

**Unraveling the Bidirectional Relationship Between Bullying Victimization and
Perpetration: A Test of Mechanisms from Opportunity and General Strain Theories**

Glenn D. Walters
Kutztown University

Author Note

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Author Bio

Glenn D. Walters, Ph.D., is a professor in the Department of Criminal Justice at Kutztown University where he teaches classes in corrections, criminology, research methods, and substance misuse and crime. His principal research interests include bullying, mediation analysis, and the development of an overarching psychological theory of crime.

Abstract

This study tested two theories designed to explain the bullying perpetration–victimization relationship. Peer delinquency was hypothesized to mediate the pathway from bullying perpetration to victimization, in line with opportunity, lifestyle, and routine activities theories, and anger was held to mediate the pathway from bullying victimization to perpetration, as set forth in general strain theory. These pathways were tested in a sample of 3,411 youth (1,728 boys, 1,683 girls) from the Longitudinal Study of Australian Children (LSAC). A causal mediation analysis performed on three non-overlapping waves of data, in which prior levels of each predicted variable were controlled, uncovered support for peer delinquency as a mediator of the perpetration–victimization pathway but failed to identify anger as a mediator of the victimization–perpetration pathway. Additional research is required to identify a mediator for the victimization–perpetration pathway and determine whether variables other than peer delinquency mediate the perpetration–victimization pathway.

Key Words: bullying perpetration and victimization; opportunity theory; general strain theory; person proximity; peer delinquency; anger

Unraveling the Bidirectional Relationship Between Bullying Victimization and Perpetration: A Test of Mechanisms from Opportunity and General Strain Theories

There is growing evidence from multiple studies (see Walters, 2020b) that the relationship between bullying perpetration and bullying victimization, like the relationship between violent offending and violent victimization (Jennings, Piquero, & Reingle, 2012), is bidirectional. What this means is that bullying perpetration is just as capable of predicting bullying victimization as bullying victimization is of predicting bullying perpetration. The mechanisms responsible for these effects, however, may differ by pattern. In a recent study employing a group of delinquent youth from the United States, Walters (2020a) noted that violent offending had an indirect effect on violent victimization via delinquent peer associations, whereas delinquent peer associations played no role in the relationship between prior violent victimization and subsequent violent offending. The results of a crime survey administered to youth in England and Wales revealed that anger was the most common emotional response experienced by those who had suffered criminal victimization (Ignatans & Pease, 2019). This, then, opens up the possibility that anger may mediate the past victimization–future perpetration relationship. Whereas these associations have yet to be fully explored with respect to their ability to curb and clarify school bullying, they nonetheless imply that separate mechanisms may link prior perpetration to future victimization and prior victimization to future perpetration, at least where violent crime is concerned. In light of the possibility that aspects of bullying may mirror aspects of violent crime, from the interpersonally intrusive nature of the behavior to the utter disregard many offenders demonstrate toward their victims, more research is required to determine if and how bullying parallels violent crime and vice versa. The current study takes one small step in this direction.

Opportunity Theory

Opportunity theory combines the microlevel contributions of lifestyle victimization theory (Garafalo, 1987) with the macrolevel perspective adopted by routine activities theory (Cohen & Felson, 1979) to explain how people's involvement in crime can lead their becoming a victim of crime. A core postulate of this model is that being in close proximity to crime-prone individuals and situations, particularly in the absence of capable guardians against crime, increases the likelihood of future victimization. People, it would seem, not only acquire the attitudes and techniques for crime from those already involved in criminal activity (Akers, 1998), they also are at increased risk for becoming the victims of crime by way of their associations with these very same individuals. Therefore, hanging out with peers, in what has become known as unsupervised routine activities, can increase a person's propensity for criminal activity (Osgood & Haynie, 2012), although the degree of criminality displayed by these peers is also important (Thomas & McGloin, 2013). Research clearly supports the notion that individuals in close proximity to crime, criminals, and peer delinquency are at increased risk for victimization (Fishman, Mesch, & Eisikovits, 2002; Frias & Finkelhor, 2017). We might call this the person proximity principle of opportunity theories of crime and criminal victimization.

Although very few studies have examined opportunity theory and person proximity in relation to the temporal nexus between bullying perpetration and victimization, there is at last one study that has directly addressed this issue. In that study, Popp (2012) used data from the School Crime Supplement to the (U.S.) National Crime Victimization Survey to evaluate the prospective association between bullying perpetration and victimization as a function of person proximity and exposure. Results showed that students with the highest levels of exposure and proximity to such school-related activities and events as school clubs, school sports, skipping

class, fighting in or after school, drugs in school, guns in school, and gangs in school also reported the highest levels of school-based bullying victimization. By contrast, students exposed to capable guardians against bullying (emotional support from teachers and students, school rule enforcement, school security) experienced lower levels of bullying victimization in school. This indicates that students with the most exposure and proximity to bully-prone individuals and situations and the least exposure and proximity to capable guardians against bullying reported the highest levels of bullying victimization. One aspect of the Popp (2012) study, proximity to bullying-prone individuals, in the form of peer delinquency, was tested as a mediator of the perpetration–victimization relationship in the current investigation.

General Strain Theory

Agnew (1992) proposed a general strain theory in which certain individual level strains in the form of failure to achieve positively valued goals, introduction of negative stimuli, and removal of positive stimuli were assumed to leave the individual vulnerable to future criminal and delinquent involvement. Victimization is an example of a negative stimulus that could lead to crime, delinquency, substance misuse, and other forms of antisocial behavior. From its inception, general strain theory has made allowances for mediating effects. Since then, Agnew and colleagues have argued that negative emotions are prime mediators of documented connections between general strain and antisocial behavior (Agnew, Brezina, Wright, & Cullen, 2002). Although a variety of negative emotions, from depression to fear, have been proposed as mediators of the strain–offending relationship, the most consistent and powerful mediating effect may be achieved through anger (Broidy, 2001). Several studies have identified anger as a core feature of the victimization–crime nexus, although these studies were either cross-sectional in nature (Sigfusdottir, Gudjonsson, & Sigurdsson, 2010; Wemmers et al., 2018) or used

longitudinal data (Oh & Connolly, 2019; Wojciechowski, 2019) in a manner that violated basic standards of causal mediation analysis (Hayes, 2018; Preacher, 2015).

