# The Association Between Relational Aggression and Perceived Popularity in Early Adolescence: A Test of Competing Hypotheses

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## Abstract

This study examined two competing hypotheses regarding the moderators of the association between relational aggression and peer status in early adolescence. The *mitigation relational aggression* hypothesis examined whether positive social behaviors reduced the negative effects of relational aggression, thus amplifying the association between relational aggression and perceived popularity. The *effective use of relational aggression* hypothesis examined whether leadership skills facilitated the proficient use of relational aggression, thus amplifying the association between relational aggression and perceived popularity. Participants were 158 fifth graders (52% female). Post hoc analyses indicated that for girls, leadership significantly moderated the association between relational aggression and perceived popularity after controlling for positive social behaviors. Positive social behaviors did not similarly moderate the association between relational aggression and perceived popularity for boys or girls. Our results demonstrated that in the context of greater leadership, female early adolescents who used more relational aggression were perceived as more popular.

### Keywords

perceived popularity; relational aggression; leadership; positive social behaviors

Relational aggression in adolescence is linked to negative socioemotional outcomes (Crick, Ostrov, & Werner, 2006) and poor physical health (Temcheff et al., 2011). In spite of these consequences, children tend to use more relational aggression throughout childhood into adolescence (Côté, Vaillancourt, Barker, Nagin, & Tremblay, 2007; Ojanen & Kiefer, 2013). This increase in relational aggression may be because youth who use relational aggression are perceived as more popular by their peers (e.g., Cillessen, Schwartz, & Mayeux, 2011).

However, not all relationally aggressive youth are perceived as more popular; the behavioral context within which youth use relational aggression may account for this difference (Walcott, Upton, Bolen, & Brown, 2008). More research is needed to identify moderators of the link between relational aggression and perceived popularity. In addition, Cillessen and Borch (2006) demonstrated that relationally aggressive youth are perceived as more popular during the transition from elementary school to middle school. This may be a critical developmental period within which to examine the link between relational aggression and perceived popularity due to increases in social skills and expansion of peer networks at this time.

An examination of the use of relational aggression in the context of other behaviors may help clarify how relational aggression is associated with perceived popularity. Social dominance theory posits that youth may use relational aggression as a coercive strategy to gain perceived popularity (Pellegrini, Roseth, Ryzin, & Solberg, 2011). However, other research has found that youth use relational aggression to harm others through the manipulation of relationships (Crick & Grotpeter, 1995), which can elicit negative responses from peers (Findley & Ojanen, 2013). It is possible that a "mixed" strategy that balances negative behaviors with positive behaviors may increase the relation between relational aggression and perceived popularity (Aikins & Litwack, 2011; Neal, 2010), which has led us to formulate the *mitigation relational aggression hypothesis*. The display of positive social behaviors, such as sharing, cheering others up, and friendliness, may reduce the negative effects of relational aggression by eliciting positive affect, and strengthen the link in early adolescence between relational aggression and perceived popularity.

There is some empirical support for this hypothesis. Studies have shown that adolescents who use relational aggression are perceived as more popular only when they exhibit positive social behaviors (Dijkstra, Lindenberg, Verhulst, Ormel, & Veenstra, 2009). However, research that examined this relation within an early adolescent sample did support this hypothesis (Cillessen, Mayeux, Ha, de Bruyn, & LaFontana, 2014). In early adolescence, relationally aggressive behaviors may be especially hurtful and positive social behaviors may not be enough to mitigate the negative effects of relational aggression. More complex social behaviors may be necessary to strengthen the link between relational aggression and perceived popularity.

Leadership is one example of a complex set of social behaviors, representing positive, negative, and neutral characteristics (Hogan, Curphy, & Hogan, 1994) that may strengthen the link between relational aggression and popularity for early adolescents. Although the term "leadership" may connote a positive social behavior, leadership also involves power, influence, and the skillful management of behaviors (Oakland, Falkenberg, & Oakland, 1996). For example, a leader can be cooperative, but they can also be coercive. Although peers may not like youth who have negative leadership skills, leaders may still be popular due to their greater social skills. Also leaders can have advanced socioemotional abilities (Scharf & Mayseless, 2009), such as greater perspective taking, which may allow a leader to effectively manipulate others. Thus, early adolescent leaders may use relational aggression in an adept manner, which may strengthen the association between relational aggression and

perceived popularity. Thus, we also explored an alternate hypothesis, the *effective use of relational aggression hypothesis.*

