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

Sam Manring[1,4], **L. Christian Elledge**[1], **Lisette W. Swails**[2], and **Eric M. Vernberg**[3]

[1]Department of Psychology, University of Tennessee, 1404 Circle Drive, Knoxville, TN 37996

[2]Center for Child Health and Human Development, University of Kansas, 3901 Rainbow Boulevard, MS 4003, Kansas City KS 66103

[3]Clinical Child Psychology Program, University of Kansas, Dole Human Development Building, 1000 Sunnyside Avenue, Room 2015, Lawrence, KS 66045

Abstract

This study examined whether social preference was a mechanism that explained the relation between proactive and reactive aggression and peer victimization. Participants were 494 children 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. The relations among 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.

Keywords

Proactive and Reactive Aggression; Peer victimization; Teacher-student relationships; Peer relationships; Peer acceptance

[4]Address correspondence to Sam Manring, University of Tennessee, Department of Psychology, Austin Peay Building, room 301F, Knoxville, TN 37996; phone: 1-865-974-1958; fax: 1-865-974-9530; smanring@utk.edu.

Ethical Standards

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Conflict of Interest

The authors declare that they have no conflict of interest.

Chronically victimized children are at risk for maladaptive outcomes in childhood and adolescence, including loneliness, school achievement (Buhs, Ladd, & Herald, 2006), internalizing symptoms, peer rejection, and low popularity (Bierman, Kalvin, & Heinrichs, 2015; Hanish & Guerra, 2002). Given these detrimental consequences, it is important to identify factors that are reliably associated with children's peer victimization experiences. Early behavior problems have been shown to predict later victimization by peers, particularly for children with fewer friendships or poor quality peer relationships (Hodges, Boivin, Vitaro, & Bukowski, 1999; Schwartz, McFadyen-Ketchum, Dodge, Pettit, & Bates, 1999). Indeed, a subgroup of peer victimized children characterized by their own aggressive behaviors emerges when investigating risk factor for peer victimization.

Proactive and Reactive Aggression and Peer Victimization

The link between aggression and peer victimization has been well established, with some research suggesting a bidirectional relation between the two constructs (i.e., a subgroup of children repeatedly victimized by peers in turn respond with aggression; Salmivalli, Karhunen, & Lagerspetz, 1996). Childhood aggression is often subdivided by the motivation that underlies the aggressive act, namely whether it is proactive or reactive (Card & Little, 2006; Dodge & Coie, 1987). Although many children exhibit both functions of aggression (Vitaro & Brendgen, 2005), exploratory and confirmatory factor analyses indicate that the two functions are distinct (Crick & Dodge, 1996; Fite, Colder, & Pelham, 2006; Poulin & Boivin, 2000a). The ways in which proactive and reactive aggression differentially confer risk for peer victimization is less well understood (Card & Little, 2006), and we examined this issue in the present study.

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 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 behaviors, proactive and reactive aggression also show unique and differential relations with psychological outcomes (Card & Little, 2006).

Accumulating evidence indicates that children scoring high on reactive aggression are more likely to experience peer victimization than their proactively aggressive counterparts, although these associations have mostly been studied with boys (Poulin & Boivin, 2000a; Schwartz et al., 1998), using cross-sectional data (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, researchers found that boys initially high on reactive aggression were more likely to be victimized by peers, and boys high on proactive aggression were less likely to be victimized by peers in the future. Neither effect was found for girls (Salmivalli & Helteenvuori, 2007). Moreover, in a sample of 7–8 year-old children, peer victimization was concurrently associated with reactive aggression and unrelated to proactive aggression,

but no evidence of a gender difference emerged in these relations (Camodeca, Goossens, Meerum Terwogt, & Schuengel, 2002). Overall, the limited and mixed findings of studies examining the role of gender in the longitudinal link between functions of aggression and peer victimization represents a key limitation in the literature.

Proactive and Reactive Aggression and Peer Relations

Reactive and proactive aggression are distinct forms of aggressive behavior that elicit different responses from peers. For example, proactive aggression is often associated with popularity 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 children scoring high on proactive aggression are more likely to have friendships, although their friends are more likely to also be proactively aggressive (Poulin & Boivin, 2000b). Therefore, these positive attributes may attenuate peers' negative responses to proactive aggression, as peers may be hesitant to provide direct negative feedback for fear of retaliation, loss of friendship, or damage to their own social reputation.

Conversely, evidence suggests that children scoring high on reactive aggression are less socially preferred (Poulin & Boivin, 2000a; Price & Dodge, 1989; Prinstein & Cillessen, 2003). Hence, it is perhaps peers' negative reaction to, or interpretation of, the aggressive behavior that explains a reactively aggressive child's higher propensity for experiencing peer victimization and other relational difficulties, rather than the aggressive act itself (Hanish & Guerra, 2000). 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 victimization as a reasonable response (Card & Little, 2006). Consistent with this supposition is research finding emotionally-dsyregulated aggressive children are at increased risk for future peer rejection and victimization (Bierman et al., 2015). Feeling anger, a trait of reactive aggression, makes a child more likely to seek revenge against their aggressor, which in turn increases their likelihood of experiencing peer victimization (Hanish et al., 2004).

