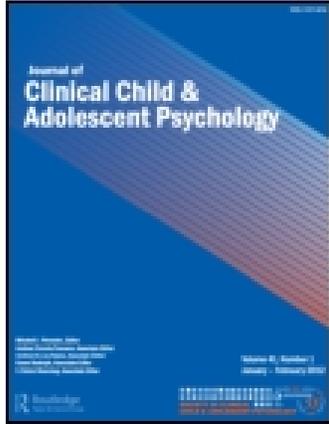


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Kimberly E. Kamper^a & Jamie M. Ostrov^a

^a Department of Psychology, University at Buffalo, The State University at New York

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Relational Aggression in Middle Childhood Predicting Adolescent Social-Psychological Adjustment: The Role of Friendship Quality

Kimberly E. Kamper and Jamie M. Ostrov

Department of Psychology, University at Buffalo, The State University at New York

The present longitudinal study examined the indirect effect of 6th-grade negative friendship quality on the associations between 5th-grade relational aggression and age 15 social-psychological adjustment (i.e., depressive symptoms and risky behavior). The study consisted of a secondary analysis of the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development using 776 children ($M = 10.42$ years in 5th grade; 50.4% boys) from the original sample. Using teacher and self-report ratings, relational and physical aggression, friendship quality, depressive symptoms, and risky behavior were measured. Bootstrapping mediation analyses were conducted. Negative friendship quality was found to mediate the association between relational aggression and depressive symptoms as well as between relational aggression and risky behavior, when controlling for physical aggression, gender and age. This longitudinal study identifies possible developmental pathways by which relational aggression and future social psychological adjustment may be linked.

Relational aggression during middle childhood shows consistent associations with both concurrent and prospective negative social-psychological adjustment; however, children's aggressiveness does not seem to deter positive peer relations and friendship (Archer & Coyne, 2005; Rys & Bear, 1997). Although work has examined the effects of relational aggression on adjustment outcomes and peer relations, more is needed to assess how aggression through peer-related constructs (i.e., friendship quality) affects adjustment outcomes. Relational aggression is defined as a behavior used with the intent to hurt or harm individuals by using the relationship or threat of removal of the relationship as the means of harm (Crick, Bigbee, & Howes, 1996). It is increasingly linked with negative psychological

outcomes throughout development (e.g., Crick, Ostrov, & Kawabata, 2007; Preddy & Fite, 2012). When children engage in relationally aggressive acts at a young age, they are at higher risk for future adjustment problems like risky behavior and depression (Underwood, Beron, & Rosen, 2011; Werner & Crick, 2004). However, even in middle childhood, relationally aggressive children not only have friendships but have friendships high in positive friendship qualities (e.g., Rose, Swenson, & Waller, 2004).

From a developmental psychopathology perspective, research is needed to examine pathways to social-psychological adjustment outcomes (i.e., depression and risky behavior) to understand what places relationally aggressive children at risk for negative outcomes (Sroufe & Rutter, 1984). Rose and Rudolph (2006) presented a peer socialization model positing the development of different processes related to social relationships, which are theorized to cause different adjustment outcomes to develop. Further, the model originally hypothesizes that same-gender friendships cause individuals to emphasize different processes within their peer relationships. These gender-linked peer relation

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Correspondence should be addressed to Kimberly E. Kamper, 206 Park Hall, Department of Psychology, University at Buffalo-North Campus, The State University at New York, Buffalo, NY 14260. E-mail: kekamper@buffalo.edu

processes then lead to different adjustment outcomes for boys and girls (Rose & Rudolph, 2006). Although boys and girls have been found to engage in relatively similar amounts of relational and other nonphysical forms of aggression (see Card, Stucky, Sawalani, & Little, 2008; Paquette & Underwood, 1999), gender schemas regarding aggression are theorized to lead individuals to be more likely to enact the types of aggression more relevant to their gender (i.e., physical aggression for boys, relational aggression for girls; Ostrov & Godleski, 2010). A gender-linked behavioral style then increases the likelihood that individuals develop gender-linked social-psychological problems, such that girls experience depressive symptoms, whereas boys engage in externalizing behaviors (i.e., risky behavior; Rose & Rudolph, 2006). Although past literature demonstrates some of these associations (Werner & Crick, 2004), understanding the role of friendship quality has been overlooked.

