi:10.1017/cbo9780511543852.014

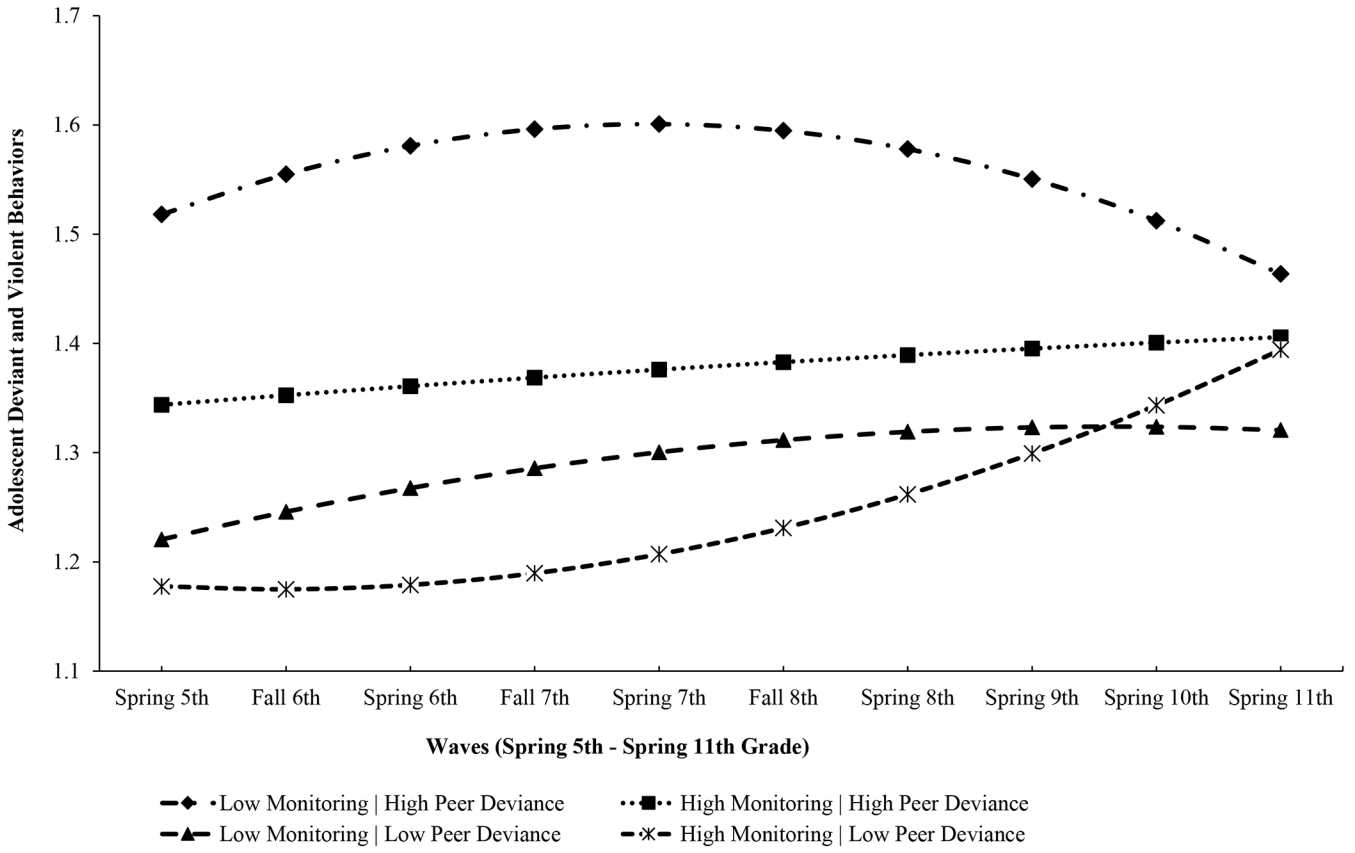


Figure 1. Effects of Between-Person Parental Monitoring and Between-Person Peer Deviance on Adolescent Deviant and Violent Behaviors
Note: High = 1 standard deviation above the mean; Low = 1 standard deviation below the mean. Simple slope of between-person Parental Monitoring and Peer Deviance over time. The four groups included: low monitoring and low peer deviance ($b = 1.09$, $SE = 0.05$ $p < .001$), low monitoring and high peer deviance ($b = 1.66$, $SE = 0.05$ $p < .001$), high monitoring and low peer deviance ($b = 1.11$, $SE = 0.05$ $p < .001$), and high monitoring and high peer deviance ($b = 1.34$, $SE = 0.08$ $p < .001$). Deviant and Violent Behaviors range from 1 to 5.

