

COMPETITIVE BEHAVIOR STYLES IN ADOLESCENT FRIENDSHIPS:
THE ROLES OF CONTEXT, GENDER, JEALOUSY,
AND FRIENDSHIP BONDS

by

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ABSTRACT

This study explored competition in adolescent friendships by distinguishing between two distinct forms, one which is divisive and superiority-oriented and another in which competitors can both improve and excel together. This study sought to improve upon limitations of previous studies of competition, creating carefully varied task settings and observing adolescents in triads to test how differences in context and group characteristics might alter the nature and amount of competition between friends. In addition, the study considered the impact of participant sex, jealousy over friends, and closeness between friends on these competitive behaviors. Participants were 101 same-sex friendship triads observed interacting throughout a sequence of tasks with varied competitive incentives. Group behaviors were coded on four scales: 1. Competing to Win (i.e., competitive behavior driven by social comparison and demonstration of superiority), 2. Competing to Excel (i.e., competitive behavior focusing on effort and self-improvement), 3. Positive Affect, and 4. Negative Affect. Results revealed that competition styles were not related to one another and displayed varying levels across task settings. Affect was not directly related to competitive behavior, but Negative Affect was impacted by the competitiveness of the task itself. Gender differences were found in superiority-oriented competition and the relationship between affect and competitive tasks. Characteristics of the individuals in the triad, such as jealousy over the present friends or closeness and balance of the triad, did not have a strong influence on either competition or affect. Findings suggest that understanding competition between friends can be improved by carefully considering task parameters, studying friends in groups, and distinguishing different forms of competitive behavior.

LIST OF ABBREVIATIONS AND SYMBOLS

df	Degrees of freedom: number of values free to vary after certain restrictions have been placed on the data
F	Computed value of F test
t	Computed value of t test
M	Mean: the sum of set measurements divided by the number of measurements in the set
SD	Standard deviation: the variation of a set of data values
p	Probability associated with the occurrence under the null hypothesis of a value as extreme or more extreme than the observed value
$<$	Less than
$=$	Equal to

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CHAPTER 1

INTRODUCTION

Youth often use social comparison as a tool in the development of their identity and self-concept (Hibbard & Walton, 2016; Sullivan, 1953). According to social comparison theory, it is necessary for an individual to compare their abilities to others to develop an accurate sense of their own identity (Festinger, 1954). When individuals learn that their own attributes compare favorably to others, their satisfaction with themselves, effort, and confidence can increase. Unfavorable social comparisons can motivate individuals to improve but they can also lead individuals to be disheartened, discouraged, and depressed. Moreover, the need to engage in social comparison and the understandable interest in avoiding unfavorable comparisons to others can generate competitive behavior with others and defensive efforts to protect a perceived status advantage (Festinger, 1954). Thus, despite being a pervasive interpersonal process, social comparison offers both rewards and risks.

Adolescents compare themselves to many types of peers within their social network, but social comparisons are most likely to occur between close, interpersonal relationship partners (Tesser, 1988). Adolescent friendships, then, are arguably a natural setting for competition to occur, as friendships become more important and peers begin to rival parents as points of reference (Collins & Laursen, 2004; Furman & Burhmester, 1992). However, competition between friends is a complex issue. Adolescent friends have been observed to be more competitive than non-friends in some studies (Newcomb & Bagwell, 1995). However, Sullivan (1953) argued that if competition was too intense or aggressive it would undermine the intimacy

and stability of adolescent friendships, leading to adverse feelings and negative interaction styles. In Sullivan's view, then, friends should avoid competition. Consistent with Sullivan's premise, some evidence shows that adolescents engage in less competition with friends than nonfriends, instead favoring equality and mutual responsiveness (Berndt, Hawkins, & Hoyle, 1986). In fact, research has shown that high levels of perceived competition can have negative impacts on friendships and contribute to relationship dissatisfaction and termination, as Sullivan surmised (Casper & Card, 2010). Still other researchers have found that friendships are most stable when a moderate amount of competition is present (Schneider, Woodburn, del Toro, & Udvari, 2005). To date, then, while there is every reason to suspect that social comparison is more common with friends than in other relationships, it is not yet clear that this implies that friends will be more competitive than non-friends and there are arguments that friends may be particularly motivated to avoid it.

I propose that our understanding of friendship competition can be enhanced by recognizing that it likely varies from relationship to relationship and closer attention should be paid to several individual factors that promote or discourage it. In particular, some participant factors—specifically gender and whether the individual is sensitive to interpersonal threat and jealousy—may contribute to whether competition is prevalent and problematic in specific friendships. Moreover, it is possible that not all forms of competitive behavior are destructive in friendships and attending to different types of competitive behavior is thereby important. Further, the context in which the competition occurs and how competition alters in intensity and form across different contexts is also likely to be important to illuminating the varying impacts of competition. Finally, it is important to extend the study of friendship competition beyond a simple focus on dyads in isolation. Studies of friendship competition have almost always

examined it in a dyadic setting alone. Yet, friendships in adolescence are typically embedded in a broader network context. This inevitable broader social context greatly complicates social comparison and competition. In triads of teens, for example, rivalries and imbalances such as coalitions can sharpen comparisons and the experience of feeling usurped, marginalized, and inadequate compared to adolescents' experiences in small groups in which all parties are on equal footing regarding one another. The structural properties of small groups, such as whether the members of triads are all equally friends, are factors that are not germane to individual friendships. As such, the past practice of studying friendships in isolation has likely given us a portrait of friendship competition that is not broadly representative of when it typically surfaces and how it plays out.

Competition in Friendships

To better understand why competition can have differing effects on friendships, it may be helpful to clarify that competition comes in many forms, and these forms can have different outcomes. Competition is a multi-faceted experience with a complicated balance of different motives, methods, and outcomes that make it difficult to generalize across settings or groups. Paying closer attention to these different dimensions can help us clarify discrepancies in the impact of competition mentioned above. This has been done previously in studies of conflict. Adams and Laursen (2001), for example, suggested that conflict may be divided into three categories: coercive, constructive, and unresolved conflict. Coercive conflict often involves negative affect, power assertion, and imbalanced outcomes while constructive conflict often includes neutral or positive affect, cooperation and negotiation, and mutually favorable outcomes. Conflict may be either beneficial or maladaptive to individual and relational outcomes depending on the amount of coercive or constructive conflict involved (Laursen & Hartl, 2015).

Similarly, competition can be differentiated by its presumed individual motivations. Two distinct types of competition are distinguished by a drive to outperform others versus a drive to improve oneself (Hibbard & Walton, 2016). Hibbard and Buhrmester (2010) defined these two competition styles as competing to win, which is driven by a desire to beat rivals, and competing to excel, which focuses more on personal development and excellence. While competing to win is intended to demonstrate superiority over another, competing to excel focuses on individual well-being and does not undermine the sense of connectedness between friends (Hibbard & Buhrmester, 2010).

Schneider et al. (2005) took a similar approach to distinguishing types of competition but expanding their description to include affective experiences. They identified four dimensions of importance: hypercompetitiveness, non-hostile social comparison, enjoyment of engagement in competition, and avoidance of competition. Hypercompetitiveness, like competing to win, is a strong desire to win “expressed by hostility and disregard for the opponent as a person” (Schneider et al., 2005, p. 165). Non-hostile social comparison, in contrast, compares without jealousy, aggression, or anger. Enjoyment of engagement in competition is competition stemmed solely from affective motivations. Finally, avoidance of competition is simply the active avoidance of competition among friends. Of these four dimensions, hypercompetitiveness was found to cause great discord in friendships of all types, while non-hostile social comparison was found to be prominent among reciprocal best friends. In many ways, these definitions resemble those of both Hibbard and Buhrmester (2010) and Adams and Laursen (2001), with level of engagement as an additional axis of analysis. More generally, they further support the need to distinguish destructive conflict from more constructive or benign forms.

Additionally, competition occurs in a variety of settings, and its relevance in a specific context can alter the experience for all individuals involved. Some tasks are inherently competitive, and in such cases, competition can be expected, and its presence should be less distressing. However, there are times when competition occurs in settings where it is unwarranted, and in these cases the competition can generate negative responses that are damaging to interpersonal relationships. It is possible that competition in activities where it is less expected is more hostile in nature from the start or creates a destructive dynamic wherein it becomes more hostile over time. Accordingly, I predicted that when put into competitive activities and games where competition was expected and acceptable, friends would be more likely to compete, but this would not necessarily be associated with negative affect among participants.

Another element of confusion is that research has not thoroughly investigated the impact of gender. Schneider et al. (2005) found some distinct gender differences in engagement and styles of competition, concordant with much of what we have come to expect of male and female same-sex friendships. Boys scored higher on all three of his styles of competition, whereas girls were more likely to avoid competition with friends entirely (Schneider et al., 2005). More recently, researchers have found further evidence that boys engage in more overt competition with same-sex friends, and girls experience high levels of distress when faced with competition with same-sex friends (Hibbard & Buhrmester, 2010; McGuire & Leaper, 2016). For males, enjoyment of competition is associated with increased companionship and closer friendships (Hibbard & Buhrmester, 2010; Schneider et al., 2005). To understand these sex differences, many researchers adopt the premise that same-sex peer groups throughout childhood create different cultures in which boys and girls are socialized. Whereas boys are trained to compete,

driven by the requirement to maintain status in the peer hierarchy, girls are encouraged to remain communally focused, to cooperate with and support their peers (Maccoby, 1990). These contrasting outcomes are driven by distinct gender-normed cultures and highlight the difficulty in generalizing the impact of competition on friendships during adolescence. It is possible that these marked gender differences have prevented generalizations about the role of competition in friendships. Accordingly, gender should be a focus and distinction in all studies of competition.

Although much of our understanding of competition in friendships comes from research on dyadic relationships, it is important to expand the study of competition into triads because triadic interaction involves higher-order interpersonal processes that complicate interpersonal motives and behavioral options (Feinman & Lewis, 1984). The importance of this setting will be discussed in more detail shortly. However, I hypothesized that triads composed of all close friends would be more competitive than triads with fewer close friendships. However, in accord with my review above, it is important to differentiate two dimensions of competitive behavior. Of the conceptualizations that I reviewed, I elected to incorporate Hibbard and Buhrmester's (2010) categories of competing to win and competing to excel, as I felt these would be the most effective in conjunction with affective dimensions which were important to Schneider et al.'s (2005) model. As a study of friendships, I predicted that competition that is supportive and allows all participants to excel would be more prevalent than more divisive, hostile competition. Further, I predicted that the latter style of competition would be associated with negative affect, whereas the former would be associated with positive affect. I hypothesized that triads consisting of closer friends would engage in more competing to excel and less competing to win than triads with fewer friends and displays of affect would be more positive and less negative. Regarding gender, I hypothesized that boy triads would display more of both competition styles and be

more positive during competition than girls. In contrast, I predicted that girl triads would be likely to display more competing to excel than competing to win and show higher levels of negative affect during competition.