Social Preference as a Mediator between Aggression and Peer Victimization

Social preference is a measure of peer acceptance that takes into consideration the extent to which peers "like" and "dislike" a child in their classroom or social group. It is possible that social preference is one mechanism through which aggression confers developmental risk for peer victimization. Schwartz et al. (1999), for instance, 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. The social or relational cost of bullying a less accepted peer may be small. Bullies expect that their attacks on disliked 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 during conflict to aid the victim) among peer victimized children (Hawkins, Pepler, & Craig, 2001).

Boivin, Hymel, & Hodges (2001) sequential social process model provides a framework for understanding the relations among aggression, social preference, and peer victimization. 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 and then indirectly peer victimization. Indeed, among 3rd–5th grade students, Boivin and colleagues found that aggression uniquely accounted for future victimization partly through low social preference, although this effect weakened with age (Boivin & Hymel, 1997; Boivin, Hymel, & Hodges, 2001). In addition, 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.

Bidirectional Relations Among Variables

In addition to relations specified by the sequential social processing model, past theory and research provides some support for the notion that aggression and victimization may have reciprocating enhancing effects over time (Ostrov & Godleski, 2013). Lamarche et al. (2007), for example, found that peer victimization predicted increases in future reactive-but not proactive- aggression for boys, suggesting that children may use reactive aggression as a defense or retaliation in response to being victimized by peers.

Similar temporal relations have also been found between aggression and social preference (Cillessen & Mayeux, 2004) and between victimization and social preference (Kawabata, Tseng, & Crick, 2014), and thus will be examined in the present study. In one of the few studies known to assess the longitudinal interplay between these variables, Sentse, Kretschmer, & Salmivalli (2015) found that victimization contributed to lower social preference and vice versa, and peer rejection positively predicted bullying (i.e., proactive aggression) amongst 3–6th graders longitudinally. However, bullying was not associated with subsequent levels of peer rejection (Sentse et al., 2015).

Current Study

We examined the prospective links between functions of aggression, social preference, and peer victimization among elementary school children. While prior studies have investigated relations between functions of aggression and victimization, few 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). We predicted that reactive aggression would emerge as a stronger predictor of peer victimization than proactive aggression. A primary aim of the current study was to examine the extent to which social preference was a mechanism that explained the relation between proactive and reactive aggression and peer victimization. In light of previous theory and research linking reactive aggression to poor peer acceptance and peer victimization, and the well documented link between peer acceptance and peer

victimization, it was hypothesized that social preference would mediate the relation between reactive aggression and peer victimization. Previous findings regarding the influence of proactive aggression on social adjustment are more speculative, but we predicted that social preference would also mediate the relation between proactive aggression and peer victimization, such that children scoring higher on proactive aggression would score higher on social preference and in turn experience lower level of peer victimization.

A secondary aim of the current study was to examine whether the pathway from proactive and reactive aggression to peer victimization was bidirectional. There is some evidence that the experience of peer victimization could lead to an increase in reactive aggression over time (Lamarche et al., 2007), but limited evidence suggests that peer victimization predicts changes in proactive aggression. Thus, it was predicted that peer victimization would emerge as a longitudinal predictor of reactive aggression but not proactive aggression. We also tested the extent to which social preference was a mechanism that explained the longitudinal relation between peer victimization and aggression, but this aim was largely exploratory.

Finally, this study examined the degree to which relations among aggression, social preference, and peer victimization vary as a function of 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. Given the limited research available, we hypothesized that the prospective relation between reactive aggression and peer victimization would be stronger for boys than for girls, whereas the relation between proactive aggression and peer victimization would be similar across gender (Lamarche et al., 2007).

Method

Participants

Participants were 494 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 of the participating children were involved in an intervention trial testing the efficacy of a school-based mentoring program for children showing early signs of aggression, and 439 children were the classroom peers of those participating in this trial (N = 494). Intervention children were identified through a combination of teacher-nomination and questionnaires completed by parents and teachers assessing aggressive behavior. Eighty-four children were identified via teacher nomination, and 78.8% of those children's parents consented to allow their child to participate in the intervention. Eligible for the intervention were 55 teacher-nominated children who scored at or above 60T on the Aggressive Behavior subscale of the Teacher Report Form or Child Behavior Checklist (Achenbach, 1991). Children were randomized to the intervention (n =28) or the waitlist control (n = 27) condition.

To recruit classmates of children participating in the intervention arm, parental consent forms were sent home with 513 children. Parental consent forms were returned to schools by 390 children. Three hundred and fifty-one parents agreed to allow their children to

participate in the larger study (Cohort 1); this number includes the 55 children participating in the intervention arm of the study. In the fall of the 2nd year, after children participating in the intervention arm of the study had transitioned to the next grade, 565 additional consent forms were sent home to the parents of classmates of the intervention children who previously had not partaken in the consent procedure in the fall of year one (i.e., these students were in classrooms *without* intervention children in the 1st year of the study) or with children who failed to return a consent form in the fall of year one. Parental consent forms were returned by 257 children, with 143 additional parents agreeing to allow their child to participate in year two (Cohort 2).

Data was collected at four time points. Self-report measures and a peer nomination inventory was administered in the early fall (September/October) and late spring (April/May) of project years one and two. Before completing the study measures, children were informed that their parents had given permission for them to participate in the study, that their participation was voluntary, and that they could choose not to participate by informing a research staff member of their decision. One student declined participation and was escorted back to their classroom. Data was available for 340 participating children in the fall of the 1st year (T1), 342 in the spring of the 1st year (T2), 393 in the fall of the 2nd year (T3), and 380 in the spring of the 2nd year (T4). Data was not collected from 87 participants at T2 and T3 because these students moved to classrooms that were not participating in our assessment procedure (i.e., classrooms without a child participating in the intervention arm) in year two of the study. Data was collected from 141 new participants at T3 and T4.