There is limited research that examines whether leadership moderates the link between relational aggression and perceived popularity. Lansu and Cillessen (2012) found that peers perceived adults who were leaders and adults who used relational aggression as more popular. However, they did not identify whether relationally aggressive adults with higher levels of leadership were as popular as those adults with lower levels. Puckett, Aikins, and Cillessen (2008) and Waasdorp, Baker, Paskewich, and Leff (2013) found that early adolescent leaders who used relational aggression were perceived as more popular. They concluded that leadership is a positive behavior that mitigates the harmful effects of relational aggression. However, no study has directly tested whether youth who are leaders may use relational aggression in a more effectual manner. There remains a gap in the literature on early adolescent leadership and *how* it affects the relation between relational aggression and perceived popularity.

Gender is another factor that must be considered when examining the link between relational aggression and perceived popularity. Girls tend to exhibit more prosocial behaviors than boys (Zimmer-Gembeck, Geiger, & Crick, 2005); girls also tend to experience more distress to relational aggression than boys (Crick, Grotpeter, & Bigbee, 2002). Thus, relational aggression might be more detrimental to the social status of girls, and relationally aggressive girls may need to display more positive social behaviors in order to be perceived as more popular. Relationally aggressive boys may not need to display positive social behaviors to be perceived as more popular. Past research reveals inconsistent findings of gender differences in the link between relational aggression and popularity (Juvonen, Wang, & Espinoza, 2013; Kuryluk, Cohen, & Audley-Piotrowski, 2011). Thus, it is important to examine whether there are differences between boys and girls in the way relational aggression is related to perceived popularity.

The goal of our study was to examine concurrent associations between relational aggression and perceived popularity in early adolescence based on social dominance theory. Expanding on previous research, we directly compared two competing hypotheses: (a) positive social behaviors will moderate the association between relational aggression and perceived popularity, such that the positive association between relational aggression and perceived popularity was expected to be stronger among youth with high positive social behaviors (*mitigation hypothesis*) and (b) leadership will moderate the association between relational aggression and perceived popularity, such that the positive association between relational aggression and perceived popularity was expected to be stronger among youth with high leadership skills (*effective use hypothesis*). We also tested whether these relations are different for girls and boys. These analyses are uniquely informative in that they extend previous research by testing whether positive social behaviors and/or leadership strengthen the association between relational aggression and perceived popularity.

## Methods

### Participants

The current study utilized cross-sectional data when participants were approximately 10 years old and in the fifth grade. Data were collected as part of an ongoing longitudinal study of children originally oversampled for externalizing behaviors at 2 years old, based on elevated scores on the Child Behavior Checklist (Achenbach, 1992). Participants were recruited in three separate cohorts of children. Further details about the original sample recruitment strategy may be found in Calkins, Dedmon, Gill, Lomax, and Johnson (2002). A total sample size of 158 fifth-grade youth (48.1% male) from Cohorts 2 and 3 were used in this study, because perceived popularity was not measured in Cohort 1. Cohort 1 was not significantly different from Cohorts 2 and 3 with regard to sex, $\chi^2(1, N = 270) = .60$, $p = .62$; race, $\chi^2(3, N = 270) = 4.63$, $p = .20$; or 10-year socioeconomic status, $F(2, 252) = .006$, $p = .94$. Our participants were on average 10.58 years ($SD = .30$). The majority of the sample was Caucasian (67.5%); African Americans comprised 22.7% of the sample. A Hollingshead (1975) Four-Factor Index of Social Status showed that the families were economically diverse with scores ranging from 17 to 66 ($\overline{X} = 44.29$, $SD = 12.09$). Of the entire subsample, 3.8% of participants were at risk of externalizing behaviors at 10 years old (Child Behavior Checklist externalizing $t$-score > 65), which is less than 17% of children who were at risk of externalizing behaviors in a non-referred normative sample (Achenbach, 1992).

### Procedure

Nominations were collected from the whole fifth grade at least 8 weeks into the school year using a modified version of Coie, Dodge, and Copottelli (1982) original procedures. Our participants were from 87 schools, with total of 3,897 students involved in the nomination procedures. From each school, a range of 9 to 105 students participated ($\overline{X} = 49$; $SD = 22.30$). The average participation rate was 63% (range = 24%−100%). The scores are reliable, due to the methodological advantages of multiple behavioral descriptors and unlimited sociometric nomination procedures (Marks, Babcock, Cillessen, & Crick, 2013). All children who returned parent consent forms participated. Sociometric measures were completed in the classrooms. Children were provided a roster of all fifth graders at their school and were asked to circle those children's names that corresponded to a number of behavioral descriptors. Trained research assistants were available to help any student who needed additional guidance. Students were allowed to make unlimited cross-gender nominations for each behavior described below (Terry, 2000). This procedure allows for increased precision and reduced measurement error compared with limited nomination procedures (Marks et al., 2013). Demographic information also was collected at the 10-year laboratory visit of participants from the original project.

