

Functions of Aggression and Peer Victimization in Elementary School Children: The
Mediating Role of Social Preference

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Abstract

This study examined the longitudinal associations among functions of aggression, social preference, and peer victimization. Participants were 492 children (249 girls, 227 boys) in grades 2-5. Proactive and reactive aggression was assessed via a self-report measure and indices of social preference and peer victimization were assessed via a peer nomination inventory. Data was collected during the fall and spring of two academic years. Results suggest that the relation between aggression, social preference, and peer victimization varied by the function of aggression and gender. For girls, reactive aggression was a significant negative predictor of social preference. Findings also revealed social preference mediated the relation between reactive aggression and peer victimization for girls. This pathway did not hold for boys. There was some evidence that proactive aggression was negatively associated with peer victimization, but only for girls. Findings from the current study suggest social preference may be a key mechanism through which reactive aggression is associated with future victimization for girls. Boys' aggression was not related to subsequent peer victimization. Future research and intervention efforts should consider gender differences and the function of aggression when investigating children's peer victimization experiences.

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Chapter 1

Introduction

Childhood peer victimization has received considerable attention in recent years. A large literature has amassed on the correlates of peer victimization, but more longitudinal research is needed to investigate the factors or pathways that lead to and sustain peer victimization experiences for children and adolescents. Children who are aggressive are at increased risk for being bullied or harassed by their peers; however, it is now clear that aggressive behavior is multidimensional and should be examined within the context of the underlying motivation for the aggressive act. Indeed, correlates of aggression differ depending on its' function, with reactive aggression often more strongly associated with peer victimization than proactive aggression. It is argued that negative social status may explain the relation between reactive aggression and peer victimization, but few prospective studies have examined whether the link between the function of aggression and victimization is mediated by social preference, specifically. The aim of this study is to examine the longitudinal relation between functions of aggression (i.e., proactive and reactive aggression) and children's peer victimization experiences. Given there is some evidence that the relationship between aggression and victimization is transactional, this study will also investigate whether these associations are bidirectional. Additionally, this study will examine whether social preference is a mechanism that explains the longitudinal link between these variables, and whether these relations among variables vary by gender.

Peer Victimization

In the current study, *peer victimization* is defined as repeated exposures to peer interactions that convey harmful intent, produce harmful effects, and are sanctioned (often implicitly) by peer groups (Craig & Pepler, 1997; Rodkin & Hodges, 2003). Bully-victim dyads are characterized by a power imbalance favoring the bully, but this imbalance often extends beyond the dyad to include bystanders, supporters, and others who witness but typically fail to intervene in the face of peer harassment (Fite et al., 2013; Salmivalli & Voeten, 2004; Stadler, Feifel, Rohrmann, Vermeiren, & Poustka, 2010). While researchers estimate that approximately 10-15 percent of school-aged children are chronically victimized (Ladd & Ladd, 2001), peer victimization is best thought of as a social process in which most children participate as bullies, victims, bully-victims, or bystanders. Findings from studies employing longitudinal designs suggest children's peer victimization experiences are moderately stable overtime (Jose, Kljakovic, Scheib, & Notter, 2012), but often peak during middle school. It is also clear that chronically victimized children are at risk for maladaptive outcomes in childhood and adolescence, including loneliness, school avoidance (Kochenderfer & Ladd, 1996), symptoms of anxiety and depression, somatic complaints, peer rejection, and low popularity (Bierman, Kalvin, & Heinrichs, 2015; Hanish & Guerra, 2002). These negative sequelae extend into adulthood, particularly for those children lacking in social support and prone to mental health problems (McDougall & Vaillancourt, 2015).

Given the relative stability of peer victimization over time and the detrimental effects for youth resulting from repeated exposure to peer victimization (Cillessen & Lansu, 2015), it is important to identify factors that are reliably associated with children's

peer victimization experiences. Much of the effort to identify such factors has focused on peer group dynamics and, more specifically, the social deficits exhibited by children that could contribute to their victimization. Thus, the assumption is that victimized children act (or react) in ways that elicit attacks against them. Consistent with this perspective, early behavior problems in children have been shown to predict later victimization by peers, particularly for those children with fewer friendships or poor quality peer relationships (Hanish & Guerra, 2000; Hodges, Boivin, Vitaro, & Bukowski, 1999; Schwartz, McFadyen-Ketchum, Dodge, Pettit, & Bates, 1999). Indeed, a subgroup of victimized children characterized by their own aggressive behaviors tends to emerge when investigating risk factors.

The link between aggression and later maladjustment, including peer victimization, has been well established. Moreover, there is some research to suggest a bidirectional relation between aggression and peer victimization. In other words, a subgroup of children who are repeatedly victimized by their peers respond with aggression or go on to develop a broader range of conduct problems (Salmivalli, Karhunen, & Lagerspetz, 1996; Sullivan, Farrell, & Kliewer, 2006). Childhood aggression, however, is a heterogeneous construct, and aggressive behavior may serve different functions for children. Thus, aggression is often subdivided by the motivation that underlies the aggressive behavior, namely whether it is proactive or reactive (Card & Little, 2006). Although many children exhibit both functions of aggression (Vitaro & Brendgen, 2005), exploratory and confirmatory factor analyses indicate that proactive and reactive aggression are distinct constructs (Crick & Dodge, 1996; Fite, Colder, & Pelham, 2006; Poulin & Boivin, 2000a). In fact, there is evidence that when the function

of aggression is measured independently of the form (i.e., overt, relational), proactive and reactive aggression is essentially uncorrelated (Little, Jones, Henrich, & Hawley, 2003).

The ways in which proactive and reactive aggression differentially confer risk for victimization is less well understood (Card & Little, 2006), and we examine this issue in the present study.

Proactive and Reactive Aggression

Rooted in the frustration-aggression model, reactive aggression occurs due to provocation or perceived threat (Berkowitz, 1993). Reactive aggression is “hot-headed” or affective, impulsive, and defensive, and often the result of a hostile attribution bias (Dodge & Coie, 1987). It involves the instant gratification of anger or frustration driven impulses. Proactive aggression, on the other hand, is goal-oriented and offensive, and best understood in terms of social learning theories of aggression (Bandura, 1973; Crick & Dodge, 1996). It is a non-provoked behavior motivated by the anticipation of a reward. In addition to the distinct social-cognitive processes underlying these two functions of aggression, proactive and reactive aggression show unique and differential relations with psychological outcomes. Over time, reactive aggression is associated with depression and anxiety, and proactive aggression is more strongly related to externalizing problems (Card & Little, 2006).

Accumulating evidence indicates that reactively aggressive youth are more likely to be victimized by peers than their proactively aggressive counterparts, although these associations have mostly been studied with boys (Poulin & Boivin, 2000a; Schwartz et al., 1998), concurrently (Lamarche et al., 2006; Salmivalli & Nieminen, 2002), or during early childhood (Ostrov, Kamper, Hart, Godleski, & Blakely-McClure, 2014). When

examining aggression and victimization longitudinally among male and female pre-adolescents (aged 10-13 years), Salmivalli and Helteenvuori (2007) found that boys initially high on reactive aggression were more likely to be victimized by peers in the future. This effect was not found for girls (Salmivalli & Helteenvuori, 2007). Among Kindergarten and 1st graders, Lamarche et al. (2007) found that peer victimization predicted *increased* displays of reactive aggression, and not proactive aggression, in boys only (Lamarche et al., 2007). However, while Camodeca et al. (2002) also found that peer victimization was associated with reactive aggression, they found no gender differences in the relations between these constructs (Camodeca, Goossens, Meerum Terwogt, & Schuengel, 2002). Overall, the lack of studies that account for gender in the longitudinal link between functions of aggression and peer victimization represent a key limitation in the literature and thus will be examined in the present study.