RELATIONAL AGGRESSION AND SOCIAL-PSYCHOLOGICAL ADJUSTMENT

Children high in relational aggression (and other non-physical forms of aggression) have been seen as adaptive in some situations (i.e., when high in prosocial behavior; Rose & Rudolph, 2006; for review see Heilbron & Prinstein, 2008); however, there are many studies showing the links between relational and other non-physical forms of aggression with a myriad of social-psychological adjustment problems (e.g., Banny, Heilbron, Ames, & Prinstein, 2011; Cleverley, Szatmari, Vaillancourt, Boyle, & Linman, 2012; Underwood et al., 2011). For example, there is preliminary evidence that relational aggression is associated with risky behavior (i.e., behavior that threatens the safety of the individual, e.g., substance use, stealing; Spieker et al., 2012) and depression (Crick, Ostrov, & Werner, 2006). Rudolph et al. (2000) emphasized the role of interpersonal stressors within their depression-specific life-stress model. The model states that, when children are stressed, specifically due to interpersonal problems such as close relationships, this stress may be internalized and lead to depression. Because relational and other nonphysical forms of aggression like social aggression are directly related to interpersonal problems, this model supports theoretical links between relational aggression and depression (Murray-Close, Ostrov, & Crick, 2007; Underwood et al., 2011). Given growing literature examining the overlap between relational aggression and disruptive behavior disorders (i.e., oppositional defiant disorder, conduct disorder; Keenan, Coyne, & Lahey, 2008), the mechanisms leading to problematic outcomes such as risky behavior need to be understood.

ROLE OF FRIENDSHIP

Forming and maintaining friendships during childhood is a key developmental task that facilitates the growth of social competence throughout middle childhood and adolescence (Sroufe & Rutter, 1984). When children are unable to develop close friendships or skills needed for close friendships, they often have poorer outcomes in adolescence and adulthood (Waldrip, Malcolm, & Jensen-Campbell, 2008). Due to the emphasis placed on close friendship during middle childhood and early adolescence, it is important to examine friendships in terms of the quality that children perceive them to have (Berndt, 2002). Friendship quality is composed of positive relationship provisions (i.e., validation and caring, companionship, guidance, and intimacy) and negative provisions (i.e., conflict and lack of conflict resolution; Furman, 1996; Parker & Asher, 1993). These relationship provisions are important due to their influence on both positive and negative developmental outcomes (Rose & Rudolph, 2006; Schmidt & Bagwell, 2007; Waldrip et al., 2008). Rose et al. (2004) found that children engaging in relational aggression had high levels of positive and negative friendship qualities. However in Heilbron and Prinstein's (2008) review, findings indicated that relational aggression did not consistently predict specific directionality regarding positive friendship quality. These studies indicate the importance of studying negative and positive friendship quality separately to understand their unique associations with adjustment outcomes.

Conflict is defined as a disagreement between two individuals in which one individual objects to something done by the other individual (Hartup, Laursen, Stewart, & Eastenson, 1988). Crick and Dodge (1994) discussed how high levels of conflict without conflict resolution could be problematic for the stability of close relationships and presumably future social-psychological adjustment (see also Cillessen, Jiang, West, & Laszkowski, 2005; Rose & Rudolph, 2006; Schmidt & Bagwell, 2007). Thus, children with high negative friendship qualities may be at risk for future adjustment problems. Schmidt and Bagwell (2007) discussed differing results, such that positive friendship qualities buffered against negative outcomes but also contributed to internalizing symptoms, whereas negative qualities played no role. Given mixed findings regarding negative friendship qualities, there is a clear need to further examine associations between friendship quality and adjustment outcomes.

THE PRESENT STUDY AND HYPOTHESES

The present longitudinal study examines how friendship quality affects the development of social-psychological

adjustment problems, especially concerning relationally aggressive behavior among children. Guided by the peer socialization model (Rose & Rudolph, 2006), we hypothesized that negative friendship quality mediates the relation between relational aggression and future adjustment outcomes. Specifically, we hypothesize that negative friendship quality (i.e., conflict, lack of conflict resolution; Furman, 1996) mediates the direct prospective association between relational aggression and risky behavior. We also hypothesize that negative friendship quality mediates the direct link between relational aggression and depressive symptoms. We further predict that gender moderates the relation between relational aggression and adjustment outcomes such that the association between relational aggression and depressive symptoms is significantly stronger for girls, whereas the association between relational aggression and risky behavior is stronger for boys (Ostrov & Godleski, 2010; Underwood, 2007). Both models will also be conducted examining positive friendship quality as a mediator such that positive friendship quality will buffer the association between relational aggression and the outcome variables (i.e., depression and risky behavior).