### Measures

**Perceived popularity, relational aggression, leadership, and positive social behaviors—**All the nominations were summed and standardized within the entire fifth-grade level of each school to account for differences in school-grade size. Scores were standardized across grade level and not at classroom level, because students in the fifth grade

at participating schools typically take classes with a variety of students throughout the day and therefore know most of their peers (similar to Zimmer-Gembeck et al., 2005).

Relational aggression scores were derived from three behavioral indicators that conceptually map onto relational aggression (Crick & Grotpeter, 1995; kids "who spreads rumors about others," "who keep kids from playing by ignoring them or telling other kids not to play with them," and "who say they will stop liking you"). Nominations for each behavioral indicator were summed and then standardized within the fifth grade. These item $z$-scores had a high internal consistency ($\alpha = .90$) and were averaged to create a relational aggression score, which was restandardized. A perceived popularity score reflected the total number of nominations for "most popular," standardized within the grade to create a single perceived popularity $z$-score (Marks et al., 2013). A leadership score was also obtained from the total number of nominations for kids "who are leaders," standardized within the grade to create a single leadership $z$-score (Puckett et al., 2008). A positive social behavior score was derived from three behavioral indicators (kids "who are friendly," "who share," and "who cheer others up.") The total nominations for each behavior were used to create three separate $z$-scores standardized within the grade. These items had high internal consistency ($\alpha = .92$) and were averaged to create a positive social behavior score, which was restandardized. Peer preference and physical aggression were included as covariates, because previous research has indicated a moderate to high correlation between peer preference and perceived popularity (Parkhurst & Hopmeyer, 1998) and physical aggression and relational aggression (Crick & Grotpeter, 1995). A peer preference score was obtained by taking the total number of peer nominations for kids who are "liked most" standardized within the grade, then subtracting the total number of peer nominations of kids who are "liked least" standardized within the grade, which was restandardized (Parkhurst & Hopmeyer, 1998). A physical aggression score was indicated by total number of nominations for "kids who fight with other" standardized within the grade.

## Results

Only the scores for our subsample were used in the analyses. We did not test for the nested effect of the data, because in the subsample only five students or fewer attended the same school. Table 1 presents the means, standard deviations, and correlations among all the study variables. Associations between race and socioeconomic status and the focal variables were not significant. Thus, race and socioeconomic status were not included in the main analyses. Independent-sample $t$ tests demonstrated significant gender differences in mean levels of positive social behaviors ($t = -6.14$, $df = 156$, $p < .001$). Girls were nominated as using more positive social behaviors than boys. When correlations were conducted separately for males and females, the association between perceived popularity and relational aggression was significant for girls only ($r = .44$, $p < .001$).

The goal of the current study was to assess the association of relational aggression and perceived popularity moderated by positive social behavior and leadership. Because we wanted to directly compare how positive social behaviors moderated the relation between relational aggression and perceived popularity to how leadership moderated the relation between relational aggression and perceived popularity, we included the two-way

interactions in the same model. The two-way interactions were included as separate steps in the model in order to demonstrate the effect of each moderator on the association between relational aggression and perceived popularity above and beyond the other moderator. Due to a priori hypotheses regarding gender, a three-way interaction of relational aggression, leadership, and sex and relational aggression, positive social behaviors, and sex were included. We included the three-way interactions in two separate hierarchical multiple regressions, because of the complexity of these tests.

In the models, peer preference, physical aggression, relational aggression, positive social behaviors, and leadership were entered in the first step. In the second step, the two-way interaction of relational aggression and positive social behaviors was entered. In the third step, the two-way interaction of relational aggression and leadership was entered. In the fourth step, the two-way interactions of relational aggression and sex and the moderator and sex were entered. In the fifth step, the three-way interaction of relational aggression, the moderator, and sex was entered. Standardized predictor variables were multiplied to create two-way interaction terms and three-way interaction terms. Follow-up tests of significant interactions were probed such that relations between relational aggression and perceived popularity were examined at low (−1 standard deviation) and high levels (+1 standard deviation) of positive social behaviors and leadership separately for males and females, as set forth by Aiken and West (1991).

