Chapter 3

Do Aggression and Withdrawal Act as Links Between Early Peer Rejection by Same-sex Peers and Later Risk Behaviors? A Longitudinal Study Across the 5-9-Year-old Period, Considering Sex Differences

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Abstract

Considering the relevance of peer relationships in childhood development, a large body of longitudinal studies has established the predictive contribution of aggression and peer rejection to later dysfunction. However, few researchers have considered rejection by same-sex peers while describing the mechanism through which behavior and early peer experiences may result in future psychological maladjustment, including aggression. Nevertheless, sex segregation during childhood has been referred to as one of the most persistent and reliable developmental phenomena. We test two separate models establishing that, regardless of the previous level of aggression at age 5, peer rejection by
same-sex peers may increase the likelihood that girls and boys will misbehave in social conflicts and that these maladaptive behaviors will develop into subsequent aggressive behaviors. Three types of aggression (physical, verbal and indirect) and withdrawal behavior in social conflicts were tested as mediators in the association between rejection by same-sex peers at kindergarten, and later aggression and behavioral problems at age 9. The participants were 48 boys and 59 girls from ages 5 to 9, in eight classrooms in three Spanish state schools. Rejection by same-sex peers was calculated from individual sociometric data collected at the end of kindergarten. At age 7, the Peer Estimated Conflict Behavior Inventory (PECOBE) was used to measure negative responses to social conflicts. Lastly, at age 9, behavioral problems and aggressive behavior were assessed using the parents’ rating and a peer rating measurement instrument, respectively. Also, in order to control the previous aggression level at age 5, an observational measure was obtained for each participant. For both girls and boys, and after controlling the previous level of aggression at age 5, rejection by same-sex peers predicted aggressive behavior at age 9, whereas among boys only, rejection by same-sex peers also contributed to behavioral problems at age 9. Further, support was found for the proposed mediating processes. Indirect aggression, as a response to social conflicts, helped to account for the link between early rejection by same-sex peers and later aggressive behavior in girls. For boys, rejection by same-sex peers increased the likelihood of aggressive behavior (physical and indirect) in social conflicts, and these behaviors in turn contributed to both aggression and behavioral problems at age 9. Findings which enhance our understanding of the mechanisms that lead to risk behavior in girls and boys have the potential to inform gender-specific interventions aimed at preventing future problems.

INTRODUCTION

A large body of longitudinal studies has established that peer rejection is a major life stressor and a precursor of externalizing and internalizing problems during school years and thereafter (e.g., Boivin, Hymel, & Bukowski, 1995; Dodge, et al., 2003; Ladd & Troop-Gordon, 2003; Ladd, 2006; Landsford, Malone, Dodge, Pettit, & Bates, 2010). But why does peer rejection predict these later dysfunctions? What behavioral processes mediate these links between early rejection and later maladaptive behaviors, including aggressive behavior? In this research project, we focus our efforts on answering these questions.

In spite of the relevance of peer rejection in future psychological maladjustment, few researchers have studied the effects of rejection by same-sex peers (Fabes, Martin, & Hanish, 2004; Oberle, Schonert-Reichl, & Thomson, 2010). However, during childhood, sex segregation (the separation of boys and girls into same-sex groups) has been referred to as one of the most persistent and reliable developmental phenomena (Mehta & Strough, 2009). Sex segregation begins at around the age of three and escalates throughout childhood (Fabes et al., 2004; Martin & Fabes, 2001; Rose & Smith, 2009), and this tendency has also been confirmed by cross-cultural research (Aydí & Corsaro, 2003; Munroe & Romney, 2008; Whiting & Edwards, 1973). Even in mixed contexts, boys mainly tend to choose male playmates and girls mainly tend to choose female playmates during the preschool and primary school years (Fabes, Hanish, & Martin, 2003; Martin & Fabes, 2001). Pellegrini (2004) calls attention to the adaptive role of these sex-segregated playgroups, considering boys’ and girls’ playgroups as important contexts for boys’ and girls’ development, respectively. Besides, within sex-segregated groups, different relationship styles are formed (for a review, see Rose
Do Aggression and Withdrawal Act as Links between Early Peer Rejection …

Boys’ social networks are dense and have well-defined dominance hierarchies, whereas girls spend more time in dyadic and more intimate interactions. Studies also suggest that girls are more prosocial, engage more in self-disclosure and spend more time in social conversation than boys (Crick & Grootpeter, 1995; Ladd & Proilet, 1996; Rose & Asher, 1999), while boys are more likely than girls to engage in rough-and-tumble play and organized play, such as sports and games with rules (Lever, 1978; Zarbatany, McDougall, & Hymel, 2000). Evidence suggests that most of these sex differences can already be observed by the age of 5 and strengthen with age (Rose & Rudolph, 2006). Thus, our overall concern has to do with identifying sex differences in the specific field of the mechanisms through which early rejection by same-sex peers affects the development of psychological and social maladjustment. A better understanding of these mechanisms is necessary in order to identify those children at risk for future maladjustment, and is essential for designing appropriate prevention and intervention programs.