Triads

It is important to expand our understanding of outside influences on adolescent dyads, because much of an adolescent's social interaction occurs within larger groups. It is rare that a dyad is interacting in isolation, and to study them as such removes a variety of stimuli that would be common in their natural environment. Researchers argue that the triad is a particularly interesting setting within which we can observe some of the higher order interpersonal processes that are absent in studies of isolated dyads (Feinman & Lewis, 1984; Lansford & Parker, 1999).

Sociologist Georg Simmel (1950a) argued that the triad, as the first step beyond a dyad, offers both a basic and critical viewpoint through which the complex interactions that occur within groups may be studied. Simmel laid the foundation for understanding triads, and their role both within and beyond dyadic relationships. The triad, by its nature, redefines each dyadic relationship within. Simmel explains that for each triad constituted of members A, B, and C, "there is, in addition to the direct relationship between A and B, for instance, their indirect one, which is derived from their common relation to C," (Simmel, 1950a, p. 135). According to Simmel, then, each member, apart from participation in their own, direct relationships, operates as an intermediary in the relationship between the other two members. These indirect relationships may either strengthen or disturb the direct relations, depending on the individuals and their varied interactions. Triads come in various forms, and even prototypical forms may vary slightly in each iteration, but there are many processes at play within triads that have been

studied with interest. It is through the study of triads that we can understand the beginnings of balance, exchange, and coalitions (Simmel, 1950a).

Psychologist Fritz Heider progressed the study of triads with his famous balance theory, developed to understand the structural factors relevant to interpersonal triads. According to Heider's theory, balance exists in a triad where three positive or negative links exist, or two negatives with one positive; for example, Person P likes Person O and both dislike Object or Person X (Heider, 1946). Every other structure is unbalanced and less satisfactory. For example, imbalance exists when there is one negative and two positive links (e.g., Person P dislikes Person O but discovers they both like or admire X). Heider argues that this imbalance in attitudes can cause distress for P, forcing them to seek balance by changing their attitude towards either Person O or X (Heider, 1946). This imbalance is also referred to as intransitivity. According to Heider and supported by subsequent research (Eder & Hallinan, 1978; Hallinan & Kubitschek, 1988), triadic intransitivity is uncommon and short-lived, as the distress leads one or multiple agents to create balance through some change.

Heider's Balance Theory is especially suited to situations where X is a concept or ideal; in the interpersonal context the third active agent introduces new dynamics that create some conflict with the assumptions of balance theory. Coalition theory postulates that power dynamics within the triad can play a significant role in the settlement of dyadic relationships (Caplow, 1956). In such cases where less powerful members may be able to gain superiority over a single, more powerful member, it is likely that a coalition will be formed, resulting in an imbalanced dynamic (Caplow, 1956). Even when power is not a consideration, as in most adolescent relationships, balance may not always be assumed. Brickman and Horn (1973) found that in situations where Person P likes either Person X or Y but not both, there is still a preference for

both X and Y to like each other (in contrast to the structurally balanced case of dislike between X and Y). They utilized interpersonal coping theory to understand the conflict; an individual's drive to avoid situations that may cause increased stress or difficulty may, in fact, lead them to prefer an imbalanced situation over a balanced one, such as one where mutual hostility may cause more problems than the imbalance itself (Brickman & Horn, 1973). Similar discrepancies were found in a more recent study, in which individuals who were both friends with the same person tended to develop a dislike for each other due to competition and jealousy, rather than becoming friends (Rambaran, Dijkstra, Munnikma, & Cillessen, 2015). Although these outcomes are not common enough to fully disprove the case made by Balance Theory, there seems to be room for some other influences to interfere with the simple process that Heider once suggested. Indeed, Hallinan and Kubitschek (1988) suggested that certain individual characteristics, such as friendliness, sex and gender sameness, friendship security, and popularity may determine a person's comfort with intransitivity, and therefore their ability to overlook an imbalance for the sake of other priorities.

The impact of gender on these different processes has, of course, been an interest of many studies over the last half century, though there is much disagreement among the results. Researchers report that girls prefer spending their time in dyads, whereas boys show a preference for larger groups (Eder & Hallinan, 1978). Other researchers, however, have found no significant difference between genders in preference for group size or number of friendship choices (Crockett, Losoff, & Petersen, 1984; Urberg, Değirmencioğlu, Tolson, & Halliday-Scher, 1995). In the case of intransitivity and balance theory, however, the distinctions between male and female responses seem clearer. In comparison to boys, girls report more friendship exclusivity in regard to a third-party newcomer (Underwood & Buhrmester, 2007). Indeed, when faced with an

intransitive triad, girls are more likely to remove the imbalanced third party in favor of a mutual, exclusive dyad, whereas boys are more likely to include the third party in their attempts for balance (Eder & Hallinan, 1978). Urberg et al. (1995) argues that this may be a result of the differences in network density. In their study of adolescent peer networks, they showed that girls are more closely integrated in networks of mutual friendships than boys, suggesting that boys may be more exposed to intransitivity and diversity of friendships, resulting in a higher tolerance for imbalance. Similarly, in a study of behavior in triads, Lansford and Parker (1999) found that girl triads predominately fit one prototypical form, whereas boy triads fall into two categories-- one that resembles the girls' and one that looks very different according to behavioral and emotional features.

These may help clarify some of the contradicting evidence of various studies: when presented with a potentially imbalanced setting (such as that with an unknown or less liked third party), girls may feel more distress and prefer to return to the exclusivity of a dyad, but this distress may not necessarily generalize to other, balanced triad settings. By contrast, boys may be more experienced in both balanced and imbalanced settings. In this study, two aspects of the structure of a triad were proposed to impact group functioning during competitive and cooperative interactions. The first was the aggregate average closeness of the members to one another. Based on the review above, I hypothesized that triads with members that are closer would avoid competing to win and instead focus more on competing to excel together and show more positive and less negative affect compared to triads in which members are not as close. A second aspect of interest was the heterogeneity in closeness among members, including imbalances in closeness across partners, etc. Specifically, I hypothesized that imbalanced triads would have more instances of negative affect and competing to win and less competing to excel

and positive affect as compared to balanced triads where all participants were equally close to one another. I also hypothesized that such heterogeneity in closeness would create more distress for female triads than male triads, such that the hypothesized relationships above would be stronger.

Friendship Jealousy

Although group structural factors and other aspects of the make-up of triads, such as sex, are likely to be important sources of variability across triads, the personalities and vulnerabilities of members can also contribute. Simmel (1950b) argued that the different characteristics and goals of the individuals can impact group dynamics and functioning. His case is supported by the breadth of research on the impact of individual differences on relationships and group functioning. The challenges of balance, intransitivity, power dynamics, and the choice between exclusion and inclusion affect every triadic interaction and may present more difficulty to some individuals than others. These struggling individuals may then pose a greater challenge to the triad, impacting its functioning and affecting the other members in the group. This may be especially true for adolescents, who are learning firsthand how to navigate complicated social networks and conflicting needs and expectations of different peers. It is important to understand which characteristics make these processes more difficult for some individuals than others, to better understand the influence of the individual on overall group functioning.

In this study, I proposed that friendship jealousy is one such characteristic due to its prevalence in adolescence and negative influence on peer interactions. Friendship jealousy is defined by Parker, Kruse, and Aikins (2010, p. 520) as a negative cognitive, behavioral, and emotional response to a close friend's "actual or anticipated interest in or relationship with another peer" where the individual believes that the friend's new relationship is threatening to

their own existing friendship. This is consistent with prior definitions of the experience of jealousy in other contexts, with the focus on the risk of loss or diminished quality of the target relationship. Researchers have found that children and adolescents experience a similar range of strong, blended, negative emotions during expressions of jealousy as those found in adults (Roth & Parker, 2001). Jealousy has been found to be a common theme across children's reports of interpersonal issues (Kuttler, Parker, & La Greca, 2002). In fact, nearly every adolescent (90%) included in an experience sampling study reported feelings of jealousy at least once during a weekend sampling period, and these feelings were more common when with peers than when with family or alone (Lennarz, Lichtwarck-Aschoff, Finkenauer, & Granic, 2017).

Although contextual factors certainly play a role in the experience of friendship jealousy, it has also been found that some individuals are more susceptible to experience jealousy over their friends in general, and that this trait is relatively stable across time and contexts (Lennarz et al., 2017; Parker et al., 2010). Increased jealousy is associated with a number of negative social, emotional, and behavioral outcomes. Jealousy has been found to be related to reports of increased loneliness and rumination, as well as lowered self-worth (Lavalley & Parker, 2009; Parker et al., 2010). Jealousy has also been reported as a leading factor in relationship dissatisfaction and negative friendship patterns, which can result in further negative consequences such as overall social dissatisfaction, disruptive behaviors, and problematic future relationships (Collins & Laursen, 2004; Deutz, Lansu, & Cillessen, 2015; Parker et al., 2010; Parker, Nielsen, & McDonald, 2016).

Behavioral responses to jealousy vary widely, but certain negative behaviors appear to be common in children and adolescents experiencing jealousy, and these negative behaviors can have serious consequences for the long-term success of the friendship. Individuals with high

jealousy engage in more aggressive, surveillance, and destructive communication behaviors (DeSteno, Valdesolo, & Bartlett, 2006; Lavalley & Parker, 2009; Parker, Low, Walker, & Gamm, 2005). Beyond their own behavior, a jealous individual may also impact the functioning of their friends in social contexts. Deutz et al. (2015) observed 105 best friend dyads and found that interactions that include a jealous individual have higher levels of disharmony, conflict, and power imbalance as well as direct negative and dominant behaviors in both individuals. One can imagine how such negative social relations observed so clearly in this dyadic setting may magnify further in a triadic setting. Indeed, negatively directed behaviors from a jealous individual may be even more detrimental in a triad, where the affected friend has a third peer to turn their attention to.

Researchers have also found gender differences in the experience of friendship jealousy. Girls have consistently been found to experience higher rates of friendship jealousy than boys, perhaps due to more exclusive friendship expectations (Parker et al., 2010; Perry & Pauletti, 2011; Underwood & Buhrmester, 2007). Girls also judge the role of the third party peer more harshly than boys (Parker et al., 2010). Similarly, high jealousy in girls is negatively correlated to prosocial behaviors, though when compared to boys they engage in fewer physically aggressive behaviors, instead resorting to more subtle aggression and exclusion tactics (Deutz et al., 2015; Eder & Hallinan, 1978; Underwood & Buhrmester, 2007).

