American Psychological Association

Psychology of Violence

2152-0828/19/$12.00

2019, Vol. 9, No. 1, 18–27
http://dx.doi.org/10.1037/vio0000210

Examining Within-Person and Between-Person Associations of Family Violence and Peer Deviance on Bullying Perpetration Among Middle School Students

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Objective: Family violence and peer deviance have been shown to be related to bullying perpetration. Although there are several cross-sectional investigations of these two factors in relation to bullying behavior, no known studies have examined their interactive associations. The current study examines the longitudinal associations of both factors on bullying perpetration using a multilevel approach. ***Method:*** Participants included 1,194 Grade 5, 6, and 7 students from four middle schools in a Midwest county. We examined the main and interactive relations between how individual reports of family violence and peer deviance fluctuated over time (i.e., within-person effects) and how average reported differences between individuals (i.e., between-person effects) were associated with levels of bullying perpetration. ***Results:*** Positive main effects were found for both family violence and peer deviance on levels of bullying perpetration. Within-person effects indicated that, on average, fluctuations from one's "typical" levels in family violence and peer deviance were associated with contemporaneous increases in bullying perpetration. A statistically significant time-variant interaction revealed that within-person family violence significantly exacerbated the relationship between within-person peer deviance and bullying perpetration. Furthermore, a statistically significant cross-level interaction revealed that the association between within-person peer deviance and bullying perpetration was stronger for individuals with higher average levels of between-person family violence (+1 *SD*) compared with lower levels (−1 *SD*). ***Implications:*** These findings provide a more nuanced lens from which to view the co-occurring relations between family and peer ecologies. Prevention and intervention efforts should target peer relations to reduce the effect of family violence on bullying behavior.

Keywords: bullying, peer deviance, delinquent peers, family violence, domestic violence

Bullying is a pervasive issue today: Approximately 21% of students between the ages of 12 and 18 years reported being bullied in 2015 (Musu-Gillette et al., 2018). Bullying perpetration is a multifaceted phenomenon that is characterized as the intentional, unsolicited, and repeated use of physical (e.g., hitting, kicking, pushing, or shoving), verbal (e.g., name-calling or teasing), and/or social (e.g., spreading rumors or social exclusion) aggression toward one's peers to inflict physical, psychological, social, or educational harm (Gladden, Vivolo-Kantor, Hamburger, & Lumpkin, 2014; Olweus, 1997). The relationship between the perpetrator and the victim is often characterized by an imbalance of strength and power, used to coerce a person of lesser strength or status (Olweus, 1993). If not prevented early, children are at risk for developing psychopathology in adulthood (Copeland, Wolke, Angold, & Costello, 2013).

Over the past 4 decades, scholars have found that bullying is particularly prevalent in educational settings such as preschool, primary, and secondary institutions (Hymel & Swearer, 2015). Depending on the student's race/ethnicity, sex, and age, prevalence rates can vary. For instance, studies found race and ethnicity differences in levels of bullying perpetration, with African American/Black and Latino youth reporting higher involvement in comparison with their White counterparts (Albdour & Krouse, 2014). Likewise, male individuals have reported bullying others more frequently than female individuals (Pellegrini & Bartini, 2000). Moreover, studies have found significant grade differences, with much higher levels of bullying observed in middle and secondary institutions than in elementary institutions; yet, levels of bullying

This article was published Online First August 2, 2018.

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others tend to decrease once at the secondary level (Espelage, Hong, Rao, & Thornberg, 2015; Pellegrini & Bartini, 2000; Pellegrini & Long, 2002).

One possible explanation for the development of bullying perpetration comes from the social learning theory, which suggests that "most human behavior is learned observationally through modeling: from observing others, one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action" (Bandura & Walters, 1977, p. 22). Specifically, in relation to physically aggressive and violent behavior, children who are exposed to violent behaviors within their immediate family and/or peer contexts may learn and accept such behavior as an appropriate method for dealing with conflict or reaching a desired goal (Akers, 2011; Bandura, 1973). Indeed, longitudinal studies have shown that exposure to family violence is related to high levels of bullying behavior (Bauer et al., 2006; Knous-Westfall, Ehrensaft, MacDonell, & Cohen, 2012; Low & Espelage, 2014); however, peer deviance has only demonstrated this association in cross-sectional studies (Espelage, Bosworth, & Simon, 2000; Ferguson, San Miguel, & Hartley, 2009). As such, there has been no examination of the longitudinal, joint associations of exposure to family violence and peer deviancy on levels of bullying perpetration to date. The current study aims to provide a better understanding of these joint associations across a middle school sample.

Family Violence, Peer Deviance, and Bullying

According to the United States Department of Justice (2015), family violence (also known as domestic violence) is defined as any pattern of violent, threatening, coercive, or controlling behavior, including physical injury, direct or indirect threats, sexual assault, emotional and psychological abuse, damage to property, economic control, or social exclusion against current or past family members, a current or former intimate partner, or between individuals within a shared living space.

A recent review by Voisin and Hong (2012) highlighted several cross-sectional studies; yet, few longitudinal studies have found associations between forms of family violence and bullying behavior. For example, Knous-Westfall and colleagues (2012) conducted a 25-year longitudinal study investigating the impact of parental intimate partner violence (IPV) on relational and physical bullying and victimization across three generations. The authors measured both minor forms of physical IPV (e.g., hitting and grabbing) and psychological violence (e.g., physical threat) and more severe measures of IPV (i.e., violence that resulted in serious injuries). When controlling for externalizing and internalizing problems, they found that minor forms of IPV did not significantly predict physical bullying or relational peer bullying; however, they did find that exposure to severe IPV was significantly predictive of physical bullying in male individuals. Another prospective longitudinal, multigenerational study conducted by Bauer and colleagues (2006) examined the relationships among IPV, physical and relational forms of bullying, internalizing behavior problems, and social attention problems in children. They found that physical bullying was related to IPV based on parent report.