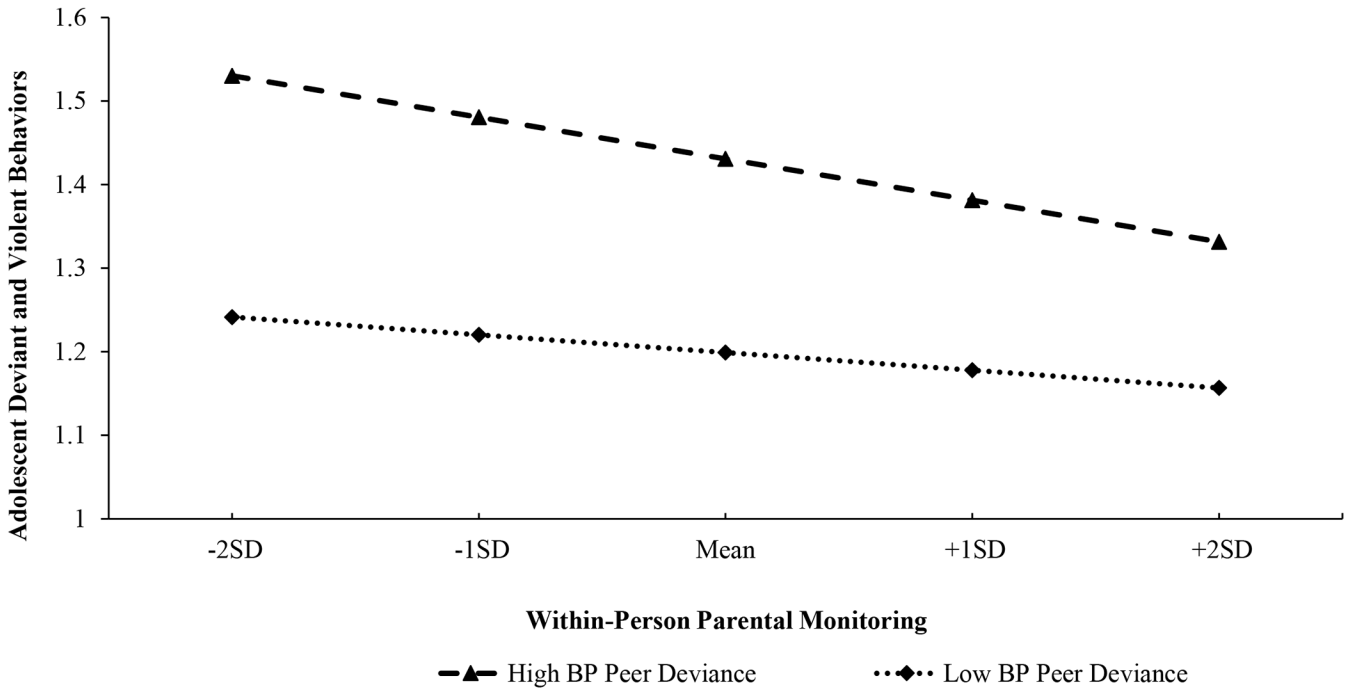


Figure 2. Effects of Within-Person Parental Monitoring and Between-Person Peer Deviance on Adolescent Deviant and Problem Behaviors
Note: High = 1 standard deviation above the mean; Low = 1 standard deviation below the mean; BP = Between-person. Simple slopes of within-person Parental Monitoring at high ($b = -0.27$, $SE = 0.06$ $p < .001$) and low ($b = -0.04$, $SE = 0.06$ $p = .447$) levels of between-person Peer Deviance respectively. Deviant and Violent Behaviors range from 1 to 5.