Several studies have examined mediation of the victimization–bullying relationship using anger as the intervening variable. Unfortunately, most of these studies, like the previously reviewed studies on violent victimization, have either used cross-sectional data or violated commonly accepted norms for causal mediation analysis, such as the need for lagged outcome variables and the advisability of testing the entire indirect effect with bootstrapped confidence intervals. In a sample of 296 adolescents from two middle schools in southwestern United States, Moon and Jang (2014) detected a link between the strain created by criminal victimization and physical bullying that was partially mediated by anger. Still, the data were cross-sectional, thus highlighting a major flaw with respect to the first and most important standard of causal mediation analysis: i.e., that the variables in the analysis are temporally ordered. A more recent study by Baek, Roberts, Seepersad, and Swartz (2019) also uncovered evidence of a mediating role for anger in a study on family violence and bullying in Trinidad, but like the Moon and Jang (2014) investigation, it was based on cross-sectional data. In the only longitudinal study to examine the mediating effect of negative affect on the bullying victimization–perpetration relationship, Walters and Espelage (2018) discovered that the cognitive-affective variable, hostility, but neither anger nor depression, mediated the bond between past bullying victimization and future bullying perpetration in another U.S. sample.

Current Study

In order to rule out viable alternative explanations of one’s results, meaningful control variables should be included in the analysis. Control variables for the present study comprised the demographic measures of age, sex, and race, an index of how safe the child feels in school,

parental knowledge of the child's friendship networks and social activities, and child delinquency. Prior research conducted in the United States indicates that bullying victimization and perpetration are more common in children than in adolescents (Lebrun-Harris, Sherman, Limber, Miller, Edgerton, 2019) and that boys are at greater risk for bullying perpetration and victimization than girls (Hamby, Finkelhor, & Turner, 2013). In addition, Black, White, and mixed race children in the U.S. and other countries tend to report higher levels of bullying than children from other racial/ethnic groups (U.S. Department of Education, 2019), although the effect has been found to vary depending on the racial/ethnic composition of the school and other contextual factors (Xu, Macrynika, Waseem, & Miranda, 2020). Guardianship is important, not only because it assumes a central role in opportunity theory, but also because bullying expands as guardianship declines (Peguero, 2009). Two guardianship measures were included as control variables in the current investigation: an inside-of-school guardianship item ("how safe do you feel in school") and an outside-of-school guardianship scale (parental knowledge). Finally, because some researchers have argued that participant-reported peer delinquency, one of two mediators in the current study, is a projection of a child's own delinquency onto his or her peers (Young, Rebellon, Barnes, & Weerman, 2013), prior child delinquency was controlled for the purpose of insuring that the peer delinquency scale was measuring peer delinquency and not participant delinquency.

The main goal of the current investigation was to identify the mechanisms responsible for two well-known temporal relationships, one of which runs from bullying perpetration to bullying victimization and the other of which runs from bullying victimization to bullying perpetration. The mechanism identified as a possible link between bullying perpetration and bullying victimization was peer delinquency, a feature of person proximity and opportunity theories of

victimization. The mechanism identified as a possible link between bullying victimization and bullying perpetration was anger, a concept central to general strain theory. Each of these (target) pathways was then contrasted with a control pathway, constructed by switching mediators (i.e., substituting anger for peer delinquency and peer delinquency for anger). The rationale for constructing control pathways was to test for the specificity of the effect by modifying a small part of the pathway, in this case, the mediators (Walters, 2018), but retaining the same sample and many of the same variables. The bullying perpetration → anger → bullying victimization sequence served as a control or comparison pathway for the bullying perpetration → peer delinquency → bullying victimization (person proximity) model and the bullying victimization → peer delinquency → bullying perpetration sequence served as a control or comparison pathway for the bullying victimization → anger → bullying perpetration (general strain) model. It was hypothesized that both target pathways would be significant, both control pathways would be non-significant, and the differences between the target pathways and their respective control pathways would be significant. It should be noted that while most of the research in this area has been conducted on samples from the United States, Australian schoolchildren served as participants in the current investigation.

Method

Participants

Participants for this study were 3,411 (1,728 male, 1,683 female) members of the Longitudinal Study of Australian Children (LSAC: Australian Institute of Family Studies, 2018), a large representative sample of Australian children organized into two cohorts (B and K). The B (baby) cohort began in infancy and was evaluated every two years to age 12-13, whereas the K (kindergarten) cohort began once the child entered kindergarten and was evaluated every two

years to age 16-17. Analyses were restricted to Cohort K because it covered the age range (early to mid-adolescence) and variables (bullying, anger, and peer delinquency) that were of principal concern in this study. Only children with complete data on at least four of the six independent/dependent/mediating variables for this study were included in the analyses. This represents 84.2% of the 4,048 children enrolled in the LSAC-K at Wave 5, the starting point for the current study. Participants were, on average, 12.41 years of age ($SD = 0.49$) at the time of the Wave 5 interview, most were born in Australia (95.9%), and the vast majority were non-indigenous persons (97.9%), with 2.0% of the sample classified as aboriginal and 0.2% classified as a Torres Strait islander. Although the non-indigenous portion of the sample was not broken down further by race, over 75% of Australians are White.

The Australian Medicare enrollment database provided the sampling frame for this study, and participants were selected using a two-stage cluster probability sampling procedure. During the first stage of the two-stage clustering procedure postcodes were randomly selected, after which individual children were randomly selected from each identified postcode. Sampling weights were calculated for the purpose of adjusting for non-response and were based on a child's probability of being selected. The weights were not used to calculate means and standard deviations, but they were used to compute correlations and path analyses. Use was made of the fifth, sixth, and seventh waves of the LSAC-K when participants were 12/13, 14/15, and 16/17 years of age, respectively. Face-to-face interviews were usually accomplished with the aid of computer-assisted self-interviewing technology, although phone interviews were performed with some hard-to-reach participants. This secondary data analysis was approved by the Institutional Review Board at Kutztown University.

