

“SHE LIKES HER, SHE LIKES HER NOT?” HOW PERCEPTIONS OF CLOSENESS
BETWEEN BEST FRIENDS AND RIVALS INFLUENCE
ADOLESCENTS’ FRIENDSHIP JEALOUSY

by

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ABSTRACT

Close friendships become increasingly prevalent during late childhood and early adolescence. While these friendships can provide general positive outcomes, they also have the possibility of generating negative emotions, such as jealousy. This may be especially true when the child perceives closeness between their friend and a third person. The purpose of the present study was to directly test this link between friendship jealousy and perceptions. It was hypothesized that children who perceived higher intimacy between the best friend and third child would be more prone to jealousy. It was also hypothesized that sex, self-esteem, and a child's own closeness would independently moderate this link. The results showed that, contrary to the hypothesis, the more children perceived closeness between their best friend and a third person, the less jealous they became. In addition, sex and self-esteem were significantly related to jealousy, but these variables did not moderate the relation between perceptions and jealousy. Although own closeness was only marginally related to jealousy, there was a significant sex by closeness interaction, such that boys had an increase in jealousy the closer they were to their friend. Further analyses did show significant age differences, with older children viewing less closeness and becoming less jealous. Furthermore, children in this study appeared to be fairly accurate in judging the closeness of their friend with another peer. These findings uniquely contribute to the friendship literature by highlighting the importance of perceptions in friendship jealousy. Implications of these findings and future directions are discussed.

DEDICATION

This thesis is dedicated to my parents, who have loved and supported me from the start, and to my nieces who are my constant source of encouragement and inspiration. Finally, I would like to dedicate this thesis in loving memory of my dear friend, Elan Strange, who encouraged me to share my passion with the world (1992 – 2018).

LIST OF ABBREVIATIONS AND SYMBOLS

b	Unstandardized regression coefficient
df	Degrees of freedom: number of values free to vary after certain restrictions have been placed on the data
M	Mean: the sum of a set of measurements divided by the number of measurements in the set
p	Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value
r_i	Intraclass correlation: the similarity of units within a group
R^2	Percentage of the variation accountable for by all variables in the regression analysis
t	Computed value of t test
$<$	Less than
$=$	Equal to

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INTRODUCTION

Jealousy is a universal emotion; one that can occur across all ages and in all types of meaningful relationships that are characterized by intimacy and companionship (Parker, Low, Walker, & Gamm, 2005). Jealousy has been broadly explored in the adult romantic literature, which in turn has provided an important contextual basis and theoretical understanding of jealousy for other important relationships, such as friendships. Moreover, research on jealousy in children and adolescents is emerging and proving to be promising. Adolescence is a period marked by self-discovery, increased independence from parental influence, and social assimilation within the peer group (Gentina, Rose, & Vitell, 2016). Of particular significance, it is a period marked by the increasing interest in and deepening of friendships. Close friendships in adolescence serve as a buffering factor and have been shown to increase self-esteem, contribute to the development of interpersonal skills, and help create a stronger self-identification (Crockett, Losoff, & Petersen, 1984).

One question that has emerged in the study of friendship jealousy in children is the issue of individual differences. Research has shown that, whereas some children get unduly jealous when their friends have other friends or spend important time with other peers, other children are relatively understanding of this. When exploring this, most past research has focused on the putative contributions of personal attributes, such as self-esteem or gender (e.g., Parker et al., 2005). This is an important contribution. However, in this study I will argue that part of the importance of vulnerable children's susceptibility to jealousy is based in their perceptions of

threat, and the contribution of these judgments has been empirically neglected. Appraisal of threat could add to our understanding of who gets jealousy and why. Before this, I will review the current literature on friendship jealousy, evaluate how the internal attributes of sex, self-esteem, and a child's own closeness may aid in the conceptualization and understanding of jealousy, and emphasize the importance of threat perception in arousing jealousy.

Jealousy and Children's Friendships

Jealousy is a mixture of emotional, cognitive, and behavioral experiences. It is conceptualized as resulting from a real or imagined threat to an existing, important relationship. There are at least two facets to this threat. The first involves the tangible loss of rewards and experiences. Part of what the jealous child finds threatening is that they will no longer have the access, time, priority, and assets of their friend. The second facet is less tangible and more symbolic. A jealous individual can be upset over the threat represented by being displaced in some symbolic role (i.e., best friend) vis-a-vis a third person. Some research on heterosexual romantic relationships has compared same-sex friends to cross-sex friends in threat level to understand whether symbolic or tangible threats pose the greatest problem to a relationship. Unsurprisingly, same-sex friends are considered less threatening in this context. In interpreting this, Worley and Samp (2014) suggest this is because same-sex rivals only pose a symbolic threat, whereas a cross-sex rival would pose both a symbolic and tangible threat to the romantic relationship.

Although jealousy is sometimes used interchangeably with envy or rivalry, it is distinctly different. Friendship jealousy has been defined as an individual's negative response to a close friend's actual or expected interest in developing a relationship with another peer. In addition, there is an expectation that such a relationship is a threat to one's own relationship with the close

friend because it will compromise its quality or lead to its dissolution (Parker, Kruse, & Aikins, 2010). Jealous individuals have a relationship they fear losing. Envy, on the other hand, occurs when an individual desires something they do not have (i.e., friendship), but that another person does have (Chin, Atkinson, Raheb, Harris, & Vernon, 2016). Envious individuals may covet a relationship someone else has. Rivalry is conceptually similar to jealousy, but differs from jealousy in that it represents two individuals' competitions over another (Legerstee, Ellenbogen, Nienhuis, & Marsh, 2010). Jealousy, envy, and rivalry are interconnected, however. For example, an individual is not likely to become jealous unless they presume that the third party is a rival to the existing relationship and both the first person and the rival may feel some envy over the quality of the relationship they perceive the other has with the common friend. Importantly, jealousy, envy and rivalry are to some extent in the eye of the beholder; parties in these interpersonal triangles can misjudge the actual attractions among the members and exaggerate or dismiss the quality and attractiveness of others' relationships with the same individual. As such, jealousy, envy, and rivalry follow as much from the perceptions among participants as the realities among them (Legerstee et al., 2010).