Reactive and proactive aggression are different behaviors that elicit different responses from peers. Given these differences, it is perhaps peers' adverse reaction to, or interpretation of, the aggressive behavior that explains an aggressive child's higher propensity for experiencing peer victimization or other peer relationship difficulties, rather than the aggressive act itself (Hanish & Guerra, 2000; Kochenderfer & Ladd, 1997). For example, proactive aggression is often associated with leadership qualities and a sense of humor, which may lead peers to respond more favorably to children displaying proactive aggression (Dodge & Coie, 1987; Poulin & Boivin, 2000a). There is also evidence that proactively aggressive youth are more likely to have friendships, although their friends are more likely to also be proactively aggressive (Poulin & Boivin, 2000b) or delinquent (Fite, Colder, Lochman, & Wells, 2007). Therefore, these positive

attributes may attenuate peers' negative responses to proactive aggression, as peer group members may be hesitant to provide direct negative feedback for fear of retaliation, loss of friendship, or damage to their own social reputation.

Conversely, peers often respond negatively to reactive aggression and are less likely to form friendships with reactively aggressive youth (Raine et al., 2006). The impulsive, angry, and hostile nature of reactive aggression is not only aversive to peers, but may in fact influence the degree to which peers perceive peer victimization as a reasonable or justifiable response. Consistent with this supposition is research finding emotionally-dysregulated aggressive children are at increased risk for peer rejection and victimization (Bierman et al., 2015; Schwartz, 2000). Feeling anger, a characteristic of reactive aggression, makes a child more likely to seek revenge against their aggressor, which in turn increases their likelihood of victimization (Hanish et al., 2004; Kochenderfer-Ladd, 2004). Reactively aggressive children's emotionally-charged response to peer provocation highlights their ineffectuality within the social domain, particularly their inability to problem solve and deflect hostile overtures from peers (Cook, Williams, Guerra, Kim, & Sadek, 2010; Schwartz, Proctor, & Chien, 2001).

Social Preference

There is some research to suggest a bidirectional relationship between aggression and peer acceptance or rejection—aggression is both a cause and consequence of peer relationship difficulties (Prinstein & Cillessen, 2003). However, the majority of empirical work has focused on examining aggression as a predictor of peer relationship difficulties. There is ample evidence to suggest that reactively aggressive children are less socially preferred (Dodge & Coie, 1987; Price & Dodge, 1989; Prinstein & Cillessen, 2003), and

a consistent pattern has emerged in the literature suggesting reactive aggression, not proactive aggression, is positively related to the social experience of peer rejection (Fite et al., 2007; Poulin & Boivin, 2000b). Social preference, an index of peer acceptance or rejection (i.e., likability), may be one mechanism through which reactive aggression confers developmental risk for peer victimization. Schwartz et al. (1999) found that the relation between externalizing problems in the first years of elementary school and later peer victimization was mediated by social preference in the intervening years (Schwartz et al., 1999). Moreover, in a sample of 4th-6th grade boys, Poulin and Boivin (2000a) found that social preference was negatively associated with reactive aggression, and unrelated with proactive aggression (Poulin & Boivin, 2000a). It appears that the social or relational cost of bullying a lower status peer or a peer with few friends is low (Buhs, Ladd, & Herald, 2006). Bullies expect that their attacks on unpopular children will go unpunished by other peers (Hodges et al., 1999), which is evidenced by the protective function of bystanders (e.g., children willing to intervene in conflict situations to aid the victim) among peer victimized children. Indeed, researchers have found that over half of bullying situations stop when a peer intervenes on behalf of the victim (Hawkins, Pepler, & Craig, 2001).

The associations among aggression, social preference, and victimization may be best understood within the context of Boivin et al.'s (2001) sequential social process model. The model first suggests that stable behavioral tendencies (i.e., aggression) may directly lead to problematic peer relationships, peer victimization, and ultimately negative social self-perceptions. Second, the model proposes that an indirect pathway may exist, whereby aggression first predicts low social preference (or negative peer status) and then

indirectly peer victimization. For less socially preferred children, the negative feelings felt by the peer group may signal the child's vulnerability or prompt the peer group to respond negatively, and ultimately may lead to subsequent peer victimization. Indeed, among 3rd, 4th, and 5th grade students, Boivin and colleagues found that aggression uniquely accounted for victimization, partly through low social preference. It is important to note that the association between aggression and victimization weakened with age (Boivin & Hymel, 1997; Boivin, Hymel, & Hodges, 2001). In addition, researchers have used this model to examine the relation between forms of aggression and peer victimization; for example, Ostrov (2008) found that, in young children, peer rejection partially mediated the association between relational aggression and later relational victimization (Ostrov, 2008). Few studies, however, have investigated the functions of aggression within this model, particularly with elementary school aged and older children (Ostrov & Godleski, 2013; Ostrov et al., 2014). Associations with social preference may develop differently over time for reactive aggression than proactive aggression, which highlights the important contribution of this study to the literature.

Current Study

The goal of this study was to examine the prospective links between proactive and reactive aggression, social preference, and peer victimization among elementary school children. It is predicted that reactive aggression will emerge as a positive predictor of peer victimization and a negative predictor of social preference. It is also hypothesized that the relation between reactive aggression and peer victimization will be mediated by social preference. Reactively aggressive children will be less accepted by their peers and in turn experience higher levels of peer victimization over time. In light of prior research

examining the relation between proactive aggression and peer relations, it is predicted that proactive aggression will be negatively related to peer victimization and positively related to social preference (Ostrov et al., 2014).

While prior studies have investigated links between functions of aggression and victimization, few studies have looked at associations longitudinally, included females, utilized multiple informants, or examined the mechanisms through which proactive and reactive aggression differentially predict risk for victimization (Card & Little, 2006). Moreover, research in this area tends to focus on young children or adolescents, yet the elementary school years are a particularly important period for understanding the processes that explain the relationship between aggression and victimization over time (Cillessen & Lansu, 2015). While the negative association among aggression and social preference is consistently found in childhood, this relation appears to shift around the beginning of middle school (Crick, Murray-Close, Marks, & Mohajeri-Nelson, 2009). Indeed, individual differences in aggression and victimization tend to stabilize in early adolescence (Perry, Kusel, & Perry, 1988).

A second aim of this investigation is to examine the possibility that the pathway from aggression to victimization is bidirectional. A limited number of studies have investigated the transactional or mediating processes in the associations among functions of aggression, victimization, and social preference. Though prior research has demonstrated direct pathways from aggression to victimization (Hanish & Guerra, 2000; Salmivalli & Helteenvuori, 2007), past theory and research also suggests the two constructs have reciprocating enhancing effects over time (Hanish & Guerra, 2002; Ostrov & Godleski, 2013). It may be the increased risk for peer victimization among

aggressive children that contributes to the maintenance or escalation of aggression behavior over time (Leadbeater & Hoglund, 2009). As noted previously, Lamarche et al. (2007) found that peer victimization predicted increases in reactive- but not proactive-aggression for boys. These authors suggest that, as a result of being victimized by peers, children may then use reactive aggression as a defense or retaliation to being attacked (Lamarche et al., 2007).

Similar temporal relations have been found between aggression and social preference (Cillessen & Mayeux, 2004), and between victimization and social preference (Kawabata, Tseng, & Crick, 2014). In one of the few studies known to assess the longitudinal interplay between these variables, Sentse et al. (2015) found that victimization contributed to lower social preference and vice versa, and peer rejection predicted bullying behaviors amongst 3-6th graders longitudinally. In fact, bullying, a form of proactive aggression, was not associated with subsequent levels of peer rejection, acceptance, or popularity (Sentse, Kretschmer, & Salmivalli, 2015).

