

Beyond Behavior: An Examination of the Associations Between Social Cognition, Aggression,
and Friendship Quality

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Abstract

The present study ($n = 226$ college students, 55% women) was designed to assess the degree of association between everyday aggressive behavior, measures of friendship quality, and social-cognitive processes known to be related to aggression, including beliefs about the legitimacy of aggression, and the interpretations, goals, and strategies involved in responding to transgressions within a friendship. Friendship quality was assessed by examining levels of positive friendship features (e.g., enjoyable companionship), negative friendship features (e.g., jealousy), and conflict. Interpretations about a friend's behavior, goals, and strategies were assessed after presenting participants with hypothetical vignettes depicting friendship transgressions. Participants responded online to measures of each of the major constructs. Results indicated, first, that self-reported levels of aggressive behavior in everyday life was associated with higher levels of negative friendship features and conflict. Second, social-cognitive processes involved in responding to friendship transgressions were also associated with measures of poorer friendship quality, as were normative beliefs endorsing the legitimacy of aggression. Third, when responding to transgressions within a friendship, endorsing aggressive goals mediated the association between making negative interpretations about a friend's behavior and endorsing aggressive strategies. Fourth, beliefs about the legitimacy of aggression were strongly positively correlated with levels of aggressive behavior. Overall, results suggest that aggression and the social-cognitive processes known to be related to aggression are linked to friendship quality through their associations with negative friendship features and conflict.

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Introduction

Over time, evidence has highlighted the harmful impacts of aggression through its association with adverse individual life outcomes, such as criminality and early school withdrawal (Farrington, 1991). Although these findings are extremely important, it is likely that harmful effects of aggression also extend to an aggressive person's social relationships, including their friendships. It is particularly valuable to examine the association between aggression and friendship, because friendship is a relationship of high importance associated with positive social-psychological adjustment across development (Hartup & Stevens, 1997). The current study is designed to examine the associations between everyday aggressive behavior, various social-cognitive processes, and the quality of college students' friendships. The aim is to determine the degree to which aggression is both directly and indirectly related to friendship quality, which will be assessed through the examination of social-cognitive processes that are known to be related to aggression, including beliefs endorsing the legitimacy of aggression, and making negative interpretations about a friend's behavior, selecting aggressive goals, and endorsing aggressive strategies in response to friendship transgressions.

Friendship

Friendship is a unique part of the human experience and is typically characterized by mutual liking, voluntary interdependence, and a shared history between partners (Asher, Parker, & Walker, 1996). Friendship is believed to satisfy needs for belonging and intimacy while also protecting individuals against negative life outcomes such as loneliness and depression (Asher, Guerry, & McDonald, 2014; Baumeister & Leary, 1995; Hartup & Stevens, 1999). Close friendships have been shown to serve as an especially protective factor against emotional difficulties (Bukowski, Newcomb, & Hartup, 1996).

Studying close friendships involves the examination of friendship quality. High-quality friendships are typically operationalized as having a high level of positive features as well as a relatively low level of conflict (Parker & Asher, 1993; Furman, 1996). High-quality friendships have been found to be associated with lower levels of loneliness, and this association persisted even when level of peer acceptance was statistically controlled for (Parker & Asher, 1993). On the other hand, friendships that are high in conflict are associated with higher levels of loneliness and lower levels of friendship satisfaction (Weeks & Asher, 2014). Until recently, conflict in a friendship has been examined as the sole indicator of negative friendship quality; however, it is plausible that additional features can also contribute to poor quality friendships. These features include constructs such as competitiveness, bossiness, and relational aggression (Wormington, Asher & Weeks, in progress). When various kinds of negative friendship features were recently examined in a sample of college students, they were associated with lower levels of social and emotional well-being, including higher levels of depression and anxiety (Gold, 2016).

Responding to Friendship Transgressions: An Examination of Social Cognition in the Context of a Key Friendship Task

Developmental psychologists have long been interested in how children and adults respond to major social tasks (Putallaz, 1983). A key task hypothesized to be important in maintaining high-quality friendships lies in how individuals respond when a friend violates a core expectation of friendship, such as by failing to provide emotional support or by betraying the individual. These situations are referred to as friendship transgressions, and they are typically assessed by providing individuals with vignettes depicting hypothetical instances of various situations that could occur within a friendship (Benenson et al., 2009; MacEvoy & Asher, 2012). Methodology employing hypothetical vignettes has occurred extensively in past research and has

been shown to predict real-life social behavior (Crick, Grotpeter & Bigbee, 2002; Dodge, 1980; Rose & Asher, 1999).

Responding to friendship transgressions involves processing social information in order to formulate a desired response. The social-cognitive processes through which this sequence occurs are believed to operate within a social information-processing pathway, with each social-cognitive process being informed by the previous process and subsequently informing the following process (Crick & Dodge, 1994). Core social-cognitive processes of the model are hypothesized to include making interpretations about the other person's behavior, which then inform the kinds of goals that are selected, which then inform the behavioral strategies that are pursued. Rose and Asher (1999) examined these social-cognitive processes in the context of friendship. In response to a set of 30 hypothetical conflict situations within a friendship, they found that the goals and strategies individuals endorsed were linked to their levels of adjustment within the friendship. Specifically, the endorsement of revenge goals and aggressive strategies was associated with poorer quality friendships after statistically controlling for children's level of peer acceptance.

MacEvoy and Asher (2012) used hypothetical vignettes depicting friendship transgressions with children. Based on their findings comparing boys' and girls' responses to friendship transgressions, they speculated that the tendency for girls to make more negative interpretations about their friend's behavior than boys did contributed to the finding that girls' friendships are no more stable than boys' friendships, even though they consistently report higher levels of positive friendship features (e.g., emotional support). Therefore, the social-cognitive processes involved in responding to friendship transgressions may play an important role in influencing the quality of people's friendships. Indeed, hypothetical vignettes depicting

friendship transgressions have also been used with samples of college students, and preliminary analyses conducted by Asher, Weeks & Yust (in preparation) indicate that social-cognitive processing patterns involved in responding to friendship transgressions are associated with friendship quality. However, both of these studies using friendship transgression vignettes did not focus on aggressive social-cognitive processing patterns specifically.

Aggression

Aggression encompasses a range of problematic behaviors and is defined in the literature as any behavior intended to harm others (Farrington, 1991). Research has found that aggression tends to be a stable behavioral characteristic across development, typically beginning in childhood and continuing into adulthood (Farrington, 1991). Additionally, it is associated with a host of adverse life outcomes throughout both childhood and adulthood, including increased risk for peer rejection, depression and other psychopathology, early school withdrawal, substance abuse, and adult criminality (Farrington, 1991; Lochman & Wayland, 1994; see Nangle, Erdley, Carpenter & Newman, 2002, for a review). For these reasons, aggression is highly costly to society.

Aggression is closely tied to problematic social information-processing patterns. Specifically, the tendency to attribute negative intent to others' actions is believed to cause distortions at subsequent stages of the social information-processing pathway, including the formulation of goals and strategies (Dodge, 1980). Ultimately, the decision to use aggressive strategies at the end of the social information-processing pathway is then believed to inform the expression of aggressive behavior (Crick & Dodge, 1994).

The association between aggression and friendship quality has been examined in childhood. In general, aggressive children have higher levels of conflict within their friendships

compared to nonaggressive children and are more likely to be friends with other aggressive children (Deptula & Cohen, 2004; Grotmeter & Crick, 1996; McDonald, Wang, Benzer, Rubin, & Booth-LaForce 2011; Poulin & Boivin, 1999). They are also more likely to report friendships lower in positive features. Specifically, they are more likely to report lower levels of validation and caring in their friendships (Grotmeter & Crick, 1996; McDonald et al. 2011). Based on the linkages between aggression and friendship quality in children's friendships, it is valuable to determine whether aggressive behavior is also related to poorer friendship quality among young adults.

As a construct, aggression has been found to differ based on its form. Form refers to the way that aggression is expressed and is generally categorized as physical (e.g., hitting someone), verbal (e.g., insulting someone), or relational (e.g., spreading rumors about someone). Different forms of aggression have been shown to have somewhat distinct associations with children's social adjustment (Grotmeter & Crick, 1996; Poulin & Boivin, 1999). To account for the various forms of aggression that exist, the present study operationalizes aggression in terms of subtype rather than as a singular construct. It should be noted, however, that the various forms of aggression are by no means mutually exclusive and have consistently been found to be positively correlated with one another (Dodge & Coie, 1987).

