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ADOLESCENT FRIENDSHIP NETWORKS AND ACTIVITIES:
RELATIONSHIPS WITH POPULARITY AND AGGRESSION

A DISSERTATION APPROVED FOR THE
DEPARTMENT OF PSYCHOLOGY

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Abstract

This study investigated peer status differences in the characteristics of adolescents' friends and friendship activities. Additionally, it examined how friendship characteristics and activities were related to aggression, and whether these relations were moderated by popularity and gender. 205 ninth-grade participants completed a peer nomination assessment of popularity, social preference, and overt and relational aggression. They also completed assessments of their best friends' characteristics (age, gender, and school) and their activities with those friends. Results indicated that the characteristics of adolescents' friends differ reliably based on their level of popularity and aggression. Friendship activities also varied according to status and gender. Furthermore, there were important associations between friendship activities and aggression that were moderated by status and gender. These findings indicate that friendships are an important context for studying popularity and aggression.

Adolescent Friendship Networks and Activities:
Relationships with Popularity and Aggression

Adolescence is a period that is characterized by an increase in the importance of peers and the need to belong (Sullivan, 1953). It also presents a number of new social and psychological challenges. Pressure from peers to use alcohol and other drugs, have sex, and engage in antisocial behaviors increases during this stage of development (Urberg, Degirmencioglu, & Pilgrim, 1997). Friendships serve an important function in how adolescents deal with these new challenges. Across development friends serve a significant developmental function, especially during adolescence when friendships are very salient and a large portion of time is spent with them (Hartup & Stevens, 1997; Sullivan, 1953). This contributes to adolescent friends having an influence on each other in positive ways, such as academic achievement, and negative ways, such as substance use (Cook, Deng, & Morgano, 2007; Marklein, Negriff, & Dorn, 2009).

Positive and negative aspects of friendships. Researchers have found that friendships can have a significant impact on children and adolescents' development. Just having one reciprocated friendship during the school-age years is related to fewer internalizing and externalizing problems as well as experiencing less victimization from peers (Hodges, Boivin, Vitaro, & Bukowski, 1999; Schmidt & Bagwell, 2007). Friendships can also affect mood. Larson & Richards (1991) found that adolescents experience more positive emotions when spending time with friends. Friends are especially beneficial during school transitions, both early and later in development. During the transition into kindergarten, having more friends in the classroom has been linked to positive school adjustment. However this effect is limited; only children who

continue to maintain their prior friendships across the school year continue to show positive attitudes toward school (Ladd, 1990). Adolescent friendships also help with school transitions. Oswald and Clark (2003) studied friendship maintenance during the transition to college. They found that adolescents who maintained their best friendships from high school were buffered against the loneliness that can accompany this transition.

Some friendships are more beneficial than others. Distinctions have been made between *quantitative* dimensions, such as having no, few, or many friends, versus *qualitative* dimensions, such as helpfulness, of friendships. *Qualitative* aspects tend to have more of an effect than *quantitative* (Demir & Urberg, 2004). Higher quality friendships are characterized by less conflict, helping each other with problems, and exchanging intimate information. They tend to be more stable than low quality friendships (Bukowski, Hoza, & Boivin, 1994). Adolescents with higher quality friendships tend to fare better than those with lower quality friendships. They have higher self-esteem, feel less lonely, are less depressed, and engage in less delinquency (Keefe & Berndt, 1996; Parker & Asher, 1993; Windle, 1994). Friendships that are high in conflict have been found to be related to more loneliness and less positive friendship qualities, but also lower levels of negative affect (Demir & Urberg, 2004; Ladd, Kochenderfer, & Coleman, 1996; Laursen, 1993; Parker & Asher, 1993).

Conflict is not the only dimension of friendships that can have a negative impact on development. Pressure from friends to engage in antisocial behavior such as substance use, sexual behavior, aggression and deviancy can happen. Friends are often nested within similar peer crowds, such as burnouts, jocks and brains (La Greca,

Prinstein, & Fetter, 2001). Adolescents have similar levels of substance use and risky sexual behaviors as other peers who are in the same crowd, and to which many of their friends also belong. Although this finding indicates a crowd affiliation influence, others have found that close friends might be more influential, especially with substance use (Urberg et al., 1997). Research has found that adolescents' perceptions of friends' risk-taking behaviors can affect their own behavior. Adolescents who perceive that their friends use alcohol, smoke, engage in oral sex, or inconsistently use condoms are more likely to engage in those same behaviors (D'Amico & McCarthy, 2006; Marklein et al., 2009; Prinstein, Meade, Cohen, 2003).

Friendship formation and homophily. Another topic studied in the friendship literature has been the formation of friendships. Most of this research started in the general social psychology literature and focused on college students. First year college students represent an optimal population for studying friendship formation, because most of them are leaving their existing friendship network, forcing them to make new friends in their new environment. Overall, the findings have pointed toward homophily effects. College students tend to make friends with those who are similar to themselves (Fehr, 1996). Developmental researchers have also found homophily effects among adolescent friends. They typically enjoy the same activities, have similar levels of aggression, and similar levels of popularity (Cairns, Cairns, Neckerman, Ferguson, & Gariepy, 1989; Houser & Cillessen, 2009; Rose, Swenson, & Carlson, 2004).

Friendship activities. One area of friendship research that has received little attention is how friends spend their time together. Zarbatany and colleagues (1990, 2000) have conducted qualitative work on preadolescent peer activities and identified

behaviors in which preadolescents engage in when they are around their peers. One study used a diary method with fifth and sixth graders to identify common activities peers engaged in together. The diary responses were content coded and the activities that were listed most often were used in a second study to identify the functions of the behaviors. The results of the first study yielded 29 different types of activities that participants did most often with peers. Participants rated these activities on importance and how much time they spent doing them. Results indicated that the most important activities were noncontact sports, watching TV and listening to music, conversing, talking on the telephone, physical games, going to parties, and hanging out. Activities that were found to be most prevalent were conversing, hanging out, walking around school, talking on the telephone, traveling to and from school, watching TV or listening to music, and physical games (Zarbatanay, Hartmann & Rankin, 1990).

A follow-up study used a similar method, but reduced the activities into four categories: *socializing*, *studying*, *play* and *team sports*. Gender differences were then investigated, and it was found that boys engaged in more *play* and *team sports* activities than girls. Girls spent more time *socializing* and *studying* with their best friend (rather than friends in general) and boys spent more time doing *team sports* with their best friend (Zarbatany, McDougall & Hymel, 2000). Further research is needed to investigate whether these results hold for older adolescents, and whether there are differences in time spent with friends as a whole compared to time spent with best friends. It is also important to research how these activities might relate to engaging in other adolescent behaviors, such as aggression. Certain activities may be found to be related to aggression and others not. For example, adolescents who socialize more with

peers may be more likely to engage in relational aggression because they have more opportunities to do so. Informing parents to encourage their children to do other activities may mitigate this. It may also inform us that activities that are assumed to be related to aggression may not be. Examples of such activities include playing sports. The physical nature of playing team sports might lead to the hypothesis that spending time playing sports with friends will be related to heightened physical or overt aggression, but it is possible that this is not the case.

Aggression Research: Forms and Associations with Friendships

Subtypes of aggression. Originally aggression was conceptualized as physical or verbal harm intentionally inflicted on another person. Studies typically used the variables of physical, verbal or overt aggression when conducting research. Because of distinct gender differences in physical aggression, this definition led to the belief that boys were highly aggressive and girls were not. Then the concepts of *indirect*, *relational* and *social* aggression began to be explored. Buss (1961) identified *indirect* aggression as a form that was covert in nature, shielding the aggressor from retaliation, since he or she is unidentified. His definition of *indirect* aggression allowed it to be both verbal (rumor spreading) and physical (damaging someone else's property). It was not until the 1980s that this type of aggression was empirically investigated in order to understand its harmful effects (Lagerspetz, Björkqvist, & Peltonen, 1988; Bj□rkqvist, Lagerspet, & Kaukiainen, 1992). Although the focus of much of this research was on psychological harm through social manipulation, the researchers still acknowledged that *indirect* aggression can involve causing physical harm (Bj□rkqvist et al., 2001). Still,

the main distinction between direct and *indirect* aggression remains that *indirect* aggression hides the identity of the aggressor and direct aggression does not.

The term *relational* aggression was introduced by Crick and Grotpeter (1995). This type of aggression is contrasted with physical aggression, because it describes inflicting harm on the relationships of another person, rather than physical injury. It is a form of verbal aggression, but does not include types of verbal aggression that are targeted directly at harming the individual (e.g. name-calling), only their relationships and reputation. A child using direct or overt verbal aggression might approach another child and verbally insult him or her with no others around, causing psychological harm to the victim. In contrast, an example of *relational* aggression would be a child telling the victim's friends a rumor that causes the friends to no longer spend time with the victim. The victim's relationships with his or her friends were harmed by the aggressor instead of causing general psychological harm. This example illustrates *relational* aggression as a form of indirect aggression. However, it can also be direct. When direct relational aggression is used it tends to be a form of relational manipulation between two individuals, such as saying, "If you don't do this then I won't be your friend anymore." Overall, *relational* aggression is a form of aggression that targets a person's relationships in an indirect or direct way.

At about the same time, Cairns and colleagues (1989) were conducting longitudinal work on peer conflicts and observed that although adolescent girls did not have many conflicts that involved physical aggression, their disputes often involved manipulation of their friends. They coined the term "*social* aggression" to describe behaviors that manipulated group acceptance by excluding a person or attacking their

character. Galen and Underwood (1997) also began studying *social* aggression but slightly tweaked the definition. Their definition was, “Social aggression is directed toward damaging another’s self-esteem, social status, or both, and may take direct forms such as verbal rejection, negative facial expressions or body movements, or more indirect forms such as slanderous rumors or social exclusion” (p. 589). The researchers used this definition and term because they believed it was the most holitistic approach that included both indirect and direct forms, both verbal and nonverbal, and that the intent of this type of aggression was to do social harm.

A review of the differences between indirect, relational, and social aggression was done by Archer and Coyne (2005). They found very few differences between the three different types of aggression and concluded that the emphasis should be on researching all three together and not making distinctions between the three. In line with these findings, the current study will use the term *relational aggression* because it uses the same definitions, items, and method as Crick and colleagues, who use this term in their research.

Relationship of friendship with aggression. Research on aggression and friendship has typically focused on overt and physical forms of aggression. Highly aggressive adolescents tend to have fewer in-school friends than others, but have more out of school friends who live in close proximity to them (Bagwell, 2004; Dishion, Andrews & Crosby, 1995). Aggressive youth tend to be rejected, which may limit their friendship choices to other aggressive and/or rejected youth in and out of school (Newcomb, Bukowski, & Pattee, 1993). Other research has indicated that aggressive and deviant friends create an environment that does not serve these adolescents well.