Analyses were based on a sample of 494 (236 girls, 215 boys; data on gender was missing for 43 children) 2nd- through 5th-grade children between the ages of 6 and 12 (*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 on ethnicity was 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

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. 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 to nominate 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 five minutes after completing all study measures.

Measures

Proactive and Reactive Aggression—Aggression was assessed using Dodge & Coie's (1987) 6-item measure of proactive and reactive aggression. Proactive aggression items were "I get other kids to gang up on somebody that I do not like", "I use physical force (or threaten to use physical force) in order to dominate other kids", and "I threaten or bully other kids to get my way." Reactive aggression items were "When I am teased or threatened, I get angry easily and strike back", "I feel that other kids are to blame in a fight. I feel they started the trouble", and "When a kids hurts me on accident (such as bumping into me), I think they meant to do it. I then react with anger or fighting." Responses were made on a 5-point scale ranging from 0 (*never*) to 4 (*almost always*). Validity for the self- and teacher-report version of this measure has been established in prior investigations (Fite et al., 2016; Fite, Wimsatt, Elkins, & Grassetti, 2012; Waschbusch, Willoughby, & Pelham, 1998; Poulin & Boivin, 2000a). Previous research using the self-report version of this measure has demonstrated internal consistency estimates that range from low to high, with most estimates falling at or above the adequate range (Fite et al., 2016; Fite, Stoppelbein, & Greening, 2009; Fite et al., 2012). In the current investigation, internal consistency was low to adequate with estimates ranging from .49 to .72 across time points for proactive aggression and .47 to .59 across time points for reactive aggression.

Peer Victimization and Social Preference—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. Scores for overt and relational victimization at each time point were averaged to form a composite peer victimization score and then standardized by classroom. Children also nominated three classmates who they liked most and three classmates who they liked least. Following procedures developed by Coie, Dodge, and Coppotelli (1982), a social preference score was computed by subtracting "like least" from "like most" nominations, and then standardizing these scores by classroom. The validity and reliability of peer nomination procedures to assess social constructs is well established (Coie, Dodge, & Kupersmidt, 1990).

Data Analytic Plan

Descriptive statistics for and correlations among study variables as well as primary analyses were estimated using Mplus 7.3 (Muthén & Muthén, 2009). Cross-lagged longitudinal panel models using maximum likelihood estimation were used to examine longitudinal associations among proactive and reactive aggression, social preference, and peer victimization. Models were estimated separately for proactive and reactive aggression. Age, gender (dummy code 1 = male), and ethnicity (dummy code 1 = White) were included as covariates in our models, and each endogenous variable was regressed on to each covariate. Because some of the children in our sample were participating in the intervention arm of the larger study, we included a condition variable in each model (dummy code 1 = children

assigned to the intervention or waitlist control; dummy code 0 = classroom peers of children participating in the intervention arm of the study) and regressed each endogenous variable in our model on to the condition variable. Although the condition variable did not emerge as a significant predictor of proactive or reactive aggression or peer victimization at any time point, there was evidence that children in the intervention arm of our study (i.e., identified as aggressive and assigned to the intervention or waitlist condition) scored lower on social preference. Thus, we retained this variable as a control variable in our final models. Because indirect effects are not normally distributed, a biased corrected bootstrap procedure (10,000 bootstrapped samples) was used to test the significance of indirect effects. A multiple group model was also estimated to examine whether relations varied as a function of gender. Model fit was evaluated using the following criteria, CFI > .90, RMSEA < .08, and SRMR < .08 (Bentler, 1990; Brown, 2015; Hu & Bentler, 1999; Little, 2013).

Treatment of Missing Data

Analyses were based on 494 participating children for whom data was available for at least one of the four data collections to minimize bias associated with case-wise deletion. Only 11 children (2%) had data at only one time point and 257 (52%) had data for at least 3 time points. 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. Results indicated that the data were missing completely at random, χ^2 (1775, N = 492) = 296.18, 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.

Results

Descriptive Statistics

Means and standard deviations for and correlations among primary study variables are reported in Tables 1 and 2. In general, constructs evidenced moderate stability overtime. Reactive and proactive aggression were significantly correlated across all measurement occasions for boys and girls. Reactive aggression was negatively correlated with social preference at Time 1, 2, and 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 T3 for boys. Reactive aggression was positively correlated with peer victimization at T4 for girls and Time 1 and 3 for boys. Girl's proactive aggression was positively correlated with peer victimization at T4 only, and boy's proactive aggression was positively correlated with peer victimization at T3 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 on peer victimization were similar across genders.

Primary Analyses

First, a single group model was estimated separately for proactive and reactive aggression. The fit for the initial model for reactive aggression, χ^2 (19) = 71.80, p < .01, *CFI* = .96, *RMSEA* = .08, *SRMR* = .04, and proactive aggression, χ^2 (19) = 76.41, p < .01, *CFI* = .96,

RMSEA = .08, *SRMR* = .04, was acceptable. Next, a multiple group 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, $\Delta\chi^2$ (Δ 100) = 212.35, $p < .01$; proactive aggression, $\Delta\chi^2$ (Δ 100) = 235.88, $p < .01$), indicating that the paths varied by gender. Therefore, a multiple group model was estimated for both the proactive and reactive aggression models.