Table 2 presents the first hierarchical multiple regression analysis. No correlations exceeded criteria for multicollinearity (variance inflation factor < 10, tolerance > .10). The total model explained 67.0% ($p < .001$) of the variance in perceived popularity. Relational aggression and leadership were both significantly and positively related to perceived popularity. However, the interaction of positive social behaviors and relational aggression was not significantly related to perceived popularity. The interaction of leadership and relational aggression also was not significantly related to perceived popularity. The relation between relational aggression and perceived popularity moderated by positive social behaviors did not vary for male and female early adolescents; therefore, the three-way interaction of relational aggression, positive social behaviors, and sex was not probed.

Table 2 also presents the second hierarchical multiple regression analysis. No correlations exceeded criteria for multicollinearity (variance inflation factor < 10, tolerance > .10). The total model explained 67.9% ($p < .001$) of the variance in perceived popularity. The interactions between relational aggression and leadership and sex were trending significant and explained an additional 1.6% ($p = .075$) of the variance of perceived popularity. The three-way interaction of relational aggression, leadership, and sex was not significant. A G-Power analysis (Buchner, Faul, & Erdfelder, 1992) suggested that the three-way interaction requires an n of 166 in order to achieve a power of .95 (Cohen, 1988) to detect a medium effect. Based on the trending significant findings and the power analysis, as a post hoc analysis we conducted analyses separately for boys and girls.

Table 2 presents the hierarchical multiple regression analysis for girls. The total model explained 63.5% ($p < .001$) of the variance in perceived popularity for girls. Relational aggression and leadership were significantly and positively related to perceived popularity.

The two-way interaction of positive social behaviors and relational aggression was not significant. The interaction between relational aggression and leadership was significant and explained an additional 2.0% ($p < .05$) of the variance of perceived popularity for girls. Probing the significant two-way interaction (Aiken & West, 1991) showed that the positive association between relational aggression and perceived popularity was significant at high ($\beta$ = .54, $p < .001$) levels of leadership, but not significant at low levels of leadership ($\beta = .26$, n.s.). For girls rated as high in leadership, as relational aggression increased they were rated as more popular (Figure 1).

Table 2 also presents the hierarchical multiple regression analysis for boys. The total model explained 78.1% ($p < .001$) of the variance in perceived popularity for boys. Relational aggression and leadership were significantly and positively related to perceived popularity. However, the interactions of positive social behaviors and relational aggression and leadership and relational aggression were not significantly related to perceived popularity.

We directly compared the slopes of the interaction of relational aggression and leadership on perceived popularity for boys and girls, and found that the difference between the two-way interaction for boys and girls was not significant ($t = 1.56$, $df = 154$, n.s.), which suggests that boys and girls do not have a statistically significant different relation between relational aggression and perceived popularity moderated by leadership. This might suggest that due to a smaller sample size, boys did not have the power to detect a significant effect of the interaction of relational aggression and leadership on perceived popularity.

## Discussion

The present research examined the relations among relational aggression, positive social behaviors, leadership, and perceived popularity in a sample of early adolescents. The unique feature of this study is that we tested competing hypotheses in order to determine how specific social behaviors may affect the link between relational aggression and perceived popularity. Toward that end, we examined positive social behaviors and leadership as two factors that may moderate the association between relational aggression and perceived popularity. In contrast to research that focused on the mitigative effect of positive social behaviors (e.g., Puckett et al., 2008), in our sample early adolescents' peer-rated use of positive social behaviors did not strengthen the relation between peer-rated relational aggression and popularity. In addition, in our sample early adolescents peers-rated as leaders did not strengthen the relation between peer-rated relational aggression and popularity. And the resulting relations between peer-rated relational aggression and perceived popularity moderated by peer-rated positive social behaviors or leadership did not vary across male and female early adolescents. We also conducted post hoc analyses that directly compared these relations for boys and girls, because of reduced power of the three-way interaction analysis and preliminary gender differences. These secondary results indicated that for girls, only leadership significantly moderated the relation between relational aggression and perceived popularity after controlling for the moderation of positive social behaviors on this relation, which supports the *effective use hypothesis*. Females rated as high on leadership were perceived as more popular as they used more relational aggression. For females rated as low

on leadership, their peer-rated use of relational aggression was not related to perceived popularity.