Beliefs About the Legitimacy of Aggression

As part of a focus on aggression, researchers have become interested in various social-cognitive processes believed to contribute to its development. In addition to the processes involved in responding to social interactions, beliefs about the legitimacy of aggression are a key social-cognitive process that have been shown to be associated with aggressive behavior across development, including in samples of college students (Bailey & Ostrov, 2008; Erdley & Asher,

1998; Werner & Hill, 2010). Beliefs about the legitimacy of aggression consist of a set of global beliefs about the context in which aggression is legitimate. They tend to be increase in stability as children age (Huesmann & Guerra, 1997). Beliefs about the legitimacy of aggression are hypothesized to act as one component of a social-cognitive “database,” informing the way that information is processed at each stage of the social information-processing pathway (Crick & Dodge, 1994). Additionally, findings have indicated that children actually increasingly approve of relational aggression as they age. Additionally, these changes in approval beliefs about relational aggression predicted subsequent increases in relationally aggressive behavior (Werner & Hill, 2010). It was hypothesized by Werner and Hill (2010) that these changes could be influenced by group norms that tend to view relational aggression more favorably as children age. These findings highlight the powerful role that beliefs about the legitimacy of aggression likely have in shaping aggressive behavior.

Zelli, Dodge, Lochman, and Laird (1999) explored the associations between beliefs about the legitimacy of aggression, social information-processing patterns, and aggressive behavior and found that beliefs about the legitimacy of aggression are a distinct construct from social information-processing patterns (i.e., interpretations, goals, and strategies). In this longitudinal study, they found that beliefs endorsing the legitimacy of aggression predicted later patterns of deviant social information-processing, and that these later patterns of deviant social information-processing predicted increased levels of aggressive behavior. In another study, the association between beliefs about the legitimacy of aggression and aggressive behavior was mediated by negative response selection (also referred to as strategies) in response to hypothetical situations in a sample of adolescents (Bellmore, Witkow, Graham, & Juvonen, 2005). To date, it appears that data about beliefs legitimacy of aggression beliefs have never been collected within the

context of friendship for any age group, which has thus far prevented the examination of potential associations between beliefs about the legitimacy of aggression, aggressive behavior, and friendship quality.

The Present Study

The major purpose of this research was to examine the associations between social cognition, aggression, and friendship quality in a sample of college students. Based on the demonstrated importance of social-cognitive processes, it is valuable to determine whether the harmful social-cognitive processing patterns related to aggression are also associated with the quality of people's friendships. If they are found to be associated with poorer friendship quality, it would suggest that these social-cognitive processing patterns have harmful impacts on well-being above and beyond their effects on behavior. The present study sought to address the following research goals:

- 1) The first goal was to assess the association between college students' levels of aggressive behavior in everyday life and their level of friendship quality in their closest friendship at college. Research with children has found that higher levels of aggression is associated with poorer friendship quality (Grotmeter & Crick, 1996), and this association was hypothesized to replicate in a sample of college students.
- 2) The second goal was to examine whether the social-cognitive processes involved in responding to friendship transgressions would be associated with friendship quality. Based on previous findings, it was expected that making negative interpretations about a friend's behavior, selecting aggressive goals, and endorsing aggressive strategies in response to friendship transgressions would each be associated with poorer friendship quality. A sub-question related to this second goal was whether making negative

interpretations about a friend's behavior when responding to friendship transgressions would be associated with the endorsement of aggressive strategies and whether this association would be mediated by the selection of aggressive goals. The existence of this mediational model has yet to be examined with friendship transgression vignettes.

- 3) A third goal was to learn whether beliefs about the legitimacy of aggression would be associated with friendship quality in a sample of college students. This association has yet to be addressed in the literature. It was hypothesized that beliefs endorsing the legitimacy of aggression would be associated with poorer friendship quality. It was also hypothesized that the strength of associations between beliefs and behavior would be stronger for the same form of aggression, such that beliefs endorsing the legitimacy of relational aggression would be more strongly related to relationally aggressive behavior than they would be to physically aggressive behavior.
- 4) A final aim was to further explore the role of beliefs about the legitimacy of aggression. In order to do this, two hypotheses were tested. The first tested whether the association between beliefs about the legitimacy of aggression and aggressive behavior found by Bailey and Ostrov (2008) with college students would replicate. The second tested the hypothesis that beliefs endorsing the legitimacy of aggression would moderate the association between making negative interpretations about a friend's behavior and selecting aggressive goals to pursue in response to friendship transgressions. This would mean that interpreting a friend's behavior as negative would be more strongly associated with pursuing aggression-related goals among individuals who also held beliefs endorsing the legitimacy of aggression. This possible moderating effect of beliefs about

the legitimacy of aggression on the associations between social-cognitive processes has yet to be examined in the literature.

Method

Participants

Participants were 242 undergraduate students attending Duke University (age range 18-22). The sample was ethnically diverse. Participant recruitment occurred through the Duke University Psychology subject pool, which consists of students enrolled in introductory psychology classes. Participants received compensation in the form of course credit. Students in these courses have the option of writing a brief paper in lieu of research participation if they wish. Students who signed up for the study were redirected to a link to complete the study online via Qualtrics software. Ten students failed to complete the survey and an additional nine students failed to complete the survey in a satisfactory manner (e.g., providing the same response to every question, not completing multiple measures). These students were excluded from analysis, leaving a total of 223 participants. Of these 223 students, 100 (45%) were men and 123 (55%) were women.

Procedure

Data collection began on November 19th, 2016 and finished on March 20th, 2017. The study consisted of six self-report measures combined with a few demographic questions about age, gender, relationship status, and ethnicity. It took participants approximately 30-35 minutes to complete. The first set of measures presented participants with hypothetical vignettes about transgression situations and asked them to respond as though the situation had happened to them. The second set of measures asked participants about the frequency with which they have engaged in aggressive behavior over the past year. The third set of measures focused on various

aspects of the participants' friendship with their closest same-sex friend, including positive and negative friendship features and conflict. A fourth set of measures asked participants about the extent to which they agreed with various statements endorsing the legitimacy of several forms of aggression. A fifth and sixth set of measures asked participants about their levels of loneliness and their beliefs about friendship, respectively, and were included for analyses outside of the present study. Finally, participants completed a short section on demographic information about themselves. Descriptive statistics and internal reliabilities for the constructs assessed by these measures are presented in Table 1. Specific measures are presented in the Supplementary Online Materials in Appendices A-G.

Measures

Aggression and social behavior (Appendix A). The purpose of this measure was to provide an indicator of everyday aggressive behavior for each participant. An adapted version of the Self-Report of Aggression and Social Behavior Measure was used (SRASBM; Linder, Crick, & Collins, 2002). The measure was abbreviated by excluding the subscales assessing victimization and exclusivity, as these constructs were not of interest to the present study and demonstrated lower internal reliability in the past than the other subscales. The remaining subscales measured two forms of aggressive behavior (i.e., physically aggressive behavior and relationally aggressive behavior) as well as prosocial behavior. Prosocial items were included in the measure so that participants didn't only reply to negatively-connoted items, but the data for prosocial behavior were not used in this study. The measure was further adapted by changing the words "a friend" or "a romantic partner" to the word "someone" to assess the frequency of aggressive behavior without regard to social relationship context. In order to assess the level of aggression a person has recently engaged in, participants were asked to provide one response

indicating how true each item was for them on a 1 – 7 scale (1 = *not at all true*, 4 = *sometimes true*, 7 = *very true*) based on the frequency with which they use aggression now or have used aggression during the last year. Internal reliabilities from the subscales have been good in previous research ($\alpha = .70 - .85$ across four studies; Bailey & Ostrov, 2008; Lento-Zwolinski, 2007; Linder et al., 2002; Murray-Close et al., 2010). In the present study, internal reliability for a composite index of aggressive behavior was good ($\alpha = .81$). Internal reliabilities for the subscales assessing the different forms of aggressive behavior were also good ($\alpha = .87$ for relational aggression, $\alpha = .83$ for physical aggression).

Beliefs about the legitimacy of aggression (Appendix B). To assess participants' beliefs about the legitimacy of aggression, an adapted and extended version of Erdley and Asher's (1998) legitimacy of aggression questionnaire was used. The original measure was intended for use with children, so it was modified to establish appropriate wording for research with college students (e.g., "It's okay to hit someone if that child hit you first" was modified to "It's okay to hit someone if that person has hit you first"). Additionally, the original measure only assessed beliefs about the legitimacy of verbal and physical aggression, but the adapted measure included items that also assessed relational aggression (e.g., "It's okay to exclude someone and leave that person out of group activities to get even with them"). All items depicted reactive aggression, or aggression used in response to some form of provocation by the target (e.g., "...if that person has made you really angry"). The final measure consisted of 21 items, creating three 7-item subscales based on form of aggression (i.e., relational, physical, verbal). Participants responded to each item on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). The measure had very good internal reliability in the past when it was used with children

($\alpha = .94$; Erdley & Asher, 1998). Internal reliability for the present study was somewhat lower but highly satisfactory ($\alpha = .89$).