METHOD

Participants

Data were used from the third and fourth phases of the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD; for more details and procedures see <http://secc.rti.org>). For this study, 776 participants (50.4% male) have complete data for assessments used in the present study with a retention rate of 73% from the total Phase IV data. The average age of participants was 11 years old ($SD = 0.23$) in fifth grade. Although this sample was recruited to represent demographic diversity, it is not statistically representative of the U.S. population. The current sample consisted of 83.4% White/Caucasian; 10.2% African American; 5% other; and 1.4% American Indian, Eskimo, Aleutian, Asian, and Pacific Islander. The study included participants who tended to be of higher socioeconomic status than the general population, and those families who remained in the study in Phase III, which is part of the current study, were more likely to have a higher income-to-needs ratio (NICHD Early Child Care Research Network [ECCRN], 2004). Overall, based on annual family income reported in Phase IV the average reported income was between \$60,001 and \$70,000 ($SD = \$15,001$ – $\$25,000$). This subset of the original population did not appear to differ significantly on any of the variables examined within the present study.

Measures

Relational aggression. The NICHD SECCYD created a questionnaire regarding children's behavior with peers including six relational aggression items (e.g., "spreads rumors or gossips about some peers") from the Children's Social Behavior Scale (Crick et al., 1996). Teachers rated children's relational aggression in fifth grade on a 3-point scale from 0 (*not true*) to 2 (*often true*). For the present study, the measure showed good reliability (Cronbach's $\alpha = 0.86$).

Physical aggression. A physical aggression scale was created from the Teacher Report Form (Achenbach, 1991) in fifth grade. For this study, only items relating specifically to physical aggression were used, following methods used by NICHD ECCRN (2004). The measure showed acceptable reliability (Cronbach's $\alpha = 0.78$).

Friendship quality. The SECCYD revised the Friendship Quality Questionnaire (Parker & Asher, 1993) to use 29 items assessing the six original subscales: Validation and Caring, Help and Guidance, Companionship and Recreation, Intimate Exchange, Conflict and Conflict Resolution. The Friendship Quality Questionnaire has a 5-point response scale, from 1 (*not at all true*) to 5 (*really true*), and is unique from other scales because it measures perceived friendship quality of a specific best friend, rather than global friendship quality. Conflict resolution items were reverse coded and averaged with the conflict items to create the negative friendship variable, whereas the other 23 items were averaged to create a positive friendship quality variable. Both variables (negative and positive) used in the present study showed good reliability (Cronbach's α 's = 0.74 and 0.93, respectively).

Risky behavior. At age 15 children reported their own risky behavior over the past year. The current Risky Behavior Questionnaire (Spieker et al., 2012) included 30 items from the original 60-item measure to create a pure measure of risky behavior (aggression items overlapping with the Physical Aggression scale were excluded). Items ranged from minor infractions (i.e., "skipped school without permission," "done something dangerous on a dare") to more serious risky behavior (i.e., "fired a gun," "used or smoked marijuana," "had sexual intercourse") in which participants have partaken. A severe risky behavior scale was also created consisting of 21 items (Cronbach's $\alpha = 0.84$). Adolescents reported on a 3-point scale, from 0 (*never*) to 2 (*more than twice*). Past reliability of this scale is uncertain due to lack of published research on this specific questionnaire/protocol (see Spieker et al.,

2012); however, the measure was reliable for the present study (Cronbach's $\alpha = 0.85$). Although a risky behavior measure was administered in fifth grade, the 19 items on this scale were not parallel in content to the modified measure used at age 15. Similarly, the internal consistency was well below threshold and the data were restricted in range. Thus, this initial assessment was not included within the models.

Depressive symptoms. The Children's Depression Inventory–Short Form (Kovacs, 1992) was used to assess depressive symptoms. The 10-item scale measures depression within the past 2 weeks and is scored on a 3-point scale from 0 (*I am sad once in a while*) to 2 (*I am sad all the time*). For the current study, the Children's Depression Inventory–Short Form from fifth grade and age 15 (approximately 10th grade) was used and showed good reliability (Cronbach's α 's = 0.73 and 0.85, respectively).