Given that empirical research supports the idea that behavioral propensities (especially aggression and withdrawal) may be considered important determinants of maladjustment, both externalizing and internalizing problems, we believe that aggression and withdrawal behaviors are good candidates for mediating the relationship between peer rejection and later maladaptive behaviors. As Ladd (2006) pointed out, much remains to be learned about how peer rejection, in conjunction with children’s aggressive or withdrawn behavioral styles, contributes to the prediction of externalizing and internalizing problems during childhood. In this chapter, we tested a model that suggests that aggression and withdrawal behaviors in response to conflicts with peers may explain how, in a different way for girls and boys, early peer rejection by same-sex peers leads to future maladaptive behavior. The model posits that peer rejection by same-sex peers increases, in a different way for boys and girls, the likelihood that they will behave in a certain way during social encounters and the way in which these behaviors give rise to subsequent risk behaviors.

Several longitudinal studies have focused on designing models based on the premise that a specific child behavior (aggression and withdrawal) and adverse peer experiences (rejection) are both associated with a variety of development and psychological difficulties in both childhood and adolescence (Pedersen, Vitaro, Barker, & Borge, 2007; Prinstein, Rancourt, Guerry, & Browne, 2009). Referring to child behavior, empirical research has confirmed that children who frequently engage in confrontational aggression among peers adopt a style of responding to interpersonal conflicts that causes them to develop more serious forms of maladjustment, such as externalizing problems, whereas children who manifest a withdrawn behavioral style in social conflicts tend more to develop internalized problems (for a review, see Rubin, Coplan, & Bowker, 2009). In relation to negative peer experiences, several studies have documented the link between peer rejection and later externalizing problems (for a review, see Boivin, Vitaro, & Poulin, 2005; Rubin, Bukowski, & Parker, 2006), and other studies have shown that peer rejection enhances the risk of internalizing problems (Hoza, Molina, Bukowski, & Sippola, 1995; Ladd & Troop-Gordon, 2003; Lopez & DuBois, 2005). When both child behavior (aggression and withdrawal) and peer experiences (peer rejection) have been studied together as predictors of psychological maladjustment, the findings suggest that aggressive behavior is a stronger predictor than peer rejection of externalizing problems in children aged between 5 and 12 (Ladd, 2006). When aggressive behavior is analyzed together with peer rejection as predictors of internalizing problems, the contribution of rejection tends to be higher than that of aggression (for reviews, see Coie,
With respect to the additive contribution of withdrawal and peer rejection on internalizing problems, although this aspect has been less studied, some evidence does exist that children with withdrawn behavioral patterns are at risk for developing subsequent internalized problems (Boivin et al., 1995; Caspi, Elder, & Bem, 1988; Ladd & Troop-Gordon, 2003), and that rejection additively enhances the prediction of these problems (Ladd, 2003; McDougall et al., 2001). So far, however, there has been no support for the hypothesis that withdrawn behavior increases children’s risk of externalizing problems.

In a previous research project, in both girls’ and boys’ groups, a relationship was found between rejection by same-sex peers and a negative response to social conflicts (aggression and withdrawal) (Carreras et al., in revision). Moreover, other authors (French, Pidada, Denoma, MacDonald, & Lawton, 2005; Laursen & Pursell, 2009; Troop-Gordon & Asher, 2005) have confirmed that peer rejection is correlated with destructive conflict tactics. Thus, in addition to an additive influence of both peer rejection and child behaviors on maladaptive behavior, we should not dismiss the possibility of a mediating model in which rejection, through its effect on aggression and withdrawal as negative responses to subsequent social encounters, contributes to future maladjustment.

Taking into account that the primary-school years (especially age 5 to 9) have been characterized as a period in which children experience a growing need for peer acceptance and a heightened fear of peer rejection (Buhrmester & Furman, 1986), and considering that peer rejection in kindergarten may cause children to engage in negative responses during their first social encounters, and that these means of resolving their incipient social needs and tasks may orient them towards later maladaptive behavior, in this research, across the ages of 5 to 9, we hypothesize that:

1. Rejection by same-sex peers in kindergarten (regardless of children’s early aggressive behavioral propensities) will predict the development of behavioral problems and aggressive behavior at age nine, in both girls and boys.
2. Rejection by same-sex peers in kindergarten (regardless of children’s early aggressive behavioral propensities) will enhance the likelihood of developing negative responses during subsequent social conflicts with same-sex peers, in both girls and boys.
3. For both girls and boys, negative responses to social conflicts with same-sex peers will be revealed as important mediators in the relationship between peer rejection by same-sex peers in kindergarten and maladaptive behaviors at age nine.
4. In sex segregated groups, sexual differences will be found in the processes mediating the influence of rejection by same-sex peers on behavioral problems and aggressive behavior. In this sense, we expect the negative responses to those social conflicts that explain this influence to be different for girls and boys.
5. We believe that understanding these mechanisms may inform interventions designed to prevent future problems of children.
METHODS