Despite the growing understanding of friendship jealousy and its impact on adolescent development, through the overwhelming use of self- and peer-reports, little is known about what occurs in the context of peer interaction with a jealous individual. In this study, the application of self-report within a directly relevant group interaction allowed for deeper insight into the role of jealousy when the specific rival is present within the triad. This is particularly interesting

because, despite the robustness of jealousy as a negative experience, we know that specific settings provoke jealousy more extremely than others. Even highly jealous adolescents are not always jealous over all friends or even a particular friend in all settings (Parker et al., 2010). Similarly, previous studies have often utilized a hypothetical interloper against which to measure jealousy, a view that provides information on an individual's vulnerability or outcomes due to jealousy over a friendship. But, fundamentally, friendship jealousy is most potent in the context of a triad, where the potential threat of a third-party is faced directly. By looking at the impact of jealousy within the specific context that evokes it, with a real rival in direct contact, we attempt to further clarify outcomes specific to that interaction. Although a triad is the quintessential setting within which to study jealousy, not every triad will have the necessary dynamic to provoke jealousy for its members. This real-world setting with naturally varied levels of jealousy provided the opportunity to study jealousy's impact on both overall group functioning and individual group members.

Accordingly, the overall level of jealousy for each triad, the variability within each triad, and the maximum level of jealousy experienced by any one member were computed for each triad in the present study. I hypothesized that the higher each of these indices were, triads would display more competing to win, less competing to excel, and more negative affect and less positive affect during competition. Further, I predicted these relationships would be especially strong for female triads during competitively oriented activities.

Current Study

In summary, this study seeks to address gaps in our understanding of competition among friends by addressing considerations of competition, group structure, friendship jealousy, and gender in an observational study of adolescent triads in a realistic interaction. One principal goal

of this study was to distinguish between different styles of competitive behavior and identify their relationship to positive and negative affect. This study observed the intensity and destructiveness of competition in the contexts of different activities to further understand the function of these different styles. Above and beyond this general focus, the group and individual level differences of structure, jealousy, and gender were used in attempting to understand what styles are more prevalent to what settings and in which settings the more destructive styles are most harmful. Through this, the study aimed to further the understanding of competition styles and their role in friendships, and some notable variables that may influence the magnitude of these experiences.

Hypotheses

1. There will be task differences in levels of competition. Tasks with more salient winning demands will elicit more Competing to Win behavior than other tasks. Cooperative or baseline tasks will elicit more Competing to Excel than other tasks.
2. Competing to Excel will be more prevalent than Competing to Win.
3. Boys will display more Competing to Win and Competing to Excel than girls.
4. Competing to Win will be positively associated with Negative Affect and negatively associated with Positive Affect.
5. Competing to Excel will be positively associated with Positive Affect and negatively associated with Negative Affect.
6. There will be task differences in displays of affect. Tasks that are more competitive by nature will produce more Negative Affect than other tasks. Cooperative or baseline tasks will produce more Positive Affect than the more competitive tasks.

7. Task differences in competitiveness will interact with gender to predict affect.
Specifically, in competitive tasks, boys will show more Positive Affect and less Negative Affect than will girls.
8. Average triad jealousy, peak jealousy, and triadic variability in jealousy will each positively predict Competing to Win and Negative Affect and negatively predict Competing to Excel and Positive Affect.
9. Average triad closeness and balance in closeness will each positively predict Competing to Excel and Positive Affect and negatively predict Competing to Win and Negative Affect.

CHAPTER 2

METHOD

The data used for this study was 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 analysis 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 1738 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 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 part of the larger study, on the day of observation participants were asked privately to consider each of the other two participants and report the length of time they had known each and classify each as to whether he or she was unfamiliar or a person they knew only casually, one of their good friends, or one of a small and elite group of closest friends. On average, Teen A reported that they had known Teen B 67.78 months (SD = 40.04; range = 0 – 168); Teen B reported that they had known Teen C 58.94 months (SD = 38.23; range = 0 – 144); and Teen A reported that they had known Teen C 52.81 months (SD = 34.38; range = 0 – 144). Further information on the closeness of each of the members with each other appears below.

Prior to undertaking the study, a power analysis conducted with G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) indicated that with a sample size of 100, we would be able to detect the expected small to medium effects ($f^2 = .065$) with .80 power if alpha is set at .05. Thus, recruiting continued until this sized sample of triads was obtained.

Procedure

Participants were given \$25 each to complete the study, which took a total of three hours. Informed consent procedures were completed with participants and a parent or guardian upon arrival to the study. Parents filled out permission forms, then were instructed that they could wait in the lobby or return to pick up their teen at the end of the study. To limit triadic interaction prior to the session and ensure completion of parental consent, parents were given \$25 each to

drive their teens to the session separately. After consent was obtained, the participants were then taken to a room where a research assistant provided them each with an assent form to read and sign. After assent forms were filled out, the research assistant reviewed the agenda for the session and allowed for questions before moving forward.

Triads were interviewed and observed during a 3-hour session in a laboratory on campus. The laboratory consisted of a small table with three chairs and simple decorations to create a comfortable setting for the interaction to take place. All observations were recorded by videotape from behind a one-way mirror and microphones hidden in the ceiling. Participants were made aware of the observation during the informed consent procedure, but the setup was designed to keep the recording as unobtrusive as possible.

After receiving an overview of the session together, the participants were placed in separate rooms to complete a pre-observation questionnaire that included basic demographic information such as grade, birthdate, age, gender, and race, as well as their initial reports of their relationship to the others, as noted above. Following this, they provided reports of their vulnerability to jealousy with respect to each of the other two participants (see below) and a more formal assessment of their closeness to each other participant (see below). Following these assessments, the participants were reunited for observation for a videotaped sequence of semi-naturalistic activities. Activities were presented in a standard sequence and represented over two hours of continuous videotaped interaction data on each triad. Except for brief periods during which an experimenter introduced each new activity, no adults or other children were present during videotaping.

Measures

Friendship closeness and balance of triads. Participants completed the Inclusion of Self and Others Scale (Aron, Aron, & Smollan, 1992) during the pre-observation questionnaire to identify the structure of the triad based on the closeness of the dyadic friendships of its members. Participants were presented with an array of seven pairs of interlocking circles ranging from barely touching to almost entirely overlapping. Participants were asked to select the pair of circles that best described how close they felt to one of the other triad members. Participants provided two scores for this measure, one for each of their relationships with the other two participants.

To represent the variability in the degree and heterogeneity of closeness in triads, I computed the mean and standard deviation of the six liking ratings in the triad representing each of the three triad members' ratings of liking for each of the other two participants. The mean was used directly in subsequent analyses, and a coefficient of variation was created to represent heterogeneity in analyses by dividing the standard deviation by the mean (Krishnamoorthy & Lee, 2013).

Friendship jealousy. A modified version of the Friendship Jealousy Questionnaire (FJQ) was used to measure vulnerability to jealousy around close friends on the pre-observation questionnaire (Parker et al., 2005). The original measure consists of 27 short vignettes depicting hypothetical social situations; 12 of the items serve as distractors to prevent acquiescence in responses but were removed from this study for the sake of brevity. (Parker et al., 2005) found no social desirability response tendencies when items were worded to specifically address jealousy ($r = .03$). The remaining 15 vignettes presented situations with one of the other triad members as the target peer and the third member as a potential interloper, and asked the

participant to indicate the level of jealousy they would feel in that situation using a 5-point Likert scale (e.g., “How jealous would you be if Sarah had a secret and told Ginny first?”; 0=*would never be jealous of that*; 4=*would definitely be really jealous*). The participants completed the FJQ for each of the other triad members as the target peer separately. These 15 items have been found to be high on both internal consistency and test-retest reliability (Parker et al., 2005).

Three facets of triadic jealousy were computed for subsequent analyses. First, a composite triadic jealousy score was created by averaging the six jealousy ratings provided by each of the three triad members over each of the other two participants. In addition, a coefficient of variability was computed across the six jealousy reports. Finally, the maximum jealousy expressed in any of the six reports was noted and used in subsequent analyses.

Observational Tasks

The observation portion of the session lasted approximately two hours, with a research assistant serving as a guide through the sequence of activities. The observation consisted of six tasks, including both structured and unstructured activities carefully designed to explore different interpersonal processes that are significant in the triadic relationship. Structured activities included both competitive and cooperative games in which the triad was split up into two uneven teams. Unstructured activities included a free time before the session began and a free-interaction snack time at the end. The research assistant provided instructions at the start of each task and returned after an allotted time but was not present during the activities themselves.

Baseline. The first task served as a warm up for the triad and as the baseline task. Participants were instructed to work together to recreate a Lego model from memory. The triad was given five minutes to study the model before it was removed, at which point they had another five minutes to recreate the model as accurately as possible. While providing initial

instructions, the research assistant reminded participants that they could work together as a team to recreate the best model possible. Because they were faced with a time limit, this task served to get the participants excited and involved. It will allow for observation of spontaneous competition or cooperation among the triad members in pursuit of a common goal. In its entirety, the object manipulation task took ten minutes. Throughout analyses, this task will be referred to as the “baseline.”

Prisoner’s Dilemma. The “Stomp or Share Game” is a bargaining task developed by Parker and Herrera (1996), and modified for triads. This was the first competitive task for the triads. It is modeled after the “Prisoner’s Dilemma” and will be referred to as such throughout analyses and discussion. Before the game was explained, the triad was told to divide themselves into two teams; the research assistant left the decision of how to split up entirely to the participants. This provided an opportunity to observe coalition formation, including attempts at balance, negotiation, or conflict in this process.

In this game, teams bargained for points by making one of two choices; the game is similar in play to Rock-Paper-Scissors, but there were only two choices that correspond to a myriad of payoff outcomes. After a countdown, players showed either a fist (representing “stomp”) or an open hand (representing “share”). The possible outcomes were as follows: if one team “stomped” while the other “shared,” the first team received 10 points; if both teams “shared,” they both received 5 points; and if both teams “stomped,” 0 points were awarded. A chart with the various outcomes and their payoffs was left with the triad for the duration of the game. The triad recorded the outcomes of forty consecutive rounds on a piece of paper. Conversation and negotiation were allowed throughout the game. While explaining the rules, the research assistant told the triad that points won during the game would be applied to chances to

win a prize at the end of the study. This was used to provide further incentive to participants, as the task was designed to observe competition, cooperation, negotiation, conflict, mediation, and generosity among triad members. The research assistant ensured that the triad understood all rules and outcomes before leaving the room for the duration of the task. Though this task was not timed, it took approximately ten minutes to complete all 40 trials.