We interpret these findings to suggest that in early adolescence, leadership may increase the link between perceived popularity and relational aggression for females, but positive social skills may not. Female leaders may use relational aggression more effectively and are perceived as more popular. Whereas, peers may not perceive relationally aggressive females who use positive social behaviors as more popular, because relational aggression may be so hurtful to females in early adolescence that positive behaviors may no longer mitigate the negative effects of relational aggression. Relationally aggressive females who are leaders may be perceived as more popular, because they may have an array of positive, negative, and neutral behaviors that may increase the effectual use of relational aggression. For example, because leaders may communicate better, their gossip may be more effective at controlling the social hierarchy. And although relational aggression may cause girls more distress than boys (Crick et al., 2002), female leaders may be able to manipulate peers without causing distress. Alternatively, boys may not find relational aggression distressing and may not need leadership skills to amplify the link between relational aggression and perceived popularity. These conclusions are weakened by a non-significant difference for boys and girls of the moderation of leadership on the link between relational aggression and perceived popularity.

The strengths of our study included the use of an unlimited sociometric nomination procedure, which has demonstrated stronger psychometric properties than limited nominations (e.g., Terry, 2000). In addition, by directly testing competing hypotheses we uniquely demonstrate a more nuanced model of how relational aggression is related to perceived popularity in early adolescence, a period critical to emerging social status. Despite these strengths, several limitations of this study must also be considered. Only a small proportion of variance was explained by the interaction of leadership and relational aggression for girls, and the difference between the interaction for boys and girls was not significant. Also some of the schools had low participation rates. These findings require replication, and we should be cautious in drawing conclusions. We also made assumptions about the multidimensionality of leadership. Future research should analyze how components of leadership may amplify the link between relational aggression and perceived popularity. Also, this sample was scattered across many schools, because this sample was recruited long before the children began kindergarten. Future research should test how school context may strengthen or weaken these relations.

This study extends previous research by uniquely informing us about *how* relationally aggressive behaviors may relate to youth being perceived as more popular. Our data suggest that one explanation for this relation is by the effective use of leadership skills and not by the mitigation of positive social skills.

## Acknowledgments

## Author Biographies

**Meghan J. Gangel** is a doctoral candidate in the Department of Psychology at University of North Carolina (UNC) at Greensboro. Her research interests include development of aggressive behaviors and social, emotional, and physiological development from middle childhood to later adolescence. She is currently involved in a longitudinal research project identifying the risk and protective factors in the development of mental and physical health of adolescents.

**Susan P. Keane** is a professor of psychology and the director of clinical training at the psychology clinic and UNC at Greensboro. Her research interests include childhood psychopathology and children's social relationships, parent-child interaction, and the etiology, assessment, and treatment of peer rejection and neglect. Her work focuses on an integrated series of topics related to developmental outcomes of early-identified problem behavior, with a specific focus on the child, family, and school contextual factors which ameliorate or exacerbate early social, emotional, and/or behavioral difficulties.

**Susan D. Calkins'** research interests include cognitive, social, and emotional development in infancy, childhood, and adolescence. She currently has four ongoing collaborative research projects that involve following young children and their families to better understand early development. She uses a biopsychosocial approach to study behavior, psychological processes, and contextual effects on development.

**Lilly Shanahan's** program of research aims at understanding the joint roles of psychosocial and biological risk factors in the development of depression and anxiety from childhood to young adulthood. As part of this program of research, she studies the emergence of the intersection of physical and mental health during the early life course. An interest in sex differences in development permeates all of her work.

**Marion O'Brien** is a professor emerita in the Human Development and Family Studies at UNC at Greensboro. Her research interests include parenting, child care, and children's social and cognitive development. She is also interested in parenting and family adaptation when a child is diagnosed with a developmental disability.