Friendship quality: Positive friendship features and conflict (Appendix C).

Participants completed an abbreviated version of the Friendship Features Questionnaire for Adults (FFQ-A), which assessed ten positive features of each participant's closest friendship as well as conflict. The ten positive features were: validation, emotional support, instrumental help, reliable partnership, shared activities, enjoyable companionship, honest feedback, self-disclosure, forgiveness/conflict resolution, and spirit of equality (FFQ-A; Weeks & Asher, 2014; adapted from Parker & Asher, 1993; Simpkins & Parke, 2001). These features have been identified as particularly important to close relationships (e.g., Asher, Parker, & Walker, 1996; Parker & Asher, 1993). The measure also examined level of conflict within the closest friendship. The 11 subscales were derived from a confirmatory analysis by Weeks and Asher (2014) and each subscale was also found to be reliably assessed.

The original measure contained five items per subscale, but the abbreviated version that was created in the present study had only two items per subscale. Typically, the two items with the highest loadings on a scale were selected using data from previous research (Gold, 2016), however if items were highly similar to one another, the item with the third highest loading was then chosen in order to have a more comprehensive set of items. Additionally, the wording of items was altered for the present study given that the dyad was the subject of interest (e.g., "My friend compliments me about things" was modified to "My friend and I compliment each other about things"). This type of modification was made because an assessment of the dyadic nature of the friendship was more consistent with the goals of the present study than assessing the features that the participant's friend provided to the participant. Participants were first asked to

write the name of their closest same-sex friend and that name was inserted into each question. For each item, participants indicated the degree to which each statement was characteristic of their closest friendship on a 7-point scale ranging from 1 = *not at all true* to 7 = *very true*. The internal reliabilities for each subscale have been good in the past, ($\alpha = .72 - .85$), as has the overall internal reliability for positive friendship features ($\alpha = .94 - .95$; Gold, 2016; Weeks & Asher, 2014). The internal reliability for conflict has been adequate in past research ($\alpha = .84$; Weeks & Asher, 2014). Internal reliability for positive friendship features was very good in the present study ($\alpha = .91$), and internal reliability for conflict was good ($\alpha = .83$).

Negative friendship features (Appendix D). In addition to assessing both the positive features of participants' closest friendships as well as conflict, various negative friendship features were also assessed. Items were selected for inclusion using data from Gold's (2016) use of the Negative Friendship Features Questionnaire (NFFQ; Wormington, Asher, & Weeks, in preparation). Subscales of the Negative Friendship Features Questionnaire assessed the following 12 negative features: competitiveness, distracting behaviors, jealousy, relational aggression, bossiness, high maintenance, hard to please, defensiveness, hypersensitivity, self-absorption, self-demeaning behavior, and hostility/abrasiveness.

The original measure contained five items per subscale, but the abbreviated version that was used in the present study had only two items per subscale. Typically, the two items with the highest loadings on a scale were selected using Gold's (2016) data, however if items were highly similar to one another, the item with the third highest loading was then chosen in order to have a more comprehensive set of items. Additionally, as with the FFQ-A items, the wording of NFFQ items was altered given that the dyad was the subject of interest (e.g., "When we spend time together, my friend tries to prove that he/she is better than me" was modified to "When we spend

time together, my friend and I try to prove that we are better than one another”). For each item, participants were asked to indicate the degree to which each statement was characteristic of their closest friendship on a 7-point scale ranging from 1 = *not at all true* to 7 = *very true*. Items from the NFFQ were randomly combined with items from the FFQ-A. In a previous study, the internal reliabilities for the subscales were very good ($\alpha = .84 - .93$) as was the internal reliability for a composite index of the negative friendship features ($\alpha = .96$; Gold, 2016). In the present study, internal reliability for a composite index of negative friendship features was good ($\alpha = .83$). The reduction in reliability could be due to the fact that this study used an abbreviated version of the measure with only two items per subscale (versus six to nine items per subscale used in previous research).

Responding to friendship transgressions (Appendix E). To examine responses to friendship transgressions, participants were presented with friendship transgression vignettes, which were adapted for college students by Asher, Weeks, and Yust (in preparation) from vignettes originally created for and used with children (MacEvoy & Asher, 2012). This set of vignettes was designed to examine differences in the way participants respond to hypothetical situations in which their friend violated a core expectation of friendship (i.e., by failing to provide emotional support or through betrayal). Vignettes varied in their levels of severity and ambiguity, with betrayal transgressions designed to score higher on level of severity than lack of emotional support transgressions. Employing procedures used in previous research, participants were instructed to carefully read each vignette and imagine that they are actually in that situation with a friend. Following the presentation of each vignette, participants rated the extent of their agreement with statements assessing interpretations about their friend’s behavior, emotions, goals, and strategies on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Additionally,

various items were added from the transgression measures used with children that represented goals and strategies associated with aggression (e.g., “I would be trying to hurt my friend back” was added as a goal item; MacEvoy & Asher, 2012). Internal reliabilities for negative interpretations about a friend’s behavior, aggressive goals, and aggressive strategies were satisfactory for both betrayal vignettes and lack of emotional support vignettes, ranging from $\alpha = .68 - .93$, with an average internal reliability of $\alpha = .81$.

Measures assessing participants’ levels of loneliness and participants’ beliefs about friendship were also included in the online self-report measure that was administered, but results from these measures were not analyzed because they were intended for use outside of the present study. The full text for these measures are presented in Appendix F and Appendix G respectively.

Results

Descriptive Statistics

Means, standard deviations, internal reliabilities, skewness, and kurtosis of study variables are presented in Table 1. All measures used for the present study had 7-point scales. Mean values for positive friendship features were very high ($M = 6.27, SD = .71$), while mean values for negative friendship features ($M = 2.33, SD = .66$) and conflict ($M = 1.97, SD = 1.04$) were low. Mean values for aggressive behavior were towards the lower end of the scale for both relationally aggressive behavior ($M = 2.49, SD = .92$) and physically aggressive behavior ($M = 1.41, SD = .72$). Mean values for beliefs about the legitimacy of physical aggression ($M = 1.94, SD = 1.06$) were rather low, whereas mean values for beliefs about the legitimacy of verbal aggression ($M = 3.46, SD = 1.56$) and relational aggression ($M = 3.39, SD = 1.36$) were more towards the middle of the scale.

Examination of skewness and kurtosis values for several variables indicated problems with non-normality in response distributions, specifically for physically aggressive behavior and beliefs about the legitimacy of physical aggression. Log transformations of these variables were completed prior to conducting inferential statistical analyses and are shown in Table 1.

Normality was achieved following log transformations of those variables.

Separate factor analyses were conducted for interpretations, goals, and strategies that participants rated in response to friendship transgressions. Factor analyses revealed that items believed to depict negative interpretations about a friend's behavior loaded onto a single factor, items believed to depict aggressive goals loaded onto a single factor, and items believed to depict aggressive strategies loaded onto a single factor. This was true for both betrayal transgressions and lack of emotional support transgressions. Factor loadings for each item are displayed in Table 2.

Association Between Everyday Aggressive Behavior and Friendship Quality

The major first goal of the present study was to examine the association between everyday aggressive behavior and friendship quality. Zero-order correlational analyses were conducted to examine the associations between two forms of everyday aggressive behavior (i.e., physically aggressive behavior and relationally aggressive behavior) and measures of friendship quality (i.e., conflict, positive friendship features, and negative friendship features). As hypothesized, both forms of aggressive behavior were significantly positively associated with conflict ($r = .17, p < .05$ for physically aggressive behavior, $r = .17, p < .05$ for relationally aggressive behavior; see Table 3). This finding replicated previous positive associations found between aggressive behavior and conflict in children's friendships (Grotzinger & Crick, 1996). Furthermore, both forms of aggressive behavior were positively correlated with negative

friendship features ($r = .28, p < .001$ for physically aggressive behavior, $r = .36, p < .001$ for relationally aggressive behavior). Contrary to our hypothesis, aggressive behavior was not associated with lower levels of positive friendship features, as it had been in prior studies with children (Grotzinger & Crick, 1996; Poulin & Boivin, 1999). In summary, results suggest that aggressive behavior is linked to poorer friendship quality primarily through its associations with negative friendship features and conflict.