Outside the family context, peer relationships also play an important role throughout adolescent development, especially during the transition to middle school. According to Pellegrini and Long (2002), it is a critical period in early adolescent development where youth begin to explore their social identity and status and may engage in negative peer relationships, which can influence problem behaviors (Salmivalli, 2010). For instance, scholars have found that peer deviance—meaning to have peers who engage in criminal (e.g., theft, drug use, or weapon-carrying) and aggressive and violent behavior (e.g., hitting, fighting, or damaging property)—is a common risk factor for the development of externalizing behavior problems (Cotter, Wu, & Smokowski, 2016; Gifford-Smith, Dodge, Dishion, & McCord, 2005). With regard to bullying, studies have found a relation between peer deviance and bullying perpetration (Espelage et al., 2000; Ferguson et al., 2009). For example, Ferguson and colleagues (2009) found that depressed mood and associating with deviant peers were the strongest predictors of child self-reported bullying and rule-breaking behaviors.

As students begin to matriculate into secondary education, researchers have recognized the dynamic association between family and peer ecologies on the development of bullying behavior (Low & Espelage, 2014; Pepler, Jiang, Craig, & Connolly, 2008). For instance, Pepler and colleagues (2008) examined different developmental trajectories—from early to late adolescence—of youth bullying and general aggression behavior in 800 children, while also assessing for individual (i.e., bullying or moral disengagement), family (i.e., parental trust, parental monitoring, and conflict with parents), and peer (i.e., physically aggressive peers, conflict with peers, and susceptibility to peer pressure) factors. Four bullying trajectories were found: high bullying group, early moderate bullying group, moderate bullying group, and nonbullying group. When comparing the groups and the associated risk and protective factors, they found that students in the high bullying group showed little regard for the welfare or feelings for others, often came in conflict with parents and peers, and associated with peers who bully, especially at the beginning of mid-adolescence. In addition, a longitudinal study conducted by Low and Espelage (2014) found significant interactions when examining community violence exposure and bullying and victimization, in relation to individual (e.g., impulsivity and delinquent behavior), peer (e.g., deviant peers), and familial (e.g., parental monitoring) influences. They found that parental monitoring buffered the effects of community violence exposure on bullying by reducing delinquent behavior and involvement with deviant peers. Overall, these studies demonstrate that peer and family influences not only predict but having moderating effects on bullying behavior.

Despite previous findings suggesting that children's social context is an important avenue by which to explore the development of bullying behavior, studies to date examining the joints effects of family violence and peer deviance have been limited to cross-sectional studies (Espelage et al., 2000; Ferguson et al., 2009). One limitation of cross-sectional studies is that statistical differences in the variables of interest are typically inferred across people (i.e., between-person effects), while disregarding how variables may vary within individuals over time (i.e., within-person effects; Curran & Bauer, 2011). For instance, when applying psychological theories of behavior (e.g., social learning theory), empirical research studies investigating these patterns often use between-person data (e.g., cross-sectional assessments) or model between-person effects, even though implicitly or explicitly implying within-person processes (i.e., an error of inference; Curran & Bauer, 2011). However, an underlying presumption of the social

learning theory is that an individual's behavior will change (i.e., within-person processes) because of what they learn and observe within their social context (Bandura, 1973). Studies applying this theory often ignore that these factors may fluctuate over time and that these fluctuations themselves may be important determinants of change in an individual's behavior (Curran & Bauer, 2011). For example, Merrin, Davis, Berry, D'Amico, and Dumas (2016) examined both the between- and within-person associations of crime, substance use, and social risk, using structural equation modeling (i.e., autoregressive latent trajectory model with structured residuals). Despite past research showing that crime and substance use have a reciprocal relation, particularly when examining differences across individuals, the authors found that this relation was not evident when taking into consideration how individuals' reports of crime and substance use fluctuated over time. As such, examining both within- and between-person effects would allow for a more substantive, developmentally meaningful, and statistically robust examination as well as have significant implications for theory (Curran & Bauer, 2011). Thus, the current study uses this framework as a tool to investigate the role of adult and peer influences on bullying behavior, while also using a multilevel approach in hopes of expanding on the literature that applies the social learning theory to bullying behavior.

The Current Study

Although findings from Low and Espelage (2014) and Pepler and colleagues (2008) demonstrate that there is a dynamic process between relational antecedents in both the peer and familial contexts that affect the development of bullying behavior over time, no longitudinal study, to date, has examined the interactive association of family violence and peer deviance. By using a multilevel approach to examine both within- and between-person variables together, and how they may interact with each other (cross-level interaction), the current study examines the extent to which students' fluctuations in exposure to family violence and peer deviance across time respectively and interactively affect their levels of bullying perpetration. In addition, there is the potential for moderating effects on bullying behavior to be found between family violence and peer deviance, especially because peer influences play a critical role during adolescence (Pellegrini & Long, 2002). For example, for students reporting higher levels of bullying in relation to heightened exposure to family violence over time, this association may also be moderated by reported fluctuations in exposure to peer deviance (and vice versa with family violence as a moderator). Our findings will provide a more dynamic investigation of how reported levels of bullying may vary at different levels of family and peer deviance exposure, thus expanding on the literature that applies the social learning theory to bullying behavior.

The current study used a large sample of middle school students to examine the longitudinal associations (four waves) between family violence and peer deviance on bullying perpetration using a multilevel design. We sought to answer several research questions, including the following:

(1) On average, are there increases in bullying perpetration across middle school?

(2) On average, are higher levels of family violence and peer deviance predictive of higher levels of bullying perpetration respectively (i.e., between-person effects)?

(3) Are time-specific fluctuations from one's typical level (i.e., within-person effects) of family violence and peer deviance associated with contemporaneous increases in bullying perpetration during middle school?

(4) Are there time-specific fluctuations—both at the within- and between-person levels as well as at the cross level—in family violence and peer deviance associated with contemporaneous increases in bullying perpetration?

Method

Participants and Procedures

Participating students in this study were asked to complete a survey seeking information about their experiences with family violence, peer deviance, and bullying perpetration. Participants included 1,194 Grade 5, 6, and 7 cohorts from four middle schools in a Midwest county. The sample was 49.6% female; age at baseline was 11–15 years (M = 13.46); and 58.7% (n = 701) identified as African American, 30.9% (n = 369) identified as White, and 10.4% (n = 124) identified as other. Over 2 years, data were collected in the spring and fall semesters for a total of four time points. Sample sizes for the Grade 5 (Wave 1 = 337, Wave 2 = 303, Wave 3 = 294, and Wave 4 = 273), 6 (Wave 1 = 411, Wave 2 = 379, Wave 3 = 358, and Wave 4 = 341), and 7 (Wave 1 = 444, Wave 2 = 403, Wave 3 = 373, and Wave 4 = 0) cohorts differed slightly over time, except for the Grade 7 cohort at Wave 4. The Grade 7 cohort was not followed into high school and thus only contributes three waves of data.