Measures

Bullying Perpetration. In the current study, bullying perpetration and victimization were cross-lagged between Waves 5 and 7 of the LSAC-K. The bullying perpetration scale consisted of 6 items inquiring as to whether the respondent had engaged in any of the following bullying behaviors over the past month (“hit or kicked someone;” “grabbed or shoved someone;” “threatened someone;” “said mean things to someone;” “stopped someone from joining in;” “told others not to be someone’s friend”) using a four-point rating scale (1 = *never*, 2 = *once or twice*, 3 = *about once a week*, 4 = *several times a week*). Summing scores for each of the six items produced a scale that could range from 6 to 24. The bullying perpetration measure had adequate internal consistency at Waves 5 and 7 of the LSAC-K as measured in the current sample of participants ($\alpha = .72-.79$). The bullying perpetration scale was divided into a physical bullying subscale (“hit or kicked someone, “grabbed or shoved someone”), a verbal bullying subscale (“threatened someone,” “said mean things to someone”), and a relational bullying subscale (“stopped someone from joining in,” “told others not to be someone’s friend”) for a more fine-tuned analysis of the relationship between bullying perpetration and victimization.

Bullying Victimization. Bullying victimization was measured with the same six items as those used to assess bullying perpetration except that the participant was now the recipient rather than the initiator of the bullying behavior. Hence, participants were asked whether another child had “hit or kicked them,” “grabbed or shoved them,” “threatened them,” “said mean things to them,” “stopped them from joining in,” or “told others not to be their friend” within the past month. As with the bullying perpetration scale, each item was rated on a four-point scale (1 = *never*, 2 = *once or twice*, 3 = *about once a week*, 4 = *several times a week*.) and the results summed to produce a score that could range from 6 to 24. The internal consistency of the bullying victimization scale at Waves 5 and 7 of the LSAC-K ranged from adequate to good ($\alpha =$

.75–.86). Physical (another child “hit or kicked them,” “grabbed or shoved them”) verbal (another child “threatened them,” “said mean things to them”), and relational (another child “stopped them from joining in,” “told others not to be their friend”) bullying victimization subscales were created using the same item pairings described previously for the bullying perpetration subscales.

Peer Delinquency. Peer delinquency served as one of two mediator variables in this study. The eight items that composed this scale (“Kids I know...” “get into trouble;” “get into trouble at school;” “cheat on tests;” “get into fights;” “smoke cigarettes;” “drink alcohol;” “have broken the law;” “try drugs”) were each rated on a five-point scale (1 = *none of them*, 2 = *one or two of them*, 3 = *some of them*, 4 = *most of them*, 5 = *all of them*) and the results summed to create a scale with scores that could range from 8 to 40. The internal consistency of this scale was good in the current sample of participants ($\alpha = .86$).

Anger. The other mediator variable in this study was problems with angry feelings. Participants were asked to indicate how often they had a problem with angry feelings on a five-point Likert-type scale (1 = *never*, 2 = *almost never*, 3 = *sometimes*, 4 = *often*, 5 = *almost always*). This was a single-item measure and so an alpha internal consistency coefficient could not be calculated.

Control Variables. There were seven control variables included in this study. Four of the variables were demographic in nature—age (in years), sex (1 = *male*, 2 = *female*), indigenouness (1 = *non-indigenous*, 2 = *indigenous*), and whether or not the child was born in Australia (1 = *no*, 2 = *yes*)—one measured feelings of safety in school, another assessed parental knowledge, and a seventh inquired about the child’s involvement in delinquent activity. Participants were asked to rate the statement “I feel safe at school” using a four-point Likert-type

scale (1 = *disagree strongly*, 2 = *disagree*, 3 = *agree*, 4 = *agree strongly*). Parental knowledge was composed of four items (i.e., “parents know child’s friends;” “parents know how child spends their money;” “parents know what child does in free time;” “parents know where child is most afternoons”) the child rated on a three-point scale (1 = *parents don’t know*, 2 = *parents know a little*, 3 = *parents know a lot*) to produce a score that could range from 4 to 12 ($\alpha = .70$).

The seventh and final control variable employed in this study was child delinquency. The delinquency scale covered 17 delinquent acts (i.e., got into a physical fight in public, skipped school, stole from a shop, drew graffiti in public places, carried a weapon like a knife or gun, took a motor vehicle for a ride, stole money or other things from another person, ran away from home and stayed out overnight, purposely damaged or destroyed other people’s property, damaged a parked car, went around with a group of three or more kids damaging property, suspended or expelled from school, broke into a house/flat/vehicle, stole something out of a parked car, started a fire in a place where you should not burn anything, used force or threat of force to get money or things from someone, caught by police for something done wrong). Each item was rated on a four-point frequency scale to indicate how often the child engaged in the behavior over the past year (0 = *not at all*, 1 = *once*, 2 = *twice*, 3 = *three times*, 4 = *four times*, 5 = *five or more times*). The internal consistency of the child delinquency scale was strong in the current sample of participants ($\alpha = .89$).

For the express purpose of establishing the temporal order of the principal variables included in the present study, three waves of longitudinal data were incorporated into an analysis of LSAC data (Waves 5, 6, and 7 of the LSAC-K when participants were 12/13, 14/15, and 16/17 years of age, respectively). To the extent that there was no overlap between adjacent waves of the LSAC, the current study qualifies as prospective in nature. Use of longitudinal data

helped establish the temporal order of the variables relative to one another. Prior or precursor measures of each predicted variable were controlled. This was done by creating lagged dependent variables and establishing proper temporal direction between the variables (Cole & Maxwell, 2003).

Research Design

The current study employed a three-wave fixed-sample longitudinal panel design that encompassed Waves 5, 6, and 7 of the LSAC-K. These data were then evaluated in a single model in order to evaluate the person proximity and general strain models simultaneously. All seven control variables (age, sex, indigenouness, born in Australia, feel safe at school, parental knowledge, and child delinquency), both independent variables (Wave 5 bullying perpetration and Wave 5 bullying victimization), and both precursor measures of the dependent variables (Wave 5 bullying victimization and Wave 5 bullying perpetration) were administered at Wave 5, the two mediating variables (peer delinquency and anger) were administered at Wave 6, and the two dependent variables (Wave 7 bullying victimization and Wave 7 bullying perpetration) were administered at Wave 7.