Interpretations About a Friend's Behavior, Goals, and Strategies in Response to Friendship Transgressions

The second research goal was to examine whether making negative interpretations about a friend's behavior, selecting aggressive goals, and endorsing aggressive strategies when responding to friendship transgressions would be associated with poorer friendship quality. Zero-order correlational analyses were conducted to assess these associations.

Negative interpretations about a friend's behavior were found to be unrelated to conflict for both betrayal transgressions and lack of emotional support transgressions (See Table 3). Negative interpretations were also found to be unrelated to levels of negative friendship features for either type of friendship transgression (i.e., lack of emotional support and betrayal). Interestingly, however, making negative interpretations was significantly correlated with higher levels of positive friendship features, but only for betrayal transgressions ($r = .15, p < .05$) and not for lack of emotional support transgressions. In other words, of the six correlations between negative interpretations and measures of friendship quality that were assessed, only one correlation was significant and that correlation was fairly modest.

Aggressive goals were not found to be significantly associated with levels of friendship conflict for either type of friendship transgression (See Table 3). Aggressive goals were also not

significantly associated with levels of positive friendship features for either type of friendship transgression. For both variations of friendship transgressions, aggressive goals were significantly positively correlated with negative friendship features ($r = .19, p < .001$ for betrayal transgressions, $r = .21, p < .001$ for lack of emotional support transgressions).

Results indicated that aggressive strategies endorsed in response to both lack of emotional support transgressions and betrayal transgressions were significantly associated with higher levels of conflict ($r = .24, p < .001$ for betrayal transgressions, $r = .21, p < .001$ for lack of emotional support transgressions; see Table 3). Aggressive strategies endorsed in response to lack of emotional support transgressions were significantly negatively correlated with levels of positive friendship features ($r = -.20, p < .01$), but aggressive strategies endorsed in response to betrayal transgressions were not found to be significantly associated with levels of positive friendship features. Both variations of friendship transgressions were significantly positively associated with higher levels of negative friendship features ($r = .28, p < .001$ for betrayal transgressions, $r = .25, p < .001$ for lack of emotional support transgressions).

In summary, aggressive goals and aggressive strategies involved in responding to friendship transgressions are primarily related to friendship quality through their significant associations with negative friendship features and conflict. Conversely, negative interpretations about a friend's behavior appear to be largely unrelated to measures of friendship quality, aside from one linkage found between making negative interpretations about a friend's behavior in response to betrayal transgressions and higher levels of positive friendship features.

Responding to friendship transgressions: Mediational model. One of the sub-goals of the present study was to examine whether the interpretations, goals, and strategies involved in responding to friendship transgressions would be related to one another in ways that support the

existence of a mediational model, such that negative interpretations about a friend's behavior would be associated with endorsing aggressive strategies through their association with selecting aggressive goals. Mediational analyses were conducted using the PROCESS macro for SPSS using 5,000 bootstrap samples (Hayes, 2013). This technique yielded 95% bias-corrected confidence intervals that did not include zero (.05 to .18 for betrayal transgressions, .10 to .22 for lack of emotional support transgressions) upon examination of the significance of unstandardized indirect effects. Thus, indirect effects were significant for both lack of emotional support transgressions and betrayal transgressions, suggesting that aggressive goals mediated the effect of negative interpretations about a friend's behavior on aggressive strategies. Standardized indirect and direct effects of the mediational analyses for both variations of friendship transgressions are depicted in Figures 1 and 2. In summary, results suggest that interpretations are related to strategies through their association with goals when individuals respond to friendship transgressions.

Beliefs about the Legitimacy of Aggression

A third research goal was to examine the correlations between beliefs about the legitimacy of aggression and measures of friendship quality. Zero-order correlational analyses were conducted to examine these associations (see Table 3). Beliefs about the legitimacy of aggression slightly differed in their associations with measures of friendship quality based on form of aggression. Beliefs endorsing the legitimacy of physical aggression and beliefs endorsing the legitimacy of verbal aggression were both positively correlated with higher levels of conflict ($r = .16, p < .05$, $r = .14, p < .05$, respectively). Beliefs about relational aggression were not significantly related to conflict. Contrary to hypotheses, there were no significant associations between beliefs about the legitimacy of aggression and positive friendship features.

Beliefs endorsing the legitimacy of physical, verbal, and relational aggression were all significantly positively correlated with negative friendship features ($r = .18, p < .001$ for beliefs about physical aggression, $r = .18, p < .001$ for beliefs about verbal aggression, $r = .19, p < .01$ for beliefs about relational aggression). In summary, these results indicate that beliefs endorsing the legitimacy of aggression are largely linked to poorer friendship quality through their associations with higher levels of negative friendship features and conflict but not positive friendship features.

Beliefs about the legitimacy of aggression: Additional linkages. A fourth goal of the present study was to assess whether beliefs about the legitimacy of aggression would be associated with aggressive behavior. As hypothesized, all beliefs endorsing the legitimacy of various forms of aggression (i.e., physical, verbal, relational) were significantly positively associated with both forms of everyday aggressive behavior (i.e., physical and relational; see Table 4). This result replicated previous findings (Bailey & Ostrov, 2008; Zelli et al., 1999). Although all subtypes of legitimacy of aggression beliefs were significantly positively associated with aggressive behavior, the strength of the associations between beliefs and aggressive behavior varied, such that beliefs about each form of aggression were much more strongly associated with their parallel form of aggressive behavior. Beliefs endorsing the legitimacy of relational aggression were much more strongly positively correlated with higher levels of relationally aggressive behavior ($r = .60, p < .001$) than they were with physically aggressive behavior ($r = .18, p < .01$). Following this pattern, beliefs about the legitimacy of physical aggression were much more strongly correlated with higher levels of physically aggressive behavior ($r = .48, p < .001$) than they were with relationally aggressive behavior ($r = .26, p < .001$). The differences between the strength of associations support previous findings that

conceptually distinct forms of aggressive behavior exist (Crick & Grotpeter, 1995; Crick, Grotpeter & Bigbee, 2002), and findings from the present study further demonstrate that beliefs about the legitimacy of aggression can be meaningfully subtyped with regard to various forms of aggressive behavior.

Moderating role of beliefs about the legitimacy of aggression. A final goal of the present study was to explore whether beliefs about the legitimacy of aggression moderate the association between making negative interpretations about a friend's behavior and the selection of aggressive goals. Multiple hierarchical regression analyses were conducted, with mean-centered negative interpretations entered on the first step, mean-centered beliefs about the legitimacy of aggression entered on the second step, and the negative interpretations x beliefs interaction term entered on the third step. Results did not support a moderation hypothesis. There was no significant statistical interaction between negative interpretations about a friend's behavior and beliefs endorsing the legitimacy of aggression.

Discussion

The results from this study provide insight into the linkages between social cognition, aggression, and friendship quality by examining associations between these constructs. Findings suggest that linkages between aggression and friendship quality occur both directly, with significant associations found between aggressive behavior and friendship quality as well as indirectly, with significant associations found between the social-cognitive processes related to aggression and friendship quality. The social-cognitive processes related to aggression that were examined in the present study included beliefs endorsing the legitimacy of aggression, and making negative interpretations, selecting aggressive goals, and endorsing aggressive strategies when responding to friendship transgressions. Results suggest that aggression and social-

cognitive processes related to aggression are more strongly linked to negative friendship features and conflict than they are to positive friendship features. Additionally, results indicate that selecting aggressive goals mediates the association between making negative interpretations and endorsing aggressive strategies. However, results failed to establish that beliefs about the legitimacy of aggression play a moderating role in the association between making negative interpretations and selecting aggressive goals when responding to friendship transgressions.

Aggressive Behavior

Based on the problematic nature of aggression and the harm associated with aggressive behavior, there is a need to better understand the scope of its effects across domains of development, including its effects on friendships.

Association with friendship quality. Research has indicated that aggression is associated with poorer friendship quality in children, including both lower levels of positive friendship features and higher levels of conflict, although the degree of these associations has been found to vary based on form of aggressive behavior (i.e., relational versus physical; Grotperter & Crick, 1996). Prior to the present study, researchers had not investigated the association between aggressive behavior and friendship quality in adulthood. Based on previous findings with children, it was hypothesized that both relationally aggressive behavior and physically aggressive behavior would be significantly associated with all measures of friendship quality, with positive correlations between aggressive behavior and negative friendship features and conflict and negative correlations between aggressive behavior and positive friendship features. Findings mainly supported this hypothesis, indicating that both subtypes of aggressive behavior were associated with higher levels of negative friendship features and conflict, but neither physically aggressive behavior nor relationally aggressive behavior was related to levels

of positive friendship features. These results suggest that aggressive behavior is mainly associated with poorer friendship quality through its linkages to negative friendship features and conflict.