Finally, this study will examine whether the associations among variables differ by gender. Despite theoretical support for gender-specific differences in the development and correlates of aggression (Ostrov & Godleski, 2010), few studies have considered the role of gender in the association between functions of aggression and social relations (Card & Little, 2006), and therefore the following gender analyses are largely exploratory. Given the limited research available, we hypothesize that the link between reactive aggression and peer victimization will be stronger for boys, and weaker (or nonexistent) for girls (Lamarche et al., 2006). We expect that the relations between proactive aggression and peer victimization to be similar for both genders (Lamarche et

al., 2007; Lamarche et al., 2006). Further understanding the contextual factors that explain the association between proactive and reactive aggression, victimization, and social preference among boys and girls can help to refine and implement more effective prevention and intervention strategies for peer-victimized children.

Chapter 2

Method

Participants

Participants were 492 children recruited from eight schools located in the Midwestern United States. Schools were selected to represent the ethnic and socioeconomic diversity of the area. Fifty-five children were participating in an intervention trial testing the efficacy of a school-based mentoring program (Lunch Buddy Mentoring) for children showing early signs of aggression, and 437 children were the classroom peers of the children participating in the intervention trial ($N = 492$). Intervention children were identified ($n = 84$) through a combination of teacher nominated and teacher- and parent-report data assessing aggression. 78.8% of parents consented to allow their child to participate in the intervention. Randomized to the conditions were fifty-five children eligible for the intervention (28 = Lunch Buddy Mentoring; 27 = Waitlist control).

Classmates of children participating in the intervention arm of the study were recruited in the fall of year 2. Parental consent forms were sent home with 513 children from 25 classrooms. 390 parental consent forms were returned to schools, and 349 (68%) agreed to participate in the larger study (Cohort 1). In the fall of year 3, after intervention children had transitioned to the next grade and classroom, 565 additional consent forms were sent home to the parents of classmates of the intervention children (from 35 classrooms) who previously had not partaken in the consent procedure in the fall of year 2 of the larger study (i.e., these students were in classrooms without intervention children in year 2 of the study) or with children who failed to return a consent form. Parental

consent forms were returned by 257 parents, with 223 (86.7%) additional children agreeing to participate for a total of 427 children in year 3 (Cohort 2).

Analyses were based on a sample of 492 (249 girls, 227 boys) 2nd- through 5th-grade children (Cohort 1: 125 in 2nd grade, 133 in 3rd grade, and 88 in 4th grade; Cohort 2: 161 in 3rd grade, 139 in 4th grade, and 126 in 5th grade) between the ages of 6 and 12 years old (*M* age at consent = 8.75 years, *SD* = .99 years). The sample was 61.8% white, but also included children whose parents identified them as African American (4.9%), Asian American (1.2%), Hispanic (3.0%), American Indian (3.7%), and multiracial (15.0%). Data were not available for 10.0% of participants and 0.4% of participants selected other ethnicity. Median family income was \$35,000-\$50,000, with 30.5% receiving reduced price lunch and 35.0% receiving free lunch.

Procedures

In addition to testing the efficacy of a school-based mentoring intervention for children showing early signs of aggression, data were collected as part of a larger project examining the correlates of peer conflict, teasing, and bullying. The University Institutional Review Board approved this project. An informational parental consent form and demographic questionnaire was sent home in children's weekly folders, and written parental consent and child assent were obtained for all study participants prior to participation. Class-wide data were collected across 4 time points. Peer reports of peer victimization and sociometric status were collected in early fall (September/October) and late spring (April/May) of project year 2 and project year 3, when the children were in the 2nd-, 3rd-, or 4th-grade and the 3rd-, 4th- or 5th-grade, respectively. Children completed self- and peer-report measures in class groups overseen by trained research assistants. For the

peer nomination procedure, items were read aloud and children used a numerical roster; children nominated classmates by circling the number corresponding to their name. To minimize discussion about ratings, children were spaced apart, instructed to keep answers covered, and allowed to work on distracter activities (e.g., mazes) between sets of questions and for approximately 5 minutes after the completion of all questionnaires.

Measures

Proactive and Reactive Aggression. Aggression was assessed using self-reports of Dodge & Coie's (1987) proactive and reactive measure (Dodge & Coie, 1987). This measure comprises six items, three for each subscale. Children report on items using a 5-point Likert scale (0 = "*never*" to 4 = "*almost always*"). Cronbach's alpha for reactive aggression ranged from .47 to .59 among time points. For proactive aggression, Cronbach's alpha ranged from .49 to .72 among time points. Mean scores were computed, centered, and used for analyses.

Peer Nominations. A peer nomination inventory, similar to procedures outlined by Coie, Dodge, and Coppotelli (1982), was used to assess children's peer victimization and social preference (Coie, Dodge, & Coppotelli, 1982). Peer victimization was assessed via two peer nomination items measuring overt (i.e., "Who in your class gets hit, pushed threatened, or teased by other children?") and relational (i.e., "Who in your class gets gossiped about or left out of activities?") victimization. Within time point correlations for overt and relational victimization were .48, .61, .76, and .77, respectively. Averaging scores for overt and relational victimization created a composite peer victimization index, which was then standardized by classroom and used for analyses. Additionally, children were asked to nominate three classmates who they like the most and three classmates

who they like the least. Social preference was computed by subtracting “like least” nominations from “like most” nominations. These scores were then standardized by classroom. Within time point correlations for “like most” and “like least” were -.37, -.45, -.39, and -.36, respectively.

Data Analytic Plan

Descriptive statistics and correlations among study variables were estimated. Path analyses were conducted using Mplus version 7.3 (Muthen & Muthen, 2009) to examine longitudinal associations of proactive and reactive aggression to social preference and peer victimization. Longitudinal panel models were estimated separately for proactive and reactive aggression. Age, gender (dummy code 1 = male), and ethnicity (dummy code 1 = White), and condition (dummy code 1 = participated in the intervention arm of the study) were included as covariates and regressed on all dependent variables in each model. Because indirect effects are not normally distributed, a biased corrected bootstrap procedure (10,000 bootstrapped samples) was used to test the significance of model parameters. A multigroup model was also estimated to examine whether relations varied as a function of gender. Model fit was evaluated using criteria recommended by Hu and Bentler (1999): $CFI \geq .95$, $RMSEA \leq .06$, and $SRMR \leq .08$.

Treatment of Missing Data

Analyses for this study were based on 492 participating children for whom data was available for at least one of the four measurement occasions to minimize bias associated with case-wise deletion. Across variables, the percentage of missing values ranged from 9% to 35%. Little’s (1995) MCAR analysis was used to examine whether there was a systematic reason for missing data, and results indicated that the data were

missing completely at random, $\chi^2 (1775, N = 492) = 296.181, p = 1.00$. Full-information maximum likelihood (FIML) estimation was used to address missing data, which in the multivariate case uses all available information in the dataset to estimate model parameters.

Chapter 3

Results

Descriptive Statistics

Means and standard deviations for and correlations among primary study variables are reported in Tables 1-2. In general, constructs evidenced moderate stability overtime. Reactive and proactive aggression was significantly correlated across all measurement occasions for boys and girls. Reactive aggression was negatively correlated with social preference at Time 1-3 for boys and at Time 1 and 3 for girls. Proactive aggression was negatively correlated with social preference at Time 2 and 3 for girls and Time 3 for boys. Reactive aggression was positively correlated with peer victimization at Time 4 for girls and Time 1 and 3 for boys. Girl's proactive aggression was positively correlated with peer victimization at Time 4 only, and boy's proactive aggression was positively correlated with peer victimization at Time 3 only. Social preference and peer victimization were negatively correlated across all time points. Overall, boys scored higher on both functions of aggression than girls. Girls were more socially preferred than boys, but scores of peer victimization were similar across genders.