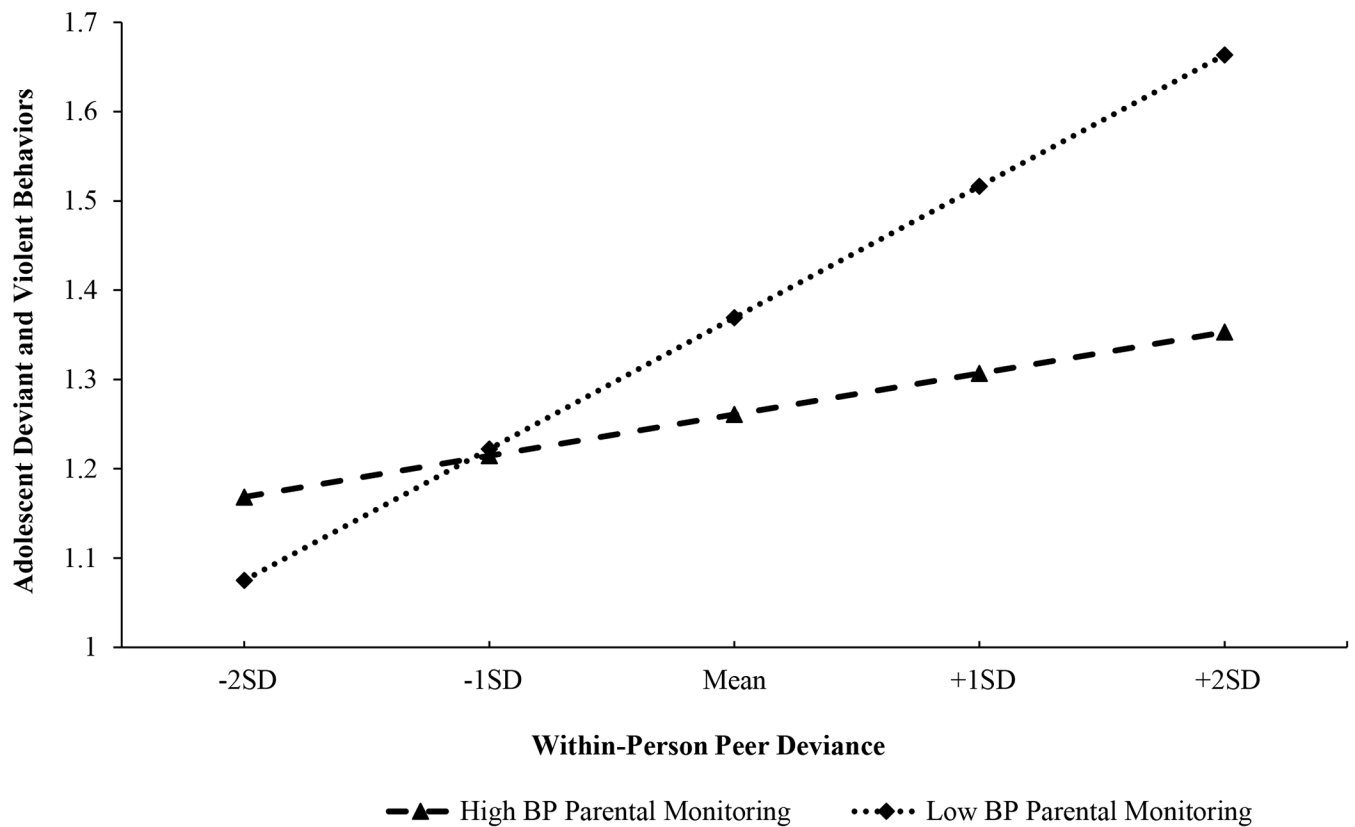


Figure 3.
Effects of Within-Person Peer Deviance and Between-Person Parental Monitoring on
Adolescent Deviant and Violent Behaviors

Note: High = 1 standard deviation above the mean; Low = 1 standard deviation below the mean. Simple slope of within-person Peer Deviance at high ($b = .04$, $SE = 0.02$, $p = .042$) and low ($b = 0.25$, $SE = 0.02$, $p < .001$) levels of between-person Parental Monitoring respectively. Deviant and Violent Behaviors range from 1 to 5.

Table 1.

Nested Growth and Cohort Models

| | Parameter Estimates (SE) | |
|-----------------------|--------------------------|--------------------|
| | Model A | Model B |
| <i>Fixed Effects</i> | | |
| Intercept | 1.202*** (.028) | 1.233*** (.037) |
| Linear Slope | .057*** (.014) | .030 (.022) |
| Quadratic Slope | -.005*** (.001) | -.001 (.003) |
| Cohort 6 | | .030 (.071) |
| Cohort 7 | | .081 (.185) |
| Time*Cohort 6 | | -.015 (.035) |
| Time*Cohort 7 | | -.005 (.063) |
| Time*Time*Cohort 6 | | .002 (0.004) |
| Time*Time*Cohort 7 | | -.001 (.005) |
| <i>Random Effects</i> | | |
| Intercept Within | .092*** (.003) | 0.103*** (.004) |
| Intercept Between | .085*** (.022) | .103*** (.004) |
| Linear Slope | .039*** (.009) | .001 (0.001) |
| Quadratic Slope | .001*** (.001) | 0.001 (0.001) |
| <i>Contrasts</i> | | |
| Cohort 6 vs Cohort 7 | | 0.05 (0.191) |
| <i>Fit Indices</i> | | |
| -2LL | 3669.42 | 4089.42 |
| AIC | 3989.412 | 4115.420 |
| BIC | 4051.304 | 4195.881 |