They tend to have similar levels of aggression even before they become friends, and over the course of time the friends become more similar in their level of aggression (Cairns et al., 1989).

Dishion and his colleagues have published several studies on deviant friendships, of which aggression is a component (Dishion et al., 1995; Dishion, Eddy, Haas, Li, & Spracklen, 1997; Dishion, Spracklen, Andrews, & Patterson, 1996; Granic & Dishion, 2003). The focus of these studies has been on "rule-break" (RB) talk, which refers to utterances that contain elements of antisocial behavior or breaking social norms. Examples of RB talk include discussing cheating, stealing, lying, and aggression. To study RB talk, Dishion and colleagues have borrowed a methodological strategy from Gottman and Levenson (1992) that involves videotaping the conversations of romantic partners. Dishion and colleagues' method has participants bring in a close friend, and the two adolescents are videotaped while completing a problem solving task together. The conversations are later coded to determine engagement in RB talk, normative talk, and reactions to RB talk (such as laughing or pausing). RB talk *bouts* refer to the duration of RB talk before switching to normative talk. Initial work identified that, compared to nondeviant friends, the pairs of deviant friends showed a pattern of positive reinforcement of RB talk. Bouts of RB talk were longer and occurred more often among deviant friends when positive engagement occurred. Also, deviant friends displayed more positive engagement in response to RB talk (Dishion et al., 1996). Later work linked the mean duration of RB talk to increases in substance use and serious delinquent offenses (Dishion et al., 1997; Dishion et al., 1996).

Dynamic systems (DS) theory has been applied to the research on RB talk in deviant friendships. DS theory is used in developmental psychology to explain how multiple interactions continuously affect development, with a focus on the importance of studying development over shorter durations of time with many points of data. An important component of DS theory that is applicable to deviant friendships is attractors or absorbing states (Thelen & Smith, 2006). In deviant friendships, RB talk is conceptualized as an absorbing state, in that once adolescents begin to engage in it, they find it hard to disengage from this type of talk. This results in longer bouts of RB talk. For non-deviant friends RB talk may be engaged in, but the duration of the talk bouts does not increase across the course of the conversation as it does in deviant friendships. Granic and Dishion (2003) studied RB talk in friendships using the method of videotaping conversations and coding them. Using time-series analysis they calculated the slopes of the duration of RB talk bouts across the conversation to examine if they increased for deviant friends. Their results indicated this was the case. The stronger the attractor state (the more positive the slope was), the more it was related to later affiliation with deviant peers, authority conflict and substance abuse.

Researchers have also studied how aggression affects friendship quality. The results have not created a clear picture of what effect aggression has on friendship quality. Some studies have found a positive relationship, others a negative relationship, and some no relationship at all (Dishion et al., 1995, Grotpeter & Crick, 1996; Hawley, Little & Card, 2007; Rose & Asher, 1999; Rys & Bear, 1997). Higher intimacy has been found to be associated with relational aggression within the friendship, and lower intimacy has been found to be related to higher overt aggression against a third party

(Grotpeter & Crick, 1996). Since relational aggression may be more common among girls and overt aggression more common among boys, it is possible that aggressive girls and boys may experience different effects on their friendships. However, this possibility has not been directly tested.

Peer Status: Multiple Forms and Associations with Aggression and Friendship

Social preference vs. perceived popularity. Traditional peer status research investigated children of varying levels of likeability or acceptance. *Social preference* has typically been measured using the sociometric method (although other approaches have also been used such as rating scales). This method involves a reference group, "votee" population, and voter population. The reference group refers to a collection of individuals who interact with the target peers and who can comment on their characteristics. When measuring *social preference*, the reference group is usually either a classroom or an entire grade. All of the individuals that are in that classroom or grade make up the "votee" population, and are the ones that will be assessed. The voter population is composed of all the individuals that participate in assessing the votee population (Cillessen, 2009). For *social preference* the voters are asked to nominate "votees" who they "most like" and who they "least like." Originally, Coie and colleagues (1982) used a limited nomination procedure where children could only nominate three classmates for each category, but now unlimited nominations are more commonly used and there is evidence that their results are more stable and reliable than limited nominations (Cillessen, 2009; Terry, 2000).

The nominations that are received have to then be quantified. All of the nominations that a "votee" receives for "liked most" and for "liked least" are added up,

subtracted from each other and then standardized within the reference group, yielding a score for *social preference* (Cillessen, 2009). Children high on *social preference (likeable)* have been found to be friendly, sociable, and attractive, while *rejected (disliked)* are aggressive, excluded from activities and sometimes suffer from externalizing and internalizing disorders (LaFontana & Cillessen, 2002; Newcomb et al., 1993). Using the sociometric method to measure status became the norm for several decades and has resulted in a vast amount of information about differences in liked/accepted children versus rejected children.

This conceptualization of peer status as likeability was later challenged in the developmental literature, partly due to research conducted by sociologists on the topic (Eder, 1985; Merten, 1997). Sociologists studying peer hierarchies among children and adolescents conceptualized status in terms of social power rather than likeability, and their research showed very different outcomes for "high status" children. For example, Merten (1997) found a positive association between being popular and being aggressive among middle school girls. Thus, distinctions were then made between *perceived popularity* (how influential, visible and dominant an individual is among peers) and *sociometric popularity/social preference* (how well-liked an individual is among his or her peers) (Parkhurst & Hopmeyer, 1998). Being *perceived popular* during adolescence is related to both negative characteristics, such as aggression and substance use, and positive characteristics, such as visibility, prominence, and power (Cillessen & Mayeux, 2004; Mayeux, Sandstrom & Cillessen, 2008). Further, the effect of *perceived popularity* on other outcomes is sometimes moderated by other factors. For example, Schwartz and colleagues (2006) found that for those who were aggressive, increases in

perceived popularity were related to decreases in grade point average and increases in school absences, but the same problems were not observed for *perceived popular* youth who were not aggressive.

Although these are two distinct forms of status, there is some overlap (Parkhurst & Hopmeyer, 1998). During middle childhood, the two forms of peer status are highly positively related, but upon the entrance to middle school they begin to become less related to each other (Cillessen & Borch, 2006; Cillessen & Mayeux, 2004). *Perceived popular* adolescents are not always well-liked, especially girls. Between 5th and 9th grade, it has been found that the correlations between *perceived popularity* and *social preference* drop from .73 to .40 (Cillessen & Mayeux, 2004). After 9th grade the correlations between the two constructs have been found to become negatively related (Cillessen & Borch, 2006). An examination of gender trends reveals that while adolescent boys are often well-liked *and* perceived popular, girls who are perceived popular are often disliked. The correlations for boys have been found to change from .77 in 5th grade to .63 in 9th grade, while for girls they gradually decreased from .67 in 5th to .04 in 9th (Cillessen & Mayeux, 2004). After 9th grade the correlations for boys have been found to stay positive, but become negative for girls (Cillessen & Borch, 2006).

Relationship of peer status with aggression and friendships. Most investigations of *social preference* and overt and relational aggression have found negative associations between the two (Prinstein & Cillessen, 2003; Rys & Bear, 1997), although there are a few exceptions, especially among studies of adolescents (e.g. Cillessen & Mayeux, 2004). The aggressive behaviors that these individuals display can contribute

to why they are disliked and continue in a perpetual cycle by seeking needed attention through aggressive acts. *Perceived popularity* has shown a very different relationship with overt and relational aggression; these constructs are positively related. This finding appears in both concurrent and longitudinal studies, showing that not only are *perceived popular* adolescents often high in overt and relational aggression, but that *perceived popularity* is also a strong predictor of later aggression (Cillessen & Mayeux, 2004; Rose, Swenson & Waller, 2004).

The relationship between peer status and aggression changes across development. *Overt aggression* has a negative relationship with *social preference* and *perceived popularity* early on, but then it changes across time. Once adolescents enter high school, *social preference* tends not to be significantly related to *overt aggression*. *Perceived popularity* and *overt aggression* have a curvilinear relationship; decreasing from fifth grade until ninth grade and then increasing from ninth grade to twelve. On the other hand, *relational aggression* gradually becomes more strongly positively related to *perceived popularity* and more negatively related to *social preference* across adolescence (Cillessen & Borch, 2006; Cillessen & Mayeux, 2004).

Gender differences have also been found in the associations between *perceived popularity* and different subtypes of aggression. For adolescent boys, *perceived popularity* has a stronger relationship with overt aggression, and for adolescent girls *perceived popularity* has a stronger relationship with relational aggression (Cillessen & Mayeux, 2004). Relational aggression often happens within a friendship and overt aggression outside of the friendship. Friends will relationally aggress against their own friends, but overtly aggress together against individuals who are not their friends

(Grotpeter & Crick, 1996). This effect may contribute to why popular girls are more likely than boys to be disliked by peers. Popular girls may hurt their own friendships via relational aggression and this could contribute to their disliking if the friendships dissolve. On the other hand, popular boys do not suffer these effects because they do not hurt their own friends as often as girls. However, research on *perceived popularity* and friendships is almost non-existent, leaving us with little knowledge of how the two are associated with one another. Of the little literature that exists, we know that friends tend to be of similar popularity and those who are in the "popular" crowd also have friends who belong to the same crowd (Houser & Cillessen, 2009; Prinstein et al., 2003; Rose et al., 2004). Friendship quality differences have been found between friends of different levels of *perceived popularity*. One study identified dyads of "popular" adolescent friends, friend dyads whose members were both high on *perceived popularity*, and "average popular" adolescent friend dyads, those whose *perceived popularity* were average. It was found that for boys, popular friends were lower in closeness than average friends, but no effects were found for girls (Houser, Mayeux, & Cillessen, 2007). Rose and colleagues (2004) found that for those adolescents who are highly disliked, aggression was related to high conflict in their friendships. However, this was not the case for adolescents who were *perceived popular*. Popularity seems to serve as a protective factor against detrimental effects of aggression on friendship quality, but it may also serve as a "risk factor" in terms of friendship closeness in general.

Literature Gaps and Research Questions

RQ 1: What are the associations among perceived popularity, relational aggression, and overt aggression? Do these relationships differ by gender?

Previous studies have investigated this topic and continue to find positive relationships among the constructs that vary in magnitude based upon gender (Cillessen & Borch, 2006; Cillssen & Mayeux, 2004; Prinstein & Cillessen, 2003; Rose et al., 2004). The current study sought to continue to replicate these findings to compare and contrast to previous studies. It extends the current findings on the relationship between *perceived popularity* and aggression to a high school sample, which represents an understudied age group in the study of perceived popularity, relational aggression, and overt aggression.