Cooperative game. Perfection (Milton-Bradley) is a commercial children's game that has been used previously to study interpersonal processes in friendship pairs (Parker & Herrera, 1996), and was used in this study with another team modification. For this game, teams were formed at random using a coin flip. Participant B flipped a coin to decide which of the other two participants would be on their team. The final participant formed the second team alone. In the game, players tried to fit as many pieces into their matching slots on the board as they could before the timer runs out. If a participant failed to stop the timer before it ran out, all pieces were ejected from the board.

In this task, teams competed in three different modes to accumulate points, once again to be attributed towards chances at winning a prize at the end of the study. The first mode was cooperative: all players worked together to fit the pieces into the board and both teams received points based on the number of pieces successfully placed. Triads played cooperatively two times (two minutes on average). This cooperative mode will be the second cooperative task for the study.

Winner-Take-All game. Participants competed on the same teams for the second version of Perfection, or "winner-take-all": each team had their own set of pieces, and whichever team placed the most individual pieces by the end of the trial received points for ALL pieces on the

board, including those of the other team. Participants played Winner-Take-All four times (four to six minutes on average). This will be used as a second, and highly competitive, task for analysis.

Individualistic game. The final version of Perfection was individual: both teams still played at the same time, but both teams received points for the number of pieces they successfully placed. Because the two teams continued to use two sets of pieces, there was still competition over the spots on the board. Participants played the Individualistic game four times (two full trials, two half-time trials; four minutes on average). This was the third and final competitive task for analysis. These three modes provided an opportunity to observe similar elements as in Stomp and Share, but across different versions of the same activity. Additionally, the presence of the timer introduced an element of excitement and emotional arousal, allowing us to observe how these factors might alter other features of the interaction.

Participants kept track of points for each separate trial on paper and totaled for each team at the end. Once this game was completed, the research assistant told the triad that, because of their success in the two games, all members would be given the maximum number of entries for the prize drawing. This process was used in a previous study (Lansford & Parker, 1999) to alleviate any potentially long-term negative effects on the friendship due to decisions made during the games.

Snack. At the end of the session, triads were given 10 minutes of free time to enjoy a snack provided by the researchers. Each participant was provided a small ice cream cup, and the triad was given a bowl of cookies to share. This task allowed for observation of casual and unstructured conversation between the triad members. However, because snack occurred at the end of the session, it may also be possible to observe any lasting effects on interpersonal interaction and affect from the previous activities.

Observational Coding

Four coding scales were developed to rate the triads across four aspects of behavior: Positive Affect, Negative Affect, Competing to Win, and Competing to Excel. Six coders were split into pairs and trained on separate scales, with Positive and Negative Affect paired for coding by a single team. Definitions and examples for each of the four separate scales are provided below. Coders utilized three subscales to capture the behavior of the triad, regardless of their coding scale. Global scores represented the coder's overall interpretation of the triad's behavior across the task; high ratings indicated a higher level of the behavior. Symmetry scores represented the degree to which the global score was representative of all three members of the triad; higher ratings indicated that the triad members were more equal in their display of the behavior. Peak scores represented the highest level of the behavior at any moment, if displays were either uneven across the task or uneven across members. Coders provided a score for each of the three subscales after watching each individual task. Tasks were viewed in random order, and longer tasks were split in half and scores averaged to create a composite activity score. Where triads were coded twice for reliability testing, a master coder was used to reconcile disparate scores and produce a final set of scores for analysis.

All raters were kept blind to the hypotheses of the study. They were trained to a high level of observer agreement within the pair on practice videos before beginning the process of rating the triads in this study. The training videos make up 8% of the final sample and were recoded individually once the coding began. No training videos were used for reliability testing. The level of observer agreement was established by having 20 random triads (20%) double-coded by the pair. Interrater reliability was determined by intraclass correlations (ICC) between the two coders on a team across the three sub-codes and all six tasks. ICC estimates and their

95% confidence intervals were calculated using SPSS statistical package based on a 2-way mixed effects model with consistency agreement; these reliabilities are reported below along with the scale descriptions.

Competing to Win. Competing to Win is driven by a desire for victory or dominance in the activity, by way of subordinating other participants. Part of Competing to Win is a preoccupation with hierarchy as it pertains to outcomes and resource allocation. Examples of Competing to Win behaviors include focus on placements, bragging, hogging resources, cheating, or refusal to continue when losing. Competing to Win was be rated on a five-point scale (1 = *this triad never displays CW behavior*; 5= *extreme display of CW, more than expected on average*). The ICC reliability for a single coder on this scale was .838 with a 95% confidence interval from .810 to .863, $p = .00$. The average measure ICC was .912 with a 95% confidence interval from .895 to .926, $p = .00$.

Competing to Excel. Competing to Excel, in contrast, is driven by a focus on individual performance and ability in the task at hand. There is no obsession over relative success, instead prioritizing learning the task, staying on task, and improving performance. Examples of Competing to Excel include continued acknowledgment of task requirements, willingness to share with and support other participants, on-task behaviors, and noncomparative discussion of skills and improvements. Competing to Excel was rated on a five-point scale (1 = *this triad never displays CE behavior*; 5 = *extreme display of CE, more than expected on average*). The ICC reliability for a single coder on this scale was .861 with a 95% confidence interval from .836 to .883, $p = .00$. The average measure ICC was .925 with a 95% confidence interval from .911 to .938, $p = .00$.

Positive Affect. Positive Affect includes both emotions and behaviors that contribute to a positive and enjoyable environment. For this study, this included attempts by individuals to increase positive affect in the group. Examples of Positive Affect include smiling, laughing, jokes not intended to harm another, relaxed or excited body postures, and physical affection. Positive Affect was rated on a five-point scale (1 = *no positive affect at all*; 5 = *extremely positive*). The ICC reliability for a single coder on this scale was .913 with a 95% confidence interval from .897 to .927, $p = .00$. The average measure ICC was .954 with a 95% confidence interval from .946 to .962, $p = .00$.

Negative Affect. In direct opposition, Negative Affect includes emotions and behaviors that contribute to a negative and disagreeable environment. This includes hostile behaviors carried out with negative emotionality. Examples of Negative Affect include scowling, scoffing, arguing, teasing, criticizing, tense or closed-off body postures, and physical aggression. Negative Affect was rated on a five-point scale (1 = *no negative affect at all*; 5 = *extremely negative*). The ICC reliability for a single coder on this scale was .917 with a 95% confidence interval from .902 to .931, $p = .00$. The average measure ICC was .957 with a 95% confidence interval from .948 to .964, $p = .00$.

CHAPTER 3

RESULTS

Competition in Triads

Table 1 presents the means, standard deviations, and intercorrelations of Competing to Win and Competing to Excel separately for each activity context. As shown the two competition variables were essentially absent in the snack period. Indeed, the scores represented for snack in Table 1 are only slightly above floor (1) due to the presence of two dyads in which competition was scored at all. As a result, snack was dropped from any further analyses involving competition. Task differences and comparisons of the two competition styles are explored further below. It is of note, though, that the two competition styles were not correlated in most tasks; the exception to this is snack, which is understandable since both styles were scored at floor in this task. As seen in Table 1, the only significant sex differences were found during the Prisoner's dilemma task, where boys displayed more superiority-oriented competition than girls, $t(99) = -.24, p = .02$.

To more formally explore the data in Table 1, a mixed-model doubly repeated measures Analysis of Variance (ANOVA) was conducted. Task setting (5 levels; baseline, prisoner's dilemma, cooperative, winner-take-all, individualistic) and nature of competition (2 levels; Competing to Win versus Excel) were within-subjects variables in this analysis. Triad sex (2 levels; male versus female) served as a between-subjects measure.

Results of this analysis found main effects for task, $F(4, 392) = 39.12, p = .00$, and form, $F(1, 98) = 74.86, p = .00$, but no main effect for sex, $F(1, 98) = 1.51, p = .22$. There were

significant two-way interactions between task and form, $F(4, 392) = 86.70, p = .00$, and sex and form, $F(1, 98) = 4.74, p = .03$. The three-way interaction between task, form, and sex was not significant, $F(4, 392) = 1.70, p = .15$. The task by form interaction appears in Figure 1. This presents the means for both forms of competition for each of the five tasks. It also includes post-hoc comparisons between the baseline and each subsequent task within each form of competition. As seen in the figure, nearly all of the tasks differed on both styles of competition from the baseline task. The exception is the comparison between baseline and the cooperative game in Competing to Excel. Further post-hoc analyses highlighted more differences between tasks. The prisoner's dilemma task produced more Competing to Win behavior than any other task, and both winner-take-all and the individualistic game produced more than the cooperative game. None of the guided activities produced differences in Competing to Excel behavior, but all showed lower displays than the baseline. As for comparisons across competition style, participants engaged in more Competing to Excel behavior than Competing to Win in all tasks except the most competitive tasks (Prisoner's Dilemma and Winner-Take-All), though Competing to Win was only significantly higher in Prisoner's Dilemma.

Figure 2 presents the follow-up analysis of the form by sex interaction. There were no sex differences in Competing to Excel, which was higher overall than Competing to Win, but boys were higher than girls in Competing to Win across all five tasks. Competing to Excel remained higher than Competing to Win for both genders.

Displays of Affect

Table 2 presents the means, standard deviations, and intercorrelations of Positive Affect and Negative Affect separately for each activity context. As shown, Positive and Negative Affect were only significantly correlated in the Baseline task, yet the strength of the relationship is

weak. A few sex differences were found within tasks: girls were more positive than were boys during the Prisoner's dilemma; boys were more negative than were girls in both the Winner-Take-All and Individualistic games. Task differences and comparisons of the two forms of affect are explored further below.

Figures 3 and 4 show the intercorrelations of Positive and Negative Affect with both Competing to Win and Competing to Excel respectively. As shown, all significant correlations between affect and Competing to Win were positive. While Positive Affect was only correlated with Competing to Win in the three Perfection games (cooperative, winner-take-all, and individualistic), Negative Affect increased as Competing to Win increased in all contexts. These results suggest that Competing to Win is generally associated with an increase in affect overall, but some contexts may link this form of competition more with negative interactions than positive. Alternatively, Competing to Excel was only ever significantly correlated with Positive Affect, specifically within the three Perfection tasks, and all of these correlations were positive. This suggests a possible task effect on affect in this game, but this will be discussed in further analyses below.