Parental consent. The current study was formally announced in school newsletters, school district newsletters, and e-mails from the principals before the spring of 2008. Upon receiving approval from the institutional review board and district school board, a waiver of active consent was distributed to each parent/guardian of the students enrolled in the school. The passive consent included a letter containing information about the purpose of the study, and parents/guardians were also invited to attend information meetings held in each community. Parents/guardians who did not wish to have their child participate in the study were asked to sign the information letter and return it to the researchers.

After parents/guardians turned in these forms, it was determined that 95% of students initially participated in the study. Students were asked to consent to participate in the study through an assent procedure described on the coversheet of the survey distributed to all remaining students. Surveys were later de-identified with code numbers so researchers could track their responses over multiple time points and ensure confidentiality.

Survey administration. Students were initially informed about the nature of the study by one of the six trained research assistants, the principal investigator, or another faculty member who administered the survey. Surveys were conducted each semester (spring and fall) in classrooms comprising 10–25 students. The survey took approximately 40–45 min to complete. Members of the research team ensured confidentiality by ensuring students

were sitting far enough away from one another. The survey was administered and read aloud while students responded individually.

Because the content of the survey could be upsetting to students, researchers assured them that their participation in the study was entirely voluntary and that they could skip any question or stop participating in the survey at any time. At least one appropriately trained doctoral-level psychology student was on-site to provide immediate support to any student and direct him or her to the appropriate resources. Students were also provided the contact information of the research team to seek more information about the study. Also, students were reminded about in-school resources available to them (e.g., guidance counselors) should they feel the need to talk to someone as a result of completing the survey.

Measures

Demographics. Participants completed a demographic questionnaire that asked about their sex, age, grade, and race/ethnicity. Participants were given six options for their race/ethnicity: African American (not Hispanic), White (not Hispanic), Asian, Native American, Hispanic, and other (with an option to provide the most appropriate racial/ethnic descriptor).

Bullying perpetration. The Illinois Bully Scale (Espelage & Holt, 2001) is a nine-item scale assessing the frequency of bullying at school. Students were asked to recall how frequently they teased others, upset others for the fun of it, excluded others from their group of friends, helped harass others, and threatened to hit or hurt another student. Response options range from "never" to "7 or more times" in the past 30 days. Exploratory and confirmatory factor analyses have demonstrated the construct validity of this scale (Espelage & Holt, 2001). In the development sample, factor loadings for these items ranged from .52 to .75, and this factor accounted for 31% of the variance in the factor analysis (Espelage & Holt, 2001). This scale and the Youth Self-Report Aggression Scale correlated moderately ($r = .65$; Achenbach, 1991), supporting the notion that it was somewhat distinct from general aggression. Cronbach's αs ranged from .86 to .90 across assessment waves.

Peer deviance. The Friend's Delinquent Behavior-Denver Youth Survey is a seven-item scale (Institute of Behavioral Science, 1987) that asks participants to report how many of their friends within the last year "hit or threatened to hit someone," "purposely damaged or destroyed property that did not belong to them," and "used alcohol," to name a few items. Response options were "none," "very few," "some of them," "most of them," and "all of them." Cronbach's αs ranged from .85 to .88 across assessment waves.

Family violence. The Family Conflict and Hostility Scale (Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003) was used to measure the level of perceived conflict and hostility in a student's family environment. This scale contains three items from a larger survey designed for the Rochester Youth Development Study: "How often is there yelling, quarreling, or arguing in your household?," "How often do family members lose their temper or blow up for no good reason?," and "How often are there physical fights in the household, like people hitting, shoving, or throwing things?" Response options ranged from "never" to "always" on a 4-point scale. Cronbach's αs ranged from .79 to .81 across assessment waves.

Analytic Plan

To address our research questions, we fit a taxonomy of growth models to our data (Singer & Willett, 2003). We began by establishing a plausible functional form for individual's levels of bullying perpetration over time. We tested a series of unconditional and conditional models that included a null, random intercept, fixed linear growth, and random linear growth model. Fixed linear growth was not found to be significant ($b = -.006$, $SE = .008$, $p = .568$) and random linear growth did not improve model fit (M1 to M2; $\Delta LR = 0.30$, $\Delta df = 1$, $p = .596$), suggesting that there was no significant average change in bullying over the four waves. As such, these growth parameters were removed from subsequent analysis. We also fit random intercept models for our main predictors (family violence and peer deviance) to assess whether there was meaningful variation at both the within- and between-person levels. All models were nested and tested based on significant reductions in $-2 \times$ log-likelihood using deviance tests.

In the following models, we addressed our research questions by examining systematic groups of conditional models. In Model 2, we controlled for age, race, and sex. For Model 3, we tested the within- and between-person main effects of family violence. We then added the within- and between-person main effects of peer deviance on individual levels of bullying perpetration in Model 4. In Model 5, the final model in Equation 1, we tested all possible interactions (within-person, between-person, and cross-level) between peer deviance and family violence on bullying perpetration. We excluded nonsignificant interactions for parsimony, leaving only two hypothesized interactions that examined peer deviance as a moderator of the relation between family violence and bullying in our final model. On levels of bullying perpetration, we estimated the within-person interactive effect of peer deviance and family violence. In addition, we allowed within-person peer deviance to vary as a function of between-person family violence. The stochastic part of the model allowed the intercept and within-person peer deviance to vary randomly across people.

Centering strategies are very important in multilevel models because they help separate the variance into different groups (e.g., within-person and between-person). Between-person, time-invariant predictors (Level 2) were grand-mean-centered and again refer to average differences between people over time. Within-person, time-varying predictors (Level 1) were person-mean-centered and again refer to time-specific fluctuations from an individual's "typical" level (i.e., individual's average). By using these centering techniques, we could partition variance in our variables at two respective levels of analysis, making them orthogonal to one another (Enders & Tofighi, 2007). As such, individuals are treated as their own control, thereby adjusting for all observed and unobserved between-person (Level 2) confounds.