Reactive Aggression—The unconstrained multiple group reactive aggression model is presented in Figure 1. Full results of this model are presented in Table 3. The model fit was acceptable, χ^2 (42) = 122.51, $p < .01$, *CFI* = .94, *RMSEA* = .09, *SRMR* = .05. 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 [−.370, −.084]; $\beta = -.16$, *SE* = .07, $p = .01$, 95% CI [−.338, −.048]). Reactive aggression at T3 was a negative predictor of social preference at T4 for girls, but only at the level of a non-significant trend ($\beta = -.10$, *SE* = .08, $p = .08$, 95% CI [−.277, .017]). Conversely, reactive aggression did not emerge as a unique predictor of social preference for boys.

Reactive aggression did not emerge as a unique predictor of subsequent peer victimization for either gender. Social preference was a significant negative predictor of peer victimization at subsequent time points for both girls and boys, with the exception of a non-significant association between T2 social preference and T3 peer victimization for 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 mediate the relation between reactive aggression at T1 and peer victimization at T3 ($b = .08$, *SE* = .03, $p = .02$, 95% CI [.028, .157]) . Social preference at T3 also mediated the relation between reactive aggression at T2 and peer victimization at T4 for girls ($b = .04$, *SE* = .02, $p = .08$, 95% CI [.006, .091]). The indirect effect 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 [−.317, −.023]). For girls, a trend emerged in which peer victimization at T1 and T2 predicted lower social preference at T2 and T3, respectively ($\beta = -.12$, *SE* = .06, $p = .06$, 95% CI [−.259, .005]; $\beta = -.13$, *SE* = .06, $p = .06$, 95% CI [−.251, −.002]) .

Proactive Aggression—The unconstrained multiple group 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, χ^2 (42) = 127.78, $p < .01$, *CFI* = .93, *RMSEA* = .10, *SRMR* = .05. 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 ($\beta = -.18$, *SE* = .16, $p = .01$, 95% CI [−.797, −.114]). This was the only significant association between proactive aggression and peer victimization to emerge for either gender, and social preference did not mediate the relation between proactive aggression and peer victimization . Moreover, social preference was again a negative predictor of peer victimization at subsequent time points across genders, with the exception of a non-significant association between boys' T2 social preference and T3 peer victimization.

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. T1 peer victimization was a significant negative predictor of T2 social preference for girls ($\beta = -.14$, *SE* = .07, $p = .05$, 95% CI [−.282, −.005]), and a non-significant trend emerged in which peer victimization at T2 was negatively related to social preference at T3 ($\beta = -.12$, *SE* = .07, $p = .09$, 95% CI [−.253, .006]). For girls, social preference at T3 was marginally positively associated with proactive aggression at T4 ($\beta = .11$, *SE* = .02, $p = .06$, 95% CI [−.001, .089]).

Discussion

Based on a review of existing research, it was reasoned that children scoring higher on reactive aggression would experience higher levels of peer victimization than their proactively aggressive counterparts (Lamarche et al., 2007; Lamarche et al., 2006; Ostrov et al., 2014; Poulin & Boivin, 2000a; Salmivalli & Nieminen, 2002; Schwartz et al., 1998). We also considered the possibility that social preference was one mechanism that might explain these relations. Finally, the current investigation examined whether these associations were bidirectional and 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 provided 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 explained through the effect of reactive aggression on girls' social preference. Girls who scored high on reactive aggression were less socially preferred overtime and subsequently more likely to experience peer victimization. Our findings suggest that peers react negatively to girls who respond to perceived threats with reactive aggression, and this negative effect on their social relations may make them easy targets for victimization.

Displays of reactive aggression identify those children who struggle to articulate and regulate their emotions well in social situations (Little, Jones, Henrich, & Hawley, 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 low social preference (Prinstein & La Greca, 2004). 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 (Hanish et al., 2004). Moreover, difficulty articulating and expressing emotion may interfere with girls' ability to form intimate, dyadic relationships, which is 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), which is further corroborated by our finding that, for girls only, low social preference predicts subsequent peer victimization and vice versa.

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 findings, it is important to consider methodological differences between the current study and previous work. This 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, Colder, Lochman, & Wells, 2007; Lamarche et al., 2007; Poulin & Boivin, 2000b) 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 victimization and functions of aggression via self-report, Little, Jones, et al. (2003) found that both functions of aggression in adolescents were unrelated to their perceptions of their own victimization, and negatively related to peer nominations of their victimization. Most of the studies relying on self-report measures of aggression have included older children and adolescents (e.g., Raine et al., 2006), and this study extends the assessment of self-reported proactive and reactive aggression downward to 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, McAuliffe, Morrow, & Romano, 2010). However, given that *intentionality* defines the function of aggression, children may be the best informants of the distinct motivations that underlie their behaviors. While the accuracy with which elementary-school children disclose their aggressiveness may vary (Lochman & Dodge, 1998), our findings suggest that self-report data provide an important perspective that might be overlooked utilizing only teacher- or peer-report measures.