Primary Analyses

Cross-lagged longitudinal panel models were estimated in Mplus version 7.3 using maximum likelihood estimation. Separate models were computed for proactive and reactive aggression. The initial path models included (1) Lag 1 associations for the three

Table 1. *Means and Standard Deviations of Primary Study Variables by Gender and Time Point*

	<u>Time 1</u>		<u>Time 2</u>		<u>Time 3</u>		<u>Time 4</u>	
Variables	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
RA	1.16 (.85)	1.07 (.80)	1.10 (.91)	.93 (.81)	1.10 (.76)	.84 (.72)	.93 (.73)	.80 (.64)
PA	.42 (.60)	.22 (.46)	.27 (.59)	.16 (.41)	.25 (.55)	.14 (.35)	.19 (.41)	.12 (.36)
SP	.33 (3.11)	1.14 (2.94)	.41 (3.30)	.72 (3.48)	.09 (3.20)	.80 (3.23)	.33 (3.18)	.44 (3.21)
PV	1.02 (1.03)	.91 (1.00)	1.01 (1.08)	1.24 (1.60)	1.05 (1.44)	1.24 (1.64)	1.17 (1.65)	1.13 (1.54)

Note. RA = Reactive Aggression; PA = Proactive Aggression; SP = Social Preference; PV = Peer Victimization. Time 1 = Fall Year 1; Time 2 = Spring Year 1; Time 3 = Fall Year 2; Time 4 = Spring Year 2.

Table 2. Correlations Among Primary Study Variables by Gender

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. RA T1	-	.33**	.40**	.14	.46**	.07	.18*	-.08	-.08	-.23**	-.12	-.09	.06	.08	.08	-.01
2. RA T2	.43**	-	.39**	.40**	.24**	.38**	.33**	.17	-.16*	-.17*	-.26**	-.18*	.21*	.00	-.02	.01
3. RA T3	.33**	.49**	-	.45**	.35**	.23*	.35**	.05	-.08	-.17*	-.13	-.17*	.15	.04	.04	.08
4. RA T4	.24*	.34**	.51**	-	.28*	.33**	.28**	.29**	-.32**	-.19*	-.20*	-.22**	-.27**	.11	.17*	.27**
5. PA T1	.50**	.29**	.43**	.32**	-	.05	.44**	.16	-.06	-.12	-.17*	-.13	.03	.11	.02	.02
6. PA T2	.27**	.50**	.41**	.26*	.40**	-	.42**	.34**	-.29*	-.21**	-.20*	-.21*	.22*	.05	-.04	.04
7. PA T3	.15	.32**	.44**	.24*	.37**	.67**	-	.26*	-.10	-.13	-.24**	-.20*	.17	.00	.04	-.02
8. PA T4	.28*	.26**	.35**	.47**	.60**	.40**	.37**	-	-.09	-.04	-.05	-.04	.07	.11	.08	.19*
9. SP T1	-.14*	-.20*	-.27**	.00	-.09	-.04	-.05	-.13	-	.65**	.51**	.53**	-.49**	-.33**	-.50**	-.55**
10. SP T2	-.19	-.25**	-.34**	-.05	-.14	-.05	-.13	-.12	.65**	-	.60**	.62**	-.39**	-.41**	-.46**	-.47**
11. SP T3	-.12	-.18*	-.25**	-.11	-.11	-.07	-.19*	-.04	.57**	.59**	-	.67**	-.44**	-.33**	-.44**	-.44**
12. SP T4	-.17	-.16	-.27**	-.09	-.14	-.06	-.01	-.02	.54**	.62**	.68**	-	-.42**	-.30**	-.41**	-.46**
13. PV T1	.16*	.15	.22*	.08	.11	.02	.01	.25*	-.50**	-.37**	-.28**	-.30**	-	.29**	.55**	.51**
14. PV T2	.14	.08	.05	-.08	.07	.04	.05	.03	-.30**	-.35**	-.33**	-.17	.23**	-	.45**	.48**
15. PV T3	.08	.11	.30**	.03	.07	.13	.28**	.15	-.18*	-.28**	-.42**	-.27**	.39**	.41**	-	.79**
16. PV T4	.13	.02	.18*	-.04	.08	.05	.20*	.06	-.25*	-.28**	-.41**	-.41**	.29**	.34**	.68**	-

Note. Correlations for boys are presented below the diagonal; correlations for girls are presented above the diagonal. PA = Proactive Aggression; RA = Reactive Aggression; SP = Social Preference; PV = Peer Victimization; T1-4 = Time 1 – Time 4.

* $p < .05$, ** $p < .01$.

main variables, (2) cross-lagged paths from aggression to social preference and peer victimization, (3) cross-lagged paths from social preference to aggression and peer victimization, and (4) cross-lagged paths from peer victimization to aggression and social preference. Age, gender, ethnicity, and whether the child participated in the intervention arm of the study were included as control variables and regressed on aggression, social preference, and peer victimization at Time 2-4. The fit of the initial model for reactive aggression was acceptable ($\chi^2 (19) = 71.80, p < .01, CFI = .96, RMSEA = .08, SRMR = .04$). The fit of the initial model for proactive aggression was also acceptable ($\chi^2 (19) = 76.41, p < .01, CFI = .96, RMSEA = .08, SRMR = .04$).

Multigroup Models

A multigroup model was estimated to examine whether the associations between aggression, social preference, and peer victimization varied as a function of gender. For both reactive and proactive aggression, an unconstrained model in which all paths were freely estimated across gender was compared to a fully constrained model in which all paths were constrained to be equivalent across gender using a chi-squared difference test. The difference in model fit between the two models was significant (reactive aggression, $\Delta\chi^2 (\Delta 102) = 214.83, p < .01$; proactive aggression, $\Delta\chi^2 (\Delta 102) = 234.88, p < .01$), indicating that the paths varied by gender. Therefore, the models for proactive and reactive aggression were estimated separately for girls and boys.

Reactive Aggression. The unconstrained multigroup reactive aggression model is presented in Figure 1. Full results of this model are presented in Table 3. The model fit was acceptable ($\chi^2 (38) = 113.58, p < .01, CFI = .94, RMSEA = .09, SRMR = .04$). In general, reactive aggression, social preference, and peer victimization were moderately