Participants

The research was conducted from the moment children were enrolled in kindergarten to the end of the third grade of elementary school. Participants were 107 5-to-9-year-old Iberian children (48 boys and 59 girls) from eight classrooms in three state schools in Guipúzcoa and Cádiz (Spain). The socioeconomic status of subjects in the sample was considered to be medium and medium-high, based on our knowledge of the area in which the participants live. The study was explained to the directors, teachers and parents, and their informed consent was requested. The children’s parents were provided with more detailed information about the research and all gave their written consent. Although the test used was not invasive, the project was pre-approved by the ethics committee at the institution to which the authors belong.

Procedure

At age five, in order to obtain an observational measure of initial levels of overt aggression, the children were filmed, in play groups only, at least twice a week during the central 15 minutes of the daily half-hour free play period at school, from November to June. Behavior was recorded using focal sampling and continuous recording methods (Martin & Bateson, 1986), and the behavior of each child was sequentially analyzed. Each subject was filmed for 2 minutes on a rota basis throughout the school year, with no subject being filmed again until all the other subjects on the list had been filmed. This procedure resulted in a total of 15 minutes being finally assessed for each child. The analysis and quantification of the behavioral patterns were accomplished using Observer 4.1 behavior analysis software (Noldus IT, Wageningen, The Netherlands).

At the end of kindergarten (Time 1, hereafter T1), individual sociometric interviews were administered in order to obtain data about the extent to which children were rejected by their same-sex classmates, with scores yielding an index of peer rejection (Criss, Pettit, Bates, Dodge, & Lapp, 2002). At age seven (Time 2, hereafter T2), the Peer Estimated Conflict Behavior Inventory (PECOBE), developed by Björkqvist and Österman (1998), was used to measure behavior in conflict situations. This inventory was completed in the form of an individual interview using a Likert scale; participants were asked to rate the frequency (never, seldom, sometimes, quite often, very often) with which each of their classmates displayed a particular behavior when they had problems or got angry with another classmate. At age nine (Time 3, hereafter T3), in order to assess the children’s behavioral problems, the parents completed the Child Behavior Checklist (Achenbach & Edelbrock, 1986). Lastly, and also at age nine, aggressive behavior was assessed using the Direct and Indirect Aggression Scale (DIAS) (Björkqvist & Österman, 1998), a peer rating measurement instrument for aggressive behavior. The tests were administered by qualified, trained researchers in each of the schools in a room adjacent to the classroom.
Measures

1. *Overt aggression.* The number of times subjects engaged in overt aggression (pushing, smacking, hitting and engaging in other aggressive patterns) was registered. To analyze the behavioral data, after extensive practice, two authors recorded the behaviors of each child. Also, three times during the study period, these same two observers simultaneously coded the behaviors of ten children. Agreement between the two coders was assessed and any discrepancies were discussed. The agreement percentage was never lower than 85%, with an average of 90.67%. Kappa was never lower than 0.80.

2. *Rejection by same-sex peers.* Following the Coie, Dodge and Coppotelli (1982) procedure, we considered the inverse of peer preference as a measure of rejection. All children were asked to name three classmates they liked the most and three they liked the least. Similarly to the protocol of other studies (e.g. Coie, Terry, Lenox, Lochman, & Hyman, 1995), both same- and cross-sex nominations were allowed. Two indexes of peer rejection by same-sex peers were used: a) *Boys’ rejection by same-sex peers,* calculated as the difference between the standardized score of negative nominations and the standardized score of positive nominations received from all boys, standardizing the resulting scores again within classrooms; and b) *Girls’ rejection by same-sex peers,* calculated as the difference between the standardized score of negative nominations and the standardized score of positive nominations received from all girls, again standardizing the resulting scores within classrooms. The scores of both indexes were normally distributed (Shapiro test: for girls’ rejection by same-sex peers, \( W = .98, p = .44 \); for boys’ rejection by same-sex peers, \( W = .97, p = .31 \)).

3. *Peer Estimated Conflict Behavior Inventory (PECOBE).* For this research, the following negative responses to social conflict were obtained: a) *Physical aggression:* children were asked who was physically aggressive (i.e. who hits, kicks, trips, shoves, pulls, takes things and pushes others); b) *Verbal aggression:* children were asked who was verbally aggressive (i.e. who yells, insults, calls names and teases others); c) *Indirect aggression:* children were asked who was indirectly aggressive (i.e. who gossips, spreads false stories, says bad things behind the other’s back, tries to get others to dislike the person and shuts the other out of the group); and d) *Withdrawal from conflict:* children were asked who withdrew from conflicts or gave up. Mediators not normally distributed were transformed and then most of them were normally distributed (Shapiro test for girls and boys respectively: verbal aggression, \( W = .97, p = .14 \); \( W = .99, p = .98 \); indirect aggression, \( W = .97, p = .13 \); \( W = .98, p = .51 \); withdrawal from conflict, \( W = .98, p = .40 \); \( W = .98, p = .63 \); for girls’ physical aggression, the data were scarce and it was not possible to normalize; for boys, physical aggression was normally distributed, \( W = .98, p = .06 \)).