Previous research on jealousy has examined several factors that appear to be involved in prompting jealousy in individuals, including the situation, the rival, and a situation and rival interaction (Bringle, Renner, Terry, & Davis, 1983). Bush, Bush, and Jennings (1988) found within a romantic context that low-threat situations can just as easily produce jealous feelings as high threat ones because an interaction between the romantic partner and third party produces a sense of rivalry, even if the third party has no desire to enter into a romantic relationship with the partner. This is understandable because jealousy, as noted, can arise not only from an actual direct threat, but from the suspicions that a threat exists and fears about how this threat could

potentially harm the relationship (Worley & Samp, 2014). Although jealousy-evoking situations create more negative feelings about the self, the partner, and the rival, an important distinction to make is that unsubstantiated threats are also harmful when people have subjectively biased and inaccurate perceptions. Regardless of whether the threat is substantiated or not, friendship jealousy has been linked to several negative outcomes such as aggression, rumination, depression, and anxiety (Lavallee & Parker, 2009; Parker et al., 2005). Likewise, jealous individuals may experience reduced relationship satisfaction, interpersonal dysfunction, and impaired psychological and social adjustment (Lavallee & Parker, 2009; Overall, Fletcher, Simpson, & Fillo, 2015; Sadikaj, Moskowitz, & Zuroff, 2016).

Responses to jealousy may encompass an array of emotional, behavioral, and cognitive aspects (Pfeiffer & Wong, 1989). Within a friendship, there is evidence that disappointment resulting from the presence of a third party can be particularly severe and emotionally demanding (Roth & Parker, 2001). Although jealousy in friendships is not uncommon, some children are especially susceptible to it, resulting in more negative and aggressive responses when confronted with a jealousy-evoking situation (Parker et al., 2010). For example, in a study done by Roth and Parker (2001), adolescents responded to several vignettes about a friend abandoning them for someone else and the emotional response that would follow. Overall, adolescents who were characteristically jealous and possessive reported more feelings of anger, jealousy, and sadness. Jealous adolescents may also employ the use of active or passive behavioral responses, some that are beneficial (e.g., talking out the problem with the friend) and some that are harmful (e.g., ending the friendship). Other responses may be more cognitive in nature. Adolescents who engage in social comparisons may perceive their rival to be more attractive or popular than they are and conclude that the relationship between the friend and third

party is more rewarding and important (Parker et al., 2010). Such negative responses may harm the maintenance and outcome of the friendship, eventually leading to peer rejection, victimization, depression, and loneliness (Culotta & Goldstein, 2008; Parker et al., 2005).

Individual Differences in Friendship Jealousy

To understand why some children become more jealous than their peers, past research has focused on several personal attributes of jealous children. One such factor is sex. Current literature on romantic relationships suggests that women are more vulnerable to emotional jealousy, or jealousy which stems from their partner becoming emotionally close with another person (Buunk & Dijkstra, 2004; Zandbergen & Brown, 2015). This has been true in both face-to-face interactions as well as online contexts, which supports the conclusion that women perceive their partner's online interactions as emotional infidelity more than men do, leaving them more vulnerable to jealous feelings (Hudson et al., 2015). However, whether this emotional component is necessary for friendship jealousy is still unknown. Like in romantic relationships, adolescent females have been shown to express more jealousy in their friendships (Parker et al., 2010). This difference in the friendship experience for boys and girls may occur due to different relationship experiences and concerns. Whereas girls' friendships have more self-disclosure, intimacy, emotional support, and collaboration, boys' friendships are characterized by more aggressive behavior and rough-and-tumble play (Lansford & Parker, 1999; Rose, Smith, Glick, & Schwartz-Mette, 2016). Consequently, the closer individuals feel to their best friend, the more threatening an outsider is to their friendship and the more it is likely to lead to perceptions of betrayal, feelings of inadequacy, and expectation violations. This is especially true when one feels the other person is replacing them or they perceive the third person has qualities that their best friend finds more desirable (Marelich, 2002). Therefore, it may be that there are no inherent

gender differences in friendship jealousy. Rather, the gender differences arise due to the way boys and girls approach intimacy. Specifically, girls are more jealous than boys as a group because girls are closer to their friends (Lansford & Parker, 1999). If boys placed the same emphasis on closeness in their friendship that girls do, they, too, would be equally jealous.

Likewise, the relation of self-esteem to jealousy has been the source of much research. Whereas jealousy emphasizes the perceptions within a relational context, self-esteem focuses on the perceptions of the self. Because self-esteem is a multifaceted construct, encompassing global and domain-specific aspects, two complimentary theoretical perspectives have been created to help conceptualize it. The intra-personal perspective holds that self-esteem is created through individuals' perceptions of their own adequacy in different domains. Thus, global and domain-specific self-esteem are interrelated. Similarly, the interpersonal perspective posits that self-esteem is influenced by the perceptions of others, as well as self-evaluations, therefore highlighting the social aspect of self-esteem (von Soest, Wichstrom, & Kvalem, 2016). The interpersonal perspective has gained considerable attention, resulting in several extensions of it, one of which is the Sociometer Theory (Leary, Tambor, Terdal, & Downs, 1995). This theory states that self-esteem serves as a marker for a person's inclusionary status, letting them know whether a change in their social acceptance occurs (i.e., rejection and exclusion) so they can rebuild their status (Leary et al., 1995). The quality of adolescents' friendships has been shown to have an effect on self-esteem. Those of poor quality, such as ones with many interpersonal conflicts, can harm their views of themselves (Keefe & Berndt, 1996). This preoccupation with acceptance makes social rejection that much harder to deal with, which may be why it has been linked to many mental and physical consequences (Leary & Baumeister, 2000). Indeed, low self-esteem has been linked to higher levels of jealousy in romantic relationships (Mathes, Adams, &

Davies, 1985; Sharpsteen, 1995) and in children's friendships (Kim, Parker, & Marciano, 2017; Parker et al., 2005). Comparisons to the interloper have been cited as a threat to their self-esteem, making the child feel inferior and resulting in negative assumptions about their best friend's commitment to the relationship. Furthermore, these children may also interpret mundane activities their friend does with the interloper as deception and abandonment (Parker et al., 2010). This implies that self-esteem may negatively affect perceptions and is an important aspect to consider when assessing jealousy.