To more formally explore the data in Table 2, a mixed-model doubly repeated measures ANOVA was conducted. Task setting (6 levels; baseline, prisoner's dilemma, cooperative, winner-take-all, individualistic, and snack) and valence of affect (2 levels; Positive Affect versus Negative Affect) were within-subjects variables in this analysis. Triad sex (2 levels; male versus female) served as a between-subjects measure.

Results of this analysis found main effects for task, $F(5, 465) = 32.91, p = .00$, and form, $F(1, 93) = 197.10, p = .00$, but no main effect for sex, $F(1, 93) = .08, p = .78$. There was a significant two-way interaction between task and form, $F(5, 465) = 4.42, p = .00$, and a trending

interaction between sex and form, $F(1, 93) = 3.02, p = .09$. The three-way interaction between task, form, and sex was not significant, $F(5, 465) = 1.64, p = .15$. The task by form interaction appears in Figure 5. This presents the means for both valences of affect for each of the five tasks. It also includes post-hoc comparisons between the baseline and each subsequent task within each valence of affect. As shown, the only task that was different from baseline for either valence of affect was the Cooperative game, which showed lower affect over all. It is possible that this reduced affect was due to the demands of the game itself. Further post-hoc analyses explored differences between the other activity contexts. Positive Affect was higher during the Prisoner's Dilemma game than any of the Perfection games and was also higher during Snack than the Cooperative and Winner-Take-All rounds of Perfection. Negative Affect was lowest during the Cooperative game, but not different between any other task. Comparisons of affect within tasks revealed that Positive Affect was higher than Negative Affect in every task.

Figure 6 presents the follow-up analysis of the form by sex interaction. There were no differences between males and females in displays of either Positive or Negative Affect. Further, Positive Affect was higher than Negative Affect across tasks for both males and females.

Effects of Jealousy

Table 3 presents the means and standard deviations for male and female triads for the average, maximum, and variability among members' jealousy over one another. As shown, female triads were more jealous on average, tended to have a higher max, and had less diversity among members in jealousy.

To explore whether indices of triadic jealousy contributed to competition and affect, six repeated measures analyses were conducted. The first three of these analyses focused on competition. Specifically, the repeated measures ANOVA on competition above was repeated

three times, once including each of the jealousy covariates. These analyses were then repeated a second time, focusing on affect.

Competition. Results revealed no significant effect of the average level of jealousy on competition style, $F(1, 96) = .039, p = .84$. Further, there were no significant interactions with form, $F(1, 96) = .00, p = .99$, task, $F(4, 384) = .21, p = .94$, or a three-way interaction, $F(4, 384) = .78, p = .54$. The second test revealed no main effect of the maximum level of jealousy experienced by any one member, $F(1, 96) = .57, p = .45$. As with the average jealousy, there were no significant interactions with form, $F(1, 96) = .00, p = .96$, task, $F(4, 384) = .09, p = .99$, or a three-way interaction, $F(4, 384) = .98, p = .42$. These results suggest general dispositions to jealousy of individuals in a triad, whether measured as a composite or individually, did not influence competitive behavior styles of the group.

Finally, there was no significant effect of the triad's variability in jealousy on competition style, $F(1, 96) = 1.58, p = .212$. As with the other measures of jealousy, there were also no significant interactions with form, $F(1, 96) = .65, p = .42$, task, $F(4, 384) = .28, p = .89$, or a three-way interaction, $F(4, 384) = .85, p = .49$. These results indicate that any differences within the triad regarding its members' dispositions toward jealousy also have no influence on the competitive behaviors of the group.

Affect. Tests of the effect of the triad's composite jealousy score as a covariate showed no effect on displays of affect, $F(1, 94) = .50, p = .48$. As with competition styles, there were no significant interactions between average jealousy and valence of affect, $F(1, 94) = 2.49, p = .12$, task, $F(4, 376) = 1.08, p = .37$, nor a significant three-way interaction, $F(4, 376) = .18, p = .95$. There was also no main effect of the maximum jealousy, $F(1, 94) = .31, p = .58$, or any significant interactions with form, $F(1, 94) = 2.24, p = .14$, task, $F(4, 376) = .69, p = .60$, or a

three-way interaction, $F(4, 376) = .88, p = .47$. These results, overall, indicate that like with competition, a triad's vulnerabilities to jealousy at individual or group levels do not impact displays of affect during group interactions.

Finally, analyses covarying the triad's jealousy variability showed no significant main effect, $F(1, 94) = .04, p = .83$, or interaction with task, $F(4, 376) = .72, p = .55$. However, a marginally significant interaction was found between the variability of jealousy and valence of affect, $F(1, 94) = 3.71, p = .06$. The three-way interaction with variability of jealousy, task, and form was not significant, $F(4, 376) = .38, p = .82$. These results indicate that more exploration was needed to determine how jealousy variability impacted Positive and Negative Affect individually. For triads with more variability in individual jealousy dispositions, Positive Affect was lower and Negative Affect was higher. These oppositional effects of variability on the different types of affect also help explain the lack of main effect on overall affect displays, as they may have cancelled each other's effects. These findings also indicate that while the absolute levels of jealousy within a group might not be an important consideration on outcomes like affect, the variability between group member's might play some role.

Effects of Closeness and Balance

Table 4 presents the means and standard deviations for male and female triads for the degree and heterogeneity of closeness between triad members. As shown, there were no sex differences in either average closeness or balance of closeness within triads. To explore whether indices of triadic closeness contributed to competition and affect, the same procedure above for jealousy was used again with these two measures of closeness as covariates. The first set of analyses focused on competition, while the second set focused on affect.

Competition. Results indicated a marginal effect of average triadic closeness on competitive behavior, $F(1, 95) = 2.34, p = .09$. This effect was not modified by an interaction with task, $F(4, 380) = 1.52, p = .20$, form, $F(1, 95) = .55, p = .46$, or a three-way interaction, $F(4, 380) = .94, p = .44$. To explore the trending main effect further, I reviewed parameter estimates within competition style and task. These estimates suggested that as the overall closeness of the triad increased, competitive behavior in general increased.

Alternatively, there was no effect of triadic variability in closeness on competition, $F(1, 95) = .50, p = .48$. Interestingly, the interaction between liking variability and task trended toward significance, $F(4, 380) = 2.07, p = .08$. There was no significant interaction with form, $F(1, 90) = .01, p = .91$, and no significant three-way interaction, $F(4, 380) = .95, p = .44$. The trending interaction was explored further following the same procedure as above. Findings suggested that in the most competitive settings, variability in closeness was negatively associated with competition overall; in contrast, variability in closeness was positively associated with competition in cooperative settings. This indicates that as variability in triad member's feelings of closeness increases, competition decreases within competitive settings and increases within cooperative settings.

Affect. Results indicated no significant effect of average triadic closeness on affect, $F(1, 90) = .77, p = .38$. However, average closeness interacted with task to predict affect, $F(5, 450) = 2.34, p = .04$. There was no interaction with form, $F(1, 90) = .01, p = .94$, or a three-way interaction, $F(5, 450) = .61, p = .69$. To explore the significant interaction between closeness and task, I reviewed parameter estimates within task. These estimates suggested that in some tasks (baseline, winner-take-all, and the Individualistic game) there was a clear positive

relationship between closeness and affect, indicating that as triadic closeness increased, so did general affect; in other tasks, this relationship was nonexistent or dependent on valence.

Alternatively, there was no effect of triadic variability in closeness on affect, $F(1, 90) = .02, p = .90$. Further, there were no interactions with task, $F(5, 450) = .87, p = .50$, or form, $F(1, 90) = .01, p = .91$, and no significant three-way interaction, $F(5, 450) = .29, p = .92$. These results suggest that the amount of variability within a triad on feelings of closeness to one another did not influence displays of affect throughout the group interaction.

CHAPTER 4

DISCUSSION

Some researchers have argued that competition is incompatible and destructive in friendships. In reality, it is inescapable, especially during adolescence. Our understanding of competition and its true impact on adolescent friendships has been limited by a few methodological limitations of previous studies. The present study supports the importance of attending to form and function of the competition as well as the context in which it is taking place.

As expected, this study found that distinguishing between divisive, zero-sum competition and competition in which participants can work together for mutual excellence proved important in this research. Coders were able to successfully and reliably score these behaviors during observations of triadic interactions. Further, these two competitive behavior styles were not directly related to one another throughout the observation. Most of the competitive behavior was focused on self-improvement and excellence as opposed to being superiority-oriented. These findings suggest simply measuring competition overall without any distinctions to nature or intensity creates an incomplete picture which can hinder our ability to accurately identify impacts on friendships. It is possible that this issue has led to the contradicting findings on competition in friendships discussed in the introduction of this study. For example, competition that allows for excellence from all participants and is not divisive could be part of a stable best friendship (Schneider et al., 2005). This study of friendship supports this idea, as such competition was more common than that which focused on superiority. In the future, it will be

important for researchers to maintain these distinctions, or perhaps explore any other varieties in form, so that outcomes and implications may be clearly identified based on the style of competition being studied.

Likewise, the context within which the competition is occurring was significant. Task was found to have an impact on levels of each type of competition, as well as on the impact that the competition had on group functioning. This study successfully varied task incentives to promote or discourage competition, and results showed that this could in fact vary the amount and nature of competitive behavior that was displayed by the triads. Competition that was focused primarily on winning and dominance was more susceptible to task effects than other competition. Certainly, when the task called for or encouraged competition, friends did not shy away from it. This suggests, as expected, that the expectations regarding competition in any given activity may dictate how accepted competitive behavior is between friends. Perhaps games, especially highly competitive ones, are a safe place in which friends can engage in vigorous competition of any form without risk of distressing one another.

Of particular interest regarding task, scores were significantly different between the baseline task and all other tasks for both the dominance-focused and excellence-focused competition styles. Our baseline task was designed to provide a portrait of the spontaneous competition and behavioral style of triads, without incentives for one behavior or another. Though the participants were given a task, it was possible for them to either cooperate, compete, or even disengage from one another as the task could be completed by as few or as many people as determined by the group. In contrast, the other tasks created clearly defined groups and attached varying salience to winning. These understandably altered the behavior of the triad. Some further task differences were found between the structured activities as well, but in general

they support the idea that task demands can alter participant behavior. These findings argue that researchers must be deliberate in designing or selecting tasks for their studies, especially in studies of competition, as tasks may be inherently neutral, cooperative, or competitive, and these task demands could alter the behavior unnaturally and thereby limit the ability to clearly interpret findings.