Table 3. *Path Analyses Results for Reactive Aggression*

Variable	Boys					Girls				
	B	S.E.	Lower	Upper	β	B	S.E.	Lower	Upper	
Age → RA2	-.06	.07	-.196	.082	-.10	-.08	.06	-.205	.045	
White → RA2	.01	.16	-.295	.339	-.02	-.03	.12	-.261	.204	
Inter → RA2	.07	.24	-.272	.666	-.03	-.09	.26	-.570	.441	
RA1 → RA2	.40**	.10	.219	.606	.33**	.33	.09	.140	.504	
SP1 → RA2	-.13	.08	-.275	.050	-.06	-.05	.09	-.217	.128	
PV1 → RA2	-.06	.08	-.211	.115	.12	.10	.08	-.050	.244	
Age → SP2	-.02	.07	-.159	.119	-.05	-.05	.06	-.177	.069	
White → SP2	-.00	.13	-.264	.243	.08	.16	.16	-.053	.398	
Inter → SP2	-.06	.16	-.497	.141	-.16**	-.54	.15	-.820	-.253	
RA1 → SP2	-.08	.07	-.229	.058	-.19**	-.22	.07	-.364	-.084	
SP1 → SP2	.63**	.06	.475	.720	.53**	.56	.06	.429	.683	
PV1 → SP2	.04	.07	-.102	.174	-.12	-.13	.07	-.259	.004	
Age → PV2	-.02	.07	-.148	.115	.05	.05	.78	-.101	.205	
White → PV2	-.07	.16	-.441	.171	.09	.20	.15	-.099	.485	
Inter → PV2	.01	.20	-.367	.411	.10	.34	.27	-.180	.901	
RA1 → PV2	-.02	.10	-.207	.172	.12	.15	.11	-.049	.365	
SP1 → PV2	-.32**	.09	-.478	-.132	-.25**	-.28	.09	-.465	-.097	
PV1 → PV2	.02	.09	-.149	.200	.12	.13	.09	-.054	.303	
Age → RA3	.22**	.06	.059	.281	.05	.04	.05	-.068	.130	
White → RA3	-.05	.13	-.323	.166	-.10	-.16	.12	-.424	.062	
Inter → RA3	.07	.17	-.167	.511	-.04	-.11	.20	-.516	.264	
RA2 → RA3	.44**	.08	.208	.528	.32*	.28	.11	.073	.503	
SP2 → RA3	-.21*	.08	-.316	-.021	-.04	-.03	.07	-.175	.105	
PV2 → RA3	-.04	.09	-.215	.128	.01	.01	.07	-.123	.135	
Age → SP3	-.06	.07	-.187	.071	.01	.01	.06	-.093	.125	
White → SP3	.03	.14	-.211	.336	-.01	-.03	.12	-.268	.202	
Inter → SP3	-.18*	.21	-.911	-.093	-.23**	-.74	.20	-.1.12	-.355	
RA2 → SP3	-.00	.07	-.147	.128	-.16*	-.19	.07	-.335	-.045	
SP2 → SP3	.32**	.09	.121	.494	.44**	.43	.09	.257	.611	
PV2 → SP3	-.11	.09	-.304	.064	-.13	-.12	.06	-.251	-.001	
Age → PV3	.06	.07	-.083	.191	-.02	-.01	.07	-.140	.128	
White → PV3	.27**	.16	.229	.840	.10	.21	.14	-.054	.478	
Inter → PV3	-.10	.19	-.712	.047	.06	.20	.24	-.287	.656	
RA2 → PV3	.01	.11	-.195	.214	-.17*	-.19	.10	-.376	.007	
RA1 → PV3	.14	.12	-.091	.396	.15	.17	.09	-.004	.351	
SP2 → PV3	-.10	.10	-.296	.078	-.30**	-.30	.09	-.485	-.124	
PV2 → PV3	.46**	.13	.261	.754	.33**	.31	.09	.143	.495	
Age → RA4	-.11	.05	-.184	.027	.04	.02	.04	-.056	.099	
White → RA4	.04	.13	-.198	.319	-.13	-.18	.11	-.406	.032	
Inter → RA4	-.16	.23	-.755	.131	-.05	-.10	.22	-.514	.368	
RA3 → RA4	.59**	.09	.367	.727	.41**	.37	.07	.233	.493	
SP3 → RA4	.00	.06	-.125	.127	-.12	-.08	.05	-.188	.020	
PV3 → RA4	-.16	.07	-.274	.013	.09	.06	.06	-.068	.176	

Table 3 Continued.

Variable	Boys					Girls				
	B	B	S.E.	95% CI		β	B	S.E.	95% CI	
				Lower	Upper				Lower	Upper
Age → SP4	-.01	-.01	.07	-.133	.122	.00	.00	.06	-.102	.112
White → SP4	.06	.13	.13	-.118	.379	-.02	-.05	.11	-.261	.172
Inter → SP4	-.11	-.30	.17	-.648	.037	-.03	-.10	.23	-.532	.370
RA3 → SP4	-.06	-.07	.09	-.235	.122	-.10	-.13	.08	-.278	.016
SP3 → SP4	.62**	.61	.07	.484	.740	.63**	.64	.06	.522	.766
PV3 → SP4	-.00	-.00	.06	-.112	.122	-.09	-.09	.07	-.223	.048
Age → PV4	.07	.07	.08	-.072	.219	-.05	-.05	.06	-.169	.068
White → PV4	-.07	-.15	.14	-.442	.119	.09	.18	.12	-.061	.418
Inter → PV4	.06	.17	.19	-.195	.555	.03	.10	.28	-.473	.618
RA3 → PV4	-.10	-.13	.15	-.409	.182	.10	.12	.11	-.076	.345
RA2 → PV4	.03	.03	.14	-.253	.282	-.12	-.14	.10	-.351	.042
SP3 → PV4	-.20*	-.21	.09	-.388	-.047	-.22*	-.22	.08	-.380	-.064
PV3 → PV4	.55**	.57	.10	.377	.754	.49**	.49	.08	.318	.626
RA1 → SP2 → PV3	-	.01	.01	-.005	.054	-	.07*	.03	.023	.147
RA2 → SP3 → PV4	-	.00	.01	-.032	.032	-	.04	.02	.009	.103

Note. RA = Reactive Aggression; SP = Social Preference; PV = Peer Victimization; Inter = Participated in the Intervention Arm.

* $p < .05$, ** $p < .01$

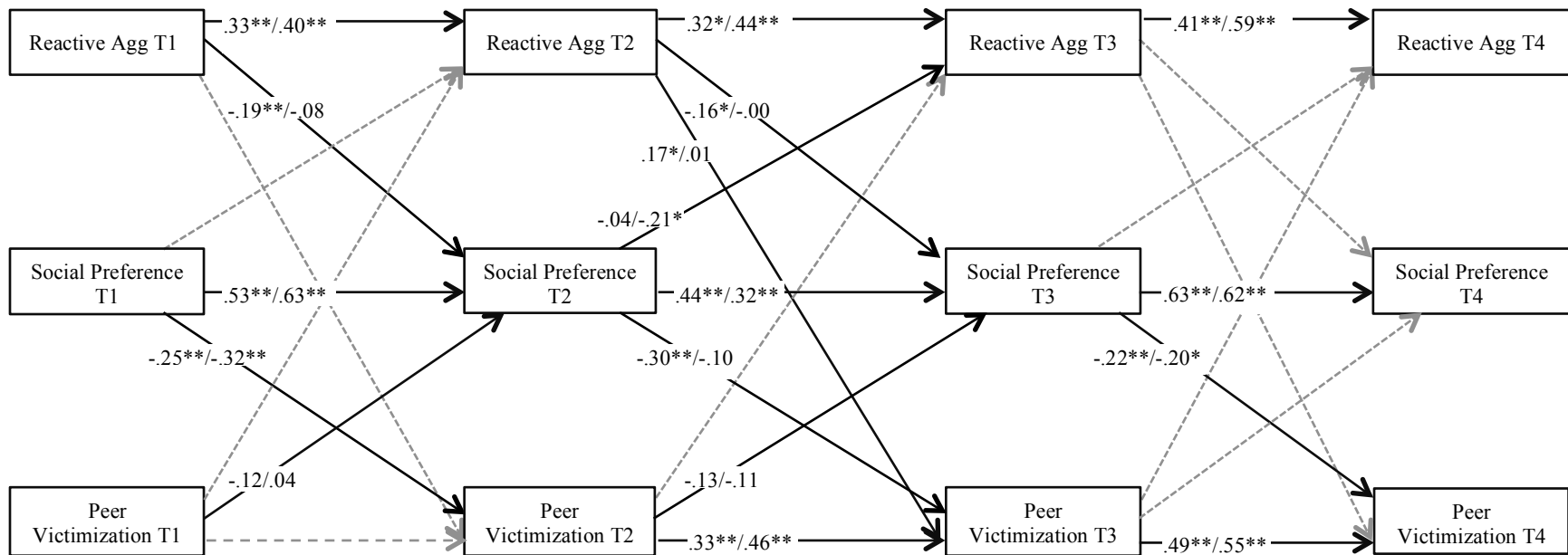


Figure 1. Bidirectional Longitudinal Panel Model Examining Associations between Reactive Aggression, Social Preference, and Peer Victimization. Estimates are Standardized Regression Weights. Before the Dash for Girls and Behind the Dash for Boys. Demographic covariates are not presented to reduce complexity.