Perceptions of Threat in Jealousy

The act of judging closeness merits attention because people who tend to assume others are close will be more prone to jealous feelings if they are otherwise vulnerable. Thus, studying the interpersonal perceptions of people will help explain why some individuals are more prone to jealousy than others. Given that threat is at the core of jealousy, comprehending the complex threat appraisal process is necessary. These interpersonal perceptions, or the judgments one makes about another's thoughts and behaviors, can be understood as a multifaceted and complex process influenced by perceiver and target characteristics (Malloy, Sugarman, Montvilo, & Ben-Zeev, 1995). For a perceiver to become jealous, along with other individual vulnerabilities, they must first identify the target as threatening to the relationship. This can be understood by using the investment model created by Rusbult (1980). This model suggests that individuals constantly weigh the value, costs, and rewards of their current relationships and compare it to their expectations or desires to increase rewards and reduce cost. Thus, if a jealous child believes their friend finds the relationship with the rival as more rewarding, they may feel their friendship is inferior in comparison and begin to fear being replaced. However, as previously discussed, these perceptions can be unfounded or genuine. The distinction between perceiving an imagined threat

and an actual threat has been discussed in romantic literature (e.g., Ellis & Weinstein, 1986), but it has yet to be studied in friendships. If jealousy is primarily related to perceptions, then an imaginary threat would be important to dissect. Indeed, Rydell and Bringle (2007) discovered that individuals who are constantly perceiving threats in their romantic relationships where no threat exists are more likely to experience chronic jealousy compared to those who have evidence that a relational transgression has occurred.

The circumstances in which these perceptions arise in is an important and understudied factor relative to the amount of work that has focused on individual differences and jealousy. One circumstantial element that is beginning to receive attention is the nature of interlopers. Individuals who are considered attractive, popular, and rich are considered more threatening as interlopers (Marelich, 2002). However, even more fundamental in understanding interlopers is separating the actual closeness from the target's perceptions of closeness between the interloper and the target of affection. In romantic relationships, individuals often feel a sense of ownership over their partner (Ben-Zeev, 2010). When someone is perceived to be threatening that ownership, it causes distress, despair, and hostility because the partner has the free will to choose who to bestow their affection upon. If, however, this perception of closeness is unfounded, it may be difficult for the partner to understand why their companion is constantly anxious and jealous, resulting in a rift in the relationship. In the past, researchers who study jealousy have understandably focused on the specific nature of the relationship between the partner and the interloper as a credible threat. That is, they have asked participants to consider actual viable interlopers or defined the interloper in such a way that the threat to the relationship is credible and substantial (e.g., Buunk & Dijkstra, 2004). In the real world, of course, this appraisal is open to interpretation, left to the perceiver, and could be ambiguous. Specifying the threat as genuine,

a priori, is important to understanding jealous reactions, but begs the question of whether some people get jealous without obvious justification. Thus, in addition to the variability among children in whether they become jealous over perceived interpersonal threats, there could be further variability due to differences among children in the perception of threat itself.

Accuracy or biases in interpersonal perceptions has been a popular topic in the social psychological research literature on relationships. Overall, it appears that people are apt to make a mix of correct and incorrect perceptions (Kenny, 2004; Kenny & Acitelli, 2001; Vogt & Colvin, 2003). One explanation is that it depends on the length and quality of the relationship. Early in a relationship, accuracy and bias may become highly related because they are both motivated by the same underlying constructs of idealization, similarity, and understanding. The motivation to seek similarity and to see the other person in a positive light introduces bias; but the desire for accuracy may facilitate strategies that enhance correct perceptions (West & Kenny, 2011). Kenny, Bond, Mohr, and Horn (1996) note that when two individuals are very close, their ability to accurately perceive how well two people like each other tends to be very high, which may have strong implications for understanding adolescents' social networks, especially within a triadic context. Nevertheless, other motivational constructs, such as relationship or ego threats, can often create an inverse relationship between closeness and accuracy in interpersonal perceptions (West & Kenny, 2011).

There are several heuristics that have been established as potential sources of perception bias, which could be related to jealousy. Reciprocity means that if person A has knowledge that person B likes C, they will assume that the feeling is reciprocated (C to B). They could also use an agreement heuristic in which they assume that others feel about a person the same way they do. Similarly, the balance heuristic infers that judgments of liking are transitive. Thus, if person

A likes B but not C, they may also assume B does not like C (Kenny et al., 1996). These perceptions of liking have strong implications even outside of close friendships. While closeness signals a biological response for survival, the desire for inclusion and connection may still invoke jealous feelings without an intimate bond (Reddy, 2010). Indeed, research has shown that when individuals are excluded from social situations by acquaintances, they react with pain, passive aversion, and reduced positive affect (Markova, Stieben, & Legerstee, 2010; Williams, 2007). Nevertheless, while jealousy can exist in relationships not bound by love or affection, those that are will possess more apparent and pernicious jealousy (Reddy, 2010). Interestingly, girls tend to be more accurate in their interpersonal perceptions. This may occur because girls are better at reading non-verbal cues. It is also possible that the intimacy in female friendships gives a greater opportunity to make trait-behavior judgments, so females may make more accurate judgments to maintain the closeness within their friendships (Vogt & Colvin, 2003). However, as previously stated, girls are also more likely to develop jealousy. Given this information, we should expect highly jealous individuals to over-estimate how much people like one another, creating a barrier to accurate perceptions.

The Current Study

Adolescence is a time of social, emotional, and psychological growth. Therefore, it is imperative to recognize aspects that can be detrimental to this development. Friendship jealousy is one such aspect. However, this is a relatively newly-defined concept, and little is known about what elements contribute to it. There is a fundamental assumption that jealousy is based around the perceptions of a threat. Interlopers are considered threatening because their intimacy with the person of interest may jeopardize the exclusivity of the relationship. However, the perceptions of the level of closeness between the interloper and person of interest are often taken for granted

and, to date, no research has examined the judgments people make about their degree of closeness and its relation to jealousy. This is an oversight, as this process could be prone to subjective interpretation and bias. Thus, when researchers skip this, they are overlooking a potentially important theoretical explanation about behavior and these biased interpretations become unaccounted variability. Understanding factors associated with jealousy will provide essential information about the dynamics of peer relationships as well as allow for the potential creation of customized interventions for jealous individuals.