4. *Child Behavior Checklist (CBCL).* This instrument was completed by parents for each participant, in order to assess children’s behavioral problems, both internalizing and externalizing problems. The test comprises of 113 statements regarding diverse areas of the child’s behavior, which parents must rate in accordance with how true they are (1 not true; 2 somewhat true; 3 very true) in relation to behavior linked to emotional problems the child may have experienced over the last 6 months. The test
provides scores for internalizing and externalizing problems. The reliability (Cronbach’s α) obtained in our sample was .60 for Isolation; .37 for Somatic Complaints; .81 for Anxiety/depression; .72 for Social problems; .74 for Thought problems; .81 for Attention problems; .54 for Delinquent behavior; .88 for Aggressive behavior and .61 for Other problems. As the most widely used assessments of children’s social-emotional problems, this measure has demonstrated excellent psychometrics in standardization samples (Achenbach, 1991). Internalizing and externalizing scores were transformed and then both were normally distributed (Shapiro test for girls and boys respectively: externalizing, W = .98, p = .43; W = .93, p = .05; internalizing, W = .99, p = .78; W = .99, p = .98).

5. Direct and Indirect Aggression Scale (DIAS). This peer-rating measurement instrument was used to assess different types of aggressive behavior at age nine. A number of different research studies endorse this test as a suitable instrument for measuring aggressive behavior in children from a young age (Björkqvist et al., 2001; Valles & Knutson, 2008). The Spanish version of the scale, developed by the authors themselves in conjunction with the English one (Björkqvist & Österman, 1998), was used, although some items were modified slightly to facilitate their comprehension by children in this age group. The DIAS is a test containing 24 items in which each child is asked to rate each of their same-sex classmates on a Likert scale (0-4) for behavior linked to physical aggression (7 items), verbal aggression (5 items) and indirect aggression (12 items). The final scores for each scale were obtained by adding the scores for each item together, and then dividing this total by the number of items which made up each scale. These three subscales were reliable for this sample: Cronbach’s αs were .96, .89 and .83, respectively. Aggressive behavior scores were transformed and then both were normally distributed (Shapiro test for girls and boys respectively: physical aggression, W = .98, p = .61; W = .99, p = .94; verbal aggression, W = .99, p = .99; W = .99, p = .99; indirect aggression, W = .99, p = .91; W = .98, p = .72).

Statistical Analysis

All the variables were transformed into Z scores in order to cancel the effect of the range disparity problems. In order to analyze sex differences in relation to the different variables proposed, a one-way ANOVA was conducted. The relationships between the different variables considered in the research were examined using a Pearson correlation coefficient. In order to analyze the potential relationships of all variables considered in the mediating model, a Standard Least Square regression was performed, following the regression approach outlined in Baron and Kenny (1986) and in Frazier, Tix and Barron (2004).
RESULTS

Preliminary Analysis

As can be seen in Table 1, boys scored higher than girls for physical, verbal and indirect aggression, both at age seven and at age nine. No sex differences were detected in relation to the rest of the variables considered.

Table 1. Descriptive statistics (Mean and Standard Deviation) of the study variables presented separately for girls and boys

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<td>Overt Aggression at 5</td>
<td>59 .62 (.99)</td>
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<td>Conflict behaviors at 7</td>
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<td>Physical aggression</td>
<td>59 .49 (.56)</td>
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<td>Verbal aggression</td>
<td>59 .53 (.51)</td>
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<td>Indirect aggression</td>
<td>59 .62 (.49)</td>
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<td>Withdrawal from conflict</td>
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<td>Internalizing problems</td>
<td>56 6.93 (5.42)</td>
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<td>Externalizing problems</td>
<td>55 6.47 (5.43)</td>
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<td>Aggressive Behaviors at 9</td>
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<td>Physical aggression</td>
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<td>Verbal aggression</td>
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<td>Indirect aggression</td>
<td>59 .52 (.31)</td>
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**p < .01; ***p < .001.