To address non-normality, we used the robust maximum likelihood estimator available in M*plus* 7.4 (Muthén & Muthén, 1998–2014). More specifically, we evaluated the extent to which our data were skewed and adjusted for the small amount of skewness we found across all variables by using robust maximum likelihood. To check these estimates, we also bootstrapped our standard errors (10,000), reran all models, and found the same

results. Attrition in the current sample ranged from approximately 15% to 20% over time. However, it should be noted that individuals who were in Grade 7 grade at baseline transitioned to high school at Wave 3 and thus do not contribute any information at Wave 4. To address missing data, we fit all our models using full information maximum likelihood. Unlike listwise deletion, full information maximum likelihood allows participants to contribute all available information they have without the need to remove participants due to missing data, unless participants have missing values on all the predictor variables. As such, data from all 1,194 participants were included. We took specific steps to examine the missing data patterns. First, we tested the extent to which our data were missing completely at random (MCAR) using Little's (1988) random MCAR test (Enders, 2010). The test for bullying perpetration was significant ($\chi^2 = 67.17$, $df = 28$, $p < .001$) and indicated that the data were not MCAR. Although there is no formal method for testing the missing at random assumption without knowing the values of the missing dependent variable (i.e., bullying perpetration), we then examined the extent to which missing data were associated with sex and race. There were no differences in missing data patterns between male and female individuals on bullying perpetration at Wave 1 ($\chi^2 = 1.53$, $df = 1$, $p = .217$), Wave 2 ($\chi^2 = 0.42$, $df = 1$, $p = .515$), or Wave 4 ($\chi^2 = 0.12$, $df = 1$, $p = .912$). However, female participants had a larger proportion of missing data on bullying perpetration at Wave 3 ($\chi^2 = 5.47$, $df = 1$, $p = .019$). For race, White participants had a larger proportion of missing data on bullying perpetration at Wave 1 ($\chi^2 = 69.32$, $df = 2$, $p < .001$), Wave 2 ($\chi^2 = 54.54$, $df = 2$, $p < .001$), Wave 3 ($\chi^2 = 25.28$, $df = 2$, $p < .001$), and Wave 4 ($\chi^2 = 33.07$, $df = 2$, $p < .001$) compared with Black and other races. There were no differences between Black and other race categories on bullying perpetration. By including race and sex in our models, we adjust for any bias due to missing data on these variables.

Equation 1:

Level 1:

$$Bullying_{ji} = \beta_{0i} + \beta_{1i}(FamilyViolence_{ij} - \overline{FamilyViolence_i}) + \beta_{2i}(PeerDeviance_{ij} - \overline{PeerDeviance_i}) + \beta_{3i}(FamilyViolence_{ij} * PeerDeviance_{ji}) + \varepsilon_{ij} \quad (1)$$

Level 2:

$$\beta_{0i} = \gamma_{00} + \gamma_{01}(Sex)_i + \gamma_{02}(Age)_i + \gamma_{03}(Black)_i + \gamma_{04}(Other)_i + \gamma_{05}(\overline{FamilyViolence})_i + \gamma_{06}(\overline{PeerDeviance})_i + U_{0i} \quad (2)$$

$$\beta_{1i} = \gamma_{10} \quad (3)$$

$$\beta_{2i} = \gamma_{20} + \gamma_{21}(\overline{FamilyViolence})_i + U_{2i} \quad (4)$$

$$\beta_{3i} = \gamma_{30} \quad (5)$$

Results

Preliminary Models

Table 1 presents a taxonomy of our five nested models. The preliminary models showed support for several of our hypotheses. We fit a null model to our data and calculated an intraclass correlation of .513 that indicated that approximately 51% of the variability in individuals' levels of bullying perpetration was due to between-person differences, whereas 49% of the variability was due to within-person differences across time.

Examining the demographic variables, Model 2 indicated that girls reported significantly lower levels of bullying perpetration across time ($b = -.06$, $SE = .026$, $p = .027$) compared with their male counterparts. Compared with boys, there was a $-.12$ *SD* decrease in bullying perpetration for girls. Further, Black students reported significantly higher average levels of bullying perpetration ($b = .10$, $SE = .026$, $p < .001$), such that Black students generally reported individual levels of bullying perpetration that were .22 of a standard deviation higher compared with their White counterparts. No differences were observed among individuals in the "Other" group when compared with White students. In addition, age had a positive association with bullying perpetration in preliminary models but was nonsignificant in subsequent models.

Between-Person Effects and Bullying Perpetration

Also, in Table 1, Models 3 and 4 display the main effects of the between-person associations of family violence and peer deviance. Significant between-person main effects were found, with individuals who reported higher levels of family violence ($b = .12$, $SE = .013$, $p < .001$) and peer deviance ($b = .32$, $SE = .02$, $p < .001$) also reporting higher average levels of bullying perpetration. That is, a 1 *SD* increase in family violence was associated with a .26 *SD* increase in bullying perpetration, and a 1 *SD* increase in peer deviance was associated with a .50 *SD* increase in bullying perpetration. Further, individuals who reported higher average levels of family violence and peer deviance showed higher levels of bullying perpetration in comparison with individuals with lower levels of family violence.

Within-Person Effects and Bullying Perpetration

In Table 1, Models 3 and 4 present the main effects of the (time-specific) within-person associations. The main effects model indicated that when individuals reported higher levels of family violence, they also reported higher levels of bullying perpetration at the same occasion ($b = .05$, $SE = .016$, $p = .002$). However, this effect was very small. Specifically, a 1 *SD* increase in within-person family violence was associated with a .06 *SD* increase in bullying perpetration. Further, when individuals reported higher peer deviance, they also reported higher levels of bullying perpetration at the same time point ($b = .20$, $SE = .023$, $p < .001$). A 1 *SD* increase in within-person peer deviance was associated with a .17 *SD* increase in bullying perpetration.