RQ 2: How do the friendship networks of perceived popular, average and unpopular adolescents differ?

Although there are large separate bodies of literature regarding friendships, aggression and popularity, more comprehensive research is needed to integrate the constructs. For example, little is known about the friendships of *perceived popular* youth. Stereotypes of perceived popular adolescents have led to the belief that they have a large network of peers to hang out with, become close friends with and do activities with. However, the validity of this stereotype has not been directly tested. A better understanding of their friendships will lend insight into unanswered questions inspired by popularity research. Who do popular youth become friends with? Do they have more friends than those peers who are less popular than they are? Are their friendships made in school or out of school? The current study aimed to answer these questions by using

the existing literature on friendships of *sociometrically popular* youth as a guide. It investigated how friendship networks of *perceived* popular, average, and unpopular adolescents differ. It is valuable to know whether or not the stereotypes about *perceived popular* adolescents' social networks are true or not and how these findings compare to the findings of *sociometrically popular* youth.

George and Hartmann (1996) conducted a study on the differences in friendship networks among those adolescents who were *sociometrically* popular, average, and *sociometrically* unpopular. Fifth and sixth graders completed a peer nomination of likeability, and an assessment of who their friends were, as well as characteristics of their friends. The authors analyzed who had more friends (both unilateral and reciprocal), how many friends they had of different age levels (preschool, younger, same age, older or adult), how many were in different locations (classroom, school, school district, or other city/state) and how many were of different levels of *sociometric popularity* (popular, average or unpopular). The results indicated that compared to average and *sociometrically* popular children, unpopular children had more younger friends, fewer same age friends, more friends located in the school district, more friends that were also unpopular, fewer friends that were popular and fewer reciprocated friends. *Sociometrically* popular children had fewer friends who were *sociometrically* unpopular, more friends that were *sociometrically* popular and more reciprocated friends than children who were *sociometrically* average or unpopular.

The current study used a similar method to George and Hartmann (1996), only with peer nominations of *perceived popularity* instead of *sociometric popularity*. This allows us to gain information about the friendships of *perceived popular* adolescents

and the ability to compare to research on friendships of *sociometrically popular* children. Previous research has shown the benefits of having friends (Hodges et al., 1999; Schmidt & Bagwell, 2007). Having a profile of the friendships of adolescents at different levels of *perceived popularity* can inform us whether there is concern for some adolescents. Being unpopular may be a risk factor for friendlessness and the negative effects that accompany this. It is also possible that being popular may afford individuals with the benefit of having lots of friends, which can help in school transitions and academic achievement (Cook et al., 2007; Oswald & Clark, 2003). The previous findings related to *sociometric popularity* have found this to be the case and this study shows whether it is also true of *perceived popularity* (George & Hartman, 1996). This study also allowed nominations of friendships outside of the school, which is a limitation of other studies on friendship that solely use in-school friendships. Neglecting out-of-school friendships may lead to the belief that certain groups (e.g. unpopular adolescents) have few friends, when they just do not have as many friends in school.

RQ 3: What do adolescent friends do when they spend time together? Are there differences based on perceived popularity and gender?

Another area that has not been studied in-depth is how friends spend their time together, including possible differences between highly *perceived popular* and less *perceived popular* adolescents in the activities friends do together. This will contribute to our understanding of both adolescent friendships in general and friendships of *perceived popular* adolescents. The little research that exists is specific to how preadolescents spend time with their peers in general and not specifically friends. By investigating the activities that adolescents do with their friends, it can be found

whether certain adolescents (e.g. perceived popular) engage in antisocial activities and others in more normative activities. *Perceived popular* adolescents have been found to be high in aggression and risk taking behaviors, thus they may engage in these activities together with their friends (Cillessen & Mayeux, 2004; Mayeux et al., 2008). If they are engaging in these activities with their friends it may lead to an increase in these behaviors among their peer network, similar to the contagion effect of rule-break (RB) talk in deviant friendships (Dishion et al., 1995).

Also, it is hypothesized that popular adolescents will spend more time with their friends doing activities that will increase their visibility. This is expected because popularity has previously been discussed in relation to visibility among peers, and doing more activities with friends that increase this among peers is likely (Cillessen & Rose, 2005). “Visible” activities with friends can serve as maintenance of their social status, especially if they are around other popular friends.

Gender differences are also important to investigate since previous findings among preadolescents have found differences in the activities they engage in, with girls socializing more and boys playing sports together more (Zarbatany et al., 2000). Using a similar approach to Zarbatany and colleagues’ (1990; 2000) work on preadolescent peer activities, the current study obtained qualitative data that was used to create a quantitative measure of friendship activities. It is expected that consistent with the previous findings, girls will do more activities with their friends that encourage socialization and boys will do more activities that are “active,” such as sports.

RQ 4: Are characteristics of adolescent friendship networks and how adolescents spend time with their friends related to aggression? Is this moderated by perceived popularity and gender?

This study also sought to extend the literature on the relationships between friendship, aggression, and perceived popularity. Prior research has shown that being popular or becoming popular is related to heightened aggression, but it is unknown whether just being friends with a popular person is related to aggression (Cairns et al., 1988; Cillessen & Mayeux, 2004; Houser & Cillessen, 2009; Rose et al., 2004). Friendship effects may partly explain these previous findings. Adolescents may be friends with popular adolescents and engage in the aggressive behaviors that their popular friends do, and be related to heightened aggression. This is in line with the friendship influences that Dishion and collegues (1995) found among deviant friends showing that spending a lot of time discussing their deviant acts led to increases in these behaviors. Therefore, having more friends who are popular may affect an adolescent's own level of aggression since their friends are more likely to be highly aggressive.

Certain characteristics might also relate to aggression, such as having friends of different ages or friends who do not attend the same school. Having more out-of-school friends may indicate difficulties with friendships in-school and lead adolescents to have to look elsewhere for friends. Previous research has shown that many aggressive youth tend to have more out-of-school friends, possibly due to rejection from their in-school peers (Bagwell, 2004). It is expected that having more out-of-school friends will be related to aggression. Due to their aggression, aggressive youth may have to meet friends outside of school who may also be aggressive. The existing aggressive

tendencies may be enhanced by influences from friends who are in the same situation. Similar effects may be found for the age of their friends. Adolescents that are unable to make friends who are the same age may have to make friends with others who also cannot make friendships with those their own age. These adolescents may have problems making friends their own age because of rejection, aggression, or psychosocial immaturity. This may enhance aggressive tendencies by being around friends who are of a different maturity level. Adolescents who have younger friends may be aggressive because it is more acceptable for youth their friends' age, and adolescents who have older friends may try to bridge the "maturity gap" and be aggressive to act older.

The activities that adolescents do with their friends might also be related to aggression. Those who engage in more substance use or physical activities might be more overtly aggressive than others because these activities could serve to enhance aggressive tendencies. Relational aggression might be more common among youths who spend a lot of time talking and electronically communicating with friends. Electronic communication has been linked to a new form of bullying termed "cyberbullying" that often involves being relationally aggressive (for a review see Kowalski, Limber, & Agatston, 2008). The more familiar an adolescent is with using these communication outlets, the more likely they might end up using it to be aggressive. In addition, friends who spend more time doing unstructured activities (e.g. sleepovers, hanging out) together may use this time to be relationally aggressive, possibly out of boredom.

It is possible that the relationships between what adolescents do with their friends and aggression may be moderated by popularity and gender. Sociological studies have found that popular boys often do more athletic extracurricular activities, and may also do so with their friends (Eder & Kinney, 1995). The relationship between sports and overt aggression might be stronger, or only exist, for popular boys because they are more likely to be doing sports and are also typically high in aggression.

Relational aggression and spending time doing unstructured activities with friends, such as sleepovers and "hanging out," might only be associated with relational aggression for popular adolescents, especially popular girls. These may be the opportunities that popular youth have to be relationally aggressive, since this form of aggression often needs more than one person to be involved. Doing more unstructured activities may cause boredom in adolescents and how they deal with this boredom may differ as a function of *perceived popularity*, especially for girls. Popular adolescents may use this as an opportunity to plan and engage in relational aggression. They are more likely to be relationally aggressive and are now around friends who can help them carry out these acts. Combined with doing something with their friends that can lead to boredom, engaging in unstructured activities with friends may lead to relational aggression for popular adolescents. Whereas, for less popular adolescents they do not have a tendency to be relationally aggressive and just use this time to socialize with their friends. This can give insight into the dynamics of the relationship between *perceived popularity* and *relational aggression*. The activities that they do may cause boredom and lead them to use that time to be relationally aggression.

Current Study

This study investigated the friendships of high school adolescents and used peer nominations of perceived popularity, relational aggression and overt aggression. Additionally, friendship networks and friendship activities were assessed. The popularity (unpopular, average, popular), age/grade (younger, same age, older, adult), gender (same-sex, opposite-sex), and location (school, out of school) of each friend were indicated by the participants. How much they spend timing doing outdoor games/activities, indoor games/activities, playing sports, sleepovers, attending school events/activities, going out to local places/events, eating, talking, substance use/parties, and hanging out with their friends was also assessed.

Method

Development of the Friendship Activities Questionnaire

In order to conduct this investigation, it was necessary to develop an age-appropriate assessment of how adolescents spend time with their friends—in other words, what kinds of activities they engage in with friends. Friendship activities were assessed using a newly created measure based upon pilot work conducted with adolescents.

Parents of nine adolescents were contacted via e-mail about having their children participate in an interview study of how adolescents spend time with friends. Five parents (100%) agreed to allow their children to be interviewed. Of these nine children, 100% provided their own assent to be interviewed. Once parental consent and child assent were obtained, the participating adolescents were interviewed either in a university lab or at their home. They were asked questions pertaining to what they did

with their friends in school, out of school, on weekends, and during school breaks. Questions were also asked about whether they spend more time in groups or one-on-one situations and how activities differed between those two situations. Finally, recognizing that adolescents might engage in activities that the participants themselves did not engage in (and thus, did not mention), we asked them about any other activities adolescents might do when spending time with their friends.