What might explain the lack of statistically significant associations between aggressive behavior and lower levels of positive friendship features? This could be due to the ability of aggressive individuals to function normally within their friendships when things are going well and therefore experience positive friendship features (e.g., enjoyable companionship) in their friendships that do not differ in level from those experienced by non-aggressive people. However, when there is any degree of perceived wrongdoing in a situation, such as in a friendship transgression situation, aggressive individuals may be more likely to behave problematically in their friendships, and several of these problematic behaviors correspond to various negative friendship features (e.g., hostility/abrasiveness). In other words, if perceived threat or wrongdoing is absent, the friendships of aggressive individuals may function relatively normally with regard to the levels of positive features in their friendships, but the overall quality of the friendship may be particularly susceptible to friendship transgressions or other challenging situations (e.g., conflicts of interest).

It is important to note that positive correlations between aggression and negative friendship features and conflict were statistically significant even though mean scores on the measure of everyday aggressive behavior were low. It is possible that, had a different sample been used with higher mean scores of everyday aggressive behavior, associations between aggressive behavior and measures of friendship quality would have likely been stronger. Future research should explore the associations between aggressive behavior and friendship quality

among samples whose baselines of aggressive behavior might be higher, including young adults living in high-risk areas or young adults with a history of delinquent behavior.

Social-Cognitive Processes Related to Aggression: Association with Friendship Quality

Interpretations, goals, and strategies involved in responding to friendship

transgressions. Previous research using friendship transgression vignettes with children revealed meaningful individual differences in how people respond to friendship transgressions (MacEvoy & Asher, 2012). Additionally, friendship transgression vignettes have recently been modified for use with adults, and preliminary analyses revealed that the way people make interpretations about a friend's behavior, select goals, and endorse strategies is related to the quality of their friendships (Asher, Weeks & Yust, in preparation). Based on these findings, it was hypothesized that making negative interpretations about a friend's behavior, selecting aggressive goals, and endorsing aggressive strategies would all be associated with poorer friendship quality. In the present study, selecting aggressive goals and endorsing aggressive strategies were more strongly associated with negative friendship features than making negative interpretations were — aggressive strategies, in particular, were found to be significantly associated with higher levels of conflict and negative friendship features and lower levels of positive friendship features. On the other hand, negative interpretations about a friend's behavior were largely unrelated to friendship quality except for a positive association found between negative interpretations in response to betrayal transgressions and positive friendship features. No significant results were found for emotional support transgressions.

These findings about interpretations and their lack of strong connection to friendship quality is important to better understand. One possibility is that the closer in conceptual proximity the social-cognitive process is to the end of the social information-processing

pathway, and thus the closer in proximity it is to the expression of behavior, the stronger the association is between aggression and poorer friendship quality. Another possibility is that making negative interpretations about a friend's behavior in response to friendship transgressions that are both unambiguous and severe, such as the betrayal transgressions may not be indicative of poor quality friendships. Accurately recognizing when a friend has intentionally violated one of the most core expectations of friendship could indicate that these violations are not viewed as normal or acceptable within that friendship, and this could signify that friendship quality is actually high. In summary, it appears as though social-cognitive processes related to aggression are more closely linked to poorer friendship quality if they are directly involved in responding to social interactions, which goals and strategies are. Social-cognitive processes that aim to make sense of social information, like interpretations about a friend's behavior, appear to be either less linked to friendship quality or linked in more complex and nuanced ways.

Mediational model. In the past, it has been found that the way individuals respond to social information is informed by a sequence of social-cognitive processes that are believed to operate within a social information-processing pathway. Namely, interpretations are believed to inform the way individuals select goals, and goals are believed to inform the strategies people select (Crick & Dodge, 1994). Specifically, aggressive behavioral responses to social interactions are hypothesized to be informed by specific social information-processing patterns in which negative interpretations inform aggressive goals, and aggressive goals inform aggressive strategies. It was hypothesized that support for a mediational model would be found in the context of friendship transgression vignettes, in which making negative interpretations about a friend's behavior would be related to endorsing aggressive strategies through the selection of aggressive goals.

For both lack of emotional support transgressions and betrayal transgressions, aggressive goals were found to mediate the associations between negative interpretations about a friend's behavior and aggressive strategies. This means that the tendency to make a negative interpretation about a friend's behavior (e.g., "My friend is rejecting me") is related to the tendency to endorse an aggressive strategy in response to the friend's behavior (e.g., "I would say something mean to my friend") through the selection of an aggressive goal (e.g., "I would be trying to hurt my friend back"). It's also important to note the existence of this mediational pathway for both variations of friendship transgression vignettes (i.e., lack of emotional support and betrayal), suggesting that this mediational model exists similarly regardless of ambiguity or severity of the friendship transgression.

Beliefs about the legitimacy of aggression and friendship quality. Beliefs about the legitimacy of aggression are believed to act as a set of global, stable beliefs that operate as a "database," informing the social-cognitive patterns involved in processing social information and responding to it (Zelli et al., 1999). The association between beliefs about the legitimacy of aggression and friendship quality had yet to be examined in the literature. It was hypothesized that beliefs endorsing the legitimacy of aggression would be associated with poorer friendship quality. Partially supporting this hypothesis, beliefs endorsing the legitimacy of aggression were associated with higher levels of negative friendship features, regardless of the form of aggression that the beliefs endorsed. However, none of the beliefs endorsing various forms of aggression were associated with levels of positive friendship features.

It is likely that this pattern reflects a similar trend that occurred with the associations found between aggressive behavior and friendship quality, namely that those who endorse the legitimacy of aggression will not necessarily fail to experience positive features in their

friendships. Contexts facilitating the maintenance of these positive friendship features will generally not overlap with contexts facilitating the use of aggression. This conclusion is further supported by the fact that all items on the beliefs about the legitimacy of aggression measure ask participants about the legitimacy of reactively aggressive behaviors, when there is a perceived threat or wrongdoing committed by another individual. Individuals endorsing the legitimacy of aggression in these contexts would thus be more likely to view aggression as a viable response to perceived wrongdoing within a friendship, translating to higher levels of negative features within a friendship but not necessarily to lower levels of positive friendship features.

Beliefs about the Legitimacy of Aggression: Additional Linkages

Association with aggressive behavior. Previous work has found that beliefs about the legitimacy of aggression predict levels of aggressive behavior across development (Huesmann & Guerra, 1997; Zelli et al., 1999). Based on these findings, it was hypothesized that beliefs endorsing the legitimacy of aggression would be associated with higher levels of everyday aggressive behavior. Beliefs about the legitimacy of aggression were also hypothesized to have particularly strongly associations with the parallel form of aggressive behavior that individuals report using, because past literature has found that those who endorse the legitimacy of relational aggression are more likely to report using relational aggression than they are to report using physical aggression (Bailey & Ostrov, 2008). Findings supported both of these hypotheses: beliefs about the legitimacy of aggression were associated with everyday aggressive behavior, and associations between legitimacy of aggression beliefs and aggressive behavior of the same form were particularly strong. This finding indicates that beliefs about the legitimacy of aggression are highly important social-cognitive processes in terms of their potential influence on aggressive behavior.

Moderating role. While previous work has found associations between beliefs about the legitimacy of aggression and social information-processing patterns, the mechanisms through which these associations occur remain largely unknown. To address this gap, the hypothesis was tested that beliefs about the legitimacy of aggression would moderate an association between making negative interpretations and selecting aggressive goals when responding to friendship transgressions. This hypothesis was based on the idea that, if negative interpretations about a friend's behavior were made, those who held beliefs endorsing the legitimacy of aggression would be more likely to pursue aggressive goals than those who held beliefs that did not legitimize the use of aggression. Rather than beliefs being the direct cause of making negative interpretations about a friend's behavior or the direct cause of selecting aggressive goals, it was believed that beliefs about the legitimacy of aggression would instead shape the association between the two.

Evidence of a moderating influence of beliefs about aggression was not found. In other words, the degree of association between making negative interpretations about a friend's behavior and selecting aggressive goals when responding to friendship transgressions is not related to beliefs about the legitimacy of aggression. This association could instead be shaped by another factor or combination of factors. Given the dearth of literature on this topic, it would be valuable to explore the effects of the other social-cognitive constructs believed to serve as part of the "database" of the social information-processing pathway (Crick & Dodge, 1994). The potential examination of these constructs will be addressed below in a discussion of future directions.