Two target and two control pathways were tested in this study using the comparison pathways approach (Walters, 2018). The two target pathways ran from Wave 5 bullying perpetration to Wave 6 peer delinquency to Wave 7 bullying victimization and from Wave 5 bullying victimization to Wave 6 anger to Wave 7 bullying perpetration. The two corresponding control pathways ran from Wave 5 bullying perpetration to Wave 6 anger to Wave 7 bullying victimization and from Wave 5 bullying victimization to Wave 6 peer delinquency to Wave 7 bullying perpetration. It was predicted that the target pathways would be significant, the control

pathways would be non-significant, and the difference between each target pathway and its corresponding control pathway would be significant.

Data Analytic Plan

Path analyses were performed with MPlus 8.3 (Muthén & Muthén, 1997–2017) using a maximum likelihood estimator and bootstrapped confidence intervals (5,000 bootstrapped replications). A confidence interval that does not include zero is considered significant. The significance of each indirect effect and the difference between target and control pathways (Preacher & Hayes, 2008) were tested against bias-corrected 95% confidence intervals. In addition, two sensitivity analyses were conducted. Kenny’s (2013) “failsafe ef ” procedure— $(r_{my.x}) \times (sd_{m.x}) \times (sd_{y.x}) / (sd_m) \times (sd_y)$ —was used to test for omitted variable bias. The coefficient produced by the “failsafe ef ” indicates how well a confounding covariate would need to correlate with the mediating and dependent variables, controlling for the independent and mediating variables in the case of the dependent variable, to negate the b path coefficient (from the mediator to the dependent variable) of any significant indirect effect. The second sensitivity test performed as part of this study was designed to evaluate for endogenous selection bias or a collider effect. This test was administered by re-doing the analyses without precursor measures, given that conditioning on a precursor can sometimes inflate path coefficients (Elwert & Winship, 2014).

Missing Data

Of the 3,411 children who participated in this study, nearly three-quarters ($n = 2,490$, 73.0%) had complete data on all 15 variables. Another 6.5% of participants were missing data on one variable, 18.2% of participants were missing data on two variables, and 2.4% of participants were missing data on 3 to 7 variables. In addition, only two variables had more than

5% missing data: Wave 7 bullying victimization and Wave 7 bullying perpetration (15.8% each). Missing data were handled with full information maximum likelihood (FIML), a procedure that uses all non-missing data to estimate standard errors and population parameters. The procedure has been found to be significantly less biased than listwise deletion, simple imputation, and other traditional missing value procedures (Allison, 2002).

Results

Preliminary Analyses

Table 1 lists descriptive statistics and correlations for all 14 variables. As indicated by the correlational matrix in Table 1, nearly three-quarters of the intercorrelations were significant using a Bonferroni-corrected alpha level of .00048. Collinearity diagnostics were performed in an effort to determine whether there was multicollinearity between predictor variables in any of the regression analyses. These diagnostic procedures failed to identify significant levels of multicollinearity in any of the regression equations: tolerance = .640–.994; variance inflation factor = 1.006–1.562.

Person Proximity Pathway

Regression results are summarized in Table 2 and Figure 1, whereas the total, direct, and indirect effects for each pathway are listed in Table 3. As indicated by the bias-corrected confidence intervals found in Table 3, the person proximity target pathway (Perpetration-5 → Peer-6 → Victimization-7) was significant, its corresponding control pathway (Perpetration-5 → Anger-6 → Victimization-7) was non-significant, and the difference between the two pathways was significant as indicated by a 95% confidence interval on the Preacher-Hayes (2008) contrast test that did not include zero. According to guidelines set forth by the comparison pathways

approach (Walters, 2018), these results support the presence of a consistent person proximity effect.

Sensitivity testing using the “failsafe c_f ” procedure revealed that an unmeasured covariate confounder would need to correlate .12 with Wave 6 peer delinquency and .12 with Wave 7 bullying victimization, controlling for Wave 5 bullying perpetration and Wave 6 peer delinquency in the case of Wave 7 bullying victimization, to nullify the significant indirect effect running from bullying perpetration to bullying victimization via peer delinquency. Hence, the indirect effect for person proximity was only modestly robust to the effects of omitted variable bias. When the two precursor measures were removed from the analysis, the a and b paths of both the target and control pathways increased rather than decreased, an outcome inconsistent with the presence of endogenous selection bias or a collider effect.

Further analysis revealed that the target pathway remained significant when only physical (Estimate = 0.0062, 95% BCBCI = 0.0008, 0.0156) or verbal (Estimate = 0.1285, 95% BCBCI = 0.0389, 0.2817) bullying items were analyzed. In both cases, the control pathway failed to achieve significance (Physical bullying, Estimate = 0.0004, 95% BCBCI = -0.0009, 0.0029; Verbal bullying, Estimate = 0.00004, 95% BCBCI = -0.00020, 0.00039) and the target pathway displayed a significantly stronger effect than the control pathway (Physical bullying, Estimate = 0.0057, 95% BCBCI = 0.0002, 0.0155; Verbal bullying, Estimate = 0.1288, 95% BCBCI = 0.0389, 0.2815). For the two relational bullying items, however, the target pathway, the control pathway, and the difference between the two pathways were nonsignificant.

General Strain Pathway

Unlike the person proximity pathway, the general strain pathway (Victimization-5 → Anger-6 → Perpetration-7) failed to achieve significance in the current study. The general strain

pathway was also not significantly stronger than its control pathway in which Peer-6 replaced Anger-6 as the mediator. What is more, the general strain pathway failed to achieve significance when the two physical bullying items (Estimate = 0.0006, 95% BCBCI = -0.0005, 0.0025), the two verbal bullying items (Estimate = 0.000133, 95% BCBCI = -0.000002, 0.000385), or the two relational bullying items (Estimate = 0.0000, 95% BCBCI = -0.0011, 0.0012) were analyzed separately.