Bivariate correlations between all study variables were examined (see Table 2). In both girls and boys, the three types of aggressive responses during conflict were positively correlated to each other at age seven, as were the three types of aggressive behavior at age nine; and also in both girls and boys, internalizing and externalizing problems were positively intercorrelated. In the case of boys, positive relationships were detected between all aggressive responses during conflict at age seven and all aggressive behaviors at age nine; externalizing behavior was positively related with the three types of aggressive behavior at age nine; and withdrawal from conflict was positively related to both indirect aggression at age nine and boys’ rejection. In girls, verbal and indirect aggression during conflict were positively related to both physical and verbal aggression at age nine; moreover, indirect aggression during conflict was positively related to indirect aggression at age nine, and a significant positive association was detected between withdrawal from conflict at age seven and both physical and verbal aggression during conflict.
Table 2. Correlations between study variables in girls (above the diagonal) and boys (below the diagonal)

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<td>.68</td>
<td>.60</td>
<td>.72</td>
<td>.50</td>
<td>.23</td>
<td>.57</td>
<td>.91</td>
<td>.90</td>
<td></td>
</tr>
<tr>
<td>T3 Indirect Aggression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. In bold, significant correlation values after the application of the Bonferroni correction for multiple comparisons.

Main Analysis

Taking into account the additive contribution of early rejection and aggression to subsequent behavioral maladjustment (Ladd, 2006), and in order to explain the potential predictive role of rejection, regardless of initial levels of overt aggression, these initial levels of aggression were controlled in our results. To this end, we regressed the initial levels of overt aggression on rejection by same-sex peers, and used the residuals of this regression as an index of actual rejection separately by same-sex peers.

Different mediating models were tested for girls and boys. Thus, regression analyses were conducted to test whether physical aggression, verbal aggression, indirect aggression and withdrawal from conflict mediated the association between actual rejection by same-sex peers during kindergarten and subsequent aggression and behavioral problems at age nine. Four conditions must be met for mediation (Baron & Kenny, 1986; Kenny, Kashy, & Bolger, 1998). First, T1 actual rejection by same-sex peers must predict T3 behavioral problems and aggressive behavior. Second, T1 actual rejection by same-sex peers must significantly predict T2 mediators. Third, T2 mediators must predict T3 behavioral problems and aggressive
behavior, above and beyond the contribution of T1 actual rejection by same-sex peers. Finally, the relationship between T1 actual rejection by same-sex peers and T3 behavioral problems and aggressive behavior must be reduced after including the mediators in the analysis.

Table 3. Analysis testing the conditions required for mediation of the T2 negative conflict behaviors in the associations between T1 actual rejection by same-sex peers and T3 behavioral problems and aggressive behaviors in boys

<table>
<thead>
<tr>
<th>Condition</th>
<th>T3 behavioral problems</th>
<th>T3 aggressive behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internalizing</td>
<td>Externalizing</td>
</tr>
<tr>
<td>T1 actual rejection by boys</td>
<td>.34*</td>
<td>.37*</td>
</tr>
<tr>
<td>T2 PA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2 VA</td>
<td>-.94*</td>
<td>-1.10**</td>
</tr>
<tr>
<td>T2 IA</td>
<td>.54</td>
<td>.77*</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>-.03</td>
<td>.15</td>
</tr>
</tbody>
</table>

* p < .05; **p < .01; ***p < .001.

Note. PA: physical aggression at age 7; VA: verbal aggression at age 7; IA: indirect aggression at age 7.

Boys’ Mediating Models

Condition 1. A regression was conducted in which T1 actual rejection by boys was entered to predict prospective T3 behavioral problems and aggressive behavior. Table 3 shows that all T3 behavioral problems and aggressive behavior were predicted by T1 actual rejection by boys.

Condition 2. Next, the association between T1 actual rejection by boys and the T2 mediators was examined. Results from Table 3 show that T1 actual rejection by boys was associated with all T2 negative conflict behaviors.

Conditions 3 and 4. Based on the significant results of the previous two conditions for mediation, we performed a multivariate regression for each dependent variable, in which the T2 negative conflict behaviors were all entered in the same regression, along with T1 actual rejection by boys, in order to predict T3 behavioral problems and aggressive behavior. These multivariate regressions control overlapping variances between the mediators and allow for
an examination of how much of the association between T1 actual rejection by boys, and T3 behavioral problems and aggressive behavior can be explained by the entry of all mediators taken together. The results are shown in table 3.

Importantly, with all mediators entered simultaneously, T1 actual rejection by same-sex peers no longer predicted T3 behavioral problems and aggressive behavior. Thus, according to Baron and Kenny (1986), with the fact that the T1 actual rejection by boys - T3 behavioral problems and aggressive behavior associations were largely reduced and found to be statistically non-significant, suggesting the existence of a complete mediation.

With regard to behavioral problems, the physical and indirect aggression as responses to conflict with peers explained how, regardless of their early levels of aggression, boys rejected by boys in kindergarten developed externalizing behaviors at age nine.

In relation to aggressive behaviors, at age seven, indirect aggression as a response to social conflict appeared to be a major mediator, explaining the relationship between T1 actual rejection by boys and all T3 aggressive behaviors at age nine. Moreover, physical aggression in conflict situations mediated the relationship between T1 actual rejection by boys and T3 physical aggression at age nine, whereas withdrawal from conflicts mediated the association between T1 actual rejection by boys and T3 indirect aggression at age nine.