The current investigation did find some evidence that girls scoring higher on proactive aggression were at reduced risk for peer victimization, but this finding did not hold for boys. Among 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 (Camodeca et al., 2002). 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 competent (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, results suggest that girls' proactive aggression did not predict social preference, which suggests that the pathway from proactive aggression to victimization may be explained by factors other than likeability. Indeed, female bullies, or proactive aggressors, tend to have a controversial status (i.e., both liked and disliked) 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 (e.g., 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. This bidirectional relation suggests 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 (Little, Jones, et al., 2003; 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 low to adequate (.49 to .72 and .47 to .59, respectively), and approximately 70–85% of girls and 51–73% of boys

endorsed zero for proactive aggression across different time points. It is possible that both of these measurement limitations attenuated relations between aggression and other constructs. Thus, null associations, in particular, should be interpreted with caution.

Conclusions

Overall, our findings highlight the complex nature of the longitudinal link between aggression and peer victimization. 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 separately for 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 and relatively inconsistent literature, the differences found in this study for reactive and proactive aggression among boys and girls are hardly definitive and represent a direction for future research. A more nuanced understanding of the individual and contextual factors differentially associated with the correlates of proactive and reactive aggression could allow researchers to better tailor intervention procedures that are aimed at reducing aggression and peer victimization, and ultimately deflect children off a trajectory toward later maladjustment. It is possible, for example, that cognitive behavioral interventions that target girls' displays of reactive aggression within the peer group could promote greater social acceptance, and thereby reduce incidences of peer victimization. Social skills training may facilitate more prosocial interactions between reactively aggressive children and their peers. Children who can learn to respond to peer victimization or peer conflict in a nonaggressive way that demonstrates emotional control may be more likely to maintain or enhance their status or level of acceptance in the peer group, disrupting the transactional cycle from low peer acceptance to peer victimization. This is clearly an important area for future research.

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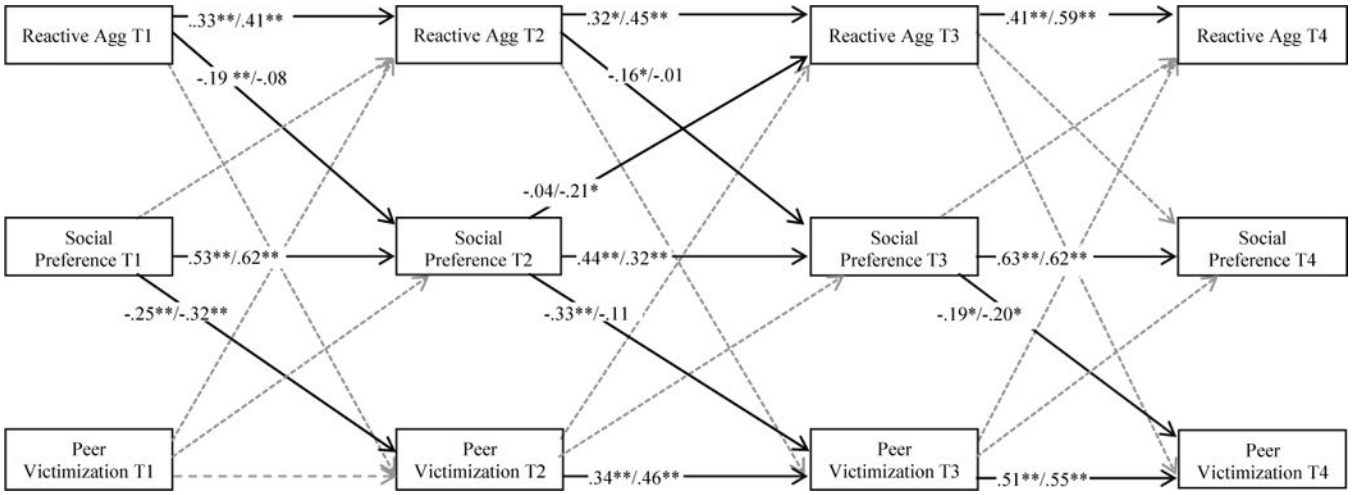

Figure 1.

Bidirectional Longitudinal Panel Model Examining Associations between Reactive Aggression, Social Preference, and Peer Victimization. Estimates are Standardized Regression Weights. Estimates before the slash are for Girls and after the slash are for Boys. Demographic covariates are not presented to reduce complexity. Dotted lines reflect non-significant paths. *$p < .05$, **$p < .01$