Discussion

Two hypotheses were tested in this study, one of which received support and the other of which did not. The first hypothesis stated that peer delinquency, but not anger, would mediate the temporally ordered relationship between bullying perpetration and bullying victimization. Controlling for age, sex, indigenouness and birth status, guardianship at home and at school, and child delinquency, a longitudinal analysis of three waves of data from the LSAC-K confirmed this hypothesis—the target (peer delinquency-mediated) pathway was significant, the control (anger-mediated) pathway was not significant, and the two pathways were significantly different from one another. Sensitivity testing for omitted variable bias and endogenous selection bias revealed that the peer delinquency-mediated pathway was modestly robust to omitted variable bias and that there was no evidence of endogenous selection bias. The second hypothesis held that the temporally ordered pathway from bullying victimization to perpetration would be mediated by anger but not peer delinquency. The indirect effect of bullying victimization on bullying perpetration via anger fell short of significance. Thus, while bullying victimization predicted anger, there was no evidence that anger predicted bullying perpetration, and thus the overall indirect effect was nonsignificant.

One of the principal goals of this study was to illustrate how bullying and crime may parallel one another. Not only is bullying an early risk factor for later delinquency but the two behaviors appear to share some of the same risk factors: to include, male gender (Baldry & Farrington, 2000), lack of parental knowledge (Holt, Kantor, & Finkelhor, 2009), low self-control (Lucia, 2016), and delinquent peer associations (Pellegrini, Bartini, & Brooks, 1999). In a meta-analysis of 15 longitudinal studies, Ttofi, Farrington, Lösel, and Loeber (2011) uncovered evidence of a moderately strong pooled association between school bullying and later offending. The current study took a different tack by delving into a pattern that bullying and delinquency may share. Meta-analytic studies have shown that just as violent offending and violent victimization are bidirectionally related (Jennings et al., 2012), so too are bullying perpetration and bullying victimization (Walters, 2020b). The present study went a step further by demonstrating how the same variable, peer delinquency, mediated between bullying perpetration and bullying victimization, in a fashion similar to how it mediated between violent offending and violent victimization in the previous Walters (2020a) investigation. Whereas there are enough differences in risk factors for bullying and delinquency to suggest separate constructs (Baldry & Farrington, 2000), there is now growing evidence, supported, in part, by the current findings, that bullying may serve as a developmental antecedent or precursor to delinquency.

Opportunity Theory and the Bullying Perpetration–Victimization Relationship

As indicated by the results of this study, person proximity plays a leading role in the temporally ordered relationship between bullying perpetration and bullying victimization. Just as Walters (2020a) discovered in a study on violent offending and violent victimization, perpetration and victimization of the in-school bullying type were brought into alignment with the aid of peer delinquency, independent of a child's own level of delinquency and degree of

guardianship at home or at school. Hence, engaging in bullying behavior brings a child into close contact with a delinquent peer group through a process of peer selection or homophily (Gottfredson & Hirschi, 1990; Kiesner, Poulin, & Nicotra, 2003), which then increases the child's odds of victimization at the hands of this peer group. Consistent with opportunity, lifestyle, and routine activities theories, being in close proximity to those who bully and engage in interpersonally intrusive behavior increases a child's vulnerability to victimization. This, in turn, completes the cycle that starts with bullying perpetration and ends with bullying victimization. What we can conclude from this is that the person proximity construct requires more attention from scholars conducting research on bullying behavior than it has thus far received in the service of theory development, enhanced clinical practice, and policy construction.

It would be premature to conclude that peer delinquency is the sole mediator of the bullying perpetration–victimization assessed based on a nonsignificant direct effect running from past bullying perpetration to future bullying victimization. For reasons of mixed-sign multiple mediation and suppressor effects, mediation is possible even when the total and direct effects of a causal mediation analysis are nonsignificant (Hayes, 2018). In the current study, peer delinquency mediated the bullying perpetration–victimization relationship when the full bullying scale and both the physical and verbal bullying subscales were analyzed, but it did not mediate the relationship between relational bullying perpetration and victimization. This suggests that a mechanism other than opportunity or person proximity may be responsible for linking relational bullying perpetration to relational bullying victimization. Such a mechanism may exist in the form of retaliation. Although retaliation is normally discussed with respect to victims (Saricam & Cetinkaya, 2018) and bystanders (Cicchetti et al., 2014), it may also apply to bullies who

provoke others into engaging in counter-aggression. This would explain the internalizing problems that beset many bully-victims (O'Brennan, Bradshaw, & Sawyer, 2009).

From the standpoint of theory, the current results insinuate that being in close proximity to a group of deviant youth can increase a child's odds of becoming a victim of antisocial behavior. Clinically, there is a need for greater attention to the interpersonal associations of children who bully. For those who engage in bullying, peer delinquency can be a double-edged sword. Not only does the child learn the techniques and attitudes for bullying through his or her contacts with children already involved in these activities (as indicated by the significant *b* path running from peer delinquency to bullying perpetration in the current study), but they are also at increased risk for victimization by these very same individuals. The fact that the relationship appears to be reciprocal and that bullying victimization can lead to bullying perpetration just as easily as bullying perpetration leads to bullying victimization, makes it all the more imperative that we find ways to disrupt the cycle of interpersonal violence that ties bullying victimization to bullying perpetration. Practical solutions might include encouraging the child to associate with a more prosocial group of peers under more structured and adult-supervised conditions. Policy solutions could include the provision of treatment to bullying children with the knowledge that they are probably also being victimized and avoiding the assumption that children who are both victims and perpetrators of bullying have brought victimization upon themselves (Chan & Wong, 2015).