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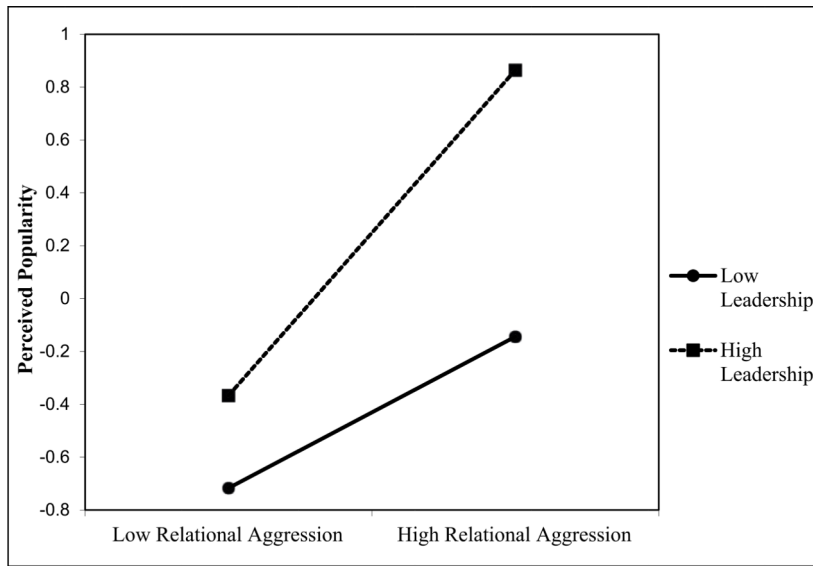
**Figure 1.**
Interaction between relational aggression and leadership for girls only.

**Table 1.**

Means, Standard Deviations, and Correlations for Study Variables.

| Variable | Girls | | Boys | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|---|---|
| | $\overline{X}$ | SD | $\overline{X}$ | SD | | | | | | |
| 1. Perceived popularity | 0.26 | 1.07 | 0.15 | 0.97 | — | .49** | .33** | .62** | .38* | .15* |
| 2. Peer preference | 0.09 | 0.86 | −0.13 | 0.91 | | — | −.17* | .44** | .61** | −.32** |
| 3. Relational aggression | 0.17 | 1.13 | −0.19 | 0.79 | | | — | .04 | −.15** | .57** |
| 4. Leadership | 0.08 | 0.90 | 0.05 | 0.89 | | | | — | .54** | −.06 |
| 5. Prosocial behaviors | 0.43 | 1.01 | −0.48 | 0.74 | | | | | — | −.45** |
| 6. Physical aggression | −0.16 | 0.64 | 0.32 | 0.90 | | | | | | — |

*Note.* Total $N$ = 158 (males = 76, females = 82).

†
$p < .10$.

*
$p < .05$.

**
$p < .01$.

***
$p < .001$.

**Table 2.**

Results of the Regression Analyses.

| Predictor variables | All participants with sex as a predictor | | | | | | Split by sex | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Positive social behaviors | | | Leadership | | | Females | | | Males | | |
| | $R^2$ | $R^2$ | β (SE) | $R^2$ | $R^2$ | β (SE) | $R^2$ | $R^2$ | β (SE) | $R^2$ | $R^2$ | β (SE) |
| Step 1 | .66 | .66*** | | .66 | .66*** | | .61 | .61*** | | .77 | .77*** | |
| Preference | | | .42***(.07) | | | .42***(.07) | | | .37**(.12) | | | .44***(.07) |
| Sex | | | −.14(.13) | | | −.14(.13) | | | — | | | — |
| Physical aggression | | | .12(.08) | | | .12(.08) | | | .14(.16) | | | .14(.08) |
| Relational aggression | | | .36***(.07) | | | .36***(.07) | | | .42***(.11) | | | .23*(.12) |
| Positive social behaviors | | | .04(.10) | | | .04(.10) | | | .18(.14) | | | −.10(.12) |
| Leadership | | | .54***(.07) | | | .54***(.07) | | | .40***(.11) | | | .69***(.07) |
| Step 2 | .66 | .00 | | .66 | .00 | | .62 | .00 | | .78 | .01 | |
| Relational aggression × Positive social behaviors | | | .05(.05) | | | .05(.05) | | | −.27(.08) | | | .16(.10) |
| Step 3 | .67 | .00 | | .67 | .00 | | .64 | .02* | | .78 | .00 | |
| Relational aggression × Leadership | | | .07(.05) | | | .07(.05) | | | .14*(.10) | | | −.08(.10) |
| Step 4 | .67 | .00 | | .68 | .01† | | | | | | | |
| Relational aggression × Sex | | | .08(.14) | | | .08(.13) | | | | | | |
| Moderator × Sex | | | −.02(.14) | | | −.24*(.11) | | | | | | |
| Step 5 | .67 | .00 | | .68 | .00 | | | | | | | |
| Relational aggression × Moderator × Sex | | | −.12(.15) | | | .08(.13) | | | | | | |

*Note.* Total $N$ = 158 (males = 76, females = 82).

†
  $p < .10$.

*
  $p < .05$.

**
  $p < .01$.

***
  $p < .001$.