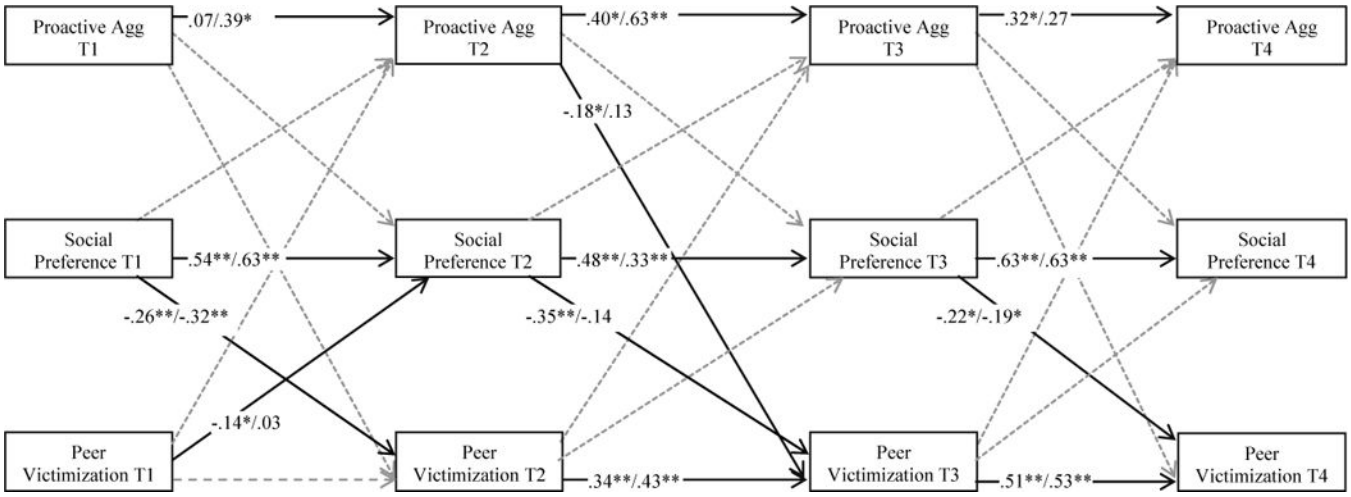

Figure 2.

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

Table 1

Means and Standard Deviations of Primary Study Variables by Gender and Time Point

	Time 1		Time 2		Time 3		Time 4	
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.

*Significant gender difference based on results of a t-test.

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 Tl	–	.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 Tl	.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	.l5	.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 Tl	−.14*	−.20*	_ 27**	.00	−.09	−.04	−.05	−.13	–	.65**	.51**	.53**	−.49**	−.33**	−.50**	−.55**
10. SP T2	−.l9	−.25**	−.34**	−.05	−.14	−.05	−.13	−.12	.65**	–	.60**	.62**	−.39**	_ 41**	−.46**	−.47**
11. SP T3	−.l2	−.l8*	−.25**	−.11	−.11	−.07	−.19*	−.04	.57**	.59**	–	.67**	−.44**	−.33**	−.44**	−.44**
12. SP T4	−.l7	−.l6	_ 27**	−.09	−.14	−.06	−.01	−.02	.54**	.62**	.68**	–	−.42**	−.30**	_ 41**	−.46**
13. PV Tl	.16*	.l5	.22*	.08	.11	.02	.01	.25*	−.50**	−.37**	−.28**	−.30**	–	.29**	.55**	.51**
14. PV T2	.l4	.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	.l3	.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.

* $p < .05$,

** $p < .01$.

Table 3

Path Analyses Results for Reactive Aggression

	Boys					Girls				
				95% CI					95% CI	
Variable	**B**	**B**	**S.E.**	**Lower**	**Upper**	**β**	**B**	**S.E.**	**Lower**	**Upper**
Age ➔ RA2	−.06	−.06	.07	−.196	.079	−.10	−.08	.06	−.207	.046
White ➔ RA2	.02	.03	.16	−.286	.350	−.02	−.03	.12	−.260	.200
Inter ➔ RA2	.07	.18	.24	−.274	.663	−.03	−.08	.26	−.564	.447
RA1➔ RA2	.41**	.43	.10	.224	.608	.33**	.33	.09	.135	.502
SP1 ➔ RA2	−.12	−.11	.08	−.269	.054	−.06	−.05	.09	−.217	.129
PV1 ➔ RA2	−.05	−.05	.08	−.207	.118	.11	.10	.08	−.055	.241
Age ➔ SP2	−.02	−.02	.07	−.159	.119	−.06	−.06	.06	−.180	.065
White ➔ SP2	−.00	−.01	.13	−.265	.242	.08	.16	.12	−.054	.396
Inter ➔ SP2	−.06	−.17	.16	−.496	.140	− 17**	−.54	.15	−.823	−.257
RA1 ➔ SP2	−.08	−.09	.07	−.231	.055	− 19**	−.23	.07	−.370	−.094
SP1 ➔ SP2	.62**	.59	.06	.474	.719	.53**	.56	.06	.489	.682
PV1 ➔ SP2	.04	.04	.07	−.102	.173	−.12	−.13	.07	−.259	.005
Age ➔ PV2	−.02	−.02	.07	−.147	.116	.05	.05	.08	−.100	.209
White ➔ PV2	−.07	−.13	.16	−.439	.173	.09	.20	.15	−.099	.486
Inter ➔ PV2	.01	.02	.20	−.369	.410	.10	.34	.27	−.177	.902
RA1 ➔ PV2	−.01	−.01	.10	−.200	.183	.12	.15	.11	−.046	.368
SP1 ➔ PV2	−.32**	−.29	.09	−.478	−.132	−.25**	−.28	.09	−.464	−.096
PV1 ➔ PV2	.02	.02	.09	−.151	.199	.12	.13	.09	−.054	.303
Age ➔ RA3	.22**	.17	.06	.057	.279	.05	.04	.05	−.068	.131
White ➔ RA3	−.05	−.07	.13	−.326	.162	−.10	−.15	.12	−.416	.070
Inter ➔ RA3	.07	.15	.17	−.169	.507	−.04	−.10	.20	−.511	.272
RA2 ➔ RA3	.45**	.38	.08	.219	.542	.32*	.28	.11	.068	.509
SP2 ➔ RA3	−.21*	−.17	.08	−.317	−.023	−.04	−.03	.07	−.174	.107
PV2 ➔ RA3	−.04	−.04	.09	−.215	.125	.01	.01	.06	−.123	.134
Age ➔ SP3	−.06	−.06	.07	−.187	.071	.01	.01	.06	−.094	.123