* $p < .05$, ** $p < .01$

stable over the 2-year period for both genders. Reactive aggression at T1 and T2 was a significant unique negative predictor of social preference at T2 and T3 respectively, for girls ($\beta = -.19$, $SE = .07$, $p < .01$, 95% CI $[-.364, -.084]$; $\beta = -.16$, $SE = .07$, $p = .01$, 95% CI $[-.335, -.045]$). A similar pattern emerged for T3 reactive aggression and T4 social preference for girls, but only at the level of a non-significant trend ($\beta = -.10$, $SE = .08$, $p = .08$, 95% CI $[-.278, .016]$). Conversely, reactive aggression did not emerge as a unique predictor of social preference for boys.

For girls, reactive aggression at T1 was a positive predictor of peer victimization at T3, but only at the level of non-significant trend ($\beta = .15$, $SE = .09$, $p = .06$, 95% CI $[-.004, .351]$). Girls scoring higher on reactive aggression were subsequently more likely to experience peer victimization. Reactive aggression at T2 emerged as a negative predictor of T3 peer victimization ($\beta = -.17$, $SE = .10$, $p = .05$, 95% CI $[-.376, .007]$), but again only at the trend level. For boys, reactive aggression did not emerge as a unique predictor of subsequent peer victimization. With the exception of a non-significant association between T2 social preference and T3 peer victimization for boys, social preference was a negative predictor of peer victimization at subsequent time points for both girls and boys. Boys and girls with lower social preference scores were more likely to experience subsequent peer victimization.

Examined next was whether the relation between reactive aggression and peer victimization was mediated by social preference. For girls, social preference at T2 was found to partially mediate the relation between reactive aggression at T1 and peer victimization at T3 ($b = .07$, $SE = .03$, 95% CI $[.023, .147]$). Social preference at T3 mediated the relation between reactive aggression at T2 and peer victimization at T4 for

girls ($b = .04$, $SE = .02$, 95% CI [.009, .103]). The indirect was not significant for boys at either time point.

In the context of the same set of models, also tested was the possibility that the direction of the effect moved from peer victimization to social preference and reactive aggression. Findings revealed few significant effects in this direction. For boys, social preference at T2 emerged as a negative predictor of reactive aggression at T3 ($\beta = -.21$, $SE = .08$, $p = .02$, 95% CI [-.316, -.021]). For girls, a non-significant trend emerged in which peer victimization at T1 and T2 predicted lower social preference at T2 and T3, respectively ($\beta = -.12$, $SE = .07$, $p = .06$, 95% CI [-.259, .004]; $\beta = -.13$, $SE = .06$, $p = .06$, 95% CI [-.251, -.001]).

Proactive Aggression. The unconstrained multigroup proactive aggression model is presented in Figure 2. Full results of this model are presented in Table 4. Collectively, the fit statistics indicate acceptable model fit ($\chi^2(38) = 122.80$, $p < .01$, $CFI = .93$, $RMSEA = .10$, $SRMR = .05$). In general, proactive aggression, social preference, and peer victimization was moderately stable over the 2-year period for both genders. For boys and girls, proactive aggression was unrelated to subsequent social preference. For girls, proactive aggression at T2 was a negative predictor of peer victimization at T3 such that girls scoring higher on proactive aggression were subsequently less likely to experience peer victimization ($\beta = -.19$, $SE = .18$, $p = .01$, 95% CI [-.828, -.082]). This was the only significant association between proactive aggression and peer victimization to emerge for either gender and there was no evidence that social preference mediated the relation between proactive aggression and peer victimization. Moreover, social preference was again a negative predictor of peer victimization at subsequent time points for both girls

Table 4. *Path Analyses Results for Proactive Aggression*

Variable	Boys					Girls				
	β	B	S.E.	95% CI		β	B	S.E.	95% CI	
				Lower	Upper				Lower	Upper
Age → PA2	-.02	-.01	.04	-.088	.068	-.16	-.06	.04	-.140	-.004
White → PA2	-.06	-.07	.10	-.275	.129	.09	.08	.07	-.072	.187
Inter → PA2	.06	.10	.18	-.207	.493	.01	.02	.13	-.236	.253
PA1 → PA2	.39**	.37	.14	.124	.669	.07	.06	.10	-.049	.370
SP1 → PA2	.02	.01	.05	-.085	.105	-.15	-.07	.05	-.210	.010
PV1 → PA2	.01	.01	.06	-.101	.124	.09	.04	.05	-.053	.164
Age → SP2	-.03	-.03	.07	-.169	.112	-.05	-.05	.06	-.178	.070
White → SP2	-.00	-.01	.13	-.262	.237	.06	.14	.12	-.086	.378
Inter → SP2	-.06	-.17	.17	-.504	.145	-.15	-.49	.15	-.781	-.177
PA1 → SP2	-.08	-.12	.10	-.313	.091	-.09	-.18	.17	-.510	.136
SP1 → SP2	.63**	.59	.06	.472	.718	.54**	.57	.07	.431	.695
PV1 → SP2	.03	.03	.07	-.105	.168	-.14	-.14	.07	-.282	-.006
Age → PV2	-.02	-.02	.07	-.155	.113	.05	.05	.08	-.101	.211
White → PV2	-.07	-.14	.16	-.445	.175	.09	.21	.15	-.098	.498
Inter → PV2	.01	.02	.20	-.374	.401	.09	.30	.28	-.228	.866
PA1 → PV2	-.00	-.01	.13	-.279	.235	.08	.17	.22	-.216	.649
SP1 → PV2	-.32**	-.29	.09	-.476	-.132	-.26**	-.28	.10	-.473	-.093
PV1 → PV2	.02	.02	.09	-.155	.194	.13	.14	.09	-.041	.322
Age → PA3	.08	.04	.03	-.009	.114	-.14*	-.05	.02	-.104	-.009
White → PA3	.02	.02	.08	-.146	.163	-.09	-.07	.06	-.201	.036
Inter → PA3	-.06	-.09	.11	-.308	.128	.01	.01	.12	-.232	.255
PA2 → PA3	.62**	.57	.15	.236	.840	.40*	.35	.14	.034	.575
SP2 → PA3	-.08	-.05	.04	-.128	.029	-.02	-.01	.03	-.055	.043
PV2 → PA3	.07	.04	.06	-.058	.171	.02	.01	.03	-.051	.066
Age → SP3	-.06	-.06	.07	-.182	.071	.03	.03	.06	-.080	.145
White → SP3	.03	.05	.14	-.221	.326	-.01	-.03	.12	-.269	.222
Inter → SP3	-.18*	-.49	.21	-.897	-.073	-.21**	-.69	.19	-1.06	-.297
PA2 → SP3	.00	.00	.11	-.224	.213	-.04	-.10	.20	-.397	.379
SP2 → SP3	.33**	.33	.09	.130	.501	.47**	.47	.09	.275	.640
PV2 → SP3	-.11	-.11	.10	-.308	.072	-.12	-.11	.07	-.253	.006
Age → PV3	.05	.05	.12	-.088	.184	-.02	-.02	.07	-.152	.120
White → PV3	.26**	.52	.15	.240	.811	.13*	.27	.13	.004	.518
Inter → PV3	-.13	-.36	.20	-.730	.030	.05	.18	.23	-.285	.628
PA2 → PV3	.08	.14	.16	-.180	.461	-.19*	-.44	.18	-.828	-.082
PA1 → PV3	.12	.19	.15	-.099	.466	.08	.16	.17	-.117	.540
SP2 → PV3	-.14	-.14	.09	-.323	.041	-.34**	-.33	.09	-.510	-.176
PV2 → PV3	.43**	.47	.12	.239	.718	.33**	.31	.10	.142	.498
Age → PA4	-.04	-.02	.02	-.061	.036	-.12	-.04	.03	-.108	.002
White → PA4	.01	.01	.06	-.111	.119	.02	.01	.05	-.093	.119
Inter → PA4	.05	.05	.14	-.205	.312	.12	.15	.15	-.088	.498
PA3 → PA4	.28	.22	.24	-.159	.675	.32	.32	.18	.024	.724
SP3 → PA4	.12	.05	.03	-.015	.117	.11*	.04	.02	.001	.088
PV3 → PA4	-.12	-.05	.04	-.128	.033	.06	.02	.04	-.04	.111

Table 4 Continued.