Within-Person and Between-Person Interactive Effects

We found two significant interactions: a within-person and a cross-level interaction (see Model 5 in Table 1). At the within-person level, the positive relation among within-person family violence and bullying perpetration is especially pronounced at time points when individuals report high peer deviance ($b = .12$, $SE = .04$, $p = .005$). Figure 1 displays the plotted slopes of peer deviance at varying levels of family violence. This pattern is

Table 1
Estimates of Fixed and Random Effects From a Series of Individual Multilevel Models Predicting Bullying Perpetration

Estimated effects	Parameter estimates (*SE*)				
	Model 1	Model 2	Model 3	Model 4	Model 5
Fixed effects					
Intercept	.435*** (.014)	.338*** (.026)	.369*** (.025)	.413*** (.023)	.408*** (.023)
Age		.038* (.013)	.019 (.013)	−.016 (.012)	−.016 (.012)
Sex (Ref = Male)		−.034 (.026)	−.085*** (.025)	−.050* (.023)	−.049* (.023)
Black (Ref = White)		.206*** (.09)	.197*** (.027)	.099*** (.025)	.100*** (.026)
Other (Ref = White)		−.011 (.047)	.011 (.044)	−.035 (.041)	−.032 (.041)
WP family violence			.075*** (.016)	.050** (.016)	.050*** (.016)
BP family violence			.201*** (.013)	.117*** (.013)	.116*** (.013)
WP peer deviance				.204*** (.023)	.212*** (.032)
BP peer deviance				.319*** (.020)	.315*** (.020)
WP Family Violence × WP Peer Deviance					.120*** (.006)
WP Peer Deviance × BP Family Violence					.063* (.032)
Random effects					
BP intercept	.183*** (.011)	.169*** (.010)	.138*** (.009)	.106*** (.008)	.121*** (.008)
WP intercept	.165*** (.006)	.165*** (.006)	.159*** (.006)	.152*** (.006)	.126*** (.006)
WP peer deviance					.142*** (.036)
Fit indices					
−2LL	4,856.76	4,757.85	4,403.30	4,075.77	4,007.80
AIC	4,862.76	4,771.85	4,421.31	4,097.77	4,035.80
BIC	4,880.82	4,813.99	4,475.28	4,163.71	4,119.72
#Parameters	3	7	9	11	14

Note. Model 1 is an unconditional null model. Model 2 added the control variables of age, sex, and race (M1 to M2; $\Delta LR = 98.9$, $\Delta df = 4$, $p < .001$). Model 3 added the main effects of within- and between-person family violence (M2 to M3; $\Delta LR = 354.55$, $\Delta df = 2$, $p < .001$). Model 5 added the main effects of within- and between-person time peer deviance (M3 to M4; $\Delta LR = 327.54.$, $\Delta df = 2$, $p < .001$). Model 6 added the interactions of within-person family violence and within-person peer deviance, and within-person peer deviance and between-person family violence (M4 to M5; $\Delta LR = 67.97$, $\Delta df = 3$, $p < .001$). WP = within-person; BP = between-person; −2LL = −2 × log-likelihood; AIC = Akaike information criterion; BIC = Bayesian information criterion.
* $p < .05$. ** $p < 01$. *** $p < .001$.

carried on as individuals report higher levels of family violence at any given occasion shown by the increasing slopes. It is noteworthy that at low levels of peer deviance (−1 *SD*), there is no discernable difference among varying levels of family violence, indicated by the nonsignificant positive simple slope for low (−1 *SD*) peer deviance. The positive simple slopes for the other two levels were significant (Figure 1).

A significant cross-level interaction ($b = .06$, $SE = .03$, $p = .05$) showed that within-person peer deviance varied as a function of between-person family violence on increased levels of bullying perpetration. For instance, individuals with higher average levels of family violence had significantly higher levels of bullying perpetration, even at low levels of within-person peer deviance. Moreover, when individuals reported high levels of peer deviance, levels of bullying perpetration were exacerbated particularly for the high between-person family violence group (+1 *SD*). Positive simple slopes were significant for each level (Figure 2).

Discussion

Given the dearth of literature on the associated effects of family violence and peer deviance exposure on levels of bullying perpetration, the current study sought to examine the longitudinal associations of both factors on bullying perpetration using a large sample of middle school students. Consistent with previous studies and the social learning theory (Espelage et al., 2000; Ferguson et al., 2009), our findings showed that violence exposure within individuals' intermediate family and peer contexts was associated with higher levels of bullying behavior. Though we cannot conclude that the bullying perpetrators learned and accepted observed violent and aggressive acts as appropriate methods for dealing with conflict or reaching a desired goal, these findings still affirm the notion that there is a relationship between exposure to violence and one's own perpetration of it.

It is important to underscore that bullying perpetration levels did not increase over the 2 years of this longitudinal study. This finding was unexpected in that we believed levels of bullying would increase significantly as students transitioned into and moved through middle school (Grades 5 and 6), especially because levels of bullying tend to be more pronounced during that time (Espelage et al., 2015; Pellegrini & Bartini, 2000; Pellegrini & Long, 2002). For instance, Pellegrini and Long (2002) found that students' levels of bullying perpetration increased significantly from Grade 5 to Grade 6, and then began to decrease at the beginning of Grade 7. However, we in general only found slight changes in bullying levels across waves, which were not significantly different from 0. Also, we did not assess students in elementary school, so we were, unfortunately, unable to assess the elementary–middle school transition.

Furthermore, we found dynamic relationships between exposure to family and peer deviance in how they affect bullying perpetration. Specifically, students with relatively elevated levels of both family violence and peer deviance at a given time reported particularly high levels of bullying perpetration at that time (Figure 1).

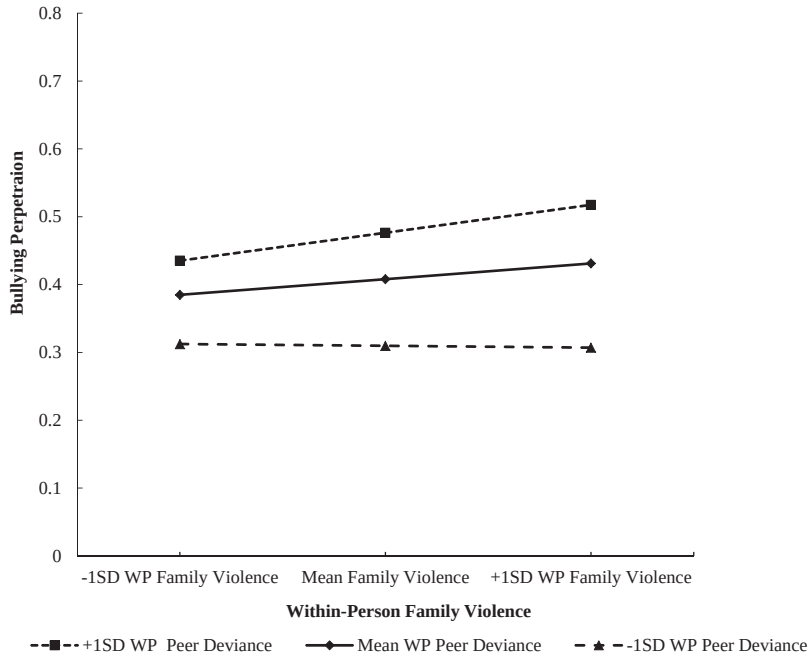

Figure 1. Within-person family violence and within-person peer deviance (Level 1 interaction). *Note:* Simple slopes: +1 *SD* WP peer deviance: $\beta = 0.09$, $SE = 0.02$, $p < .001$; mean peer deviance: $\beta = 0.05$, $SE = 0.02$, $p < .001$; −1 *SD* WP peer deviance: $\beta = .01$, $SE = 0.02$, $p = .578$. WP = within-person.