Lastly, it is interesting to point out that, after controlling physical and indirect aggression and withdrawal from conflict, verbal aggression as a response to social conflict was found to have a negative relationship with internalizing and externalizing problems, as well as with physical aggression at age nine.

**Girls’ Mediating Models**

*Condition 1.* A regression was conducted in which T1 actual rejection by girls was entered to predict prospective T3 behavioral problems and aggressive behavior. As shown in table 4, T1 actual rejection by girls was not found to be significantly related to any T3 behavioral problems; however, T1 actual rejection by girls predicted the development of three types of T3 aggressive behaviors (physical, verbal and indirect).

*Condition 2.* Next, the association between T1 actual rejection by girls and the mediators was examined. Results from Table 4 show that T1 actual rejection by girls was only associated with the three types of T2 aggressive responses to conflict.

*Conditions 3 and 4.* Following the same procedure used for boys, for girls, a multivariate regression analysis was performed for each dependent variable, in which the three types of T2 aggressive responses to conflict were entered as mediators of the relationship between T1 actual rejection by girls and T3 aggressive behaviors.

As shown in table 4, with the three types of T2 aggressive responses during conflict entered simultaneously as mediators, T1 actual rejection by girls no longer predicted T3 verbal and indirect aggression at age nine; with T2 indirect aggression as a response to conflict being the only mediator which explained how T1 actual rejection by girls in kindergarten predicted an increase in the three types of T3 aggressive behaviors at nine. Moreover, our results revealed that both T1 actual rejection by girls and T2 indirect aggression in conflict contributed to the development of physical aggression at age nine.
Table 4. Analysis testing the conditions required for mediation of the T2 negative conflict behaviors in the associations between T1 actual rejection by same-sex peers and T3 behavioral problems and aggressive behaviors in girls

<table>
<thead>
<tr>
<th>Condition 1&lt;sup&gt;a&lt;/sup&gt;</th>
<th>T3 behavioral problems</th>
<th>T3 aggressive behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internalizing</td>
<td>Externalizing</td>
</tr>
<tr>
<td>T1 actual rejection by girls</td>
<td>-.00</td>
<td>.02</td>
</tr>
<tr>
<td><strong>Condition 2&lt;sup&gt;b&lt;/sup&gt;</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1 actual rejection by girls</td>
<td>.31*</td>
<td>.27*</td>
</tr>
<tr>
<td><strong>Conditions 3'&amp;4&lt;sup&gt;d&lt;/sup&gt;</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Internalizing</td>
<td>Externalizing</td>
</tr>
<tr>
<td>T1 actual rejection</td>
<td>.01</td>
<td>-.05</td>
</tr>
<tr>
<td>T2 PA</td>
<td>.17</td>
<td>.05</td>
</tr>
<tr>
<td>T2 VA</td>
<td>.02</td>
<td>.09</td>
</tr>
<tr>
<td>T2 IA</td>
<td>-.26</td>
<td>.10</td>
</tr>
</tbody>
</table>

<sup>* p < .05; ** p < .01; *** p < .001.</sup>

Note. PA: physical aggression at age 7; VA: verbal aggression at age 7; IA: indirect aggression at age 7.

<sup>a</sup> T1 actual rejection predicting T3 behavioral problems and aggressive behaviors. 
<sup>b</sup> T1 actual rejection predicting mediators (T2 negative conflict behaviors). 
<sup>c</sup> Mediators predicting T3 behavioral problems and aggressive behaviors. 
<sup>d</sup>T1 actual rejection predicting T3 behavioral problems and aggressive behaviors controlling for mediators.

**CONCLUSION**

This piece of research contributes to a more complete understanding of the mechanisms through which an early experience of rejection by same-sex peers during kindergarten is associated with the later development of aggressive behavior and behavioral problems, at age nine. This research advances the existing conceptual and empirical knowledge about peer rejection through several methodological choices. Firstly, we propose possible mediating mechanisms that may account for the link between an early rejection experience and the development of later maladaptive behavior. Secondly, taking into account that sex segregation during childhood has been referred to as one of the most persistent and reliable developmental phenomena and that same-sex segregated playgroups can be seen as important contexts for boys’ and girls’ development (Pellegrini 2004), we have analyzed the effects of rejection on maladjustment in girls and boys, separately. Thirdly, considering that several authors (i.e. Lansford et al., 2010) point out that aggression has a direct effect on subsequent peer rejection, we analyze peer rejection after controlling the initial levels of children’s aggression in our research project, in order to gauge the specific contribution of early peer rejection to children’s later psychological and social maladjustment, independently of their propensity to engage in overt aggression. Fourthly, given that previous research (Crick, et al., 1999; Smith, Rose, & Schwartz-Mette, 2010), as well as our own results, all indicate strong correlations between the three types of aggression; the overlaps between physical, verbal and
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indirect aggression as responses to conflict with peers at age seven are controlled in order to clarify the independent role of each mediator in the relationship between early rejection and later maladaptive behaviors.