The interviews were then transcribed and the transcribed responses were broken down into "meaningful units," or short phrases pertaining to one activity or type of activity, by two independent research assistants. The two lists of meaningful units were compared and discrepancies were discussed to create a finalized list of 162 meaningful units to be coded (Creswell, 2007). There was an 87% agreement between the raters in the initial list of meaningful units. A content coding scheme was created by looking at portions of the data. The original codes were as follows: *Outdoor games/activities, indoor games/activities, playing sports, sleepovers, attending school events/activities, going out to local places/events, mall, eating, talking, substance use/parties, hanging out* and *other*. The results indicated a low number of meaningful units coded for *mall* (7 units, 4% of units), which resulted in combining this category with *going out to local places/events*. The *other* (12 units, 8% of units) category was dropped, yielding ten final content codes: *Outdoor games/activities* (10 units, 6% of units), *indoor games/activities* (24 units, 15% of units), *playing sports* (13 units, 8% of units), *sleepovers* (13 units, 8% of units), *attending school events/activities* (10 units, 6% of units), *going out to local places/events* (23 units, 14% of units), *eating* (11 units, 7% of units), *talking* (20 units, 12% of units), *substance use/parties* (10 units, 6% of units), and *hanging out* (16 units,

10% of units). These codes were then used in creation of the Friendship Activities Questionnaire (FAQ; see below).

Participants

205 ninth-grade students in a high school located in the southern United States participated in the study. Permission was obtained from school administrators to send a letter detailing the study to the parents of all ninth-grade students. Attached to the letter was a consent form that parents signed. They were asked to return the consent form to their child's school, regardless of whether or not they allow their child to participant in the study. During a designated class period, research assistants collected the consent forms and handed out assent forms to all the adolescents who obtained permission from their parents. Only adolescents who had parental consent and gave their own written assent participated in the study.

Demographic and Peer Nomination Measures

Participants indicated their age, gender and race and then completed a peer nomination instrument. A roster of the names of all of the students in the grade was given to each participant. Next to each student's name was a unique code number that was used when nominating that student. For each nomination item, 10 blank spaces were provided for the participant to write down the code numbers of peers they wished to nominate for that item. However, participants were encouraged to nominate more than 10 peers if they wished to. *Perceived popularity* was measured by instructing participants to "Write the code numbers of the people who are the most popular in your grade" and "Write the code numbers of the people who are the least popular in your grade." Using the procedure outlined in Coie, Dodge, and Coppotelli (1982), the

number of nominations each grade member received for each item was counted. Then the number of nominations each participant received for each item was standardized to a z-score with a mean of 0 and a standard deviation of 1 based on the average number of nominations received. Standardized popularity scores were calculated for each grade member by subtracting the number of "least popular" nominations from the number of "most popular" nominations. The final score was again standardized within grade.

Social preference was measured and used as a control variable in some analyses. The same peer nomination procedure was used, but nominations were for likeability. Participants were asked to nominate "Who in your grade do you like the most?" and "Who in your grade do you like the least?" Nominations for both were summed and standardized as previously mentioned for popularity and a final score for *social preference* was obtained by subtracting the "liked least" score from the "liked most" score and standardizing within the grade.

Both *relational aggression* and *overt aggression* were measured using peer nominations (Crick & Grotpeter, 1995). For *relational aggression* participants were instructed to respond to three questions by writing the code numbers of peers who engage in each behavior the most. The three questions were: "Who are the people that exclude others from the peer group?"; "Who are the people who spread rumors or gossip about some peers?" and "Who are the people who ignore others in order to get their way?" *Overt aggression* was measured the same way but asked these three questions: "Who are the people who initiate or get into physical fights with peers?"; "Who are the people who hit, shove, or push peers?" and "Who are the people who try to dominate or bully people?" Standardized relational and overt aggression scores were

derived using the same procedure used for the popularity score. First standardized scores were calculated for each item, and then the mean of the three standardized scores for the *relational aggression* items and mean of the three standardized scores for the *overt aggression* items were calculated. The items were all highly correlated for *relational aggression* (r = .58-.69) and *overt aggression* (r = .84-.91).

Friendship Networks and Activities

The friends in each participant's network were assessed by asking them to list up to 15 of their "good friends." They were instructed to write the code number of the friend if the friend was on the peer nomination roster, or the first name of the friend if they were not. Participants recorded each friend's gender and grade level (if applicable) and age in years. For friends who attended school, participants indicated which high school or middle school they attended.

These questions were used to create the following variables to describe each friend: *gender*, *grade/age*, *location*, and *friend's popularity*. The *friend's gender* was either *same-sex* or *opposite-sex*. *Grade/age* was either *younger* (1 grade/year or more below), *same*, *older* (1 grade/year or more above), or *adult* (age 18 or older). *Location* was one of two types: *same-school* or *out-of-school*. *Friend's popularity* was one of three types: *popular* (standardized score .75 or more above the mean), *average* (standardized score between .75 above or below the mean), or *unpopular* (standardized score .75 or more below the mean).

Friendship activities questionnaire (FAQ). The previously collected qualitative data (see above) was used to create a new measure of friendship activities. *Outdoor games/activities, indoor games/activities, playing sports, sleepovers, attending school*

events/activities, going out to local places/events, eating, talking, substance use/parties, and *hanging out* were the ten final categories obtained from the content coding of the data.

Participants were asked to rate how often they spent time doing the activities with their friends in the past 30 days on a Likert scale. Each of the ten activities is listed and examples of activities are given (e.g. Doing indoor activities, such as: videogames, watching movies, listening to music) and participants circled a response ranging from 1 (never) to 7 (often) to indicate how much time they spent doing this type of activity with their friends.

Results

Regression analyses were conducted to replicate findings of the relationship between perceived popularity and the two forms of aggression, along with predicted gender differences. Then a series of MANOVAs were conducted to investigate differences in friendship networks between popular, average and unpopular adolescents. Regression analysis and descriptive statistics were used to investigate how adolescent friends spend time together, and if this differed based on perceived popularity and gender. Finally, a regression analysis tested whether adolescent friendship networks and friendship activities were related to levels of overt and/or relational aggression, and whether those associations were moderated by perceived popularity and gender.

RQ 1: What are the associations among perceived popularity, relational aggression, and overt aggression? Do these relationships differ by gender?

To address these research questions, a hierarchical regression analysis was conducted with the continuous standardized peer-report score for *perceived popularity*

as the dependent variable, while controlling for *social preference.* For the independent variables, *gender* was entered in Step 1, *social preference* in Step 2, and *overt aggression* and *relational aggression* in Step 3. In Step 4, the two interactions between *gender* and each type of aggression were entered. This controlled for the overlap in effects of *relational* and *overt aggression* and directly tested for the moderation of *gender*. Table 1 presents the standardized betas and *t* values for each predictor and includes the R^2 and change in R^2 for each block. Results indicated that popular adolescents were both more overtly aggressive, $\beta = .37$, $t(215) = 6.26$, $p < .001$, and relationally aggressive, $\beta = .49$, $t(215) = 8.40$, $p < .001$, than adolescents lower in popularity. However, no significant gender interactions were found for either overt or relational aggression.

RQ 2: How do the friendship networks of perceived popular, average and unpopular adolescents differ?

Bivariate correlations were obtained between popularity and each of the friendship network variables; results are presented in Table 2. Significant positive relationships with popularity were found for *number of younger friends*, $r = .18$, $p = .01$, *friends from a different school*, $r = .16$, $p = .03$, *number of popular friends*, $r = .54$, $p < .001$, and *total number of friends*, $r = .14$, $p = .05$. Additionally, significant negative relationships with popularity were found for *number of average friends*, $r = -.19$, $p = .01$, and *number of unpopular friends*, $r = -.30$, $p < .001$.

Next, participants were assigned to one of three *popularity level* groups using the popularity scores derived from the peer nominations. Those with standardized scores at .75 or more above the mean were categorized as *popular* ($n = 24$), those whose

standardized scores were between .75 above and below the mean were categorized as *average* (*n* = 147), and those with standardized scores at .75 or more below the mean were categorized as *unpopular* (*n* = 26). Two separate analyses were conducted; one using *all friends* and one using only *school friends*. Only friends that the participants used a code number when nominating, indicating they were in the same grade and attended the same school, were considered *school friends*.

Overall differences in the number of friends were investigated by conducting a 3-way (*popularity level*) ANOVA with the number of *all friends* as the dependent variables and *popularity level* (*popular*, *average*, *unpopular*) as the independent variable. Results indicated that there was no significant effect of popularity level for total number of *all friends*.

To analyze differences in characteristics of adolescents' friendship networks, repeated-measures MANOVAs were conducted. Network characteristics *grade/age* (*younger*, *same*, *older*, *adult*), *friend's gender* (*same-sex*, *opposite-sex*), *location* (*in-school*, *out-of-school*), and *friend's popularity* (*popular*, *average*, *unpopular*) were the within-subject factors and *popularity level* (*popular*, *average*, *unpopular*) was the between-subjects factor. Significant omnibus F-tests were probed using ANOVA and Tukey post-hoc tests, as noted. For this study only the interactions between the within-subjects factors and between-subject factors were of interest. Results and descriptive statistics are indicated in Table 3.

Analyses of all friends. To test for effects of popularity on the number of friends at different age levels, a 3 (*popularity level*) × 4 (*grade/age*) repeated-measures MANOVA was conducted on the number of *unilateral friends*. Effects of popularity on

the number of friends who are the *same-sex* or *opposite-sex* were tested using a 3 (*popularity level*) × 2 (*friend's gender*) repeated-measures MANOVA with number of *unilateral friends* as the dependent variable. Finally, a 3 (*popularity level*) × 2 (*location*) repeated-measures MANOVA tested for effects of popularity on the number of friends at different locations, with number of *unilateral friends* as the dependent variable. No significant interaction effects were found in any of these analyses, indicating that popularity had no effect on the characteristics of the friends within their friendship network. As a result, no post-hoc tests were necessary to test for differences between the groups.

Analysis on school friends. An additional MANOVA was conducted to test for differences between *popular, average* and *unpopular* adolescents in the number of *school popular, average,* or *unpopular friends*. A 3 (*popularity level*) × 3 (*friend's popularity*) repeated-measures MANOVA was conducted, with number of *school friends* as the dependent variable. A significant interaction effect was found between *popularity level* and *friend's popularity*, Wilks' Lambda = 18.98, $F(4, 344) = 35.70$, $p < .001$. To follow-up on the interaction effect, separate 3-way (*popularity level*) ANOVAs were conducted for each of the three levels of *friend's popularity* (*popular, average,* and *unpopular*). Results indicated significant effects for number of *popular*, $F(2, 173) = 34.04$, $p < .001$, *average*, $F(2, 173) = 4.78$, $p = .01$, and *unpopular friends*, $F(2, 173) = 9.54$, $p < .001$. Tukey post hoc tests revealed that *popular* adolescents reported significantly more *popular friends* than *average* and *unpopular* adolescents, *average* adolescents reported significantly more *average friends* than *popular* and *unpopular*

adolescents, and *unpopular* adolescents reported significantly more *unpopular friends* than *popular* and *average* adolescents (see Table 3).

RQ 3: What do adolescent friends do when they spend time together? Are their differences based on perceived popularity and gender?