Hypotheses

There are two conceptual models that serve as heuristics for this research. These models are shown in Figures 1 and 2. These figures consider how perceptions of a potential interloper's closeness with a friendship partner influences jealousy surrounding that partner with that interloper. As shown, perceptions of greater closeness between a best friend and interloper is a necessary but not sufficient factor in becoming jealous over the partner with regard to the third party. Therefore, I propose four hypotheses.

1. The more closeness a child perceives between their best friend and third partner, the more jealousy they will experience.
2. I expect that being female constitutes a vulnerability, such that perceptions of closeness will influence jealousy more strongly if subjects are girls rather than boys. This expectation follows from the literature reviewed above that demonstrates that girls are more prone to jealousy.
3. I propose there will be a stronger link between perceptions of closeness and friendship jealousy among children with low self-esteem, but not for those with moderate or high self-esteem. This expectation is based on results (reviewed above)

demonstrating that positive self-esteem can buffer children from jealousy arising from other vulnerabilities, such as problematic parenting and emotion regulation difficulties (see Kim et al., 2017).

4. I expect that the closer a child is to their friend, the stronger the link between perceptions of closeness and friendship jealousy will be compared to those who report little to no closeness.

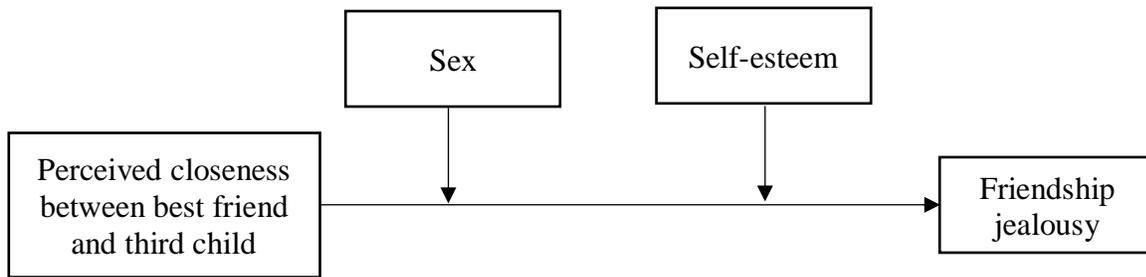


Figure 1. Proposed moderation of sex and self-esteem on the relation between perceived closeness and friendship jealousy

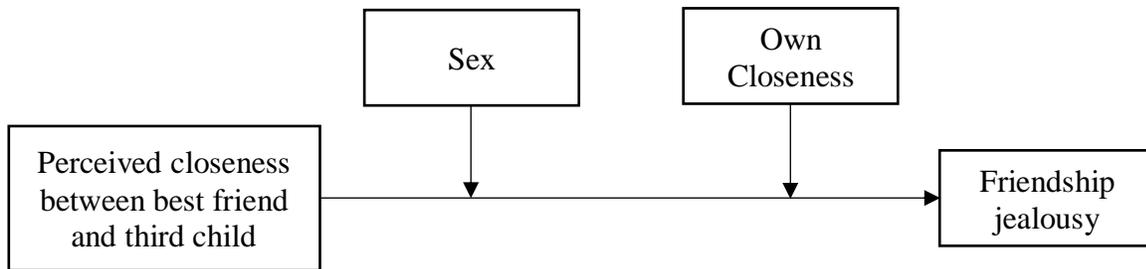


Figure 2. Proposed moderation of sex and own closeness on the relation between perceived closeness and friendship jealousy

METHODOLOGY

The data used for this study were collected for the Friendship Project at the University of Alabama. Not all original measures were utilized for this study; the following descriptions will focus on details pertaining to the measures and tasks used for this study only.

Participants and Recruitment

Participants were 101 same-sex triads (53 female) of adolescents between the ages of 10 and 16 years ($M = 13.20$, $SD = 1.32$). Specifically, the names, addresses, and last known telephone numbers of 1,738 families were obtained from a commercial service specializing in census data and represented all families in the county with children. The county was in the southern United States and was largely rural or full of small communities, but also contained a city of about 200,000 residents. From this comprehensive pool of potential participants, a smaller sample of 760 potential families with children of the appropriate age was selected at random and mailed a recruitment letter outlining the study and inviting their participation. Beginning a few days after, these families were randomly telephoned over several months to make contact and to ascertain their child's eligibility and interest. If the parent or guardian expressed interest, the recruiter spoke directly with the child of eligible age and outlined the study and invited their participation. Children who were willing to participate became the "host" or seed child (Teen A) for purposes of recruiting a triad. Specifically, the recruiter asked them to invite a same-sex peer to participate in the study as well and provide contact information. Recruiters then reached out to the second individual and their parents and explained that they had been invited by Teen A to participate in a research study. If the second teen agreed to participate (Teen B), they were then

asked to invite another same-sex peer who would be the third member of the triad. This invitee (Teen C) was contacted in the same manner as the second child. If this child could not participate, Teen B was asked to think of another friend to invite, and so on. This process continued for each step until a full triad was composed. As such, there was no necessary friendship relationship between the first participant and the third, but one was possible. In 74 instances, the triad was composed of all Caucasian participants; in 14 further cases all the participants were African American; and in 12 triads the racial makeup was mixed. Each participating child received \$25 for their participation and their parent or guardian received a further \$25.

Measures

Closeness to Partners. The Inclusion of Other in the Self scale (IOS; Aron, Aron, & Smollan, 1992) was used to determine each member's closeness to the other two participants. Each participant was presented with two sets of seven Venn diagrams that varied systematically in the degree to which the depicted circles overlapped, from not at all to almost completely. The circles were labelled *self* and the names of each of the partners in turn. Participants were asked to use the diagrams to metaphorically represent how close they felt to each of the two other participants, with greater overlap in the circles representing greater closeness to the other. Scores ranged from 1-7, with a 1 signifying they did not feel close, and a 7 signifying they felt very close. Reliability and validity have been determined for this scale (Aron et al., 1992).

Perception of Triad Partners' Closeness to One Another. A modified version of the IOS scale was used to assess each participants' judgments of the closeness of the other two participants to one another. Specifically, the subjects were presented with a second set of overlapping Venn diagrams with circles labelled with the names of the two other triad members

and asked to choose which best represented how close they thought the other participants were to each other. Scores also were measured on the 1-7 scale.