In addition, increasing levels of peer deviance at a given time corresponded with higher levels of bullying perpetration at that time, especially for students with generally high levels of family violence across time (Figure 1).

A similar dynamic relation also existed across levels (cross-level interaction). We found a moderating effect where increasing levels of peer deviance at a given time exacerbated the relation between family violence exposure and levels of bullying perpetra-

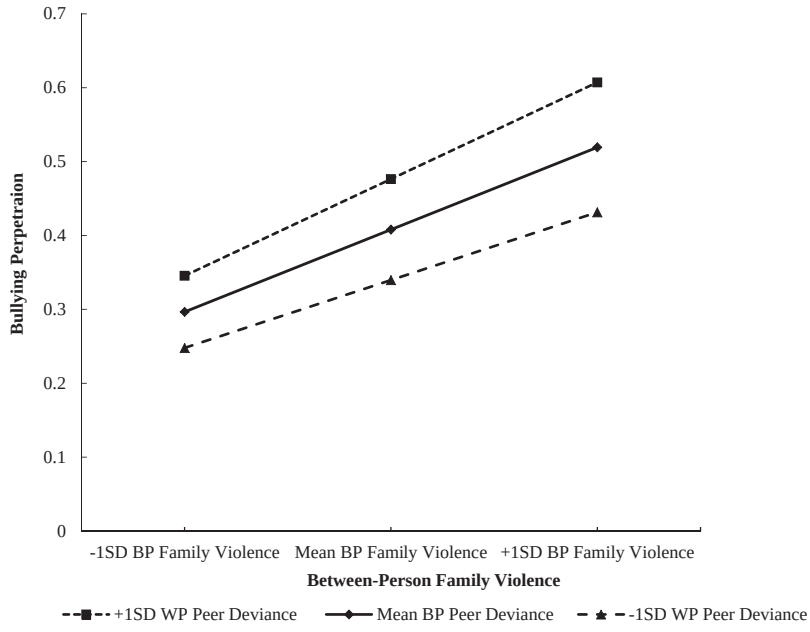

Figure 2. Within-person peer deviance and between-person family violence (cross-level interaction). *Note:* Simple slopes: +1 *SD* BP peer deviance: $\beta = 0.14$, $SE = 0.02$, $p < .001$; mean peer deviance: $\beta = 0.12$, $SE = 0.01$, $p < .001$; −1 *SD* BP peer deviance: $\beta = .10$, $SE = 0.02$, $p < .001$. BP = between-person.

tion. One plausible explanation for the moderating role of peer deviance on bullying behavior is that research on problem behaviors among adolescents indicates that youth who live in households characterized with high levels of family conflict and low positive family relations are less likely to receive adequate parental monitoring and more likely to associate with deviant peers over time (Ary, Duncan, Duncan, & Hops, 1999). However, more research is needed to test this relation with bullying behavior.

The current study has multiple strengths worth noting. First, previous studies examining associations among peer deviance, family violence, and bully perpetration have largely been cross-sectional. Furthermore, longitudinal studies examining these associations have been limited in their methodological approach, whereas this study appears to be the first to examine the longitudinal association among peer deviance, family violence, and bully perpetration using a time-variant, multilevel approach. Second, the current study examined both within- and between-person level effects, allowing researchers to examine average differences between people, and how individuals change respective to their own mean levels of bullying perpetration over time. More specifically, partitioning the variance at multiple levels of analysis allowed us to control for person-level dependencies (i.e., how individuals' scores are correlated over time) and all observed and unobserved between-person confounds (i.e., how individuals differ from one another), which made for a more robust model, thereby adding to the substantive utility of our findings. By factoring in both within- and between-level differences, this added interpretational value in terms of how we interpreted the relation between family violence and peer deviance on bullying perpetration, with nonsignificant average growth in levels of bullying perpetration and within-person effects showing significant fluctuations in reported levels.

Limitations

There are several limitations to this study that should be noted. First, the current study used data collected from self-reported measures of bullying. Although self-report is the most commonly used method in bullying research (Cornell & Brockenbrough, 2004), multi-informant methods of examining incidence of bullying such as peer- and teacher-reports should also be considered for future studies to reduce any threats to validity. Second, the current study examined middle school students from one Midwest county. Thus, the generalizability of these findings is geographically limited. Third, we were only able to examine bullying behaviors across a 2-year span (four waves), looking at students who have already transitioned into or passed Grade 7 by the second wave. This may have limited our ability to detect significant average growth because our analysis did not include critical periods where bullying behavior becomes pervasive, particularly around Grade 5. Fourth, the MCAR test was significant and indicated that the data were not MCAR. However, we examined missing at random assumptions and included sex and race variables in our model to account for any potential bias due to missingness on these variables. Fifth, the Grade 7 cohort was not followed into high school and thus does not contribute any information at Wave 4. Finally, although the social learning theory provides a plausible explanation for the development of bullying behavior, it is limited in that it does not take into consideration the broader context. Bullying is indeed influenced by various other ecological contexts (e.g., school climate, neighborhood environment, and cultural norms; Hong, & Espelage, 2012) that this study did not include. Moreover, the question of why is it that youth who live in households characterized by high levels of family conflict associate more with deviant peers over time is interesting. However, the current study's theoretical framework and methodological approach do not provide data to answer this question. We can only hypothesize based on previous literature rooted in relational theory (in that an examination of the nature and quality of relationships on thoughts, behaviors, and attitudes is conducted) rather than a social–cognitive framework that focuses on the relation between cognitions (i.e., observation) and one's social environment on behavior (i.e., the imitation of observed interactions in one's social environment). Causal models linking pathways between characteristics of the peer and family relational context on bullying behavior are needed.