Data Analysis Plan

Bivariate correlations were conducted with all key study variables. Procedures for the analysis of mediation were conducted using the test of indirect effects from the SPSS PROCESS macro created by Hayes (2012; Preacher & Hayes, 2008). Bootstrapped confidence intervals were generated to test the indirect effect of friendship quality on relational aggression and different adjustment outcomes. Recent arguments show that it is not necessary for the independent variable to be significantly associated with the dependent variable to show mediation (Shrout & Bolger, 2002).

RESULTS

Preliminary analyses were first conducted and descriptive statistics of each variable as well as the correlations

among the variables are listed in Table 1. Descriptive statistics suggested that the assumption of normality was not violated (Kline, 2010). Outliers were reduced to the value of 3 SDs above the mean (Kline, 2010). Less than 10% of data were missing for all variables, so mean imputation was conducted to correct for missing data (Kline, 2010). Relational aggression and physical aggression were strongly correlated for the overall sample ($r = .54$), showing the importance of controlling for the other subtype of aggression in these models (e.g., Smith, Rose, & Schwartz-Mette, 2009).

Bivariate associations revealed significant correlations between relational aggression in fifth grade and negative friendship quality in sixth grade as well as risky behavior at age 15 (r s = .07 and .18, p s < .05); however, there was not a significant correlation between relational aggression and positive friendship quality or depressive symptoms at age 15 (r s = .04 and .03, p s = .28 and .38). Given the temporal distance between these variables, mediation was still pursued (Shrout & Bolger, 2002) in light of the theoretical links between these constructs. Because relational aggression and negative friendship quality in fifth grade were not significantly associated, the stability of negative friendship quality was low in magnitude, and given that 65.9% of participants did not bring in the same friend from fifth grade to sixth grade, negative friendship quality in fifth grade was not included as an initial covariate in the subsequent models.

Moderation by Gender

Moderation analyses were first conducted to determine whether gender interacted with relational aggression in the prediction of friendship quality and psychopathology. The interactions were not significant when predicting friendship quality or psychopathology. To be parsimonious, these interaction terms were excluded from the model (Aiken & West, 1991) and a mediation

TABLE 1
Descriptive Statistics and Bivariate Correlations

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. |
|--|-----------|-----------|-----------|-----------|-----------|------------|-----------|
| 1. Relational Aggression (5th Grade) | X | | | | | | |
| 2. Physical Aggression (5th Grade) | 0.54** | X | | | | | |
| 3. Depressive Symptoms (5th Grade) | 0.04 | 0.01 | X | | | | |
| 4. Negative Friendship Quality (6th Grade) | 0.07* | 0.05 | 0.17** | X | | | |
| 5. Positive Friendship Quality (6th Grade) | 0.04 | -0.04 | -0.10** | -0.41** | X | | |
| 6. Risky Behavior (Age 15) | 0.18** | 0.16** | 0.09** | 0.10** | -0.01 | X | |
| 7. Depressive Symptoms (Age 15) | 0.03 | -0.03 | 0.24** | 0.08* | -0.03 | 0.13** | X |
| <i>M</i> | 0.32 | 0.07 | 1.18 | 1.47 | 4.13 | 6.23 | 1.90 |
| <i>SD</i> | 0.40 | 0.17 | 1.68 | 0.56 | 0.66 | 5.32 | 2.46 |
| <i>Range</i> | 0.00–1.60 | 0.00–0.77 | 0.00–7.13 | 1.00–4.00 | 2.45–5.00 | 0.00–23.73 | 0.00–9.91 |

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

TABLE 2
Bootstrapping Estimates, 95% CIs, and Variance for Indirect Effects for Friendship Quality

| Mediator | DV | Effect of Relational Aggression on M (a) | Effect of M on DV (b) | Direct Effects (c') | Indirect Effect (a × b), 95% CIs |
|-----------------------------|---------------------|--|-----------------------|---------------------|----------------------------------|
| Negative Friendship Quality | Dep: $R^2 = 0.10$ | 0.12 (.06)* | 0.31 (.16)** | 0.01 (.26) | 0.01, 0.12 |
| | Risky: $R^2 = 0.07$ | 0.13 (.06)* | 0.64 (.33)* | 2.05 (.56)** | 0.01, 0.25 |
| Positive Friendship Quality | Dep: $R^2 = 0.10$ | 0.06 (.07) | -0.21 (.13) | 0.06 (.26) | -0.07, 0.01 |
| | Risky: $R^2 = 0.07$ | 0.05 (.07) | 0.33 (.29) | 2.11 (.56)** | -0.02, 0.14 |

Note: Controlling for age, gender, and physical aggression in all models and initial depression in depression models. Numbers within parentheses show standard error. CI=confidence intervals; DV=dependent variable; M=mediator; Dep=depressive symptoms at age 15; Risky=risky behavior at age 15; R^2 =adjusted R^2 .