Friendship Jealousy Surrounding Each Partner. A modified version of the Friendship Jealousy Questionnaire (FJQ; Parker et al., 2005) was used to measure how jealous the subject was with regard to each specific partner around the third triad member. Specifically, each participant was presented with 15 short vignettes depicting one of the partners behaving like a friend or engaging in an enjoyable activity with the other partner without the respondent. They were then asked how jealous and upsetting this would be to them. For example, one item read: “How jealous would you be if you invited (Focal Partner) to the movies, but she was already going with (Third Partner)?”. Using mail merge word processing functions, the actual names of the day’s partners were imbedded into the printed questionnaire for each child in the appropriate place before testing. Two questionnaires were printed for each participant—one each with the names of the roles of Focal Partner and Third Partner swapped. Participants responded on a 5-point Likert scale (0 = *would never be jealous over that*; 4 = *would definitely be really jealous*). Jealousy scores were created for each participant for each partner by averaging scores across the 15 items for the corresponding partner. These items have been previously shown to possess good psychometric properties (Parker et al., 2005). In the current study, $\alpha = .91$

Self-esteem. Participants’ self-esteem was assessed using a modified version of the five-item global subscale of the Self-Perception Profile for Adolescents (Harter, 1988). Respondents were instructed to rate how much each item is true for them on a 4-point scale ranging from “Not at all like me” (1) to “Really like me” (4). An example item on the scale is “I like the way I am leading my life.” Items were averaged to create a total self-esteem score with higher scores reflecting higher self-esteem. Internal consistency was $\alpha = .71$.

Procedure

Each member of the triad was brought into the lab by their respective parent or guardian. After arrival, a research assistant reviewed the consent/assent process in detail and all necessary forms were filled out. Then, to reduce any distractions, the participants' cellphones were collected, and parents were led out of the room by another assistant. The participants were separated into different rooms to complete a battery of questionnaires, including the self-esteem measure and the assessments of their perception of closeness of the other participants and their own closeness. Following this, the children completed several interactive activities as a triad. Following this, triad members were separated a second time to complete a battery of questionnaires that were not used for this study.

RESULTS

Triadic Interdependence

Prior to the full analysis, I explored the question of whether multi-level modeling (MLM) would be required for all analyses due to the nested structure of the data. Specifically, four multi-level linear mixed models were conducted, one on each of the primary study variables (i.e., jealousy, global self-esteem, perceptions of closeness, and individual closeness), with participants nested within triads. Triadic membership accounted for 17%, 14%, 13%, and 18% of the variance in jealousy, global self-esteem, perceptions of closeness, and individual closeness respectively. That is, members of triads only modestly resemble each other, suggesting that the cascading procedure used to recruit participants in triads did not produce particularly homogeneous groups in terms of jealousy, self-esteem, individual closeness, and perceptions of closeness. To formally evaluate the potential effects of independence violations on standard error estimates from these resemblances, design effects were computed following Peugh (2010). Design effect estimates greater than 2.0 have been suggested to indicate multilevel modeling is required (Muthén, 1991, 1994). The calculated design effects associated with each of the variances above were all below 1.35. Accordingly, MLM was not used in subsequent analyses, except in instances (noted) where within-triad relations were the specific interest.

Table 1

Summary of Intercorrelations, Means, and T-test Results Comparing Females and Males

Variables	1	2	3	4
1. Jealousy	—			
2. Self-Esteem	-.202**	—		
3. Own Closeness	.079	.130*	—	
4. Perceptions of Closeness	-.095	.132*	.340**	—
5. Age	-.218**	-.027	-.080	-.117**
Males <i>M(SD)</i>	.77(.65)	3.34(.450)	5.41(1.41)	5.00(1.37)
Females <i>M(SD)</i>	1.00(.712)	3.24(.614)	5.74(1.57)	4.94(1.68)
<i>t(df)</i>	<i>t</i> (298) = 2.87, <i>p</i> = .004	<i>t</i> (301) = -1.56, <i>p</i> = .119	<i>t</i> (294) = 1.88, <i>p</i> = .062	<i>t</i> (294) = -.27, <i>p</i> = .786

**p* < .05

***p* < .01

Preliminary Data Analysis

Table 1 presents the simple bivariate intercorrelations among the main variables across all 300 participating children. As shown, the closer children were to their friends, the more closeness they perceived in the relationship between their best friend and other child. Self-esteem was also related to own closeness and perceptions of closeness. Children with higher self-esteem were closer to their friends and perceived their best friend as closer to the other child in the triad. In terms of age, older children reported less jealousy and perceived less closeness between the other two children than younger children did. Table 1 also presents t-tests comparing males and females on the primary variables. As shown, and consistent with past research, females reported more jealousy than males. There was a tendency for females to report being closer to their

friends than males did, otherwise the sexes did not differ significantly in perceptions of closeness or self-esteem. Also shown, and consistent with past research, jealousy and self-esteem were significantly negatively related, such that as global self-esteem increased, feelings of jealousy decreased. The relations in Table 1 are addressed more fully below in the context of specific research questions.

All primary variables were reviewed for suitability to parametric analysis by considering their skewness and kurtosis and the presence of outliers. Several variables, notably jealousy, self-esteem, own closeness, and perceptions of closeness were positively skewed. These distributions make sense given the constructs involved and were within tolerances for analysis.

Perceptions of Others' Closeness

Children's ratings of closeness of the other two participants spanned the theoretical maximum range, from the minimum of 1 to the maximum of 7 ($M=4.97$, $SD=1.53$). To explore these perceptions further, I ran a hierarchical multiple regression focused on understanding age and sex influences, ignoring the nested nature of the data (see above). That is, each of the 300 participants' ratings of their closeness to the two other triad members served as the dependent variable in this analysis (i.e., $n = 600$). Sex and age (centered across the sample) were entered on the first step of this analysis and the sex by age interaction was entered on the second. There was no significant main effect of sex ($b = .09$, $p = .471$), but age was a significant predictor ($b = -.14$, $p = .003$). Older children saw the other children as less close than younger children did. There was no significant sex by age interaction ($b = -.171$, $p = .078$). This model accounted for a very small amount of the variance, but was significant, $R^2 = .02$, $F(3, 588) = 3.97$, $p = .008$.