Research Implications

In sum, these findings support previous research that points to the strong predictors of family violence and exposure to deviant peers on increased levels of bullying perpetration (Espelage et al., 2000; Ferguson et al., 2009). In line with the social learning theory, bullying behavior did change in relation to reported levels of violence exposure within individuals' immediate family and peer contexts. Expanding on the social learning theory's explanation for bullying behavior, we also found a dynamic process between relational antecedents in the peer and family context when factoring in within-person differences. Specifically, we indeed found that fluctuations in violence exposure within individuals' family and peer contexts were important determinants of change in an individual's bullying behavior. These findings provide a more nuanced lens from which to view the co-occurring relations between family and peer ecologies. Future research should incorporate statistical modeling that considers both between-person and within-person approaches to capture the complex interactions between family and peers on bullying perpetration. Also, adding protective factors in these models is critical to identify how youth exposed to family violence resist joining deviant peer groups.

Clinical and Policy Implications

With regard to prevention and intervention efforts, delinquency and peer relations should be targeted to reduce the effect of family violence on bullying behavior. Interestingly, a recent randomized clinical trial of a middle school social–emotional learning program (Second Step; Committee for Children, 2008) reduced self-reported delinquency across the 3-year evaluation, which in turn was associated with reductions in bullying perpetration (Espelage, Low, Van Ryzin, & Polanin, 2015). Although few antibullying programs target both the peer and the family level, programs that have focused on skill-building at the peer level have had success in reducing bullying perpetration. In the context of the current findings, identifying the skills and programs that build prosocial connections between peers seems especially important. Two factors in specific—social support and connectedness—have been suggested to be protective factors against bully perpetration (McNeely & Falci, 2004; Resnick, Ireland, & Borowsky, 2004). According to Substance Abuse and Mental Health Services Administration's

National Registry of Evidence-Based Programs and Practices, the Cross-Age Mentoring Program (CAMP) for Children with Adolescent Mentors (Karcher, 2000) is one program that includes these factors and offers a potential intervention for middle school students. CAMP's purpose is to promote social–emotional and cognitive development in students by fostering connectedness among their peers, school, family, and community and prevent problematic behaviors. Younger (Grades 4–8) mentees are paired with older (Grades 9–11) mentors who engage in structured meetings throughout the school year and for 10 days over the summer. Though it has not been evaluated as an antibullying program, CAMP offers a potential intervention deserving of future research given its association with improved connectedness with parents (Karcher, Davis, & Powell, 2002) and friends, culturally diverse peers, and their schools (Karcher, 2009). Future research may consider evaluating programs focused on connectedness and social support to improve peer relations.

References

Achenbach, T. M. (1991). *Manual for the youth self-report and 1991 profile*. Burlington: University of Vermont Department of Psychiatry.

Akers, R. L. (2011). *Social learning and social structure: A general theory of crime and deviance*. Brunswick, NJ: Transaction Publishers.

Albdour, M., & Krouse, H. J. (2014). Bullying and victimization among African American adolescents: A literature review. *Journal of Child and Adolescent Psychiatric Nursing, 27,* 68–82. http://dx.doi.org/10.1111/jcap.12066

Ary, D. V., Duncan, T. E., Duncan, S. C., & Hops, H. (1999). Adolescent problem behavior: The influence of parents and peers. *Behaviour Research and Therapy, 37,* 217–230. http://dx.doi.org/10.1016/S0005-7967(98)00133-8

Bandura, A. (1973). *Aggression: A social learning analysis*. Oxford, United Kingdom: Prentice Hall.

Bandura, A., & Walters, R. H. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bauer, N. S., Herrenkohl, T. I., Lozano, P., Rivara, F. P., Hill, K. G., & Hawkins, J. D. (2006). Childhood bullying involvement and exposure to intimate partner violence. *Pediatrics, 118,* e235–e242. http://dx.doi.org/10.1542/peds.2005-2509

Committee for Children. (2008). *Second step: Student success through prevention program*. Seattle, WA: Author.

Copeland, W. E., Wolke, D., Angold, A., & Costello, E. J. (2013). Adult psychiatric outcomes of bullying and being bullied by peers in childhood and adolescence. *Journal of the American Medical Association Psychiatry, 70,* 419–426. http://dx.doi.org/10.1001/jamapsychiatry.2013.504

Cornell, D. G., & Brockenbrough, K. (2004). Identification of bullies and victims: A comparison of methods. *Journal of School Violence, 3,* 63–87. http://dx.doi.org/10.1300/J202v03n02_05

Cotter, K. L., Wu, Q., & Smokowski, P. R. (2016). Longitudinal risk and protective factors associated with internalizing and externalizing symptoms among male and female adolescents. *Child Psychiatry and Human Development, 47,* 472–485. http://dx.doi.org/10.1007/s10578-015-0580-9

Curran, P. J., & Bauer, D. J. (2011). The disaggregation of within-person and between-person effects in longitudinal models of change. *Annual Review of Psychology, 62,* 583–619. http://dx.doi.org/10.1146/annurev.psych.093008.100356

Enders, C. K. (2010). *Applied missing data analysis*. New York, NY: Guilford Press.

Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: A new look at an old issue. *Psychological Methods, 12,* 121–138. http://dx.doi.org/10.1037/1082-989X.12.2.121

Espelage, D. L., Bosworth, K., & Simon, T. R. (2000). Examining the social context of bullying behaviors in early adolescence. *Journal of Counseling and Development, 78,* 326–333. http://dx.doi.org/10.1002/j.1556-6676.2000.tb01914.x

Espelage, D. L., & Holt, M. L. (2001). Bullying and victimization during early adolescence: Peer influences and psychosocial correlates. *Journal of Emotional Abuse, 2,* 123–142. http://dx.doi.org/10.1300/J135v02n02_08

Espelage, D. L., Hong, J. S., Rao, M., & Thornberg, R. (2015). Social-ecological factors associated with bullying perpetration among early adolescents across the elementary-middle school transition. *Violence and Victims, 30,* 470–488. http://dx.doi.org/10.1891/0886-6708.VV-D-14-00046

Espelage, D. L., Low, S., Van Ryzin, M. J., & Polanin, J. R. (2015). Clinical trial of Second Step middle school program: Impact on bullying, cyberbullying, homophobic teasing, and sexual harassment perpetration. *School Psychology Review, 44,* 464–479.