One thing that is most interesting about competition in the realm of friendships is the impact it has on the participants and the relationship between them. In this study, this was represented by displays of affect among participants and the way affect related to competition style and task demands. While Positive and Negative Affect did not correlate with one another, there were some interesting associations between forms of affect and competition styles. As predicted, Negative Affect was positively correlated with Competing to Win in all tasks. Regardless of expectations of the activity, as competition focused on beating one another increased, so did displays of Negative Affect. Perhaps this is due to the nature of this style of competition, wherein focusing on a winner also focuses on a loser. As certainly no one enjoys losing, one might expect to see displays of negative affect in regard to the game itself. Alternatively, in these findings we see some support for Sullivan (1953), who argued that this type of competitive behavior might be seen as a violation of friendship ideals and participants might express negative affect toward one another as a way of discouraging future instances of such behavior.

Interestingly, Positive Affect had a significant positive association with both forms of competition, in the right settings. While this supported predictions regarding excellence-focused competition and Positive Affect, it is interesting that Positive Affect also increased in the present of superiority-focused competition. Of course, this was dependent on the task setting itself, and

was only true for a subset of the tasks all based on the board game Perfection. Indeed, this game is very fast-paced and produces high levels of energy and excitement in its players. Perhaps in the right setting (in this case, a fast-paced and generally competitive one), Positive Affect will abound between friends regardless of the types of competitive behaviors displayed between them.

In contradiction to expectations, there was one setting where Positive Affect was positively associated with winning-focused competition and not excellence-focused competition. This was the Prisoner's Dilemma task, which has been studied under a variety of settings and modifications. Most connected to this study, though, is the finding that friends cooperate more easily than nonfriends, including in Prisoner's Dilemma tasks (Sally, 2000). It is striking, then, that a non-cooperative competition would be so readily accepted, as the findings of this study show. This very behavior undermines the expectations of the friendship in this setting, and yet remains positive. It is possible that the novel setting proved entertaining for the participants or simply provided a good environment for socialization among friends, both of which might explain the increase in Positive Affect. Regardless, this finding was not expected and suggests possible positive roles for competition.

Supporting this, Positive Affect was higher overall than Negative Affect, and this remained true regardless of sex. This should not be surprising, as it was a study of friendship triads and we should expect, or at least certainly hope, that friendship interactions would be overwhelmingly positive. Regardless, it is encouraging that even in the competitive settings, and even when Negative Affect did increase, the interaction was able to remain primarily positive. This could have important implications for how we perceive competition in daily interactions, as it does not have to be assumed to be a negative experience. Indeed, previous studies have found

that friendly competition can improve performance by providing motivation and increasing learning (Burguillo, 2010). Educators, coaches, and even parents could utilize friendly competition between an adolescent and their peers to encourage growth. Future studies should consider the different forms of competition in studying effects on performance, and any possible concerns that might need to be carefully controlled.

As expected, findings revealed several interesting sex differences in styles of competition. In support of previous studies, boys engaged in more competition that was motivated by winning and superiority than girls (Hibbard & Buhrmester, 2010; Schneider et al., 2005). In contrast to these previous studies, however, boys did not display higher levels of all types of competition. There were no sex differences in competition that allowed all participants to benefit and improve. This finding suggests that girls do not necessarily avoid competing with friends overall, as argued by Schneider et al. (2005). Again, we see the importance of differentiating in forms of competition as we attempt to explore more complicated differences such as those between sexes.

Interestingly, there were no consistent sex differences in displays of affect or influence of competition on affect. Some within tasks comparisons revealed sex differences in that girls were more positive than boys in one competitive setting and less negative than boys in the other two competitive settings. However, these results were limited to specific tasks and in larger analyses the interaction between sex and task was not significant. This does not match my predictions, which were built from previous evidence which showed that boys reported enjoying competition while girls experienced great distress over competition between friends (McGuire & Leaper, 2016). It is possible that this finding could be explained by the higher prevalence of friendly competition as compared to hostile competition. Competing to Win, as defined by this study, is

perhaps the prototypical form of competition that any individual would imagine if they were asked to report on their experiences with competition. Lack of clarity in depictions of competition presented in previous studies may have contributed to this sex difference, and future studies should continue to parse out these distinctions to clarify the ways males and females may be alike or different regarding friendship competition.

This study found support for identifying and distinguishing between the nature of competition styles and the contexts in which it occurs, as well as some sex differences. However, it provides limited support for the argument that individual characteristics of group members can impact these relationships further. Findings indicated that jealousy did not have impact on competition within triads, apart from a marginal interaction between jealousy and valence of affect. This marginal finding suggested that as variability between triad members in jealousy increased, Positive Affect decreased, and Negative Affect increased. This is interesting in light of studies showing jealousy to be disruptive and harmful to friendships (Deutz et al., 2015; Parker et al., 2010). It is possible that when friends experience similar levels of jealousy over one another, there is more understanding or more intentional support that might help to moderate any negative feelings. Alternatively, when friends experience different levels of jealousy, they may interact with one another differently or have varying levels of dependency on the relationship, and thus struggle more in group interactions such as this study. Regardless, more research is necessary to explore this issue deeper and determine findings with more significance. As this study looked at dispositional jealousy over the friendships involved, future studies might consider adding a jealousy behavioral code or a post-task measure of jealousy to more accurately capture jealousy at the time of study.

This study also attempted to explore the effects of closeness within the triad and the degree of balance in closeness of included dyads, but again findings were often only nearing significance and generally convoluted. Findings on the overall degree of closeness in the triad suggested some support for an impact on competition and a significant impact on affect depending on task setting. First, it appeared that as closeness increased, so did competitive behavior. This supports some previous researchers' assertions that friends do indeed compete more than nonfriends (Newcomb & Bagwell, 1995). However, as this finding did not reach full significance, it must be interpreted with caution and yet more research is needed to confirm this argument. In addition, higher levels of closeness within the triad predicted increased displays of affect in some tasks. This finding is difficult to interpret, though, as the tasks involved included the baseline task, one of the most competitive tasks but not the other, and a lesser competitive task. While it is not surprising that closer triads displayed more affect, it is interesting that this was dependent on the context and that this sometimes included very competitive settings. Future research should delve further into this issue of context and try to identify the characteristics of the task that might be driving this interaction.

Likewise, the variability in closeness of dyads within the triad produced only limited evidence of on competition and affect in triads. Indeed, findings indicated no influence on affect, and only a marginal effect on competition that was dependent on task. In the most competitive tasks, an imbalance in the levels of closeness experienced within the triad was associated with less competition, whereas in more cooperative settings this imbalance was associated with more competition. This suggests possible support for the predictions of balance theory (Heider, 1946), which I argued would predict more competition and disfunction in imbalanced triads. Indeed, we see these increases in competition in settings where it is not needed or intended, which would

surely create a more difficult group atmosphere. It is interesting, though, that more balanced triads were more likely to compete in competitive settings. Perhaps this suggests that the level of comfort that friends feel with one another, allowing for competitive behaviors in appropriate settings without negative outcomes. Once again, further research is necessary on this topic before making any strong conclusions.

Overall, these findings suggest that who is in the triad does not necessarily matter when it comes to competition or its impact on friendship. Individual differences may not be as important as I expected. Alternatively, lack of support for the two characteristics tested in this study does not preclude the importance of other group differences. While this study showed that there was heterogeneity in competition across tasks, it did not assess whether the same triads were driving competitive behavior throughout or if different triads were competitive in different tasks.

A related point is that this study did not look at heterogeneity of competitive behavior within triads, instead observing the aggregate level of the group. The aggregate ratings given to each triad may have obscured differences among the members in their competition. Future research should code at both the individual and triad level to consider variability among group members. One question that could be addressed by doing so is the question of homophily among friends in competitive orientation. By coding at the individual level, we could examine whether friends make friends with others who are as competitive as they are or competitive in the same situations they are.

Researchers have tended to assume that qualities of the individuals influence interaction most severely and underestimate the importance of setting. Indeed, in this study the strongest findings were in relation to context and differentiating between forms of behavior, suggesting that our understanding of competition between friends can be improved by carefully considering

task parameters, studying friends in groups, and distinguishing different forms of competitive behavior. Friendship competition is complicated, and researchers should be careful to avoid overgeneralizations in these important domains, particularly when exploring sex differences.

Limitations of the Current Study

There are a few general limitations of note in this study that have not yet been addressed. The first is that, while an interesting study of friendship specifically, this study cannot be generalized to adolescent's experiences with competition with all their peers. Future studies should consider these same distinctions of form and context in other peer and possibly romantic relationships, as adolescents face competition with more than just their friends. Indeed, while we found competition to be largely a positive experience among friends, this may not be true of other peers.

Further, while this study provided an array of activities within which to study these different forms of competition, it is only a start. One limitation of note regarding the tasks used in this study is that in all competitive settings, there was a degree of interdependence of outcomes. As such, one team's success inherently occurred at the cost of the other's, removing any setting where two competing teams could both truly succeed alongside one another. In addition, no setting was established to allow natural, spontaneous competition to occur between individuals. It is possible that the competitive incentives used in this study worked against robust individual differences, resulting in the failure to support the influence of group characteristics or certain sex differences proposed by previous research. By design, we encouraged cooperative or competitive behavior in our participants. Thus, the findings speak to the issue of how different triads can compete or cooperate, but they do not address the issue of whether triads spontaneously compete or cooperate. To do that, it would have been helpful to include a task

with no incentives to observe triad behavior in a completely spontaneous context. Relatedly, adolescents experience a vast spectrum of contexts and interactions in their daily lives, and different tasks that might spark or encourage competition should be explored. Future studies might focus more on behavior in less contrived settings to observe the prevalence and nature of competition in the more routine lives of adolescents. While this study benefited from its control of task incentives and varied levels of competitive tone, a more naturalistic observation (or a derived setting that creates space for spontaneous competition without direction) would provide a clearer view into how these processes are at work in the real world.

Some consideration to alternate measures may benefit future studies. While the observations of affect were reliable and interesting, they only capture the outward displays of emotion regarding these activities and may possibly miss any underlying thoughts or opinions the participants may have had throughout the activities. Post-task reports of satisfaction or enjoyment of the tasks would be an alternative that would allow for direct contribution from the participant, though it is quite possible that participant's answers could be inaccurate by the time of report or influenced by their friends or a desire to please researchers. I would recommend a combination of observational coding and self-report, to capture all views. Similarly, regarding measures of jealousy and closeness, questionnaires that address these concepts directly in the observed context or observational measures to capture behaviors simultaneously with competition and affect could provide stronger analyses for the limited findings presented. Alternatively, future studies might explore other individual characteristics such as self-esteem, aggressiveness, or popularity.