To understand whether self-esteem influenced how children viewed others' closeness, a similar hierarchical regression was run. Sex and age (centered across the sample) were entered

on the first step of this analysis, global self-esteem was entered on the second, the sex by self-esteem and age by self-esteem on the third, and the sex by age by self-esteem interaction was entered on the fourth. After controlling for sex and age, global self-esteem was positively related to perceiving others' closeness ($b = .357, p = .003$). However, neither sex ($b = .008, p = .974$) nor age ($b = .004, p = .962$) nor sex by age ($b = .013, p = .941$) moderated this relation. This model also accounted for a very small, but significant amount of the variance, $R^2 = .03, F(6, 585) = 3.06, p = .006$.

Accuracy in Perceptions of Others' Closeness

A round robin Social Relations Analysis was conducted using mixed multilevel modeling following Kenny, Kashy, and Cook (2006). Reported closeness for each of the other two participants were nested within participant ($n = 300$) within triad ($n = 100$) for this analysis and sex was included as a fixed between-groups factor. Results indicated that the largest source of variance in closeness ratings (41%) was due to variation within triads between specific pairs of individuals; variation due to differences across triads in their average closeness and variation due to tendencies for some participants to be closer than others were negligible (3% and 1% respectively). Importantly, the variance due to pair further implies that reciprocity in closeness between pairs of participants was strong but not redundant, $r_i = .410$. Triads of males did not differ significantly from triads of females in the overall closeness of members, $b = .189, p = .260$.

To explore the accuracy of participants' perceptions of the closeness of the other triads members to one another, the ratings of the other two triad participants' ratings of closeness were averaged for each participant and compared in multilevel modeling to the report the participant provided for this pair's mutual closeness. Participants ($n = 300$) were nested within triads ($n =$

100) for this analysis and sex, age, and the participant's estimate of the others' closeness with one another were used to predict the actual closeness as reported by the other two members themselves. Male and female triads did not differ in the actual closeness of partners with one another, $b = .490, p = .313$. On the other hand, participants' reports of closeness of the pair were strongly predictive of the actual closeness of the pair, $b = .507, p = .000$. Note that this level of accuracy is approximately equivalent to the intraclass correlation between the reports provided by the two members of the pair directly. That is, outsiders were approximately as accurate at gauging two participants' closeness as the participants themselves. As noted earlier, older participants reported that other members of the triad were less close than younger participants. In the MLM analyses, however, age was not a significant predictor of the actual closeness of the other partners computed from the average closeness those partners reported, $b = -.061, p = .263$, and age did not interact to moderate accuracy, $b = .05, p = .168$.

The closer participants were to their invited partner, the closer they reported the relationship between that partner and the third child, $r = .267, p = .000$. This raises the possibility that some of the accuracy participants displayed in reporting how the closeness between one another may be due to the agreement heuristic—i.e., the tendency for individuals to assume that others feel as they do. To address this possibility, I ran the analyses above a second time after including own closeness to the invited partner in the prediction of that partners' closeness to the third child. There was little evidence of agreement bias, insofar as participants' reports of others closeness remained predictive of their actual closeness, $b = .46, p = .034$, even after controlling for self-reported closeness.

Finally, the MLM above was re-run replacing own closeness with jealousy as a predictor to explore the idea that jealousy decreases the accuracy of perceptions of other's closeness. Once

again, perceiver ($n = 300$) was nested within triad ($n = 100$) for these analyses, and the actual closeness of others was represented by the average of the other two partners' ratings of closeness to one another. Sex and age were entered as control variables and sex was considered as a moderator of perceptions along with jealousy. Participants' reports of others' closeness remained and even improved a bit as a predictor of their actual closeness, $b = .55$, $p = .001$, with jealousy controlled. However, and importantly, jealousy did not predict others' actual closeness, $b = .172$, $p = .623$, and did not moderate the prediction of actual closeness from perceived closeness, $b = -.049$, $p = .477$. Thus, there was little evidence that jealousy decreases accuracy.

Jealousy and Perceptions of Others' Closeness

As presented in Table 1, girls reported more jealousy and jealousy was negatively related to both age and self-esteem. Prior to formal testing of both models shown in Figures 1 and 2, a preliminary hierarchical multiple regression was used to directly understand how perceptions of closeness related to feelings of jealousy. This analysis was based directly on the reports of the 300 participants (i.e., the nested nature of the data was ignored; see above). Sex and age served as controls in step one of this analysis. Perceptions of closeness was entered on the second step and the sex by perceptions interaction was entered on the third step. Contrary to the hypothesis, the findings indicated that after controlling for sex and age, perceptions of closeness was negatively related to jealousy, such that as perception of closeness increased, jealousy decreased, ($b = -.054$, $p = .003$). Sex did not significantly moderate this relation ($b = .018$, $p = .632$). The variance accounted for by this regression was small ($R^2 = .08$), but the regression was significant, $F(4, 587) = 13.49$, $p = .000$.

Model 1: Sex and Self-esteem Moderation of Perceptions of Closeness on Jealousy

The moderation of perceptions of closeness on jealousy by sex and self-esteem (see Figure 1) was tested using the reports of the 300 participants and procedures outlined by Hayes (2013) and output generated by Version 2.15 of the PROCESS Macro for SPSS and SAS. Specifically, PROCESS was used to derive parameter estimates and 95% bootstrapped confidence intervals across 5000 resamples. All predictor variables were centered before analysis to reduce multicollinearity and age was included as a covariate. Results of this analysis replicated the significant regression effects reported above. This includes the negative relation between perceptions of closeness and jealousy and the sex, global self-esteem, and age effects. Importantly, however, there was no moderated effect of either sex ($b = .014, p = .699$) or self-esteem ($b = .001, p = .942$). Thus, the model shown in Figure 1 was not supported.

Jealousy and Own Closeness

A hierarchical multiple regression was also used to test whether a child's own closeness to the person of interest was related to jealousy. As before, this analysis was based on the 300 participants' reports of the other triad partners ($n = 600$) and sex and age were entered as covariates on the first step. The child's own's closeness was entered in step two and a sex by closeness interaction entered in the final step. The results showed that a child's own closeness was only marginally related to jealousy after controlling for sex and age ($b = .032, p = .062$). However, there was a significant sex by closeness interaction, indicating that the more boys felt close to the target, the more jealousy they experienced ($b = .065, p = .048$). This interaction is shown in Figure 3.