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	Boys					Girls				
				95% CI					95% CI	
Variable	B	B	S.E.	Lower	Upper	β	B	S.E.	Lower	Upper
White → SP3	.03	.06	.14	−.210	.337	−.01	−.03	.12	−.270	.200
Inter → SP3	−.18*	−.49	.21	−.908	−.094	−.23**	−.74	.19	−1.12	−.357
RA2 → SP3	−.01	−.01	.07	−.149	.127	−.16*	−.19	.07	−.338	−.048
SP2 → SP3	.32**	.32	.09	.119	.492	.44**	.43	.09	.258	.610
PV2 → SP3	−.11	−.12	.10	−.303	.066	−.13	−.12	.06	−.251	−.002
Age → PV3	.04	.04	.07	−.094	.171	−.02	−.02	.07	−.146	.128
White → PV3	24**	.49	.15	.207	.786	.11	.23	.14	−.047	.488
Inter → PV3	−.12	−.33	.20	−.689	.078	.05	.15	.24	−.327	.618
RA2 → PV3	.07	.07	.09	−.106	.241	−.12	−.14	.09	−.311	.034
SP2 → PV3	−.11	−.11	.10	−.305	.067	−.33**	−.33	.09	−.505	−.160
PV2 → PV3	46**	.50	.12	.257	.741	.34**	.32	.09	.158	.503
Age → RA4	−.11	−.08	.05	−.185	.026	.04	.02	.04	−.057	.098
White → RA4	.04	.06	.13	−.199	.318	−.13	−.19	.11	−.407	.032
Inter → RA4	−.15	−.32	.23	−.753	.134	−.05	−.11	.23	−.518	.369
RA3 → RA4	.59**	.56	.09	.363	.725	.41**	.37	.07	.232	.492
SP3 → RA4	.00	.00	.06	−.125	.128	−.12	−.08	.05	−.190	.021
PV3 → RA4	−.16	−.12	.07	−.265	.012	.09	.06	.06	−.061	.176
Age → SP4	−.01	−.01	.07	−.132	.121	.00	.00	.06	−.102	.112
White → SP4	.07	.13	.13	−.116	.380	−.02	−.05	.11	−.259	.175
Inter → SP4	−.11	−.30	.17	−.648	.038	−.03	−.09	.23	−.531	.370
RA3 → SP4	−.06	−.07	.09	−.236	.121	−.10	−.13	.08	−.277	.017
SP3 → SP4	.62**	.61	.07	.484	.740	.63**	.64	.06	.523	.766
PV3 → SP4	−.00	−.00	.06	−.112	.122	−.09	−.09	.07	−.224	.047
Age → PV4	.06	.06	.07	−.073	.206	−.04	−.04	.06	−.153	.082
White → PV4	−.07	−.15	.14	−.429	.119	.08	.16	.12	−.080	.399
Inter → PV4	.06	.17	.19	−.191	.545	.04	.14	.27	−.417	.649
RA3 → PV4	−.08	−.11	.10	−.323	.083	.04	.05	.09	−.126	.242
SP3 → PV4	−.20*	−.21	.09	−.381	−.047	−.19*	−.18	.08	−.337	−.043

	Boys					Girls				
				95% CI					95% CI	
Variable	B	B	S.E.	Lower	Upper	β	B	S.E.	Lower	Upper
PV3 → PV4	.55**	.57	.10	.378	.748	.51**	.51	.08	.344	.641
RA1 → SP2 → PV3	–	.01	.01	−.005	.059	–	.08*	.03	.028	.157
RA2 → SP3 → PV4	–	.00	.01	−.032	.033	–	.04*	.02	.006	.091
PV1 → SP2 → RA3	–	−.01	.01	−.042	.015	–	.00	.01	−.013	.030
PV2 → SP3 → RA4	–	.00	.01	−.022	.020	–	.01	.01	−.001	.037