General Strain Theory and the Bullying Victimization–Perpetration Relationship

Based on general strain theory (Agnew, 1992), it was hypothesized that an emotion (anger) rather than person proximity (peer delinquency) would mediate the pathway from prior bullying victimization to future bullying perpetration. Findings from the present study, however,

failed to support this hypothesis. In an earlier investigation on a different sample of participants, Walters and Espelage (2018) discovered that angry emotions were ineffective in mediating the bullying victimization–perpetration relationship. The weak link in the Walters and Espelage (2018) study was a nonsignificant *a* path running from the independent variable, bullying victimization, to the mediator, anger. The weak link in the current investigation was a nonsignificant *b* path running from the mediator, anger, to the dependent variable, bullying perpetration. In both studies, the total indirect effect of bullying victimization on bullying perpetration by way of anger was nonsignificant. One way to explain these results is that a purely emotional variable like anger is too unstable to serve as an effective mediator, particularly when there are two years between waves, as there was in the current study. Of course, it could also be argued that the one-item measure of anger used in the current study and the two-item anger scale used in the Walters and Espelage (2018) investigation were inadequate for the purposes of assessing a construct as complex as anger.

Given the fact that hostility, which was not measured in the LSAC and was unavailable for analysis in the present study, was found to mediate the victimization–perpetration relationship in the Walters and Espelage (2018) study, additional research is required to identify the mechanism or mechanisms responsible for this relationship. A mediator must be sufficiently stable to predict the dependent variable and sufficiently malleable to be predicted by the independent variable (Wu & Zumbo, 2008). Current and prior results pertaining to the victimization–perpetration pathway imply that an affective reaction alone (anger) may be insufficient to draw a link between prior bullying victimization and subsequent bullying perpetration, and that an affective variable with a strong cognitive component (hostility) may be required in its place. The results of the current and prior studies do not challenge the reciprocal

nature of the bullying victimization–perpetration relationship nor do they preclude an affective explanation for the victimization to perpetration pattern (affect generated by victimization encourages the individual to react by bullying others). What they do indicate, is that while peer delinquency may mediate the pathway from perpetration to victimization, a mediator other than anger must be found in order to explain the mechanism that drives the victimization to perpetration pathway.

Limitations

This study suffers from several limitations, each of which requires the reader's attention. First, the fact that the sample was composed of Australian youth, approximately three-quarters of whom were White (although the actual proportion of different ethnic groups could not be determined for the LSAC-K), may limit the generalizability of the current results to less homogeneous populations. As was previously stated, the vast majority of prior studies in this area were performed in the United States, which differs significantly from the Australian context in demographics, school practices, victimization, and other areas central to the current study. For this reason, these results need to be verified in studies conducted in the United States and elsewhere. Second, all of the measures included in this study were based on participant self-report, thereby raising questions about mono-operational bias, shared method variance, and self-serving bias (Shadish, Cook, & Campbell, 2002) and underscoring the need for multi-source assessments from parents, teachers, and other outside observers in future studies on the bullying perpetration–victimization relationship. Third, the peer influence scale employed in this study focused generally on peer delinquency rather than specifically on peer bullying, highlighting the need for more specific measures of peer bullying in future research in this area. Finally, the mediating effects observed in this study were small, with none of the standardized path

coefficients exceeding .14. Small effects, it should be noted, are common in mediation research (Kenny & Judd, 2014; Preacher, 2015) and illustrate the value of the comparison pathways approach to mediation analysis. By comparing target and control pathways using the same sample and all of the same variables except for the mediator, it was possible to rule out the alternate hypothesis that any variable arrangement in a sample this size would have produced a significant mediating effect.

Conclusion

The well-established and frequently documented relationship between bullying perpetration and bullying victimization was found to be bidirectional in a recent meta-analysis of longitudinal data (Walters, 2020b). A similar pattern was observed in the current study when zero-order correlations were calculated between prospective measures of bullying victimization and perpetration, although only one of two proposed mediators attained significance. Peer delinquency successfully mediated the bullying perpetration–victimization relationship in a configuration known as person proximity, replicating a pattern observed with violent crime and violent victimization (Walters, 2020a). Anger, the putative mediator of the victimization–perpetration relationship, on the other hand, failed to link prior bullying victimization to future bullying perpetration, and in so doing replicated a pattern previously observed with bullying victimization and perpetration (Walters & Espelage, 2018). One possible explanation for why anger failed to mediate the victimization–perpetration relationship is that the two-year gap between waves afforded other variables, including developmental mediators, the opportunity to intercede in the relationship. Accordingly, shorter time frames should be employed in future research in this area. Beyond this, the next stage in the research agenda should be to identify intervention strategies and policy initiatives capable of ameliorating destructive pathways like

person proximity that may link bullying perpetration to bullying victimization with an eye toward disrupting the cycle of interpersonal violence that links perpetration to victimization of various kinds.

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Table 1*Descriptive Statistics and Correlations for the 14 Independent, Dependent, Mediating, Moderating, and Control Variables*

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	Range	2	3	4	5	6	7	8	9	10	11	12	13	14	
1. Age	3411	12.41	0.49	12–13	-.00	.02	.02	-.04	-.02	.02	.04	.06	.00	-.01	.02	-.01	.06	-.02
2. Sex	3411	1.49	-	1–2		.01	-.02	.08†	.07†	-.12†	-.10†	-.03	-.05	.03	-.11†	-.05	-.19†	-.13†
3. Indigenous	3411	1.02	-	1–2			.02	-.06	-.06	.12†	.06†	.03	.04	.02	.04	.00	.07†	-.01
4. Born Australia	3411	1.96	-	1–2				-.04	.01	.03	.04	.02	.03	.02	.06†	.02	.04	.00
5. Safe at School	3241	3.40	0.65	1–4					.20†	-.16†	-.24†	-.18†	-.14†	-.13†	-.30†	-.14†	-.22†	-.10†
6. Parent Knowledge	3351	11.16	1.30	4–12					-.22†	-.27†	-.22†	-.14†	-.12†	-.16†	-.07†	-.24†	-.06	
7. Delinquency	3374	1.34	4.20	0–85							.34†	.21†	.10†	.10†	.21†	.12†	.41†	.12†
8. Peer-5	3376	9.92	2.90	8–40								.42†	.14†	.16†	.28†	.07†	.42†	.10†
9. Peer-6	3262	10.98	4.06	8–40									.16†	.21†	.21†	.15†	.31†	.16†
10. Anger-5	3357	2.31	0.88	1–5										.54†	.21†	.13†	.17†	.08†
11. Anger-6	3249	2.31	0.89	1–5											.20†	.14†	.14†	.08†
12. Victimization-5	3376	7.88	2.96	6–24												.23†	.47†	.13†
13. Victimization-7	2871	6.70	1.71	6–22													.16†	.59†
14. Perpetration-5	3375	6.71	1.59	6–24														.23†
15. Perpetration-7	2871	6.35	1.17	6–20														