Ferguson, C. J., San Miguel, C., & Hartley, R. D. (2009). A multivariate analysis of youth violence and aggression: The influence of family, peers, depression, and media violence. *The Journal of Pediatrics, 155,* 904–908.e3. http://dx.doi.org/10.1016/j.jpeds.2009.06.021

Gifford-Smith, M., Dodge, K. A., Dishion, T. J., & McCord, J. (2005). Peer influence in children and adolescents: Crossing the bridge from developmental to intervention science. *Journal of Abnormal Child Psychology, 33,* 255–265. http://dx.doi.org/10.1007/s10802-005-3563-7

Gladden, R. M., Vivolo-Kantor, A. M., Hamburger, M. E., & Lumpkin, C. D. (2014). *Bullying surveillance among youths: Uniform definitions for public health and recommended data elements, Version 1.0*. Retrieved from https://www.cdc.gov/violenceprevention/pdf/bullying-definitions-final-a.pdf

Hong, J. S., & Espelage, D. L. (2012). A review of research on bullying and peer victimization in school: An ecological system analysis. *Aggression and Violent Behavior, 17,* 311–322. http://dx.doi.org/10.1016/j.avb.2012.03.003

Hymel, S., & Swearer, S. M. (2015). Four decades of research on school bullying: An introduction. *American Psychologist, 70,* 293–299. http://dx.doi.org/10.1037/a0038928

Institute of Behavioral Science. (1987). *Youth interview schedule: Denver Youth Survey*. Boulder: University of Colorado.

Karcher, M. J. (2000). *Children with Adolescent Mentors Program (CAMP): The developmental mentoring trainer's guide*. (Unpublished manual), University of Wisconsin-Madison, Madison, WI.

Karcher, M. J. (2009). Increases in academic connectedness and self-esteem among high school students who serve as cross-age peer mentors. *Professional School Counseling, 12,* 292–299. http://dx.doi.org/10.5330/PSC.n.2010-12.292

Karcher, M. J., Davis, C., & Powell, B. (2002). The effects of developmental mentoring on connectedness and academic achievement. *The School Community Journal, 12,* 35–50.

Knous-Westfall, H. M., Ehrensaft, M. K., MacDonell, K. W., & Cohen, P. (2012). Parental intimate partner violence, parenting practices, and adolescent peer bullying: A prospective study. *Journal of Child and Family Studies, 21,* 754–766. http://dx.doi.org/10.1007/s10826-011-9528-2

Little, R. J. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association, 83,* 1198–1202. http://dx.doi.org/10.1080/01621459.1988.10478722

Low, S., & Espelage, D. (2014). Conduits from community violence exposure to peer aggression and victimization: Contributions of parental monitoring, impulsivity, and deviancy. *Journal of Counseling Psychology, 61,* 221–231. http://dx.doi.org/10.1037/a0035207

McNeely, C., & Falci, C. (2004). School connectedness and the transition into and out of health-risk behavior among adolescents: A comparison of social belonging and teacher support. *The Journal of School Health, 74,* 284–292. http://dx.doi.org/10.1111/j.1746-1561.2004.tb08285.x

Merrin, G. J., Davis, J. P., Berry, D., D'Amico, E. J., & Dumas, T. M. (2016). The longitudinal associations between substance use, crime, and social risk among emerging adults: A longitudinal within and between-person latent variables analysis. *Drug and Alcohol Dependence, 165,* 71–78. http://dx.doi.org/10.1016/j.drugalcdep.2016.05.009

Musu-Gillette, L., Zhang, A., Wang, K., Zhang, J., Kemp, J., Diliberti, M., & Oudekerk, B. A. (2018). *Indicators of School Crime and Safety: 2017 (NCES 2018–036/NCJ 251413)*. National Center for Education Statistics, U.S. Department of Education, and Bureau of Justice Statistics, Office of Justice Programs. Washington, DC: U. S. Department of Justice.

Muthén, L. K., & Muthén, B. O. (1998–2014). *Mplus user's guide* (7th ed.). Los Angeles, CA: Author.

Olweus, D. (1993). *Bullying at school*. Oxford, United Kingdom: Blackwell.

Olweus, D. (1997). Bully/victim problems in school: Facts and intervention. *European Journal of Psychology of Education, 12,* 495–510. http://dx.doi.org/10.1007/BF03172807

Pellegrini, A. D., & Bartini, M. (2000). A longitudinal study of bullying, victimization, and peer affiliation during the transition from primary school to middle school. *American Educational Research Journal, 37,* 699–725. http://dx.doi.org/10.3102/00028312037003699

Pellegrini, A. D., & Long, J. D. (2002). A longitudinal study of bullying, dominance, and victimization during the transition from primary school through secondary school. *British Journal of Developmental Psychology, 20,* 259–280. http://dx.doi.org/10.1348/026151002166442

Pepler, D., Jiang, D., Craig, W., & Connolly, J. (2008). Developmental trajectories of bullying and associated factors. *Child Development, 79,* 325–338. http://dx.doi.org/10.1111/j.1467-8624.2007.01128.x

Resnick, M. D., Ireland, M., & Borowsky, I. (2004). Youth violence perpetration: What protects? What predicts? Findings from the National Longitudinal Study of Adolescent Health. *The Journal of Adolescent Health, 35,* 424.e1–424.e10. http://dx.doi.org/10.1016/j.jadohealth.2004.01.011

Salmivalli, C. (2010). Bullying and the peer group: A review. *Aggression and Violent Behavior, 15,* 112–120. http://dx.doi.org/10.1016/j.avb.2009.08.007

Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. New York, NY: Oxford University Press. http://dx.doi.org/10.1093/acprof:oso/9780195152968.001.0001

Thornberry, T. P., Krohn, M. D., Lizotte, A. J., Smith, C. A., & Tobin, K. (2003). *Gangs and delinquency in developmental perspective*. New York, NY: Cambridge University Press.

United States Department of Justice. (2015). *Domestic violence*. Retrieved from http://www.justice.gov/ovw/domestic-violence

Voisin, D. R., & Hong, J. S. (2012). A meditational model linking witnessing intimate partner violence and bullying behaviors and victimization among youth. *Educational Psychology Review, 24,* 479–498. http://dx.doi.org/10.1007/s10648-012-9197-8

Received October 29, 2016
Revision received April 19, 2018
Accepted June 1, 2018 ■