Variable	Boys						Girls			
	B	B	S.E.	95% CI		β	B	S.E.	95% CI	
				Lower	Upper				Lower	Upper
Age → SP4	-.02	-.02	.06	-.138	.098	-.01	-.01	.06	-.112	.105
White → SP4	.08	.17	.13	-.072	.422	-.02	-.04	.11	-.242	.181
Inter → SP4	-.12*	-.33	.16	-.646	-.013	-.02	-.07	.23	-.490	.405
PA3 → SP4	.11	.20	.13	-.059	.439	-.04	-.10	.20	-.424	.353
SP3 → SP4	.63**	.63	.06	.503	.749	.63**	.65	.06	.524	.772
PV3 → SP4	-.05	-.05	.06	-.162	.066	-.09	-.09	.07	-.229	.049
Age → PV4	.04	.04	.07	-.099	.184	-.06	-.06	.06	-.180	.059
White → PV4	-.07	-.14	.14	-.424	.111	.07	.15	.12	-.099	.373
Inter → PV4	.05	.15	.20	-.237	.553	.03	.10	.27	-.439	.640
PA3 → PV4	.07	.14	.25	-.394	.622	-.10	-.26	.32	-1.01	.297
PA2 → PV4	-.12	-.20	.21	-.640	.190	-.02	-.04	.34	-.622	.734
SP3 → PV4	-.18*	-.19	.09	-.368	-.018	-.22**	-.22	.08	-.379	-.067
PV3 → PV4	.53**	.55	.10	.366	.741	.51**	.50	.08	.335	.635
PA1 → SP2 → PV3	-	.02	.02	-.007	.082	-	.06	.06	-.031	.199
PA2 → SP3 → PV4	-	.00	.02	-.041	.047	-	.02	.05	-.073	.109

Note. PA = Proactive Aggression; SP = Social Preference; PV = Peer Victimization; Inter = Participated in the Intervention Arm.

* $p < .05$, ** $p < .01$

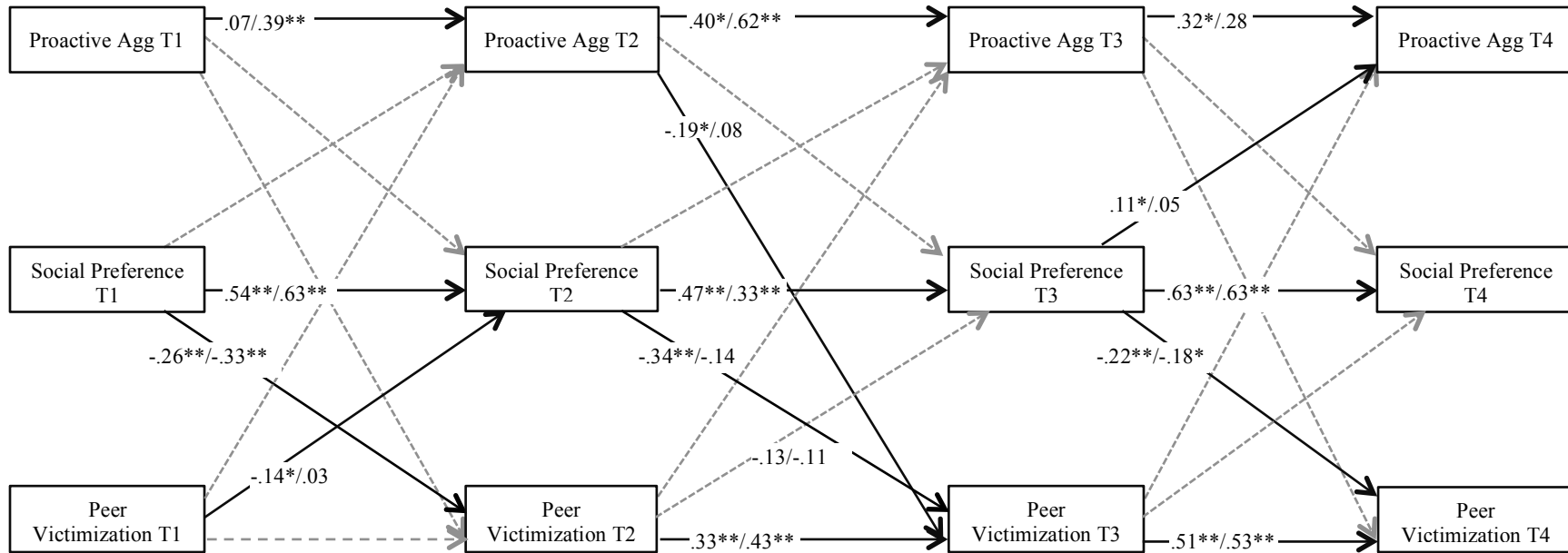


Figure 2. Bidirectional Longitudinal Panel Model Examining Associations between Proactive Aggression, Social Preference, and Peer Victimization. Estimates are Standardized Regression Weights. Before the Dash for Girls and Behind the Dash for Boys. Demographic covariates are not presented to reduce complexity. * $p < .05$, ** $p < .01$

and boys, with the exception of a non-significant association between T2 social preference and T3 peer victimization for boys.

Similar to the reactive aggression model, the possibility that the direction of effects moved from peer victimization to social preference and proactive aggression was considered. The few significant effects found in this direction applied to girls only. For girls, social preference at T3 was marginally associated with higher levels of proactive aggression at T4 ($\beta = .11$, $SE = .02$, $p = .06$, 95% CI [.001, .088]). T1 peer victimization significantly predicted lower T2 social preference for girls ($\beta = -.14$, $SE = .07$, $p = .05$, 95% CI [-.282, -.006]), and a non-significant trend emerged in which peer victimization at T2 also predicted lower social preference at T3 ($\beta = -.12$, $SE = .07$, $p = .09$, 95% CI [-.253, .006]).

Chapter 4

Discussion

Child aggression is a behavioral risk factor for peer victimization. An aggressive child's risk for experiencing peer victimization, however, appears to vary depending on the function of the aggressive behavior. Based on a review of existing research, it was reasoned that reactively aggressive youth would be more likely to be victimized by peers than their proactively aggressive counterparts (Camodeca et al., 2002; Lamarche et al., 2007; Lamarche et al., 2006; Ostrov et al., 2014; Poulin & Boivin, 2000a; Salmivalli & Nieminen, 2002; Schwartz et al., 1998). The reasons why proactive and reactive aggression might differentially confer risk for peer victimization is less well understood (Card & Little, 2006), and this issue was examined in the present study. Considered was the possibility that social preference is one mechanism that explains the relation between the function of aggression and peer victimization. In light of previous research documenting the transactional relationship between aggression and victimization (Hanish & Guerra, 2002; Ostrov & Godleski, 2013), also considered was whether the longitudinal pathway from aggression to peer victimization through social preference was bidirectional. Finally, the current investigation examined the degree to which the pathway from aggression to victimization varied as a function of gender.

The current study provided little evidence that the pathway from aggression to peer victimization is bidirectional. Instead, when significant effects were found, they suggested an influence of aggression on social preference and peer victimization. Results from the current study did provide partial support for the sequential social process model (i.e., aggression predicting peer victimization partly through social preference; Boivin et

al., 2001), particularly for girls. Reactive aggression emerged as a longitudinal predictor of peer victimization and that association was partly (or fully) explained through the affect of reactive aggression on children's social preference. Reactively aggressive girls were generally less socially preferred by their peers overtime and subsequently more likely to experience peer victimization. For girls, social preference appears to be one mechanism that explains how reactive aggression confers risk for peer victimization. Findings suggest that peers react negatively to girls who respond to perceived threats with reactive aggression and this negative affect on children's social relations may make them easy targets of bullying perpetration.