Finally, this study focused solely on competition in adolescent friendships. Advances in cognitive and social development during adolescence may make the experience of competition

different than that of other developmental periods. By including a wider age range of participants, we could address when children's understanding of competition develops and its role in friendship interactions. Van Lange, De Bruin, Otten, and Joireman (1997) found evidence for developmental, social, and cultural influences on competitive orientations. For example, competitive orientations decreased with age, and one theory for this shift was that the older participants had been raised in a more collectivist society, which might promote cooperation over competition. However, Van Lange et al. (1997) did not have the ability to test cross-cultural influences among same-age participants, nor did they distinguish specific forms and settings of competition. By extending the current methodology to a broader cultural and developmental range, it would be possible in the future to explore the limits of the generalizability and interpretation of cultural and developmental differences.

In sum, the present study enriches our understanding of competition and how adolescents handle this important social task. It suggests the fruitfulness of considering form and tasks when designing and analyzing the role of competition in relationships. Finally, it encourages future research that would broaden this methodology to consider further impacts of competition developmentally and culturally.

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APPENDIX: TABLES AND FIGURES

Table 1

Means (standard deviations), tests of gender differences, and intercorrelations of competition scales within each task.

Task	Competing to Win			Competing to Excel			<i>r</i>
	Male	Female	<i>t</i>	Male	Female	<i>t</i>	
Baseline	1.56 (.87)	1.33 (.59)	-1.60	2.90 (.43)	2.94 (.57)	.46	-.04
Prisoner's Dilemma	2.94 (.99)	2.49 (.90)	- 2.38**	2.29 (.68)	2.44 (.53)	1.25	-.06
Cooperative Game	1.27 (.49)	1.17 (.38)	-1.16	2.50 (.51)	2.47 (.54)	-.27	.06
Winner-Take- All	2.52 (.99)	2.40 (.82)	-.69	2.40 (.49)	2.43 (.54)	.37	-.05
Individualistic Game	2.27 (1.03)	2.25 (.85)	-.14	2.42 (.54)	2.45 (.54)	.34	-.01
Snack	1.04 (.23)	1.02 (.10)	-.67	1.02 (.10)	1.02 (.10)	-.08	.41**

Note. Tests of significance are marked with a *.

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

Table 2

Means (standard deviations), tests of gender differences, and intercorrelations of valence of affect within each task.

Task	Positive Affect			Negative Affect			<i>r</i>
	Male	Female	<i>t</i>	Male	Female	<i>t</i>	
Baseline	2.78 (.78)	2.84 (.85)	.40	1.86 (.75)	1.68 (.79)	-1.19	-.24*
Prisoner's Dilemma	2.89 (.66)	3.23 (.73)	2.45*	1.94 (.64)	1.90 (.68)	-.30	-.00
Cooperative Game	2.28 (.88)	2.33 (.85)	.31	1.32 (.56)	1.21 (.49)	-1.07	.15
Winner-Take- All	2.38 (.86)	2.61 (.81)	1.39	1.81 (.66)	1.55 (.65)	-2.00*	.13
Individualistic Game	2.40 (.97)	2.50 (.84)	.53	1.83 (.78)	1.51 (.72)	-2.14*	.00
Snack	2.88 (.69)	2.88 (.80)	.02	1.53 (.54)	1.66 (.56)	1.16	-.11

Note. Tests of significance are marked with a *.

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

Table 3

Means (standard deviations) and tests of gender differences of three measures of jealousy.

Measure	Triad Jealousy		
	Male	Female	<i>t</i>
Triadic Mean Jealousy	.75 (.40)	.96 (.46)	2.46*
Maximum Jealousy	1.42 (.70)	1.68 (.78)	1.79
Triadic Variability of Jealousy	.76 (.39)	.59 (.27)	-2.43*

Note. Tests of significance are marked with a *.

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

Table 4

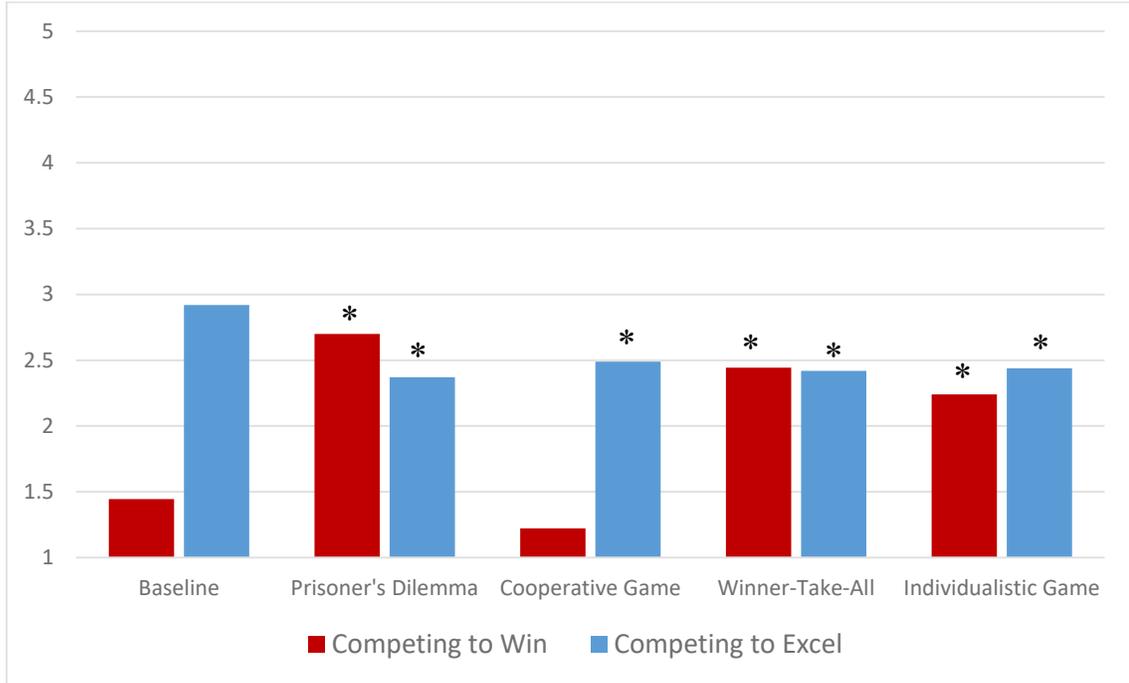
Means (standard deviations) and tests of gender differences of degree and homogeneity of liking within triads.

Measure	Triad Closeness		
	Male	Female	<i>t</i>
Triadic Mean Closeness	5.13 (.75)	5.31 (.90)	1.11
Triadic Variability of Closeness	.27 (.12)	.31 (.16)	1.55

Note. Tests of significance are marked with a *.

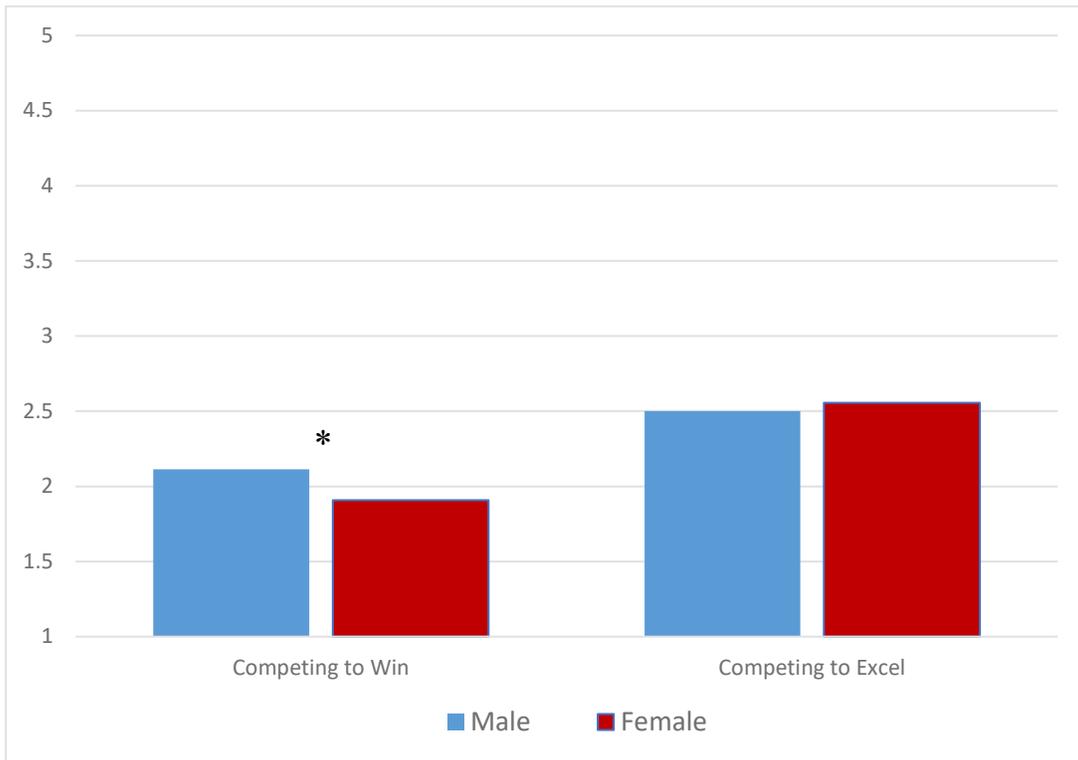
* $p < .05$; ** $p < .01$

Figure 1. Levels of Competing to Win and Competing to Excel within tasks.



Note. Bars marked with a * indicate tasks in which competitive behavior is significantly different ($p < .05$) from that seen during the baseline task, within each form of competition.

Figure 2. Levels of competition styles of males and females, across tasks.



Note. Bars marked with a * indicate significant differences ($p < .05$) between genders within a style of competition.

Figure 3. Intercorrelations of Competing to Win with Positive and Negative Affect within each task.