Means and standard deviations for frequency of the ten friendship activities (*outdoor games/activities, indoor games/activities, playing sports, sleepovers, attending school events/activities, going out to local places/events, eating, talking, substance use/parties,* and *hanging out*) are presented separately for boys and girls in Table 4. This analysis illustrates the normative levels of adolescent engagement in these activities with their friends. Gender differences in how much time adolescents spend engaging in these activities with friends were tested using a series of t-tests. Results indicated that girls reported eating together, $t(205) = -4.01$, $p < .001$, electronically communicating, $t(206) = -3.43$, $p = .001$, and having sleepovers, $t(203) = -3.19$, $p = .002$, more than boys did. Girls engaged in sports less often than boys did, $t(204) = 3.57$, $p < .001$.

To test the relationship between engagement in friendship activities and popularity, correlations between each of the ten activities and *popularity* were obtained. To test for gender differences, separate correlations were conducted for boys and girls and Fisher's r-to-z transformations tested for significant differences. Overall correlations are presented in Table 5 and correlations broken down by gender are presented in Table 6. Results indicated positive relationships between popularity and *going to school events*, $r = .29$, $p < .001$, *going to local places*, $r = .29$, $p < .001$, *having sleepovers*, $r = .21$, $p = .002$, *playing sports*, $r = .30$, $p < .001$ and *going to parties*, $r =$

.22, $p = .001$, with friends. No significant gender differences were found for the correlations.

RQ 4: Are characteristics of adolescent friendship networks and how adolescents spend time with their friends related to aggression? Is this moderated by perceived popularity and gender?

Six different hierarchical regression analyses were conducted to investigate this set of research questions. Separate analyses were conducted using *all friends' characteristics, school friends' popularity,* and *frequency of friendship activities* as predictor variables. For each, two different regressions were conducted, one using *relational aggression* as the dependent variable and one using *overt aggression* as the dependent variable. Interactions were plotted in the manner of Aiken and West (1991). Moderation by gender was interpreted by testing for differences in the slopes of regression lines for girls and boys. Moderation by popularity was tested by creating two regression lines, one calculated using a popularity score of 1 standard deviation above the mean and the other using 1 standard deviation below the mean. The results were then interpreted by testing for differences in the slopes of these lines.

Friendship Networks

All friends' characteristics. The purpose of these analyses was to investigate whether having more friends of a different age or from a different school was related to *relational* and *overt aggression,* and if this was moderated by *gender* and *perceived popularity*. Two regression analyses were conducted with identical predictor variables. *Gender, social preference, popularity,* and *total number of friends* were entered in Step 1. Step 2 contained three friendship network variables: the number of *younger, older*

and *different school all friends*. Step 3 contained the two-way interactions between *popularity*, *gender*, and the three friendship network variables. For Step 4, the three-way interactions between *popularity*, *gender*, and the three friendship network variables were entered. The results for this analysis are presented in Table 7.

For *overt aggression* no significant main or interaction effects of interest were found. However, for *relational aggression* several significant effects were found. Results indicated that adolescents who had more friends who went to a different school were higher in *relational aggression*, $\beta = .15$, $t(195) = 2.09$, $p = .04$. *Popularity* moderated the association between number of *younger* friends and *relational aggression*, $\beta = -.23$, $t(195) = -2.89$, $p = .004$, and between number of *different-school* friends and *relational aggression*, $\beta = .22$, $t(195) = 2.56$, $p = .01$. These results indicated that adolescents who were low on popularity and had few friends that were younger or from a different school were the lowest on *relational aggression* (See Figures 1 and 2). Also, *gender* moderated the association between number of *different school friends* and *relational aggression* $\beta = .29$, $t(195) = 2.31$, $p = .02$, indicating that girls who had a lot of friends who went to a different school were highest on *relational aggression* (See Figure 3).

Finally, two three-way interactions were found predicting *relational aggression*. The first was between *gender*, *popularity*, and number of *younger* friends, and indicated that girls who were popular and had few younger friends were highest on *relational aggression*. This interaction also found that unpopular boys, regardless of number of younger friends, and unpopular girls who had few younger friends, were the lowest on *relational aggression* (See Figure 4). The second was between *gender*, *popularity*, and

number of *different school* friends, and indicated that girls who were popular and had a lot of different school friends were highest on *relational aggression.* It also found that regardless of number of different school, popular boys were higher on relational aggression than unpopular boys or girls (See Figure 5).

School friends' popularity. These analyses investigated whether having more friends of a different level of popularity is related to *relational* and *overt aggression* and if this is moderated by *gender* and *perceived popularity*. Two regression analyses were conducted with identical predictor variables. *Gender*, *social preference*, *popularity*, and *total number of friends* were entered in Step 1. Step 2 contained the following three variables of *school friends'* popularity: number of *popular*, *average*, and *unpopular school friends*. Step 3 contained the two-way interactions between *popularity*, *gender*, and the three *school friends' popularity* variables. For Step 4, the three-way interactions between *popularity*, *gender*, and the three *school friends' popularity* variables were entered. It is expected that having more *popular* friends will be related to more *relational* and *overt* aggression. The results for this analysis are presented in Table 8.

Results indicated that adolescents who had more unpopular school friends were higher in *overt aggression*. *Popularity* moderated the association between number of *popular school friends* and *overt aggression*, $\beta = -.22$, $t(172) = -2.62$, $p = .01$, and between number of *average school friends*, $\beta = -.41$, $t(172) = -4.53$, $p < .001$, and *overt aggression*. This indicated that popular adolescents who had more popular school friends were less overtly aggressive, and unpopular adolescents who had more popular school friends were more overtly aggressive (See Figure 6). It also found that popular adolescents with more average school friends were less overtly aggressive (See Figure

7). Finally, a significant three-way interaction between *gender*, *popularity*, and number of *average school friends* was found, β = .86, $t(172) = 5.70$, $p < .001$. Popular boys who had fewer average school friends and unpopular boys who had more average school friends were higher on overt aggression. However, this relationship did not exist for girls (See Figure 8).

For *relational aggression*, adolescents who had more popular school friends were higher in relational aggression, β = .24, $t(172) = 3.27$, $p = .001$. *Popularity* moderated the relationship between number of *average school friends* and *relational aggression*, β = -.20 , $t(172) = -2.12$, $p = .04$, indicating that popular adolescents with fewer average friends were higher on relational aggression (See Figure 9). Also, *gender* moderated the relationship between number of *popular school friends* and *relational aggression*, β = .32, $t(172) = 3.58$, $p < .001$, indicating that girls that had a lot popular friends were more relationally aggressive (See Figure 10). Finally, a three-way interaction between *gender*, *popularity*, and number of *popular school friends* predicting *relational aggression* was found, β = .30, $t(172) = 2.50$, $p = .01$. These results indicated that popular girls with a lot of popular school friends were the highest in relational aggression, but this effect was not present for boys (See Figure 11).

Frequency of Friendship Activities

This set of analyses investigated whether adolescents' friendship activities were related to their levels of *relational* and *overt aggression*, and if these associations were moderated by *gender* and *popularity*. Correlations were obtained between participants' ratings of their engagement in each of the 10 friendship activities and peer-nominated relational aggression and overt aggression. These results are presented in Table 5. *Overt*

aggression was positively related to *attending school events*, $r = .16$, $p = .02$, participating in *outdoor activities*, $r = .17$, $p = .01$, *playing sports*, $r = .22$, $p = .002$, and *going to parties/substance use*, $r = .38$, $p < .001$, with friends. *Relational aggression* was positively related to *attending school events*, $r = .23$, $p = .001$, *going to local places*, $r = .25$, $p < .001$, *having sleepovers*, $r = .24$, $p = .001$, *playing sports*, $r = .16$, $p = .02$, and *going to parties/substance use*, $r = .15$, $p = .03$, with friends.

Two regressions were then conducted using only the friendship activities significantly correlated to the type of aggression used in the analysis. For the first regression *overt aggression* was the dependent variable. *Gender*, *social preference* and *perceived popularity* were entered in Step 1. Next, the four *friendship activities variables* (*attending school events*, *outdoor activities*, *playing sports* and *substance use/*parties) were entered in Step 2. Finally, in step 4 the two-way interactions of *popularity*, *gender*, and four *friendship activities variables* were entered. The results of this analysis are presented in Table 9. Results indicated that adolescents who went to parties more or used substances more with friends had were higher on *overt aggression*, $\beta = .24$, $t(202) = 4.24$, $p < .001$. *Popularity* moderated the association between *playing sports* and *overt aggression*, $\beta = .46$, $t(202) = 2.32$, $p = .02$, and between *going to parties/substance use* and *overt aggression*, $\beta = .54$, $t(202) = 6.44$, $p < .001$. This indicated that adolescents who were both popular and played sports with friends a lot were highest in overt aggression, while those who were unpopular and played sports with friends a lot were lowest in overt aggression (See Figure 12). Also, those who were popular and "partied" with friends a lot were highest in overt aggression (See Figure 13). Gender also moderated the association between *going to parties/substance use* and

overt aggression, β = -.22, *t*(202) = -2.99, *p* = .003, indicating that boys who "partied" with friends a lot were highest in overt aggression and boys who "partied" with friends infrequently were the lowest in overt aggression (See Figure 14).

In the second regression *relational aggression* was the dependent variable. *Gender*, *social preference* and *popularity* were entered in Step 1. Next, the five *friendship activities variables* (*attending school events*, *going to local places*, *having sleepovers*, *playing sports* and *substance use/*parties) were entered in Step 2. Finally, in step 4 the two-way interactions of *perceived popularity*, *gender*, and five *friendship activities variables* were entered. Results are presented in Table. No significant main effects were found, but several interactions effects were significant. *Popularity* moderated the association between *relational aggression* and *attending school events*, β = -.52, *t*(202) = -2.09, *p* = .04, and *going to local places*, β = .53, *t*(202) = 2.48, *p* = .01. This indicated that adolescents who were both unpopular and attended of school events with friends a lot were highest on relational aggression (See Figure 15). Also, those who were both popular and went to local places with friends a lot were highest on relational aggression (See Figure 16). Finally, *gender* moderated the association between *relational* and *going out to local places*, β = .42, *t*(202) = 1.95, *p* = .05, indicating that girls who went to local places with friends a lot were highest in relational aggression and girls who went to local places with friends infrequently were the lowest in relational aggression (See Figure 17).