Limitations and Future Directions

The present study provides valuable information about the associations between aggression and friendship quality, but certain methodological limitations need to be noted. First, all measures were self-report and thus vulnerable to subjective biases. This limitation has the potential to be especially problematic for the measures assessing aggression, as it is typically not socially acceptable to say that one is aggressive or would engage in aggressive behavior, especially towards a friend. Second, the information about friendship quality was received from only one partner in the dyad and might not be congruent with how the person's friend perceives the relationship. Third, participants were students from a single university, and there are potentially important differences between the sample and the entire population of interest (i.e., all college students). Fourth, all data were collected at a single time point and no experimental manipulations occurred, therefore the directionality of effects between study variables cannot be established. In summary, findings should be interpreted with caution prior to additional replication based on these various limitations.

To address the issue of subjective bias on self-report measures, future research could obtain information about participants from multiple sources, including friendship quality data from the best friend of the participant or teacher-report data about the levels of the participant's aggressive behavior (if a child sample was used). To account for potential homogeneity of a sample, future research could broaden the variability of the sample by recruiting participants through Amazon Mechanical Turk, which allows researchers to collect data online from a diverse sample of individuals across the country.

Collection of qualitative data could also be helpful in future pilot studies exploring associations between social cognition, aggression, and the quality of people's social relationships. Given that the role of beliefs about the legitimacy of aggression within the social

information-processing pathway remains unclear, future qualitative research could ask individuals to expand upon the way that they process, conceptualize, and respond to social information as well as provide explanations for their beliefs about the legitimacy of aggression. This would allow researchers to assess whether any patterns emerge between the two constructs. For example, perhaps individuals view aggression as being a viable response to perceived wrongdoing if the other person involved is unfamiliar, but do not view aggression as being a viable response when the other individual involved is a friend. This could also help to explain why a moderation analysis was not supported, since legitimacy of aggression beliefs were not specific to the friendship context.

Additionally, qualitative data from piloting could provide preliminary insight about the role of other social-cognitive processes hypothesized to be a part of the “database” of the social information-processing pathway. These processes include social schemas, social knowledge, acquired rules, and memory storage (Crick & Dodge, 1994). For example, it is possible that an individual may make a negative interpretation about a friend’s behavior and feel angry about it, but the social rules in his or her social-cognitive database may advise the individual not to respond aggressively because using aggression violates a social rule. Finally, qualitative data could provide insight about how aggression and processes related to aggression operate differently based on relationship context. Qualitative data used in piloting could provide preliminary ideas about how aggression may relate to friendship quality in different ways than it relates to romantic relationship quality. Individuals have been shown to make more negative interpretations and more endorse negative goals and strategies when responding to their romantic partner’s behavior compared to their friend’s behavior or their roommate’s behavior (McDonald & Asher, 2013). This could mean that the impacts of aggression and the social-cognitive

processes related to aggression could be even more harmful for romantic relationship quality than they are for friendship quality, and qualitative work offer ideas about why differences between associations occur.

Overall, the present study adds to the literature by providing a comprehensive examination of the associations between social cognition, aggression, and friendship quality in a sample of college students. The study replicated findings that levels of aggressive behavior and the way that individuals respond to friendship transgressions are associated with friendship quality. The present study also led to the novel finding that beliefs endorsing the legitimacy of aggression are significantly associated with higher levels of negative friendship features and higher levels of conflict. Taken together, these findings support the conclusion that the social-cognitive processing patterns related to aggression also negatively affect the quality of people's friendships. More broadly, this research points to the pernicious effects of aggression apart from its associations with the adverse life outcomes associated with aggressive behavior; it suggests that the quality of people's social relationships may also suffer because of aggression and its related social-cognitive processing patterns.

Results from the present study also support the idea that there are several distinct social-cognitive processes, including interpretations, goals, strategies, and beliefs about the legitimacy of aggression that are important constructs linked to both the way individuals behave and the quality of their social relationships. Findings have implications for intervention research, because they suggest that intervention efforts aimed at reducing the prevalence of aggressive behavior could also be beneficial in improving friendship quality and further enhancing social-psychological adjustment. For the first time, evidence also suggests that beliefs about the legitimacy of aggression are important social-cognitive processes that are associated with both

levels of aggressive behavior and friendship quality. The mechanisms through which these associations occur remain largely unknown, however, and should therefore be the focus of future study. Overall, results from the present study suggest that both aggressive behavior and social-cognitive processing patterns related to aggression are harmful for friendship quality through their linkages with higher levels of negative friendship features and conflict.

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Table 1
Summary Statistics for Main Study Variables

	Mean	SD	α	Skewness	Kurtosis
Positive friendship features	6.27	.71	.91	-1.01	.09
Conflict	1.97	1.04	.83	1.87	1.39
Negative friendship features	2.33	.66	.83	.98	.89
Negative interpretations (lack of emotional support)	3.19	1.11	.93	-.01	-.51
Negative interpretations (betrayal)	4.81	.97	.90	-.56	.83
Aggressive goals (lack of emotional support)	2.46	.90	.68	.43	-.16
Aggressive goals (betrayal)	3.32	1.03	.72	.30	.00
Aggressive strategies (lack of emotional support)	1.82	.71	.82	.90	.39
Aggressive strategies (betrayal)	2.66	.96	.81	.54	.57
Relationally aggressive behavior	2.49	.92	.87	.48	-.29
Physically aggressive behavior	1.41	.72	.83	2.16	4.42
Physically aggressive behavior (log10)	.11	.17	.83	1.49	1.17
Beliefs about physical aggression	1.94	1.06	.87	1.70	2.91
Beliefs about physical aggression (log10)	.24	.20	.87	.68	-.27
Beliefs about verbal aggression	3.46	1.56	.92	.28	-.69
Beliefs about relational aggression	3.39	1.36	.87	.22	-.46

Table 2

Factor Analysis of Items in Response to Friendship Transgression Vignettes Measure

	<i>LES</i>	<i>BET</i>
<i>Negative Interpretations</i>		
My friend does not value or respect me	.90	.91
My friend does not care about our friendship	.94	.89
My friend is rejecting me	.88	.80
My friend is trying to push me around	.59	.62
My friend doesn't care about my wants or needs	.92	.90
My friend's behavior is wrong	.73	.61
<i>Aggressive Goals</i>		
I would be trying to keep my friend from pushing me around	.39	.31
I would be trying to get back at my friend so that they treat me more respectfully in the future	.94	.90
I would be trying to hurt my friend back	.82	.85
I would be trying to get what I wanted out of the situation	.40	.51
<i>Aggressive Strategies</i>		
I would say something mean to my friend	.79	.80
I would yell at my friend	.81	.79
I would act cold and distant towards my friend	.58	.69
I would threaten to use physical force against my friend or actually use it	.69	.50
I would threaten to end the friendship	.83	.78
I would say mean things about my friend behind their back	.59	.69

Note. LES = Lack of emotional support transgressions. BET = Betrayal transgressions.

Table 3
Correlates of Friendship Quality

	Positive friendship features	Conflict	Negative friendship features
Aggressive behavior relational	-.07	.17*	.36***
Aggressive behavior physical	-.13	.17*	.26***
Negative interpretations (LES)	.01	.05	.11
Negative interpretations (BET)	.15*	-.05	-.04
Aggressive goals (LES)	-.01	.11	.21**
Aggressive goals (BET)	.07	.09	.19**
Aggressive strategies (LES)	-.20**	.21**	.25***
Aggressive strategies (BET)	-.12	.24***	.28***
Beliefs physical	-.10	.16*	.18**
Beliefs verbal	.10	.14*	.18**
Beliefs relational	.11	.12	.19*

Notes. LES = Lack of emotional support transgressions. BET = betrayal transgressions
 Aggressive behavior physical and beliefs physical were transformed using log 10 transformations to eliminate non-normality.

* $p < .05$, ** $p < .01$, *** $p < .0001$

Table 4
Correlations Between Aggressive Behavior and Beliefs about the Legitimacy of Aggression

	Beliefs physical	Beliefs verbal	Beliefs relational
Aggressive behavior relational	.26***	.47***	.60***
Aggressive behavior physical	.48***	.26***	.18**

Notes. Aggressive behavior physical and beliefs physical were transformed using log 10 transformations to eliminate non-normality.