Note: The likelihood ratio test was not significant ($LR = -420.0$, $df = 6$, $p = .99$). The cohort model includes cohort coefficients at level 2 and a time-by-cohort interaction. Cohort effects were not significant.

Table 2.

Means and Standard Deviations of Deviant and Violent Behaviors, Parental Monitoring, and Peer Deviance Across Time

| Time (Grade Level) | Deviant and Violent Behaviors | | Parental Monitoring | | Peer Deviance | |
|-------------------------|-------------------------------|-----------|---------------------|-----------|---------------|-----------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Spring 5 th | 1.27 | 0.53 | 0.80 | 0.30 | 1.46 | 0.68 |
| Fall 6 th | 1.25 | 0.38 | 0.84 | 0.24 | 1.52 | 0.61 |
| Spring 6 th | 1.26 | 0.40 | 0.85 | 0.25 | 1.55 | 0.64 |
| Fall 7 th | 1.29 | 0.46 | 0.81 | 0.28 | 1.54 | 0.66 |
| Spring 7 th | 1.33 | 0.49 | 0.83 | 0.26 | 1.65 | 0.71 |
| Fall 8 th | 1.33 | 0.53 | 0.76 | 0.29 | 1.70 | 0.79 |
| Spring 8 th | 1.40 | 0.53 | 0.81 | 0.27 | 1.82 | 0.84 |
| Spring 9 th | 1.32 | 0.45 | 0.86 | 0.27 | 1.67 | 0.79 |
| Spring 10 th | 1.34 | 0.44 | 0.85 | 0.29 | 1.69 | 0.83 |
| Spring 11 th | 1.26 | 0.43 | 0.72 | 0.38 | 1.54 | 0.80 |

Table 3.

Bivariate Correlations among Predictors, Covariates, and Deviant and Violent Behaviors Across Time

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-----------|---------------------|------|------|---------------------|--------------------|--------------------|---|
| 1. DVB | 1 | - | - | - | - | - | - |
| 2. WPPM | -0.04 [*] | 1 | - | - | - | - | - |
| 3. WPPD | 0.13 ^{**} | 0.02 | 1 | - | - | - | - |
| 4. BPPM | -0.28 ^{**} | 0.00 | 0.00 | 1 | - | - | - |
| 5. BPPD | 0.43 ^{**} | 0.00 | 0.00 | -0.22 ^{**} | 1 | - | - |
| 6. Female | -.09 ^{**} | 0.00 | 0.00 | 0.13 ^{**} | 0.2 [*] | 1 | - |
| 7. Age | 0.09 ^{**} | 0.00 | 0.00 | -0.13 ^{**} | 0.17 ^{**} | -0.02 [*] | 1 |

Note: Between-person and within-person variables are orthogonal and share no variance, thus correlations between the centered within and between person variables are zero. DVB = Deviant and Violent Behaviors; WPPM = Within-Person Parental Monitoring; WPPD = Within-Person Peer Deviance; BPPM = Between-Person Parental Monitoring; BPPD = Between-Person Peer Deviance.

^{*}
p<.05;

^{**}
p<.001

Table 4.

Estimates of Fixed and Random Effects from a Series of Growth Models using Parental Monitoring and Peer Deviance to Predict Adolescent Deviant and Violent Behaviors.