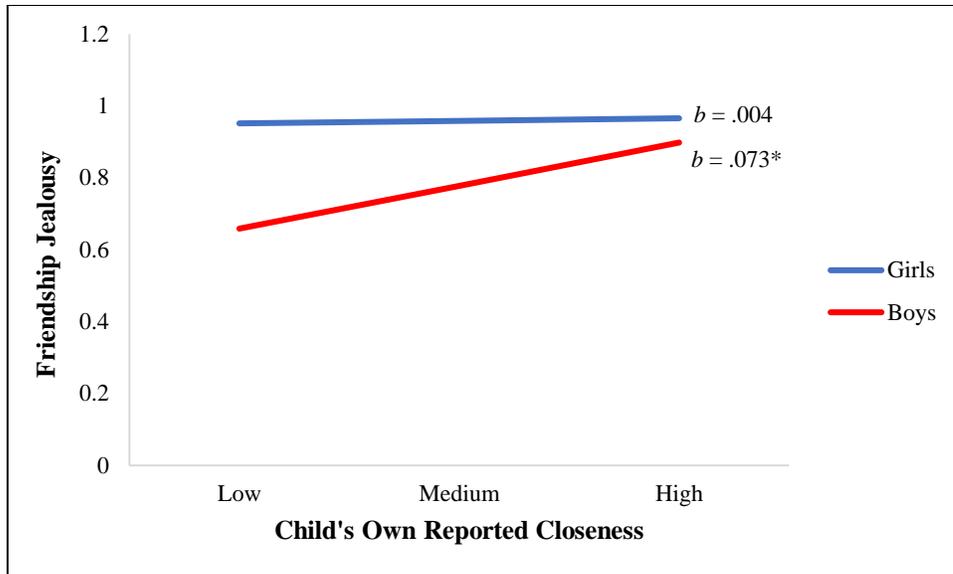


Figure 3. Relation between friendship jealousy and closeness for girls and boys

Note. * $p < .05$.

Model 2: Sex and Own Closeness Moderation of Perceptions of Closeness on Jealousy

To explore whether one's own closeness moderated the relation between perceptions of others' closeness and jealousy, the PROCESS analyses above was repeated after substituting own closeness for the self-esteem moderator. Results of this analysis replicated the significant regression effects already reported, including the negative relation between perceptions of closeness and jealousy. More importantly, neither sex ($b = .035, p = .345$) nor own closeness ($b = .003, p = .763$) moderated the relation between perceptions of how close the others were and feeling jealous. Therefore, the model shown in Figure 2 was also not supported.

DISCUSSION

Jealousy over friends is a relatively common experience, however, some children are more prone to experience jealousy more severely. In these instances, children may suffer both socially and psychologically. While researchers are beginning to get a grasp on what factors contribute to atypical jealousy, there are still many elements that research has not explored. The purpose of this study was to contribute to the growing literature on friendship jealousy by assessing how perceptions of closeness between a friend and potential rival influence the prevalence of this phenomenon, something that has not yet been tested within friendships. Additionally, this study focused on three internal attributes that have been shown to be individually related to the arousal of jealousy: self-esteem, sex, and a child's own closeness.

Perhaps the most interesting finding was that the more children perceived closeness between the friend and interloper, the less jealous they were, contrary to the hypothesis. I expected a positive relation based the presumption that children view their friendships as monogamous relationships, similar to romantic relationships. However, this finding suggests that children regard their friendships as less exclusive than romantic partners do their romantic relationships. Instead, it appears that when children know their friend is close with someone else, they are less threatened by that relationship. Therefore, they do not necessarily see the other child as a rival because they are aware of the closeness and know that this closeness between the friend and other child is not interfering with their own relationship. On the other hand, children may experience jealousy when they discover their friend is spending time with someone whom they did not perceive their friend to be close to. In these instances, the perceiving child may feel

betrayal because they believe that their friend should have confided in them about this relationship. In addition, they may feel hurt that their friend would choose to spend time with the other child instead of with them. Consequently, this other child may provoke feelings of rivalry because the perceiving child is unaware of the other child's intentions and may fear losing their best friend. This may work differently in romantic relationships. As noted earlier, individuals in romantic relationships feel a sense of ownership over their partner and the knowledge that their partner is close to someone of the opposite sex is usually enough to incur a sense of jealousy.

The findings also suggest that self-esteem is an important concept to consider when assessing closeness and jealousy. High self-esteem seems to not only acts as a buffer against jealous feelings but is also related to increased feelings of closeness to the friend and to perceptions of increased closeness between friends and third persons. One reason for this could be that children who have positive perceptions of themselves and their abilities also perceive other aspects of their own life and others' relationships in a more positive light. This is supported by past research. For example, studies have found that individuals with higher global self-esteem also have more positive perceptions of the future and rate their life satisfaction higher (Levy, Benbenishty, & Refaeli, 2012). Therefore, it appears that positive perceptions of self could carry over to perceptions of others' relationships as well, resulting in a higher rating of closeness. Another reason could be that feeling close to a friend increases self-esteem which, in turn, boosts their own feelings of closeness and perceptions of closeness. There is ample research to support that certain types of closeness, for example, parent-child closeness, can positively influence children's self-esteem (Brian, Bruce, & Rolf, 1992). Thus, it may be that close friendships also have strong positive effects on children's self-esteem. Future studies should elaborate on this self-esteem link and explore other forms of self-esteem.

Contrary to the hypothesis, children who perceived more closeness did not necessarily experience jealousy. However, children who reported more closeness did report perceiving more closeness between their friend and the third child. One interpretation of this finding is consistent with the agreement heuristic, in which children are using a cognitive shortcut in their interpersonal perceptions and assuming that children believe their own closeness to the target is equal with the third person. However, another interpretation of this finding is that there is a partner effect. This would infer that the target is simply a likeable person and the child is aware of this. Although the present study could not test the actor-partner effect due to the way closeness was conceptually measured, future studies should consider the possibility of this effect when estimating perceptions of closeness. Additionally, it would be helpful for future research to implement the full round-robin design analysis to test how much variance in the judgement of closeness is due to actor effects, how much is due to partner effects, and how much is due to both.