*p < .05, **p < .01, ***p < .001

Figure 1

Mediation Model: Negative Interpretations, Aggressive Goals, and Aggressive Strategies in Response to Lack of Emotional Support Transgressions

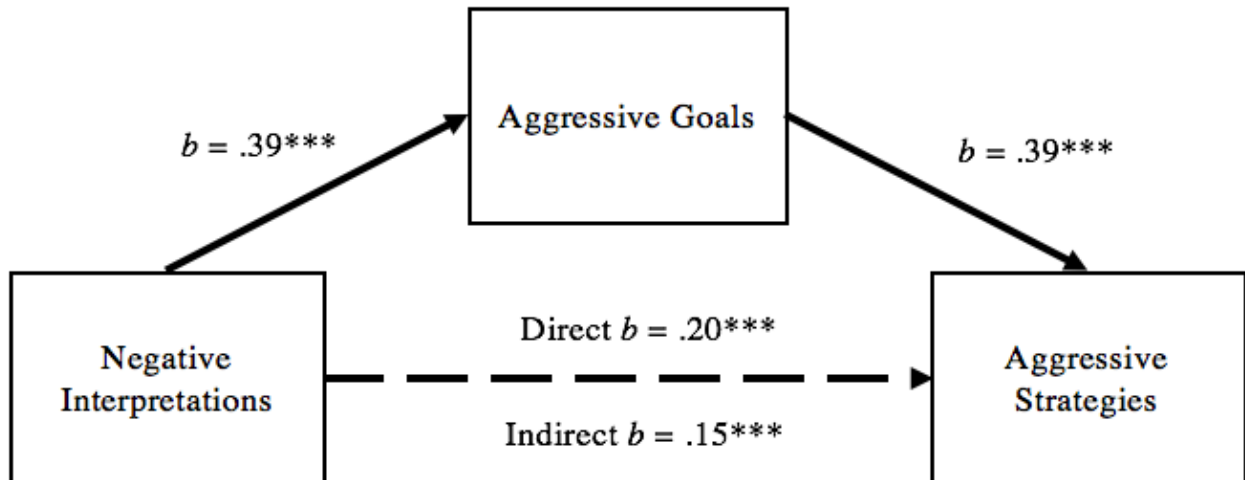
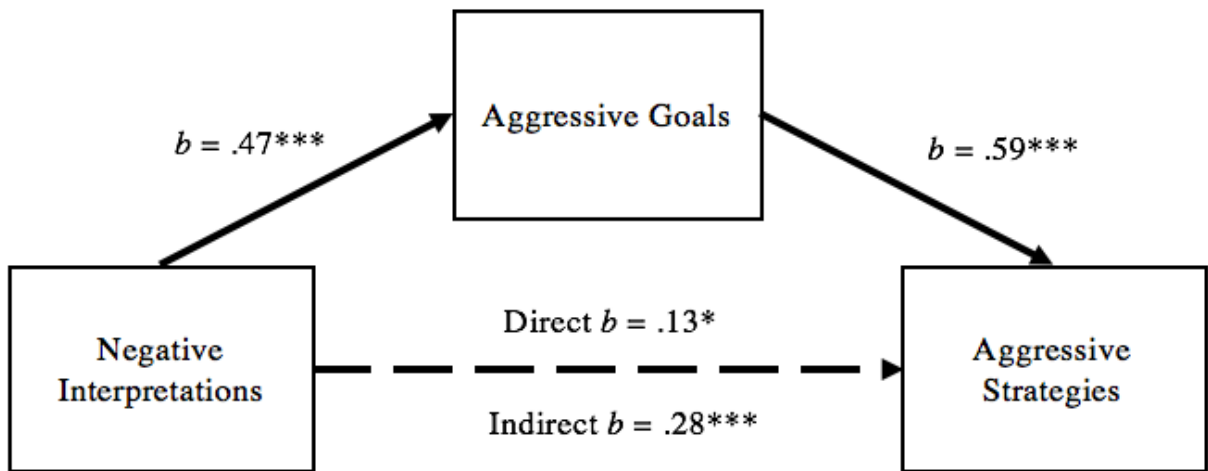


Figure 2

Mediational Model: Negative Interpretations, Aggressive Goals, and Aggressive Strategies in Response to Betrayal Transgressions



Online Appendix A

Aggression and Social Behavior Questionnaire

This questionnaire is designed to measure qualities of adult social interaction and close relationships. Please read each statement and indicate how true each is for you, **now and during the last year**, using the scale below. Write the appropriate number in the blank provided. Remember that your answers to these questions are completely anonymous (the research team does not even have access to your name), so please answer the questions as honestly as possible!

How true are the following of you, now and within the last year?

1 = *not at all true*, 7 = *very true of me*

1. I usually follow through with my commitments.
2. I have threatened to end a relationship with someone in order to get them to do what I wanted.
3. I try to get my own way by physically intimidating others.
4. I am willing to lend money to other people if they have a good reason for needing it.
5. My friends know that I will think less of them if they don't do what I want them to do.
6. When I am not invited to do something with a group of people, I will exclude those people from later activities.
7. I am usually kind to other people.
8. I am usually willing to help out others.
9. When I want something from someone, I act "cold" or indifferent towards them until I get what I want.
10. I try to make sure that other people get invited to participate in group activities.
11. I try to make people jealous when I am mad at them.
12. When someone makes me really angry, I push or shove the person.
13. When I have been angry at, or jealous of someone, I have tried to damage that person's reputation by gossiping about them or by passing on negative information about them to other people.
14. When someone does something that makes me angry, I try to embarrass that person or make them look stupid in front of their friends.
15. I am willing to give advice to others when asked for it.
16. When I have been mad at someone, I have flirted with their romantic partner.
17. When I am mad at a person, I try to make sure they are excluded from group activities (going to the movies or to a bar).
18. I make an effort to include other people in my conversations.
19. When I have been provoked by something a person has said or done, I have retaliated by threatening to physically harm that person.
20. I have threatened to share private information about someone with other people in order to get that person to comply with my wishes.
21. I make other people feel welcome.
22. When someone has angered or provoked me in some way, I have reacted by hitting that person.
23. I am usually willing to lend my belongings (car, clothes, etc.) to other people.
24. I have threatened to physically harm another person in order to control them.

25. I have spread rumors about a person just to be mean.
26. I am a good listener when someone has a problem to deal with.
27. I give people the silent treatment when they hurt my feelings in some way.
28. When someone hurts my feelings, I intentionally ignore them.
29. I try to help others out when they need it.
30. I have intentionally ignored a person until they gave me my way about something.
31. I have pushed and shoved others around in order to get things that I want.

Online Appendix B

Beliefs About the Legitimacy of Aggression

Directions: The following questions ask you about the extent to which you agree whether certain behaviors are okay in a number of different situations. Using the scale below, click the answer that best describes what you think. There are no right or wrong answers to the questions, so please answer them as honestly as possible.

(1 = *strongly disagree*, 7 = *strongly agree*).

Physical

It's okay to push or shove someone to get even with them.

It's okay to hit someone if that person has hit you first.

It's okay to physically intimidate someone if that person has done something hurtful to you.

It's okay to physically fight someone if that person has offended you.

It's okay to use physical force against someone if that person has humiliated you.

It's okay to invade someone's personal space if that person has made you really angry.

It's okay to threaten to physically harm someone if that person has disrespected you.

Verbal

It's okay to yell at someone if that person has disrespected you.

It's okay to scream at someone if that person has screamed at you first.

It's okay to swear at someone if that person has done something hurtful to you.

It's okay to insult someone to get even with them.

It's okay to say something rude to someone if that person has offended you.

It's okay to say something disrespectful to someone if that person has humiliated you.

It's okay to say something hurtful to someone if that person has made you really angry.

Relational

It's okay to exclude someone and leave that person out of group activities to get even with them.

It's okay to tell other people not to associate with someone if that person has offended you.

It's okay to say negative things about someone to other people if that person has humiliated you.

It's okay to share private information about someone if that person has also shared private information about you too.

It's okay to threaten to stop speaking to someone if they have disrespected you.

It's okay to try to make someone jealous if that person has done something hurtful to you.

It's okay to ignore someone or act cold and distant around them if that person has made you really angry.

Online Appendix C

Revised Friendship Quality Questionnaire for Adults

Directions: Please think about a person of the **same sex** as yourself who you consider your closest friend. Be sure to think of someone who is a friend and not someone who is a romantic partner.

First name of close friend _____) How long have you known this person? _____ (years) _____ (months) Please indicate how true each statement is about your relationship with this person (response format ranges from 1 = *not at all true*, 7 = *very true*).

Validation

My friend and I make each other feel good about our ideas.

My friend and I make each other feel important and special.

Emotional Support

My friend and I are there for each other when one of us needs emotional support.