| <i>Fix Effects</i> | Parameter estimates (<i>SE</i>) | | | | | |
|----------------------|-----------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| Intercept | 1.20 *** (0.03) | 1.22 *** (0.04) | 1.24 *** (.035) | 1.34 *** (.030) | 1.34 *** (.030) | 1.30 *** (.031) |
| Linear Slope | .057 *** (.014) | .046 *** (.014) | .032 ** (.013) | .010 (.012) | .008 (.012) | .019 (.012) |
| Quadratic Slope | -.005 *** (.001) | -.004 ** (.001) | -.002 (.001) | .001 (.001) | .001 (.001) | -.001 (.001) |
| Female | | -.097 *** (.023) | -.101 *** (.024) | -.079 *** (.019) | -.079 *** (.019) | -.076 *** (.018) |
| Age | | .029 ** (.011) | .034 ** (.012) | -.003 (.010) | -.003 (.010) | -.002 (.009) |
| African American | | .101 *** (.027) | .116 *** (.028) | .009 (.022) | .010 (.022) | .030 (.022) |
| Other | | .019 (.036) | .028 (.038) | -.008 (.029) | -.007 (.029) | .004 (.028) |
| WP Peer Deviance | | | .136 ** (.015) | .142 *** (.014) | .150 *** (.014) | .146 *** (.014) |
| WP Monitoring | | | -.133 *** (.038) | -.139 *** (.038) | -.158 *** (.038) | -.156 *** (.038) |
| BP Peer Deviance | | | | .385 *** (.017) | .384 *** (.017) | .316 *** (.051) |
| BP Monitoring | | | | -.389 *** (.045) | -.387 *** (.045) | -.308 ** (.114) |
| WPMon *BPPeerD | | | | | -.202 ** (.073) | -.176 ** (.072) |
| WPPeerD *BPMon | | | | | -.462 *** (.067) | -.448 *** (.067) |
| BPMon *BPPeerD | | | | | | -.570 *** (.163) |
| BPMon *Time | | | | | | -.097 (.054) |
| BPPeerD *Time | | | | | | .023 (.025) |
| BPMon *BPPeerD *Time | | | | | | .012 (.082) |

| | |
|---------------------|---------|
| BPMon *Time *Time | .015 ** |
| | (.006) |
| BPPeerD *Time *Time | -.005 |
| | (.003) |
| BPPeerD *BPMon * | -.001 |
| Time *Time | (.010) |

Parameter estimates (SE)

| <i>Random Effects</i> | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
|--------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Within-Person Intercept | .092 *** (.003) | .092 *** (.003) | .050 *** (.003) | .052 *** (.003) | .052 *** (.003) | .053 *** (.003) |
| Between-Person Intercept | .085 *** (.022) | .082 *** (.022) | .108 *** (.020) | .049 *** (0.14) | .047 *** (.014) | .028 * (.012) |
| Linear Slope | .039 *** (.009) | .039 *** (.009) | .031 *** (.008) | .018 ** (.006) | .018 ** (.006) | .010 (.005) |
| Quadratic Slope | .001 *** (.001) | .001 *** (.000) | .001 *** (.000) | .001 *** (.000) | .001 *** (.000) | .001 ** (.000) |
| WP Peer Deviance | | | .053 *** (.007) | .052 *** (.007) | .040 *** (.006) | .040 *** (.006) |
| WP Monitor | | | .211 *** (.047) | .216 *** (.047) | .202 *** (.045) | .200 *** (.044) |
| Fit Indices | | | | | | |
| -2LL | 3969.42 | 3926.73 | 3346.574 | 2788.56 | 2738.022 | 2617.978 |
| AIC | 3989.412 | 3419.344 | 3382.574 | 2828.56 | 2782.022 | 2675.978 |
| BIC | 4051.304 | 3461.010 | 3493.340 | 2951.633 | 2917.402 | 2854.434 |
| DF | 10 | 14 | 18 | 20 | 22 | 29 |

Note: Model 1 is a conditional growth model with linear and quadratic effects of growth that allows growth to vary randomly between people. Model 2 added the main effect of gender (male=reference), age, and race dummy variables of African American and Other, with White as the reference group (M1 to M2; LR = 42.69, df = 4, p < .001). Model 3 added the main effects of within-person time variant peer deviance and parental monitoring (M2 to M3; LR = 580.16, df = 4, p < .001). Model 4 added the main effects of between-person time invariant peer deviance and parental monitoring (M3 to M4; LR = 558.01, df = 2, p < .001). Model 5 added the interactions among within-person peer deviance and between-person parental monitoring, and within-person parental monitoring and between-person peer deviance (M4 to M5; LR = 50.54, df = 2, p < .001). Model 6 added the interactions among between-person peer deviance and between-person parental monitoring, (M5 to M6; LR = 120.04, df = 7, p < .001).

- * p<.05,
- ** p<.01,
- *** p<.001

Intercept, random linear slope, and quadratic slope were allowed to co-vary. Covariances are not shown for ease of reading. WP = Within-person; BP = Between-person.