Reactive aggression is a signal for children who struggle to articulate and regulate their emotions well in social situations (Connor, Steingard, Anderson, & Melloni, 2003). Although emotion-dysregulation and ineffectuality within the social domain is typical of boys and girls who are reactively aggressive, these attributes may be particularly problematic for girls (Hanish et al., 2004). Girls who use aggression in their peer interactions may violate traditional gender norms, ostracizing themselves from the peer group and placing them at greater risk for social maladjustment (Crick, 1997). Consistent with this supposition is evidence linking externalizing behaviors in girls to peer victimization (Cillessen & Lansu, 2015) or peer rejection (Salmivalli, Kaukiainen, & Lagerspetz, 2000). Hanish et al. (2004) argue that peers may be more sensitive to expressions of anger (i.e., a characteristic closely tied to reactive aggression) among girls, despite displays of anger being more common among boys. If expressing anger is a more acceptable behavior for boys than for girls, it is possible that displays of anger are more closely tied to girl's social adjustment (Hanish et al., 2004). Moreover, difficulty

articulating and expressing emotion may interfere with girls' ability to form intimate, dyadic relationships, which may be particularly detrimental at this age (Crick & Zahn-Waxler, 2003). Indeed, the ability to develop social ties within the peer group appears to be a stronger predictor of maladjustment for girls than for boys (Sentse et al., 2015). This is further corroborated by our finding that, for girls, low social preference predicts subsequent peer victimization and vice versa, which was not found for boys.

It is important to note, however, that after controlling for fall scores on reactive aggression (T1), girl's scores on reactive aggression in the spring (T2) predicted lower scores on peer victimization the subsequent fall (T3). While speculative, there may be something about the maintenance or escalation of reactive aggression over time in girls that attenuates their risk for peer victimization. It is possible that the potential cost of bullying a chronically reactively aggressive child deters bullies from future bullying perpetration. Clearly, this finding needs replication.

Contrary to our hypotheses, reactive aggression was not found to predict social preference or peer victimization for boys, which is at odds with the existing literature. In attempts to explain these null relations, it is important to consider methodological difference between the current study and previous work. The current study utilized a self-report measure of aggression and a peer report measure of peer victimization, whereas the majority of research has assessed proactive and reactive aggression via teacher-report (Camodeca et al., 2002; Dodge & Coie, 1987; Fite et al., 2007; Lamarche et al., 2007; Poulin & Boivin, 2000a) and, to a lesser extent, peer-report (Prinstein & Cillessen, 2003; Salmivalli & Helteenvuori, 2007; Salmivalli & Nieminen, 2002). In one of the few known studies to examine functions of aggression via self-report, Little et al.

(2003) found that both proactive and reactive aggression in adolescents was unrelated to their perceptions of their own victimization, and negatively related to peer nominations of their victimization (Little, Jones, et al., 2003). Most of the studies relying on self-report measures of aggression have included older children and adolescents, and this study extends the assessment of self-reported proactive and reactive aggression downward to younger elementary-school children. It is important to note that some have questioned whether self-reports of aggression among elementary school-aged children are valid (Hubbard et al., 2010). However, given that *intentionality* defines the function of aggression, children may be the best informants of the distinct motivations that underlie their aggressive behaviors. While the accuracy with which elementary-school children disclose their aggressiveness may vary (Lochman & Dodge, 1998), the findings from this study suggest that self-report data provide an important perspective on children's aggression that might be overlooked utilizing only teacher- or peer-report measures.

The current investigation did find some evidence of a relation between proactive aggression and peer victimization. Girls scoring higher on proactive aggression were at reduced risk for peer victimization, but this finding did not hold for boys. Among the studies that have examined gender differences in the relation between proactive aggression and victimization, findings are mixed. Some evidence suggests that proactive aggression is negatively related to peer victimization in boys only (Salmivalli & Helteenvuori, 2007), while other studies have found correlates of proactive aggression to be similar across gender (Connor et al., 2003; Ostrov et al., 2014). Results from the current study add to the mixed literature on the role of proactive aggression in children's peer victimization experiences. Still, there is evidence suggesting that proactively

aggressive children are often themselves bullies, feared by other students, or are socially dominant members of the peer group (Little, Brauner, Jones, Nock, & Hawley, 2003), which indicates that this behavior may deter peers from selecting these children as targets of peer victimization. It is also important to note that, unlike reactive aggression, the current investigation found that proactive aggression in girls did not predict social preference, which suggests that the pathway from proactive aggression to victimization for girls may be explained by factors other than likeability. Indeed, female bullies (i.e., proactive aggressors) tend to have a controversial status in the peer group (Salmivalli, Lagerspetz, Björkqvist, Österman, & Kaukiainen, 1996).

This study also replicates and extends prior research examining the association between social preference and peer victimization (Sentse et al., 2015). For both boys and girls, social preference scores in the fall were uniquely related to their peer victimization experiences the following spring; girls' social preference scores in the spring were also predictive of their peer victimization scores in the fall of the following school year. There was evidence that for girls this relation was bidirectional. These findings suggest a spiraling down process for girls, such that girls who are accepted less well by their peers are more victimized, victimized girls are then subsequently less accepted by their peers, and then girls scoring lower on peer acceptance are once again at risk for future peer victimization. This may be particularly detrimental for girls' long-term psychosocial adjustment given the heightened value girls place on relationship status and peer perceptions relative to boys (Rose & Rudolph, 2006).

Strength and Limitations

The current investigation had a number of strengths. Data were collected using a longitudinal design spanning two academic years with four measurement occasions, strengthening our ability to discern predictive relations and possible mechanisms of action. Different report sources were used to assess aggression, peer victimization, and social preference, which allowed us to examine the extent to which our findings generalized beyond a single report source. The investigation also considered the possibility that relations among constructs varied as a function of gender or were reciprocal. This represents an area that has received less attention in the research literature, particularly in terms of examining the pathways from functions of aggression to peer victimization (Ostrov et al., 2014; Salmivalli & Helteenvuori, 2007).

Several limitations of this study also deserve consideration. When interpreting gender effects, it is important to consider the characteristics of the aggression measure used in the current study (i.e., Dodge & Coie, 1987). The overt, rather than relational, nature of the proactive/reactive aggression items may shed some light on the current findings, particularly with regard to correlates of girls' aggressive behavior. Others have also criticized this measure for confounding the form and function of aggression (Vitaro & Brendgen, 2005). It would be important to examine both the form and function of aggression in order to disentangle these complex relations (Ostrov et al., 2014). Estimates of internal consistency for proactive and reactive aggression were also lower and may have attenuated relations between aggression and other constructs.

Conclusions

Overall, these findings highlight the complex nature of the longitudinal link between aggression and peer victimization, which appears to depend on the function of aggression, social preference, and gender. To the author's knowledge, this is the first study to examine whether social preference is a mechanism that explains the relation between proactive and reactive aggression and peer victimization among boys and girls. Results from this study reflect initial evidence in support of both direct and indirect pathways of the sequential social process model in girls for reactive aggression and peer victimization. Not only do these findings suggest the need to distinguish functions of aggression in future research, they also reflect the importance of examining gender differences within the aggression construct. Indeed, given the limited research available and inconsistencies in the literature, differences found in this study for reactive and proactive aggression among boys and girls is hardly definitive and represents a direction for future research. If we understand more about the individual and contextual factors differentially associated with the correlates of proactive and reactive aggression, researchers will be better equipped to tailor intervention procedures that reduce aggression and peer victimization.

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