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

model was conducted. Gender was included as a covariate in the model due to a priori theory as well as statistically significant correlations between gender and relational aggression.

Indirect Effect Models

The first hypothesis tested whether negative friendship quality mediated the relation between relational aggression and risky behavior, controlling for physical aggression, gender, and age. In this model, there was a significant indirect effect of negative friendship quality (see Table 2), showing that relational aggression was positively associated with negative friendship quality, which in turn predicted future risky behavior. The total effect model was also significant, $F(4, 771) = 11.96$, $p < .001$, $R^2 = .07$, which demonstrated that relational aggression did significantly predict risky behavior ($b = 2.05$, $p = .003$).

The second hypothesis considered the indirect effect of negative friendship quality on the relation between relational aggression and depressive symptoms, holding physical aggression, gender, age, and initial depression constant. Although the total effect model was significant, $F(5, 770) = 16.40$, $p < .001$, $R^2 = .10$, there was not a significant effect of relational aggression on depressive symptoms as hypothesized ($b = 0.05$, $p = .85$). However the mediational model was still tested given our predictions guided by the peer socialization model and a positive and statistically significant indirect effect was found (see Table 2). Thus, there was a significant indirect effect of negative friendship quality on relational aggression and depressive symptom, $F(6, 769) = 14.38$, $p < .001$, $R^2 = .10$, such that negative friendship quality significantly predicted increases in depressive symptoms ($b = 0.31$, $p < .05$) above and beyond relational aggression.

When testing whether positive friendship quality mediated the association between aggression and the outcome variables, there were no significant findings of mediation (see Table 2). Similarly, a follow-up model

was tested with the Severe Risky Behavior subscale, $F(4, 771) = 5.13$, $p < .001$, $R^2 = .03$; however, negative friendship quality did not mediate the relation between relational aggression and the outcome variables. Of interest, relational aggression was significantly associated with future severe risky behavior ($b = 0.76$, $p < .01$).

DISCUSSION

The present study examined the mediating role of friendship quality in predicting the relation between relational aggression and both risky behavior and depressive symptoms. Although the results did not yield evidence for gender-linked differences in aggression, friendship quality and adjustment outcomes as outlined in the peer socialization model, they did support the basic theoretical model. As hypothesized, the results demonstrate that a behavioral peer process, relational aggression, leads to differential adjustment outcomes via peer processes (i.e., likely stress from negative dyadic relationships).

Relational aggression was positively related to negative friendship quality (see Figure 1), which appears to be in line with the current literature linking relational aggression with higher levels of poor friendship qualities, such as conflict and lack of conflict resolution (e.g., Rose & Rudolph, 2006; Rose et al., 2004). Previous literature has shown an association between relational aggression and friendship quality; however, what is leading to risky behavior and depressive symptoms was previously unknown (Cillessen et al., 2005). Therefore, the current study links relational aggression to both risky behavior and depressive symptoms via peer relation mechanisms to offer specific processes through which adjustment problems arise across development.

Given the importance placed on intimate relationships, we can speculate that when children are relationally aggressive (Ostrov & Godleski, 2010), higher levels of conflict without successful resolution may increase the levels of interpersonal stress these children are