Note. Variable = variable name, Age = chronological age in years, Sex = male (1) vs. female (2), Indigenous = non-indigenous (1) vs. indigenous (2), Born Australia = child not born in Australia (1) vs. child born in Australia (2); Safe at School = feels safe at school at Wave 5, Parental Knowledge = parental knowledge at Wave 5, Delinquency = self-reported child delinquency at Wave 5, Peer-5 = peer delinquency at Wave 5, Peer-6 = peer delinquency at Wave 6, Anger-5 = angry feelings at Wave 5, Anger-6 = angry feelings at Wave 6, Victimization-5 = bullying

victimization at Wave 5, Victimization-7 = bullying victimization at Wave 7, Perpetration-5 = bullying perpetration at Wave 5, Perpetration-7 = bullying perpetration at Wave 7, *M* = mean, *SD* = standard deviation, Range = range of scores in current sample.

†*p* < .00048 (Bonferroni-corrected alpha: .05 / 105 correlations).

Table 2*Four-Equation Path Analysis of Bullying Victimization–Perpetration Relationship*

Variables	b (BCBCI)	β	Z	p
Outcome = Peer-6				
Age	0.280(-0.002, 0.566)	0.033	1.92	.055
Sex	0.399(0.131, 0.689)	0.047	2.83	.005
Indigenous	0.044(-0.776, 1.162)	0.002	0.09	.927
Born Australia	-0.110(-0.850, 0.493)	-0.005	-0.33	.743
Safe at School	-0.303(-0.579, -0.037)	-0.047	-2.16	.031
Parental Knowledge	-0.289(-0.437, -0.140)	-0.092	-3.78	<.001
Delinquency	0.065(0.010, 0.120)	0.065	2.30	.021
Victimization-5	0.203(-0.413, 0.932)	0.015	0.60	.550
Perpetration-5	3.528(1.734, 5.712)	0.139	3.48	<.001
Peer-5	0.439(0.341, 0.544)	0.310	8.38	<.001
Outcome = Anger-6				
Age	-0.027(-0.084, 0.028)	-0.015	-0.92	.356
Sex	0.137(0.079, 0.195)	0.077	4.73	<.001
Indigenous	-0.072(-0.273, 0.152)	-0.014	-0.64	.520
Born Australia	-0.039(-0.199, 0.116)	-0.009	-0.48	.627
Safe at School	-0.057(-0.104, -0.010)	-0.042	-2.39	.017
Parental Knowledge	-0.016(-0.040, 0.006)	-0.025	-1.38	.167
Delinquency	0.005(-0.003, 0.013)	0.024	1.27	.205

Victimization-5	0.231(0.126, 0.350)	0.079	4.04	<.001
Perpetration-5	0.047(-0.186, 0.271)	0.009	0.39	.693
Anger-5	0.509(0.473, 0.542)	0.510	29.37	<.001
Outcome = Victimization-7				
Age	-0.088(-0.217, 0.023)	-0.025	-1.31	.191
Sex	-0.064(-0.192, 0.068)	-0.018	-0.96	.337
Indigenous	-0.146(-0.437, 0.183)	-0.015	-0.94	.348
Born Australia	0.056(-0.190, 0.255)	0.006	0.49	.624
Safe at School	-0.135(-0.318, 0.002)	-0.052	-1.69	.092
Parental Knowledge	0.012(-0.055, 0.070)	0.009	0.38	.703
Delinquency	0.017(-0.007, 0.047)	0.041	1.24	.216
Peer-6	0.029(0.004, 0.055)	0.072	2.22	.026
Anger-6	0.133(0.045, 0.243)	0.069	2.62	.009
Perpetration-5	0.126(-0.669, 0.938)	0.012	0.30	.760
Victimization-5	0.974(0.585, 1.420)	0.172	4.54	<.001
Outcome = Perpetration-7				
Age	-0.069(-0.155, 0.021)	-0.029	-1.54	.124
Sex	-0.215(-0.306, -0.125)	-0.092	-4.75	<.001
Indigenous	-0.199(-0.401, -0.028)	-0.030	-2.12	.034
Born Australia	-0.043(-0.226, 0.107)	-0.007	-0.51	.612
Safe at School	-0.047(-0.155, 0.044)	-0.027	-0.93	.351
Parental Knowledge	0.017(-0.025, 0.053)	0.019	0.84	.402
Delinquency	0.005(-0.013, 0.031)	0.018	0.44	.658

Anger-6	0.044(-0.014, 0.105)	0.033	1.46	.146
Peer-6	0.025(0.007, 0.044)	0.089	2.64	.008
Victimization-5	0.030(-0.189, 0.304)	0.008	0.24	.811
Perpetration-5	1.192(0.485, 1.970)	0.169	3.18	.001
Victim-5 with Perp-5	0.024(0.019, 0.029)	0.470	9.26	<.001
Peer-6 with Anger-6	0.317(0.200, 0.438)	0.115	5.23	<.001
Victim-7 with Perp-7	1.083(0.864, 1.355)	0.579	8.70	<.001

Note. Outcome = outcome measure, Age = chronological age in years, Sex = male (1) vs. female (2), Indigenous = non-indigenous (1) vs. indigenous (2), Born Australia = child not born in Australia (1) vs. child born in Australia (2); Safe at School = feels safe at school at Wave 5, Parental Knowledge = parental knowledge at Wave 5, Delinquency = self-reported child delinquency at Wave 5, Peer-5 = peer delinquency at Wave 5, Peer-6 = peer delinquency at Wave 6, Anger-5 = angry feelings at Wave 5, Anger-6 = angry feelings at Wave 6, Victimization/Victim-5 = bullying victimization at Wave 5, Victimization/Victim-7 = bullying victimization at Wave 7, Perpetration/Perp-5 = bullying perpetration at Wave 5, Perpetration/Perp-7 = bullying perpetration at Wave 7, with = covariance, b(BCBCI) = unstandardized coefficient and 95% biased-corrected bootstrapped confidence interval (in parentheses); β = standardized coefficient, Z = Wald Z test statistic; p = significance level of the Wald Z test statistic, N = 3,411.