From age 5 to age 9, among boys, several findings emerged from this longitudinal research. Independent of initial levels of overt aggression, an experience of rejection by same-sex peers during kindergarten reliably predicts later internalizing and externalizing problems and the three types of aggressive behavior (physical, verbal and indirect) at age nine. Until now, although early peer rejection has emerged as a powerful predictor of later maladaptive behaviors in a great many longitudinal studies, few have considered the importance of controlling aggression in order to determine the potentially unique effects of peer rejection (Prinstein et al., 2009). Furthermore, in this research, we have focused on clarifying the specific mechanisms which explain how an early experience of rejection by same-sex peers, regardless of previous levels of aggression, could lead boys to enhance their likelihood of later developing maladaptive behavior. Early peer rejection causes children to resolve insipient social needs and tasks in ways that orient them toward antisocial behavioral development during the primary years (Ladd, 2006); in fact, we found that there are different pathways leading to a maladaptive outcome, thus the experience of rejection by boys in kindergarten influenced the way which boys responded to their daily social conflicts in the subsequent year (specifically, prompting them to engage in aggressive and withdrawal responses), and it are these negative responses to social conflict which lead boys to develop future maladaptive behaviors. Thus, we found that: a) in boys rejected by boys, responding to conflict with pure physical aggression (excluding overlaps with verbal and indirect aggression) increases the likelihood of externalizing problems, mainly, physically aggressive behavior at age nine; b) withdrawing from conflict as a consequence of boys’ rejection by boys leads to greater use of indirect aggression at age nine; and c) engaging in pure indirect aggression (excluding overlaps with other types of aggression) as a coping strategy for peer conflicts explains how boys’ rejection prompts boys to develop externalizing problems and all types of aggressive behavior, at age 9.

According to our results, physical aggression shows a high level of stability across the 5-to-9 age period. Regardless of their previous levels of overt aggression, if boys rejected by boys in kindergarten respond to social conflict with physical aggression at age seven, they then maintain these aggressive behaviors at age nine, thus consolidating an aggressive trajectory. Although other longitudinal studies corroborate the fact that aggressive behavior, even at an early age, is fairly stable for both boys and girls and moderately predictive of externalizing problems (Cairns & Cairns, 1994; Cairns, Cairns, Neckerman, Ferguson, & Gariepy, 1989; Caspi, Elder, & Bem, 1987; Olweus, 1979; Tremblay, Pihl, Vitaro, & Dobkin, 1994), this stability was only detected in boys rejected by boys in our results. Furthermore, our findings showed that boys’ rejection can also lead boys to withdraw from conflict. According to the Rejection Sensitivity Model (Downey & Feldman, 1996; Downey, Lebolt, Rincon, & Freitas, 1998), rejection experiences can sensitize children to several forms of expectations of rejection which are activated in situations in which rejection is possible and which are accompanied by defensive emotional states (anxiety); these defensive expectations lead children to act defensively, in the form of either aggression or social withdrawal. Moreover, in our case, boys who withdrew as a result of same-sex peer rejection showed later maladaptive behavior. While some authors have suggested that withdrawn behavior is not predictive of dysfunction (for example, Wanlass & Prinz, 1982), other longitudinal studies
suggest that certain aspects of this behavior may (to a certain extent) predict future maladjustment (Caspí et al., 1988; Gazelle & Ladd, 2003). Specifically, in our findings, as a consequence of rejection, withdrawal prompts boys to engage in indirect aggression at age nine. It is likely that the wide range of social-emotional difficulties and defensive expectations associated with withdrawal (Rubin et al., 2009) primarily prompt boys to manifest indirect aggression, probably due to the fact that children with these social-emotional difficulties (such as anxiety) and an inclination to act defensively, may prefer the less risky, more covert nature of indirect forms of aggression.

Furthermore, our results indicate that engaging in pure indirect aggression as a consequence of boys’ rejection increases the likelihood of them exhibiting high levels of externalizing problems and all types of aggressive behavior at age nine. In their meta-analytic review, Card, Stucky, Sawalani and Little (2008) concluded that indirect aggression is uniquely associated with internalizing problems. However, as several authors (Cillessen & Mayeux, 2004; Crick, 1996; Crick, Casas, & Mosher, 1997; Crick, Ostrov, Appleyard, Jansen, & Casas, 2004) argue, we believe that, at least for boys, high levels of indirect aggression can be a risk for both internalizing and externalizing problems; in fact, in our mediating models, in addition to a significant influence on the externalizing problems, we also detected a moderate (although not significant) influence of indirect aggression on internalizing problems.

Future research should consider the personality characteristic of boys as a variable to be included in the models. It is plausible to expect shy, rejected boys to select a strategy of withdrawing from conflict, and this behavior would then prompt them to adopt indirect aggression that is more subtle and less risky than other forms of aggression. It is also plausible to expect bold rejected boys to engage in aggressive behavior which may initially be indirect (in order to reduce the possibility of further rejection), but which later may extend to more overt forms of aggression.