Discussion

This study investigated how the friendship networks of adolescents and the activities they do with their friends, were related to popularity and aggression. Although

previous studies have investigated aspects of friendships of sociometrically popular youth, little is known about the friendships of perceived popular or unpopular youth (George & Hartmann, 1996). Past research has found that being or becoming popular is associated with certain risk factors, such as aggression and substance use, but it is unknown if just being friends with popular adolescents carries a risk (Cillessen & Mayeux, 2004; Mayeux et al., 2008). Additionally, little is known about what adolescents spend time doing with their friends and if these activities are related to other negative behaviors. The results of this investigation lend evidence that who adolescents are friends with and what they spend time doing with their friends differs by popularity and is associated with aggressive behavior.

The results of this study suggest that popular, average and unpopular adolescents' friendship networks differ on one characteristic--the popularity of their friends. Adolescents were found to have more friends who are of a similar level of status than who are of different status, which corroborates previous findings (Houser & Cillessen, 2009; Rose et al., 2004). Also, the age, location and popularity of their friends had an impact on the level of their aggression, and these results were moderated by the participants' gender and popularity. Another portion of this investigation found that girls spent more time with their friends eating together, electronically communicating, and having sleepovers, and less time playing sports, compared to boys. It also found that going to school events, going out to local places, having sleepovers, playing sports, and partying more often with friends was positively related to popularity. Partying more often with friends was found to be positively related to overt aggression, and this association was moderated by gender and popularity. Finally, the

relationship between relational aggression and going to school events and going out to local places was moderated by gender and popularity.

Friendship Networks

Popularity level differences. Compared to George and Hartmann's (1996) study of differences in friendship networks of children of different levels of *social preference*, the results of this study found fewer differences in the friendship networks of adolescents of different levels of *popularity*. Differences between popular, average and unpopular adolescents in number of overall friends and those who were of a different gender (same, opposite), age (younger, same age, older, adult), location (same-school, different school) and popularity (popular, average, unpopular) were tested. I only found group differences in friends' popularity. Popular adolescents had the most popular friends of the three groups, average adolescents had the most average friends, and unpopular friends had the most unpopular friends. This is consistent with previous findings that have found high correlations between best friends' levels of popularity (Houser & Cillessen, 2009; Rose et al., 2004). However, this study differs from the previous ones because it went beyond a dyadic analysis and looked at the total number of close friends who shared the same level of popularity as the participants.

The lack of differences in the number of overall friends and differences in the other characteristics, may be partly due to the sample and method used. Categories based on popularity are usually created using cutoff scores of 1 standard deviation above and below the mean, but after no results were found with the standard cutoffs a somewhat more liberal cutoff of .75 above and below the mean was used to increase size of the groups. Even using this approach, the popular and unpopular groups were

small, making possible differences harder to detect. Bivariate correlations showed relationships between popularity and number of younger friends, (r = .18, p < .05), different school friends, (r = .16, p < .05), and total friends (r = .14, p < .05), which indicates possible differences that the MANOVA was unable to detect. The problem with using the bivariate correlations is that they do not test for a possible curvilinear relationship and do not control for total number of friends nominated. However, these results did show an important finding: that unpopular adolescents do not appear to have fewer friends or suffer from friendlessness. By allowing adolescents to nominate friends who are outside of their school and grade-level, I was able to capture a more accurate picture of their friendship network. Studies that limit friendship nominations to grademates or classmates (which almost all studies of peer relations do) may be seriously underestimating the number of friends that unpopular, low-power adolescents have. This underestimation has important implications for our understanding of unpopular teens' adjustment.

Another likely factor in the lack of group differences was the participants' age. The overall numbers of friends were very low for younger (M = .34), older (M = 1.60), and different school (M = 1.32) friends. This might likely be attributed to the participants being 9th grade students, in a school that contained only 9th and 10th graders. As 14-15-year-olds, they likely lack a driver's license or job, both of which would allow more opportunities to have close friends who are from a different school. This also means that they are probably more likely to be close friends with other adolescents who go to their school, not allowing for much variability in the age of their friends. Participants may have lost touch with their younger friends when moving to

high school, and not attending a high school with 9th through 12th grade limits the possibility of having more older friends.

Relationships with aggression. I found that the qualities of adolescents' friends are related to aggression, especially when taking into account their own gender and popularity. Overall, having a larger number of unpopular friends was related to being more overtly aggressive. It may be that adolescents try to exert dominance over their friends when they have a friendship network that consists of a large number of individuals low in social status. Also, they may continue to claim these people as friends because of their ability to exert dominance over them without resistance.

Popularity moderated the relationship between overt aggression and number of popular and average friends. Popular adolescents with more popular or average friends were *less* overtly aggressive, while unpopular adolescents with more popular friends were *more* overtly aggressive. Finally, there was a three-way interaction between gender, popularity and number of average friends in predicting overt aggression. Popular boys with more average friends were lower in overt aggression, but unpopular boys with more average friends were higher in overt aggression. No significant effects were found for girls though. Unpopular adolescents may be trying to "act tough" for their friends to make up for the disparity in their social status. Additionally, popular adolescents, especially popular boys, with a lot of friends who do not share their social status, may be positively affecting their behavior by not condoning aggressive behavior.

Interestingly, having more friends of a different age or from a different school was not related to overt aggression. Previous research has found that aggressive youth tend to have more out-of-school friends, but the findings in this study fell just short of

reaching significance (Bagwell, 2004). Therefore, future studies should continue to investigate this as a possible effect. The hypothesis that adolescents who have more friends who are older or younger would be more overtly aggressive to "bridge the maturity gap" was also not confirmed. This may again be a result of characteristics of the sample. The low number of different-age friends may be due to a lack of variability in the age at their school, and not having the same opportunities as older adolescents to make out-of-school friends that are a different age.

Friendship network characteristics were even stronger predictors of relational aggression. The hypothesis that having more different-school friends would be related to relational aggression was confirmed. This effect was also moderated by gender and popularity. Girls, especially popular girls, who had many friends from a different school were found to be high in relational aggression. Unpopular adolescents, especially unpopular girls, who had more friends from a different school were low in relational aggression. Individuals need to be socially savvy in order to use relational aggression successfully, and highly relationally aggressive youths have been found to have a high degree of social connectedness among peers (Garandeau & Cillessen, 2006; Neal, 2009; Xie, Swift, Cairns & Cairns, 2002). This degree of social connectedness may extend beyond school peers to those outside of school. Furthermore, girls, especially popular girls, tend to be highly relationally aggressive (Cillessen & Mayeux, 2004). The unpopular adolescents with a lot of other-school friends may have been victims of relational aggression and sought an escape from this behavior by befriending peers from another school.

Also consistent with hypotheses, having more popular friends was related to being higher in relational aggression. This was further moderated by gender and popularity. Girls, especially popular girls, who had a lot of popular friends were high on relational aggression. This is a particularly important finding because previous research has shown that popularity is a risk factor for aggression and substance use (Cillessen & Mayeux, 2004; Mayeux et al., 2008), but it has never been tested whether just being friends with popular adolescents is a risk factor. The frequent use of relational aggression by popular adolescents may have a "contagion effect" on their friends, especially among those who tend to use aggression more frequently. It would be important for future research to investigate this further and include other risk factors such as substance use.

Finally, popularity moderated the association between number of average-status friends and relational aggression. Popular adolescents who had more average friends were low on relational aggression. Again, average friends may sanction this behavior, causing it to decrease among their friends. It is also possible that some popular adolescents break ties with other popular peers out of a desire not to be associated with their relationally aggressive behavior. These popular teens may befriend, and feel more comfortable with, more average-status peers who are less aggressive.

Friendship Activities

Pilot interviews with adolescents helped to create a new measure of what adolescents spend time doing with their friends. Previous research has used a similar method, but with a younger sample, and focused on either peers in general or best friends (Zarbatanay et al., 1990; 2000). The purpose of this investigation was to extend

this work to an older demographic and to focus on close friends, rather than best friends or peers. Furthermore, I investigated how friendship activities were related to popularity and aggression.

Overall results and gender differences. The activities that were ascertained through pilot work were similar to those found in the previous work using a younger demographic (Zarbatanay et al., 1990; 2000). Most of the differences were generalizations, such as indoor activities instead of watching television and listening to music, related to time period differences, such as electronic communication instead of talking on the phone, or age related, such as substance use/partying. When the activities were measured quantitatively, the results showed that adolescents engaged in these activities at high levels and with wide variability. The one exception to this trend was substance use and partying, which showed low base levels but did have similar variability to the other activities. This is not necessarily an unexpected outcome, as adolescents at this age do tend to have lower levels of substance use compared to their older peers (Centers for Disease Control and Prevention, 2009). Furthermore, the opportunities for having or attending parties at which substances are present are rare, even at an older age. Adolescents are able talk on a cell phone every day, go to a school event multiple times a week, or have a sleepover every weekend; whereas obtaining illegal substances, for their age or anyone, or planning these types of partying pose a challenge the other activities do not.

The results of the investigation of gender differences confirmed our hypotheses. Girls reported that they spent more time with friends doing activities that encouraged sociability (eating together, electronically communicating, and sleepovers), while boys

spent more time doing activities that were active (like sports). This is in line with previous work with preadolescents that found girls spend more time socializing and boys spent more time playing team sports with their best friends (Zarbatanay et al., 2000). I also expected that boys would spend more time with their friends doing outdoor activities, but the data did not support this hypothesis. The examples given to the participants, derived from the pilot work, were more "active" and stereotypically associated with males (hiking and camping), but the null finding may have been due to broadness of the category. These stereotypes may simply not be true at this developmental stage, and females spend just as much time doing these stereotypically male activities.

Relationships with popularity. The hypothesis that friendship activities that would enhance visibility and are related to risk-taking behavior would have a positive relationship with popularity was confirmed. Spending more time with friends attending school events, going to local places, playing sports, and partying were positively related to popularity. This is consistent with previous research that has found a relationship between risk-taking behaviors and popularity (Mayeux et al., 2008). It also shows that popular adolescents are *socially* engaging in these behaviors more than their less popular peers, and not necessarily alone. Sternberg (2007) noted that adolescent risk-taking behavior is often a result of not a misunderstanding of the risk, but instead the socioemotional network overriding the cognitive-control network. In a study using a video driving game, it was found that adolescents did not differ from adults in the number of risks they took when they were tested alone. When peers were present

adolescents' risk-taking doubled, but the adults' risk-taking did not differ from when alone.

These are important findings when thinking about the risks of being popular. Research on delinquent behavior has distinguished between adolescence-limited and life-course-persistent trajectories (Moffitt, 1993). The distinction is that an adolescent-limited trajectory is related to social influences that disappear after adolescence, whereas a life-course-persistent trajectory is related to neurodevelopmental and family adversity factors, which are present in childhood and continue through the lifespan. The popularity-risk-taking behavior link may be similar to the adolescent-limited trajectory of deviancy; the social environment and cognitive processes present during these years may affect popular adolescents more. Popular adolescents may more often be in social situations that involve risk-taking behaviors, particularity substance use, and the adolescent brain has not matured enough to properly handle the situation. In the future it will be important to investigate distinctions between social substance use and solo substance use among adolescents to better understand which adolescents may have a pathological problem with substance use and which may only be socially using. Ideally, long-term studies would investigate whether social substance use leads to increased solo substance use, and if the distinction between the two types has an impact on possible long-term effects with substance use problems.