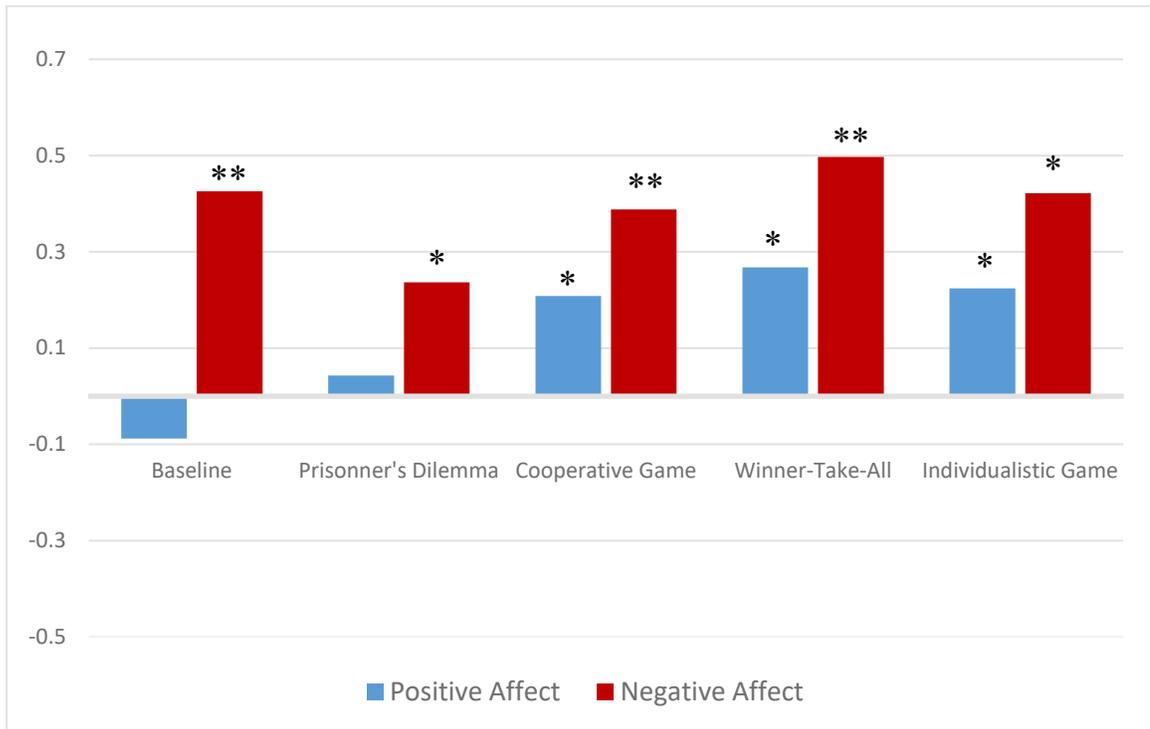


Figure 4. Intercorrelations of Competing to Excel with Positive and Negative Affect within each task.

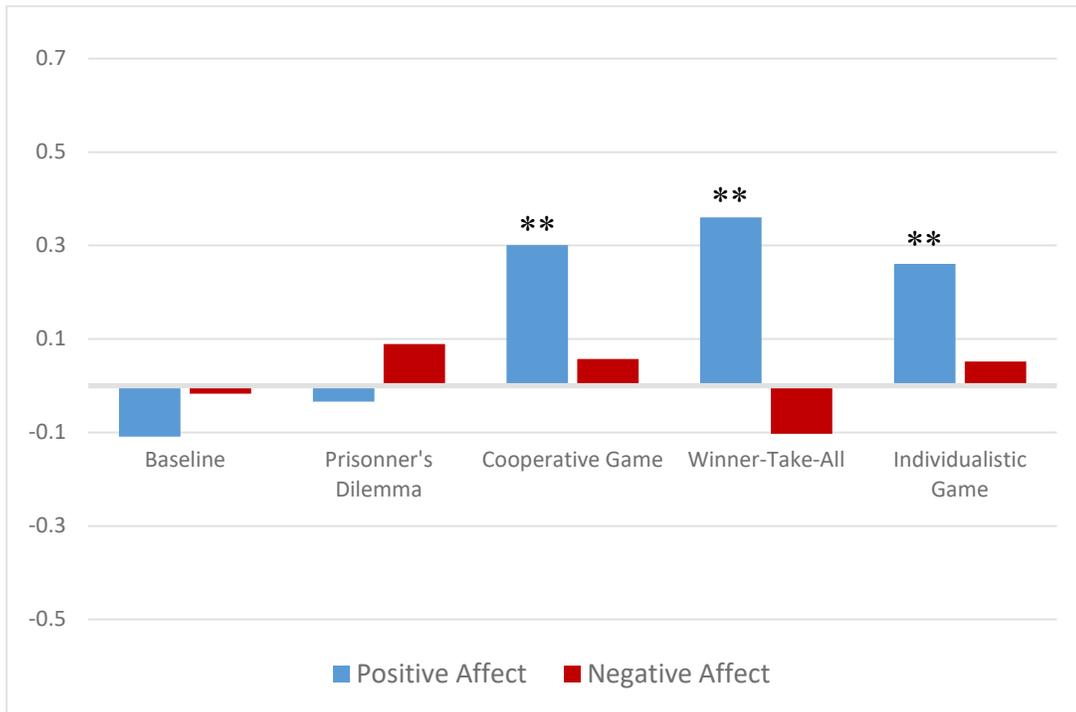
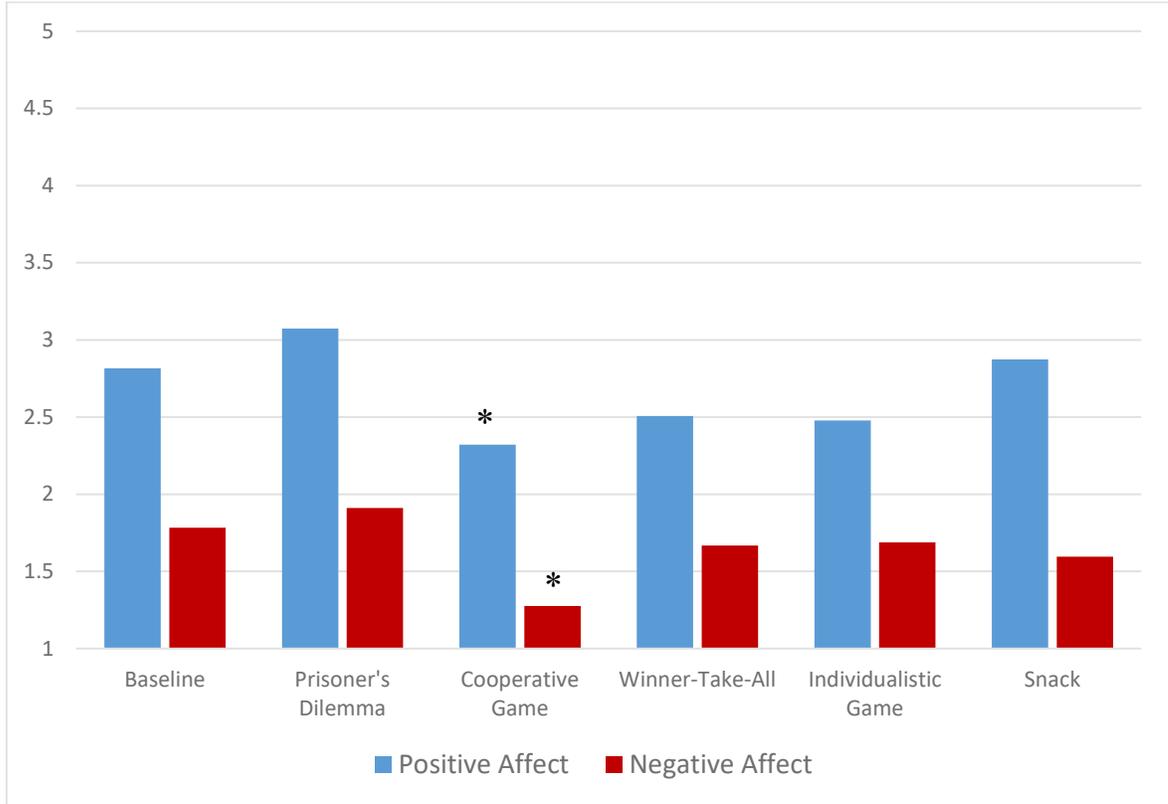
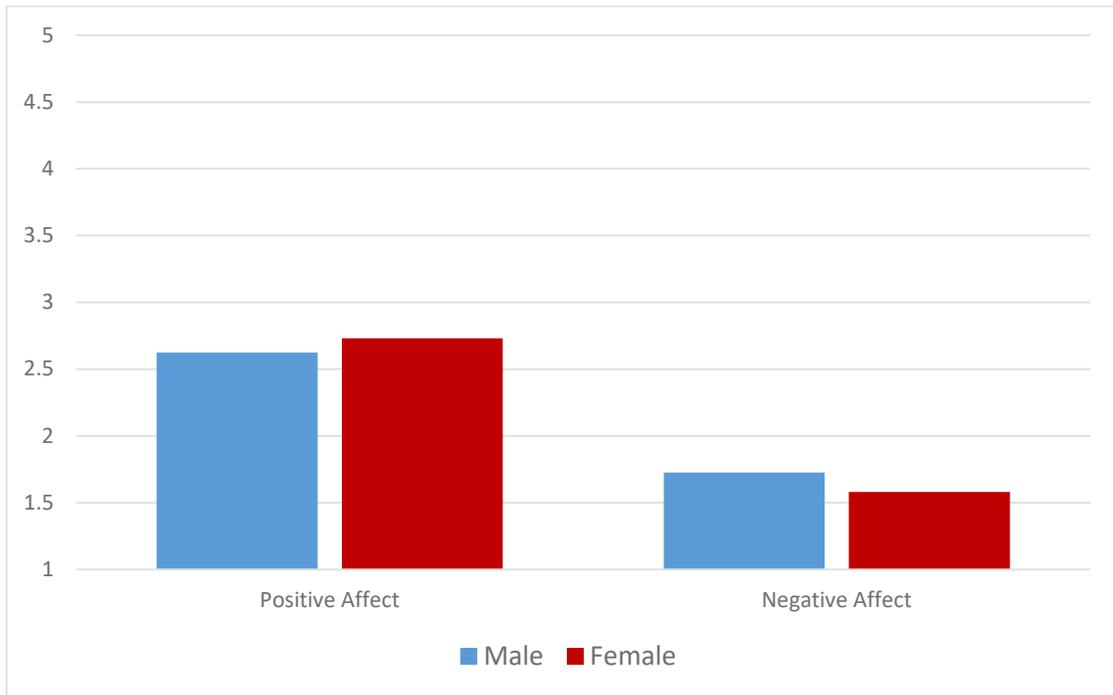


Figure 5. Levels of Positive and Negative Affect within tasks.



Note. Bars marked with a * indicate tasks in which competitive behavior is significantly different ($p < .05$) from that seen during the baseline task, within each form of competition.

Figure 6. Levels of Positive and Negative Affect for males and females, across tasks.



Note. Bars marked with a * indicate significant differences ($p < .05$) between genders within a style of competition.