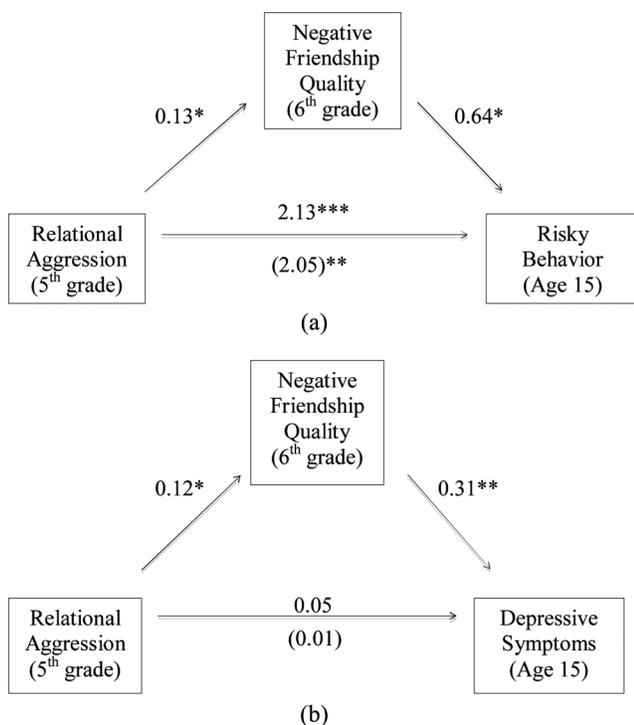


FIGURE 1 Negative friendship quality as a mediator of (a) relational aggression and risky behavior or (b) relational aggression and depressive symptoms. * $p < .05$. ** $p < .01$. *** $p < .001$.

experiencing. This stress response may then be internalized and lead to the development of depressive symptoms (Rudolph et al., 2000). It is important to note that it may be the proliferation of conflict within their friendships that cause these depressive symptoms, given the lack of direct association between relational aggression and depression within the current study. Of interest, positive friendship quality did not mediate the association between relational aggression and the outcome variables. On the other hand, when children learn to deal with frustration or stress within their friendships in an aggressive manner, aggression may then be exacerbated over time and develop into other externalizing problems and risky behavior (Tremblay, 2012). This contrasts with previous literature that has found associations between relational aggression and positive friendship qualities (Banny et al., 2011; Rose et al., 2004; Schmidt & Bagwell, 2007), although in the current study, individual friendship quality subscales (i.e., specific relationship provisions) were not examined in relation to relational aggression which makes the interpretation difficult. It may be that individual relationship provisions (i.e., intimacy, exclusion) are significantly associated with relational and other nonphysical forms of aggression (Murray-Close et al., 2007; Underwood & Buhrmester, 2007) and lead to different problematic outcomes.

The results found are notable given the long span of time between assessments (i.e., from the fifth grade or roughly age 10 to age 15). The present longitudinal results not only support the peer socialization model but also highlight results of Crick et al. (2006), showing the predictive power of relational aggression, above and beyond that of physical aggression, when investigating adjustment across development. Given mixed results regarding associations with adjustment outcomes when relational and physical aggression are jointly considered (Preddy & Fite, 2012), more work is needed to understand how both forms of aggression are associated with future social-psychological outcomes, especially risky behavior.

Although the current longitudinal study had a large sample size and used sophisticated statistical analyses, there are limitations that must be noted. First, the test of the indirect effect regarding risky behavior did not control for previous levels of risky behavior (i.e., fifth grade) due to unreliable initial measures. Thus, the current model cannot claim that association between relational aggression and friendship quality lead to increases in risky behavior over time. Similarly, associations rather than increases in friendship quality were examined due to item inconsistency and low internal consistency of the initial friendship quality variable. Second, the method used to measure risky behavior was developed by the SECCYD staff for the current study and has not been validated thoroughly (Spieker et al., 2012). Similarly, the physical and relational aggression measures were not ideal. The gold standard for assessing aggression during middle childhood is peer report; however, aggression variables were limited to teacher or parent report. The measure of relational aggression examined how aggressive behavior was used with peers in general and did not assess how it was used within specific dyadic friendships. It may be beneficial to measure relational aggression against others and within the relationship to examine whether relational aggression within the friendship leads to increases in negative friendship quality. Last, there was a lack of longitudinal data between sixth grade and age 15, limiting our ability to explore additional mechanisms that occurred between assessments. For example, negative friendship qualities may lead to friendship dissolution, which might account for changes in adjustment outcomes.

Clinical Implications

The present results show the importance of focusing on relational aggression in early prevention and intervention programs. The unique relation of relational aggression to negative friendship quality as well as risky behavior and depressive symptoms emphasizes the important impact of this form of aggression on

developmentally and clinically meaningful outcomes. Because these results indicate that these children struggle with both conflict and a lack of conflict resolution skills, intervention work might benefit from focusing on problem-solving strategies and positive communication to prevent high levels of conflict (e.g., Leff et al., 2010).

In sum, the present findings indicate that negative friendship quality indirectly mediates associations between middle childhood relational aggression and future depressive symptoms and risky behavior in adolescence.

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