These results are also consistent with the characterization of popular adolescents as having high social visibility (Cillessen & Rose, 2005). Being visible among peers may be a result of the activities that popular youths engage in. It is also possible that they consciously engage in these activities because they want to enhance their visibility.

It would be interesting to interview popular adolescents and probe them about whether the activities that they choose to do, alone and with friends, are done partly because of the chance that it will help increase visibility among peers. This may be related to status maintenance because they must continue to be visible to their peers to stay popular. Much like celebrities, if teens aren't in the "public eye" as much, then their social status will likely diminish. The social visibility of who they are with and what they are doing is likely to explain the results as well. As discussed previously, popular adolescents tend to be friends with other popular adolescents. Spending time being seen with popular peers may further solidify the view that they are popular.

Relationships with aggression. Hypotheses regarding the relationships between friendship activities and overt and relational aggression were partly confirmed. Substance use/partying was positively related to overt aggression, consistent with our expectation. The positive relationship between physical activities (outdoor activities and playing sports) and overt aggression was only found in the correlational analysis. However, popularity did moderate the association between playing sports with friends and overt aggression. Popular adolescents who played sports with their friends more often were higher in overt aggression, consistent with the expectation that playing sports would increase existing aggressive tendencies. Additionally, popularity and gender were found to moderate the relationship between substance use/partying and overt aggression. Popular adolescents, and boys, who spent more time with their friends partying were highest in overt aggression.

These results are not necessarily causal, but may instead be a result of an attraction process. Aggressive adolescents may engage in substance use more because it

gives them additional opportunities to be aggressive or an excuse to be aggressive ("it was because I was drunk"). A possible explanation for the moderation by popularity is that popular adolescents may use sports as a socially acceptable way to display their overt aggression. Popular adolescents, particularly boys, tend to be high in overt aggression, and the social acceptability of this form of aggression decreases across time (Cillessen & Mayeux, 2004). The moderating effect of popularity on the link between partying and overt aggression could be explained in a similar way. Overt aggression is not socially acceptable, so aggressive popular adolescents will use substances and party with their friends so that they can blame their aggressive behavior on the substances.

The expected finding that going to school events, going out to local places, having sleepovers, playing sports, and substance use/partying with friends would have a positive relationship with relational aggression was supported by the correlational analysis but not by the regression. However, some significant moderating effects of gender and popular were found. Popular adolescents, and girls, who spent more time with their friends going out to local places were more relationally aggressive. This is consistent with the hypotheses related to visibility and unstructured activities. Popular adolescents spent more time doing activities with their friends that enhance visibility. Also, relational aggression partly relies on knowing social information, which can be obtained by spending more time where peers are visible. Furthermore, these can sometimes be unstructured activities, going to the mall for example, which provides an opportunity for adolescents to relationally aggress with (or against) their friends. Popular adolescents and girls are more likely to be relationally aggressive, and it may be that those adolescents who spend more time going out to local places with their

friends use that as an opportunity to be relationally aggressive (Cillessen & Mayeux, 2004). They could also be using that time to gain information to be used for later relationally aggressive acts.

Another moderation effect that was found was inconsistent with expected results. Unpopular adolescents who spent more time with their friends attending school events were higher in relational aggression, the reverse of what was hypothesized. Attending school events was considered to be an activity that increased visibility among peers, and had been found to be related to popularity. It was expected to show the same effect as with going out to local places. Why popular and unpopular adolescents attend these events may explain the findings. Popular adolescents may use this time to increase visibility, but are also attending these events for the purpose of engaging in the activity itself, dancing at a dance for example, rather than to enhance relational aggression. However, unpopular adolescents who spend a lot of time at these events may do so because they want to become more popular. Their purpose for attending these events may actually be to engage in relational aggression (perhaps including aggressing against their popular peers).

Finally, contrary to the hypothesis, electronic communication with friends did not have a relationship with relational aggression. This might be explained by the very high rates of this activity overall, especially among girls. If this is a common activity among adolescents and adolescent girls, then the less aggressive ones are likely to be doing it just as much as the aggressive ones. The lack of relationship between popularity and electronic communication lends evidence to the idea that the high rates of it most likely contribute to the null findings. Idiosyncratic differences between

adolescents might be what distinguish those who use electronic communication with their friends more than those who don't.

School Context and Practical Implications

In light of the findings it is valuable to point out the context of the school setting and practical application of the results. The school's location is on the outskirts of a medium sized city and draws students from a suburban area that extends to a more rural setting. The building is located on a complex that includes separate buildings for the 9th/10th grade students and 11th/12th grade students, with graduating class sizes of around 400 to 500 students. Each building is administered by separate principals and vice-principals. The atmosphere at the schools in the district has a heightened sense of community; with teachers having close relationships with the students in a laid-back classroom environment.

If the data had been collected at a school that did not have this same high sense of community, was smaller in size, or had buildings that housed more than just two grades, the findings from this study could have possibly differed slightly. This study failed to replicate the previous findings of a moderation of gender for the relationship between aggression and popularity, but this failure has also been found with data collected on adolescents in this district before (Cillessen & Mayeux, 2004; Mayeux, Houser, & Samples, 2009). This finding may be a result of the contextual factors of the school district, and it is possible that it may have affected other results as well. It will be important to note the context of the school in which the data is collected for future studies on these topics.

The contextual factors are also important to consider when talking about the practical applications of the findings, since they may only apply to larger district schools in a suburban setting. One implication of this study is for parents to encourage their children to consider the popularity of the friends they make. The findings indicated that having more friends of lower status can buffer negative effects that accompany being popular. Also, having a large number of popular friends was found to have negative impact on adolescents. So, parents should inform children of this and have reason to be concerned if their adolescents have a large proportion of popular friends. An implication for parents, school psychologists, or teachers is that for students who may appear to not have a lot of school friends or have problems making friends with peers at school, this may not be cause for alarm. Encouraging these students to make friends outside of the school setting and providing opportunities for these friendships may be the more important aspect to consider with them.

Limitations and Future Directions

There are a few important limitations of the study to note. Data was gathered from only about 50% of the students in the grade, which is a lower participation rate than most studies using peer nominations have achieved. However, given that previously-found associations between popularity and overt and relational aggression were replicated in this study, this participation rate was high enough to produce reliable results. The small sample size also resulted in relatively small groups for the popular, average, and unpopular adolescents in the group comparisons, limiting power.

Additionally, it should be noted that these findings were concurrent relationships and not based upon longitudinal work. It may be that adolescents are drawn to certain

friendships because they have similar characteristics or do activities that promote their already existing aggressive behavior, and not that being friends with certain adolescents or engaging in certain activities leads to increases in aggressive behavior. Another possibility is that both are the case, as previous friendship research has found. Selection and socialization effects in friendships have been previously identified, meaning individuals are more likely to select friends who share similar characteristics and over time they become more similar to each other (Kandel, 1978). Future research should focus on whether changes in who a person is friends with and the activities they do with their friends are related to increases in aggression over time. Perhaps the most important question for future longitudinal work should investigate is the effect of being friends with popular peers. The current study showed that just being friends with popular adolescents is a risk factor for aggression, and further work on this would be beneficial to see if the effect is shown across time and for other risks, such as substance use.

One of the contributions of the current study was the development of a brief, age-appropriate measure of friendship activities. Researchers should continue to use the measure to investigate other aspects of friendship, such as age differences in how friends spend their time together. It would be interesting to find out whether the gender differences found in this study hold for older and younger adolescents, and whether the activities adolescents do with their friends change across time. The relationship between friendship activities and aggression may also vary by age and would be a good avenue for future research.

While the current study focused on an important developmental stage for the study of friendships, future studies should investigate friendship network characteristics

of both younger and older children. Findings from this study have shown that many adolescents do have a variety of types of friendships (in-school, out-of-school, etc.), but teens of this age may have been too young to have large numbers of older friends. Older adolescents have more opportunities to meet friends from outside of school, and may have more variability of the age and location of the close friends within their friendship network. Out-of-school friends and the influences they can have, positive or negative, have largely been ignored by the literature. Future studies could specifically focus on investigating adolescent friendships that originated outside of school. These friendships could be beneficial for those who have trouble gaining friendships at school, but could also be related to influences on substance use or antisocial behavior.

Although past research has linked together peer status literature with aggression literature and aggression literature with friendship literature, little has focused on linking peer status with friendship or all three together. It is important to continue work that investigates the friendship processes that exist among popular adolescents. Since both positive and negative factors are related to being popular, we would be well served to know how friendships can affect and be affected by high status. Adolescents who may want to become popular because of its social benefits may have to do so at the cost of their previous friendships. They may also engage in activities that encourage or facilitate aggressive behaviors. Lastly, due to the necessity to maintain popularity once it is gained, the friendships of those who are popular may more easily suffer from deceit and cause dissolution. Power and prestige may trump relationships for those who have it, and this would be a valuable inquiry to explore.

The purpose of this investigation was to extend the literature linking friendships, popularity, and aggression. It focused on who adolescents are friends with and the activities they do with their friends. Who adolescents are friends with can promote aggressive behavior. Also, popular adolescents are doing different activities with their friends than their less popular peers. Some of these activities likely promote increased popularity and increased aggression. This clearly shows that friendships are an important context for which to study popularity and aggression.

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Table 1.

Summary of Hierarchical Regression Analysis for Aggression Predicting Perceived Popularity

	β	*t*	R^2	ΔR^2
Step 1			.001	.001
Gender	-.02	-.024		
Step 2			.040	.040**
Social Preference	.20**	2.962		
Step 3			.467	.426***
Overt Aggression	.37***	6.257		
Relational Aggression	.49***	8.403		
Step 4			.467	.001
Gender x Overt Aggression	.02	.233		
Gender x Relational Aggression	-.13	-.129		

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

Table 2.

Intercorrelations Between Number of Friends, Popularity, Overt and Relational Aggression

	Perceived Popularity	Overt Aggression	Relational Aggression
Same-Sex Friends	.10	-.07	.06
Opposite-Sex Friends	.12	-.13	.20**
Younger Friends	.18**	.07	.12
Same-Age Friends	.12	-.15*	.09
Older Friends	.01	-.02	.15*
Adult Friends	.05	.03	-.05
Same-School Friends	.06	-.12	.04
Different-School Friends	.16*	-.01	.28***
Popular Friends	.54***	.18*	.48***
Average Friends	-.19**	-.25***	-.15*
Unpopular Friends	-.30***	-.08	-.20**
Total Number of Friends	.14*	-.11	.16*

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

Table 3.