Moreover, according to our results, in boys, pure verbal aggression (free of any physical or indirect aggression), as a means of resolving interpersonal conflicts, decreased the risk of later maladaptive behaviors. As Bukowski (2003) pointed out, a large part of previous research supports the idea that aggression, as a means of resolving interpersonal conflicts in young children, is a necessarily antisocial and dysfunctional behavior (for a review, see Coie & Dodge, 1998). However, a growing body of literature, especially from the perspective of ethology and evolutionary psychology, is suggesting that socially dominant children are often quite aggressive in the context of acquiring and controlling resources, but are also frequently affiliative and prosocial; thus, their aggressive behavior may be a strategy for resolving conflicts with peers and, during a certain developmental period, may serve to promote social adjustment (Charlesworth, 1996; Hawley, 1999; Hawley, 2007; Hawley & Little, 1999; Hawley & Vaughn, 2003; Pellegrini, 2007; Strayer & Trudel, 1984; Tremblay, 2000; Vaughn, Vollenweider, Bost, Azria-Evans, & Snider, 2003). Our findings are not incongruent with this conceptual and empirical characterization of aggressive behavior in young children; furthermore, our mediating model emphasizes pure verbal aggression as a kind of assertive behavior that may prevent, at least in boys, the development of maladaptive behavior (both internalizing and externalizing behaviors). Recognizing that some kinds of aggressive behavior (in our case, pure verbal aggression) are associated with positive outcomes, and fulfill an adaptive function, may help us gain a better understanding of the balance between
achieving one's goals (individual) and maintaining adequate relationships with peers (social), in order to achieve adequate adjustment.

For girls, although a relationship between girls’ rejection in kindergarten and both internalizing and externalizing problems was not detected in our study, girls’ rejection led girls to develop later aggressive behaviors (physical, verbal and indirect). Besides, only pure indirect aggression mediated the relationship between girls’ rejection and all types of aggressive behavior. It is interesting to note that, as for boys, girls’ rejection leads girls to use an indirect form of aggression in response to conflicts with peers, and it is this behavior which finally leads them to adopt not only indirect aggression but also physical and verbal aggression at age nine. These findings also support the idea that, during the first school years, indirect aggression is at least as present among boys as it is among girls, and that this behavior has similar negative consequences for both the adjustment of boys and girls. Card et al. (2008) also concluded that the magnitude of sex differences in indirect aggression is trivial, so this type of aggression is no more normative for one gender than the other; furthermore, these authors found no evidence of sex moderation in the relationship between indirect aggression and later maladjustment.

Future studies should focus more specifically on trying to identify the precise forms and functions of the aggressive behavior associated with negative and/or positive consequences, and should develop more targeted intervention efforts. Moreover, for both girls and boys, given that pure indirect aggression, previously rejected by same-sex peers, provides significant information about children’s risk of future maladaptive behavior, finding an adequate measure of this pure indirect aggression may be interesting for future research and interventions.

In short, the use of multivariate mediating analyses, as well as the consideration of sex-segregated groups as important socialization contexts, and the effort to control the overlaps between the different variables, has allowed us to detect how certain negative responses to social conflict explain the specific influence of rejection by same-sex peers in kindergarten on later maladaptive behavior at age nine. Thus, for boys, responding with pure physical aggression to social encounters as a consequence of same-sex rejection prompts them to consolidate physical aggression as a social strategy. Also for boys, withdrawing from conflicts as a consequence of same-sex rejection induces them to use indirect aggression at age nine. Curiously, for both girls and boys, an extensive use of pure indirect aggression at age seven, as a result of early rejection by same-sex peers, emerges as a relevant risk factor for developing future psychological and social maladjustment; whereas, only for boys, responding to social conflict with pure verbal aggression decreases the probability of developing both physical aggression and behavioral problems (internalizing and externalizing).

During childhood, aggression is a natural part of peer relationships and school dynamics. Right from preschool, boys groups are more physical, more vigorous and more competitive than girls groups. It is in the former groups that adequate uses of competitive aggression are learned, helping to organize and structure these groups (dominant relationships are established by a combination of agonistic and cooperative strategies). However, if boys’ rejection deprives them of the opportunity to participate in the normative activities of their same-sex peer group and, as a consequence, they cannot learn how to adequately manage physical aggression, this would result in the eventual development of risk behaviors. On the other hand, indirect aggression, as a subtle social manipulation, tends more to disrupt the
social hierarchy and the balance of the affiliation-aggression within the groups. If we take into account the adaptive function of sex-segregated groups, it is hardly surprising that indirect aggression, by damaging the structure of these unisexual groups, has negative consequences for the development of rejected girls and boys.

**ACKNOWLEDGMENT**

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