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

* $p < .05$,

** $p < .01$

Table 4

Path Analyses Results for Proactive Aggression

	Boys					Girls				
				95% CI					95% CI	
Variable	**B**	**B**	**S.E.**	**Lower**	**Upper**	**β**	**B**	**S.E.**	**Lower**	**Upper**
Age ➔ PA2	−.02	−.01	.04	−.090	.065	−.16	−.06	.03	−.140	−.004
White ➔ PA2	−.06	−.07	.10	−.276	.127	.09	.08	.07	−.074	.186
Inter ➔ PA2	.06	.10	.18	−.203	.496	.01	.02	.12	−.235	.252
PA1 ➔ PA2	.39*	.37	.14	.126	.671	.07	.06	.09	−.051	.362
SP1 ➔ PA2	.02	.01	.05	−.084	.106	−.15	−.07	.05	−.211	.009
PV1 ➔ PA2	.01	.01	.06	−.100	.127	.09	.04	.06	−.055	.164
Age ➔ SP2	−.03	−.03	.07	−.171	.112	−.05	−.05	.06	−.179	.070
White ➔ SP2	−.00	−.01	.13	−.263	.237	.06	.13	.12	−.088	.378
Inter ➔ SP2	−.06	−.17	.17	−.505	.144	−.15	−.49	.15	−.781	-.177
PA1 ➔ SP2	−.08	−.13	.10	−.317	.089	−.09	−.18	.17	−.516	.139
SP1 ➔ SP2	.63**	.59	.06	.472	.718	.54**	.57	.07	.431	.695
PV1 ➔ SP2	.03	.03	.07	−.105	.167	−.14*	−.14	.07	−.282	−.005
Age ➔ PV2	−.02	−.02	.07	−.154	.114	.05	.05	.08	−.101	.212
White ➔ PV2	−.07	−.14	.16	−.445	.175	.09	.21	.15	−.098	.499
Inter ➔ PV2	.01	.02	.20	−.374	.402	.09	.30	.28	−.227	.865
PA1 ➔ PV2	.00	.00	.13	−.276	.245	.08	.17	.22	−.216	.654
SP1 ➔ PV2	−.32**	−.29	.09	−.476	−.132	−.26**	−.28	.10	−.473	−.093
PV1 ➔ PV2	.02	.02	.09	−.155	.194	.13	.14	.09	−.041	.321
Age ➔ PA3	.09	.05	.03	−.007	.116	−.14*	−.05	.02	−.105	−.009
White ➔ PA3	.02	.02	.08	−.142	.165	−.09	−.07	.06	−.197	.037
Inter ➔ PA3	−.06	−.10	.11	−.308	.124	.01	.01	.12	−.231	.256
PA2 ➔ PA3	.63**	.58	.15	.252	.848	.40*	.35	.14	.031	.574
SP2 ➔ PA3	−.09	−.05	.04	−.130	.029	−.02	−.01	.03	−.055	.044
PV2 ➔ PA3	.07	.04	.06	−.059	.167	.02	.01	.03	−.051	.066
Age ➔ SP3	−.06	−.06	.07	−.183	.070	.03	.03	.06	−.079	.145

	Boys					Girls				
				95% CI					95% CI	
Variable	B	B	S.E.	Lower	Upper	β	B	S.E.	Lower	Upper
White → SP3	.02	.05	.14	−.227	.323	−.01	−.02	.13	−.269	.223
Inter → SP3	−.18*	−.49	.21	−.892	−.071	−.21**	−.69	.19	−1.06	−.300
PA2 → SP3	−.01	−.01	.11	−.233	.196	−.04	−.10	.20	−.395	.380
SP2 → SP3	.33**	.33	.09	.133	.503	.48**	.47	.09	.275	.641
PV2 → SP3	−.11	−.11	.10	−.307	.071	−.12	−.11	.07	−.253	.006
Age → PV3	.04	.04	.07	−.095	.172	−.03	−.03	.07	−.155	.116
White → PV3	.25**	.52	.14	.243	.806	.12*	.26	.13	−.008	.516
Inter → PV3	−.13	−.35	.20	−.727	.034	.06	.18	.23	−.272	.630
PA2 → PV3	.13	.21	.14	−.067	.489	−.19*	−.43	.16	−.797	−.114
SP2 → PV3	−.14	−.15	.10	−.336	.034	−.35**	−.34	.08	−.512	−.186
PV2 → PV3	.43**	.46	.12	.235	.713	.34**	.31	.09	.150	.497
Age → PA4	−.04	−.02	.02	−.061	.034	−.12	−.04	.03	−.109	.001
White → PA4	.00	.00	.06	−.115	.115	.02	.01	.05	−.091	.120
Inter → PA4	.05	.05	.14	−.205	.311	.12	.15	.15	−.085	.500
PA3 → PA4	.27	.20	.23	−.168	.656	.32	.32	.18	.020	.722
SP3 → PA4	.13	.06	.03	−.012	.119	.11	.04	.02	−.001	.089
PV3 → PA4	−.10	−.04	.04	−.114	.039	.06	.02	.04	−.04	.114
Age → SP4	−.02	−.02	.06	−.138	.098	−.01	−.01	.06	−.112	.105
White → SP4	.09	.18	.13	−.072	.421	−.02	−.04	.11	−.242	.182
Inter → SP4	−.12*	−.33	.16	−.646	−.014	−.02	−.07	.23	−.490	.404
PA3 → SP4	.11	.20	.13	−.060	.437	−.04	−.10	.20	−.424	.353
SP3 → SP4	.63**	.63	.06	.502	.748	.63**	.65	.06	.524	.772
PV3 → SP4	−.05	−.05	.06	−.163	.067	−.09	−.09	.07	−.229	.050
Age → PV4	.05	.05	.07	−.083	.192	−.06	−.05	.06	−.174	.062
White → PV4	−.06	−.13	.14	−.406	.128	.07	.15	.12	−.107	.365
Inter → PV4	.04	.11	.20	−.259	.517	.03	.10	.26	−.449	.587
PA3 → PV4	−.02	−.03	.16	−.407	.253	−.11	−.28	.25	−.823	.171
SP3 → PV4	−.19*	−.20	.09	−.381	−.045	−.22**	−.22	.08	−.372	−.065

	Boys					Girls				
				95% CI					95% CI	
Variable	B	B	S.E.	Lower	Upper	β	B	S.E.	Lower	Upper
PV3 → PV4	.53**	.55	.10	.366	.745	.51**	.51	.08	.349	.642
PA1 → SP2 → PV3	–	.02	.02	−.007	.090	–	.06	.06	−.031	.199
PA2 → SP3 → PV4	–	.00	.02	−.039	.054	–	.02	.05	−.073	.109
PV1 → SP2 → PA3	–	−.00	.00	−.032	.204	–	.00	.00	−.017	.004
PV1 → SP2 → PA3	–	−.01	.01	−.071	.106	–	−.01	.00	−.028	.003

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

* $p < .05$,

** $p < .01$