Interestingly, older children reported perceiving less closeness between the other participants than did younger children. This finding may imply that as children get older, they become more aware of the friendship dynamic and realize that not everyone is as likely to be close as they are to their friend. Alternatively, it could indicate that they are implementing a personal fable. Personal fables, or the belief that one is unique, special, and invulnerable to harm, has been recognized as a type of egocentrism that is displayed during adolescence (Schwartz, Maynard, & Uzelac, 2008). If this type of fable is being used by older children, they may believe themselves to be the closer friend and consider their friendship as unique, while simultaneously downplaying the relationship their friend has with the other child. This implies that perceptions of closeness may change from late childhood to early adolescence. Particularly, older children

may focus more on their existing relationship with their best friend when making judgements of others' closeness, whereas younger children do not make this type of personal comparison or use the same intricate cognitive processes.

Consistent with past research, girls reported experiencing more overall jealousy than did boys. However, their closeness to their friend did not seem to play a role in how jealous they got over the thought of their friend doing something with another peer without them. Boys, on the other hand, were more likely to experience jealousy the closer they were to the target. This is an interesting finding because most of the jealousy research focuses on how the intimacy in female friendships leads them to experience more jealousy. However, based on these findings, it appears that boys are also sensitive to the closeness in their friendships. So, although boys' friendships function differently than girls' friendships, there is still a good amount of closeness in these friendships and this intimacy influences their perceptions. Specifically, they view threats more the closer they are to their friend. This may also mean that there may be more components at work in female friendships that lead them to jealousy aside from how close they feel to their friend, such as rival-specific factors. As previously noted, certain characteristics, such as attractiveness and status, can influence perceptions. Future research should consider other factors to help understand this sex difference.

Finally, neither model presented in Figures 1 or 2, were supported. None of the moderators presented in this study (i.e., sex, self-esteem, and own closeness) proved to strengthen the link between perceptions of closeness and friendship jealousy. Regardless, it may be that there are other factors that would help explain the link, especially since the link was completely inverted from what was initially proposed. For instance, this study used global self-esteem, but it could be that a more specific, contingent self-esteem would more strongly

moderate the relationship to jealousy. Additionally, although the preliminary correlations showed jealousy to be higher for girls than for boys, there did not appear to be any sex differences in how close boys and girls expected two other people to be.

Although no hypotheses were created regarding the accuracy of judgements of closeness, it was assessed due to theoretical interest. Although some research suggests that threats to a relationship can distort perceptions of closeness, findings from this study indicate that, overall, children are relatively accurate in determining how close two people are. This holds true even after considering how close the child was to their best friend. Therefore, children who are not necessarily close were just as likely to be able to predict how close the two other members were as children who were close. These findings are consistent with those of Kenny et al. (1996), who also found that people are fairly accurate about interpersonal judgements, even when given little information. Of specific interest, the findings indicate that feelings of jealousy do not distort accuracy in perceptions of closeness. This is also consistent with the conclusion that perceptions work differently in friendships than they do in romantic relationships. Again, it may be the case that friendships are not considered monogamous relationships by children. Perhaps because children do not view friendships through the lens of exclusivity, the biases that may occur in romantic relationships do not occur. Furthermore, these findings imply that these perceptions of threat are not imaginary. Far from being biases in the heads of the perceivers, children in this study were able to report with some accuracy whether their friends were close to other people. The accuracy of children's judgments of closeness remains an interesting direction to pursue in the future. In the present study, there was some evidence that jealousy itself did not color these perceptions. However, there still could be a number of other personality traits or characteristic vulnerabilities that influence these judgements. For example, it might be the case that children

who are defensive, such as those with low or fragile self-esteem, underreport or intentionally minimize how close others are to their friends as a mechanism of protecting themselves and coping.

One limitation of this study is an aspect of the measure used to determine the closeness between the other children in the triad. Specifically, the way this measure worked meant that children judged the other relationship holistically, as a single score representing the joint feelings of the two other people. The measure did not allow the judge to report asymmetric relationships, such as one person having strong feelings for the other that are not reciprocated. The variation in judgments of how close children think two people are could not be tested based on the way this measure was set up. Given this, there is no way to infer whether children perceived the other child as being closer to their friend or vice versa. This distinction could be essential in understanding jealousy, because it may be that jealousy is least likely to happen when the child believes the third child is close to their friend but knows that the feeling is not reciprocated. The other side of that scenario is also possible. Children who perceive their best friend as being closer to the third child but perceives a lack of reciprocation may result in more feelings of threat because they believe their friend desires a close friendship with the other child more.

Another limitation of this study is the level of jealousy actually reported by participants. Although jealousy was reported in this sample, the level of reported jealousy was not atypically high. This is to be expected given that few children actually experience abnormally high levels of jealousy and obtaining a sample of just highly jealous children would be difficult. Therefore, whether children who experience an abnormal amount of jealousy view threats differently than with low levels of jealousy was not directly studied and the findings presented may not apply. Future research should explore how perceptions work for atypically jealous children.

Despite these limitations, this study provides novel information about how friendships in adolescence function. The most notable is that it is the first study of its kind to consider the cognitive process of perceiving closeness and its relation to friendship jealousy. These findings illustrate that perceiving closeness works against jealousy rather than toward it, especially when children know or are friends with the “rival” child. Therefore, caution should be added when relying too heavily on romantic literature when considering friendships because, although similar in some respects, this study demonstrates that there are fundamental differences in friendship jealousy and romantic jealousy. For example, perceiving two people as close doesn’t necessarily lead to jealousy in friendships, where it would in romantic relationships.

This study also replicates previous findings regarding sex differences and provides some enlightenment as to how girls and boys get jealous. The fact that girls appeared to be more jealous has been documented before (see Parker et al., 2010). However, the fact that boys tend to rely more heavily on their own closeness to their friend in arousing jealousy is a new finding. Furthermore, age appears to be meaningful in understanding jealousy. Older children seem to employ different cognitive processes regarding their close friendships than do younger children. It would be interesting to know more about the cognitive changes that occur between late childhood and adolescence to help account for the differences in perceptions in friendship jealousy.

In summary, this study has helped document that perceptions are imperative in understanding friendship jealousy; and while sex, self-esteem, and individual closeness did not moderate this link, they are principal components to consider individually. Furthermore, there appear to be two mental processes going on when children are investigating a potential threat. They must evaluate their own closeness to their friend as well as attempt to understand the

closeness between the friend and the other person. A new, or unknown person, could be considered more threatening to the relationship because the child does not know them well enough to determine what role they will play – friend or foe.

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