My friend and I cheer each other up when one of us is feeling down.

Instrumental Help

If one of us has a problem, my friend and I will help the other solve it.

My friend and I do favors for each other when one of us needs help with something.

Reliable Partnership

I know my friend and I can really rely on each other.

No matter what happens, my friend and I can count on each other to be there.

Shared Activities

My friend and I hang out together.

My friend and I rarely spend time together.

Enjoyable Companionship

My friend and I make each other laugh.

My friend and I have a lot of fun when we are together.

Honest Feedback

My friend and I give each other honest advice.

I know my friend and I will be honest with each other, even if one of us has something unpleasant to say.

Self-Disclosure

My friend and I talk to each other about private or personal things.

My friend and I talk to each other about our thoughts and feelings.

Forgiveness/Conflict Resolution

My friend and I are forgiving of each other.

My friend and I are willing to forgive each other if one of us does something wrong.

Spirit of Equality

There is a spirit of fairness in my friendship with my friend.

My friend and I take each other's wishes and feelings into account.

Conflict

My friend and I get irritated with one another a lot.

My friend and I disagree with one another a lot.

It seems like my friend and I disagree with each other all of the time.

There is a lot of conflict in our friendship.

Online Appendix D

Negative Friendship Features Scale

Competitiveness

I get the feeling that my friend and I are competing with each other when we're together.
In our friendship, my friend and I turn everything we do into a contest.

Distracting Behaviors

Often, my friend and I encourage each other to stop working and do something fun together instead.

My friend and I will suggest things for us to do regardless of how much work the other one has to get done.

Jealousy

My friend and I are jealous when one of us does something with someone else.
My friend and I get jealous if one of us tries to become friends with other people.

Relational Aggression

My friend and I threaten not to be friends with each other anymore.
My friend and I put each other down when we're around others.

Bossiness

My friend and I will do almost anything to get what we each want in our friendship.
My friend and I each try to get our own ways in our friendship.

Overly dramatic

When my friend and I talk to each other about our problems, we often blow them out of proportion.
My friend and I exaggerate when we tell each other about our problems.

High maintenance

Every time my friend and I are together, one of us has a big problem to talk about.
My friend and I spend an excessive amount of time discussing our own problems.

Hard to Please

When it comes to our friendship, my friend and I are both hard to please.
No matter what my friend and I do, it is never enough to satisfy each other.

Defensiveness

My friend and I can't say anything even the least bit critical to one another without taking it as an attack.
My friend and I do not take criticism from each other very well.

Hypersensitivity

My friend and I can lash out at each other over very small things.
Even the smallest things my friend and I say to each other can set us off.

Self-Absorption

My friend and I talk about what is going on in our own lives, rather than being interested in each other's.
My friend and I rarely ask each other about our days.

Self-Demeaning Behavior

When we're together, my friend and I are overly critical of ourselves.
When we're together, my friend and I get really down on ourselves.

Hostility/Abrasiveness

My friend and I are rude to each other when we spend time together.
My friend and I often get angry with each other when we're together.

Online Appendix E

Response to Friendship Transgression Vignettes

Directions: Please read all of the directions before proceeding.

In this next section, you will be presented with 8 hypothetical situations that could occur in everyday life with a good friend. Please read each situation carefully.

After reading each situation you will be asked to rate four sets of statements. The situation will be repeated at the top of each page for your reference. You will rate each statement by clicking the circle indicating how much you agree or disagree with each statement.

Try to imagine that the story is describing a situation that you are actually in with a good friend and then rate the statements accordingly.

One set of statements will ask you to rate what you would be thinking in the situation. A second set of statements will ask you to rate how you would feel if the situation happened. A third set of statements will ask you to rate different goals that you might pursue in the situation described. A fourth set of statements will ask you to rate what you would do or say in the situation described. Please make each rating without thinking about your other ratings. For instance, when asked about your goals, you can give more than one statement a high rating if you wish.

Lack of Emotional Support Transgressions

Your romantic partner just broke up with you and you are really upset. You call your friend and tell them that your romantic partner just broke up with you and you ask your friend if they can hang out. Your friend says that they can't hang out with you right now (Lack of Emotional Support)

You have been getting bad grades in your classes recently due to some personal problems and you are concerned about how poorly you are doing. You ask your good friend to listen to your problems and talk about them with you, but your friend says that they can't talk. (Lack of Emotional Support)

Your family is having some problems and you are worried that your parents are going to get divorced. You want to talk to your good friend about how you are feeling and ask for advice about what to do. Your friend says that they can't talk right now. (Lack of Emotional Support)

You are graduating from college in a month and you still haven't found a job. You are really worried about not having a job yet and you want to talk to your good friend about it. You go over to your friend's place to talk, but your friend says that they can't talk right now. (Lack of Emotional Support)

Betrayal Transgression

You go to a party with a group of friends. Your good friend is taking a lot of pictures and you ask your friend to not post any pictures of you online. The next day, you wake up to find that

your friend has shared many embarrassing pictures of you online. (Betrayal)

You walk into a coffee shop and see your good friend talking to a group of other people. They are all laughing, but as you approach them everyone gives you a strange look and stops talking. Later, you find out that your good friend was talking about you behind your back to that group of people. (Betrayal)

You receive a poor grade on an important test and you tell your good friend how upset you are about the grade. Because you're feeling embarrassed, you ask your friend not to tell anyone. Later, you find out that your friend told a bunch of your other friends about your poor grade. (Betrayal)

Your good friend tells you that they are going out with a group of people that you don't know later that night. You ask if you can come along and your friend tells you to meet them at the movie theater at 7:00. As you are walking up to the theater, you can hear your friend complaining to the group about how you begged to come even though you weren't invited. (Betrayal)

(1 = *strongly disagree*, 7 = *strongly agree*)

Interpretations

What would you be thinking in this situation?

My friend didn't mean to hurt my feelings.

My friend didn't mean to do anything wrong.

My friend does not respect or value me.

My friend does not care about our friendship.

My friend is rejecting me.

My friend did not mean to hurt my feelings.

My friend didn't mean to do anything wrong.

My friend is trying to push me around.

My friend doesn't care about my wants or needs.

My friend's behavior is wrong.

Severity:

How seriously would you take your friend's action?

Emotions

How would you feel if this situation with your friend happened?

I would feel sad.

I would feel angry.

I would feel fine.

Goals

What would be your goal in this situation?

I would be trying to stay friends.

I would be trying to figure out what happened.

I would be trying to keep myself from getting upset.

I would be trying to help my friend understand my point of view.

I would be trying to keep my friend from pushing me around.

I would be trying to get back at my friend so that they treat me more respectfully in the future.

I would be trying to hurt my friend back.

I would be trying to get what I wanted out of the situation.

Strategies

What would you say or do in this situation?

I would forget about it and let it go.

I would talk to my friend about the situation.

I would say something mean to my friend.

I would yell at my friend.

I would act cold and distant towards my friend.

I would end the friendship.

I would threaten to use physical force against my friend or actually use it.

I would threaten to end the friendship.

I would say mean things about my friend behind their back.

Online Appendix F

Loneliness in Context Questionnaire for Adults

Directions: Sometimes people can feel lonely in their day-to-day lives. The items on this form ask about your feelings in different contexts. On the scale directly below each item indicate how often you feel the way the item describes. There are no right or wrong answers because people can feel very differently from one another. Just describe how you feel in these contexts (response options range from 1 = never to 5 = always).

Mornings are a lonely time for me.

I am lonely in the evening.

My place of residence is a lonely place for me.

My free time is a lonely time for me.

I feel sad and alone on weekends.

I am lonely with other people.

I feel sad and alone at social events.

I am lonely during meal times.

I feel sad and alone when I am running errands.

Bed time is a lonely time for me.

Online Appendix G

Revised Beliefs About Friendship Questionnaire- Short Version

Directions: Please rate the extent to which you agree or disagree with each of the following statements. (1 = *Strongly disagree*, 7 = *Strongly agree*)

A good friendship requires some work and maintenance.

Every good friendship is unique and special in its own way.

Friends are a little like replaceable parts — when you lose one you can easily find another.

If your good friend sometimes includes other people in your activities, it means that person is not a great friend.

No matter how well a friendship is going, it ultimately won't last.

Disagreements between friends can strengthen a friendship.

Friends should be able to forgive each other when they make mistakes.

Friends are either destined to get along or not.

If a friendship is meant to be you can tell from the start.

Friends can sense each other's needs without ever having to be told.

Even best friends can make mistakes in a friendship.

If friends get into an argument, it pretty much means that their friendship is falling apart.