Table 3

Total, Direct, and Indirect Effects of Peer Delinquency and Anger on the Cross-Lagged Bullying Victimization–Perpetration Relationship

	Estimate	BCBCI	
		Lower	Upper
Effects from Perpetration-5 to Victimization-7			
Total Effect	0.0235	-0.0562	0.1039
Direct Effect	0.0126	-0.0669	0.0938
Total Indirect Effect	0.0109	0.0021	0.0240
Specific Indirect Effects			
Perp-5 → Peer-6 → Victim-7	0.0103	0.0024	0.0230
Perp-5 → Anger-6 → Victim-7	0.0006	-0.0023	0.0048
Preacher & Hayes Contrast Test	0.0098	0.0016	0.0228
Effects from Victimization-5 to Perpetration-7			
Total Effect	0.0045	0.0177	0.0324
Direct Effect	0.0030	0.0189	0.0304
Total Indirect Effect	0.0015	-0.0004	0.0044
Specific Indirect Effects			
Victim-5 → Anger-6 → Perp-7	0.0010	-0.0002	0.0028
Victim-5 → Peer-6 → Perp-7	0.0005	-0.0010	0.0030
Preacher & Hayes Contrast Test	0.0004	-0.0031	0.0046

Note. Perpetration/Perp-5 = bullying perpetration at Wave 5, Perpetration/Perp-7 = bullying perpetration at Wave 7, Victimization/Victim-5 = bullying victimization at Wave 5, Victimization/Victim-7 = bullying victimization at Wave 7, Peer-6 = peer delinquency at Wave 6, Anger-6 = angry feelings at Wave 6, Preacher & Hayes Contrast = comparison between the target and comparison pathways; BCBCI = bias-corrected bootstrapped 95% confidence interval (b = 5000); Estimate = point estimate; Lower = lower boundary of the 95% confidence interval; Upper = upper boundary of the 95% confidence interval; $N = 3,411$.

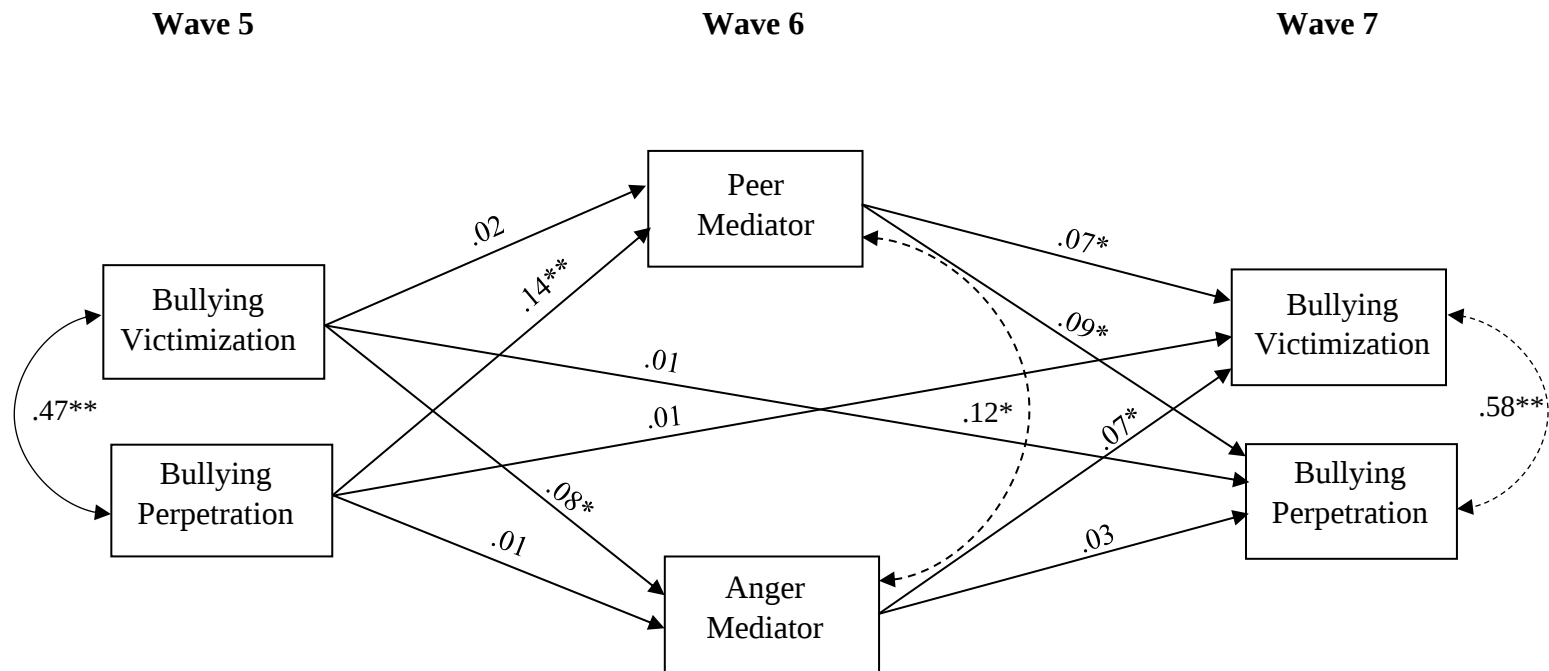


Figure 1. Path analysis of pathways running from Wave 5 bullying victimization and perpetration to Wave 7 bullying victimization and perpetration via Wave 6 peer delinquency and anger

Note. Standardized beta coefficients are reported; solid curved line = exogenous covariance; dashed curved lines = endogenous (residual) covariance; $N = 3,411$.

* $p < .05$; ** $p < .001$.