Means and Standard Deviations of Number of Friends by Popularity Level

	Popularity Level							
	Popular (*n* = 24)		Average (*n* = 147)		Unpopular (*n* = 26)		Overall	
	M	SD	*M*	SD	*M*	SD	*M*	SD
All Friends	9.71	4.04	7.50	4.57	7.42	3.47	7.76	4.42
Gender								
Same-Sex	6.25	3.03	4.99	2.98	5.27	2.66	5.18	2.96
Opposite-Sex	3.46	2.45	2.54	3.03	2.15	1.87	2.60	2.48
Age								
Younger	.54	.93	.32	.78	.23	.59	.34	.78
Same Age	6.71	4.10	5.45	4.05	4.54	3.01	5.48	3.96
Older	2.37	2.75	1.38	2.01	2.15	2.44	1.60	2.19
Adult	.25	.90	.11	.46	.19	.63	.14	.55
Location								
Same School	7.08	4.02	6.29	4.17	6.12	2.49	6.37	3.96
Diff School	2.54	3.53	1.13	1.80	1.31	2.06	1.32	2.15
School Friends								
Popularity								
Popular	4.14_a	2.83	$.95_b$	1.72	$.17_b$	.48	1.22	2.09
Average	2.57_a	1.91	4.81_b	3.38	4.13_a	2.44	4.45	3.19
Unpopular	$.05_a$	.22	$.35_a$	.75	1.00_b	1.14	.40	.82

Note. Means with different subscripts differ from each other at $p < .05$.

Table 4.

Means and Standard Deviations for the Friendship Activities Questionnaire by Gender

	Overall		Boys		Girls	
	M	*SD*	*M*	*SD*	*M*	*SD*
Attending School Events	4.00	2.22	4.10	2.35	3.91	2.10
Indoor Activities	4.57	1.70	4.46	1.76	4.68	1.65
Outdoor Activities	4.21	1.99	4.44	2.11	3.99	1.86
Eating Together	5.87	1.54	5.45***	1.75	6.27***	1.18
Electronic Communication	6.11	1.44	5.76***	1.56	6.43***	1.23
Going Out to Local Places	5.11	1.78	4.88	1.88	5.33	1.66
Hanging Out	6.09	1.33	6.02	1.47	6.16	1.19
Having Sleepovers	4.97	2.02	4.52**	2.17	5.40**	1.77
Playing Sports	4.44	2.32	5.02***	2.23	3.90***	2.28
Going to Parties/Sub Use	2.10	1.82	2.23	1.93	1.97	1.71

Note. Significant gender differences are indicated by *$p < .05$, **$p < .01$, ***$p < .001$.

Table 5.

Intercorrelations Between Friendship Activities, Popularity and Aggression

	Popularity	Relational Aggression	Overt Aggression
School Events	.29***	.23***	.16*
Indoor Activities	-.01	.02	-.03
Outdoor Activities	.06	.13	.17*
Eat Together	.06	.09	-.05
Electronic Communication	.05	.14	.02
Go to Local Places	.29***	.25***	.08
Hang Out	.07	.06	.09
Sleepovers	.21**	.23***	.04
Play Sports	.30***	.16*	.22***
Substance Use and Parties	.22***	.15*	.38***

Note. *$p < .05$, *$p < .01$, ***$p < .00$

Table 6.

Intercorrelations Between Friendship Activities and Perceived Popularity by Gender

Variable	1	2	3	4	5	6	7	8	9	10	11
1 Popularity	-	.29**	.03	.04	-.04	.06	.24*	-.01	.25**	.37**	.14
2 School Events	.29**	-	.05	.20*	.22*	.22*	.36***	.22*	.20*	.52***	.17
3 Indoor Activities	-.04	.07	-	.17	.32***	.34***	.27**	.16	.24**	.16	.04
4 Outdoor Activities	.07	.29**	.12	-	.22*	.27**	.30**	.21*	.17	.35***	.17
5 Eat Together	.11	.42***	.35***	.18	-	.44***	.30**	.31***	.32***	.17	-.01
6 Electronic Comm	.06	.19	.01	-.03	.19	-	.35***	.38***	.28**	.19*	.19*
7 Go to Local Places	.34***	.47***	.19	.18	.40***	.15	-	.47***	.50***	.18	.31**
8 Hang Out	.12	.26**	.23*	.26**	.22*	.22*	.49***	-	.33**	.15	.17
9 Sleepovers	.21*	.37***	.31**	.16	.39***	.18	.36***	.35***	-	.18	.14
10 Play Sports	.26**	.71***	-.07	.36***	.29**	.14	.48***	.35***	.29**	-	.20*
11 Parties	.28**	-.04	-.02	.16	.03	.05	.18	.12	.04	.12	-

Note. Girls are above the diagonal, boys below the diagonal. *$p < .05$, *$p < .01$, ***$p < .001$.

Table 7.

Summary of Hierarchical Regression Analysis for All Friends' Characteristics Predicting Aggression

	Overt Aggression				Relational Aggression			
	β	*t*	R^2	ΔR^2	β	*t*	R^2	ΔR^2
Step 1			.38	.38***			.46	.46***
Gender	-.28***	-4.82			.18***	3.35		
Popularity	.47***	8.07			.55***	10.05		
Social Preference	-.36***	-6.14			-.45***	-8.26		
Total Friends	-.07	-1.22			.12	2.10		
Step 2			.39	.01			.48	.03
Younger Friends	.04	.60			-.10	-1.69		
Older Friends	.06	.82			-.02	-.36		
Different-School Friends	-.14	-1.88			.15*	2.09		
Step 3			.50	.11***			.57	.09***
Popularity x Young Friends	.13	1.55			-.23**	-2.89		
Popularity x Older Friends	-.07	-.87			.09	1.10		
Popularity x Diff Sch Friends	.01	.04			.22**	2.56		
Gender x Young Friends	-.11	-1.06			-.15	-1.46		
Gender x Older Friends	-.10	-.84			-.10	-.91		
Gender x Diff Sch Friends	.13	.95			.29*	2.31		
Gender x Popularity	-.43	-5.71***			.26***	3.66		
Step 4			.53	.03			.61	.04***
Pop x Gen x Young Friends	-.21	-1.61			-.49***	-4.07		
Pop x Gen x Older Friends	-.04	-.37			.04	.36		
Pop x Gen x Diff Sch Friends	-.20	-1.19			.41**	2.72		

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

Table 8.

Summary of Hierarchical Regression Analysis for School Friends' Popularity Predicting Aggression

	Overt Aggression				Relational Aggression			
	β	*t*	R^2	ΔR^2	β	*t*	R^2	ΔR^2
Step 1			.43	.43***			.48	.48***
Gender	-.27***	-4.49			-.21***	3.64		
Popularity	.51***	8.63			.58***	10.30		
Social Preference	-.36***	-6.07			-.40***	-7.01		
Total Friends	-.10	- 1.63			.09	1.52		
Step 2			.45	.02			.53	.05***
Popular Friends	-.09	-1.11			.24***	3.27		
Average Friends	.04	.40			-.07	-.84		
Unpopular Friends	.13*	2.02			.06	.92		
Step 3			.66	.21***			.63	.18***
Popularity x Pop Friends	-.22**	-2.62			.11	1.28		
Popularity x Avg Friends	-.41***	-4.53			-.20*	-2.12		
Popularity x Unpop Friends	-.08	-1.01			.04	.56		
Gender x Pop Friends	.03	.31			.32***	3.58		
Gender x Avg Friends	.22	1.83			.03	.28		
Gender x Unpop Friends	-.08	-1.10			-.03	-.38		
Gender x Popularity	-.33***	-.3.64			.22*	2.36		
Step 4			.72	.06***			.65	.02
Pop x Gen x Pop Friends	-.06	-.60			.30**	2.50		
Pop x Gen x Avg Friends	.86**	5.70			.32	1.90		
Pop x Gen x Unpop Friends	.03	.23			-.04	-.40		

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

Table 9.

Summary of Hierarchical Regression Analysis for Friendship Activities Predicting Overt Aggression

	β	*t*	R^2	ΔR^2
Step 1			.38	.38***
Gender	-.29***	-5.04		
Popularity	.43***	6.21		
Social Preference	-.32***	-4.87		
Rela Aggression	.09	1.21		
Step 2			.44	.06***
School Events	-.01	-.01		
Outdoor Activities	.06	.96		
Sports	-.02	-.29		
Partying	.24***	4.24		
Step 3			.63	.19***
Popularity x School	-.19	-.90		
Popularity x Outdoor	.19	1.37		
Popularity x Sports	.46*	2.32		
Popularity x Partying	.54***	6.44		
Gender x School	-.04	-.26		
Gender x Outdoor	-.20	-1.68		
Gender x Sports	-.02	-.15		
Gender x Partying	-.22**	-2.99		

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

Table 10.

Summary of Hierarchical Regression Analysis for Friendship Activities Predicting Relational Aggression

	β	*t*	R^2	ΔR^2
Step 1			.44	.44***
Gender	.24***	4.17		
Popularity	.50***	7.93		
Social Preference	-.40***	-6.78		
Overt Aggression	.08	1.21		
Step 2			.46	.02
School Events	.03	.47		
Local Places	.06	.91		
Sleepovers	.10	1.54		
Sports	.01	.11		
Partying	.01	-.07		
Step 3			.54	.08***
Popularity x School	-.52*	-2.09		
Popularity x Places	.53**	2.48		
Popularity x Sleep	.27	1.54		
Popularity x Sports	.08	.35		
Popularity x Partying	.14	1.37		
Gender x School	.07	.45		
Gender x Places	.42*	1.95		
Gender x Sleep	.09	.51		
Gender x Sports	.10	.62		
Gender x Partying	-.05	-.58		

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

Figure Captions

Figure 1. Popularity moderates relationship between number of younger friends and relational aggression.

Figure 2. Popularity moderates relationship between number of different school friends and relational aggression.

Figure 3. Gender moderates relationship between number of different school friends and relational aggression.

Figure 4. Three-way interaction between gender, popularity, and number of younger friends predicting relational aggression.

Figure 5. Three-way interaction between gender, popularity, and number of different school friends predicting relational aggression.

Figure 6. Popularity moderates the association between number of popular school friends and overt aggression.

Figure 7. Popularity moderates the association between number of average school friends and overt aggression.

Figure 8. Three-way interaction between gender, popularity, and number of average school friends predicting overt aggression.

Figure 9. Popularity moderates the association between number of average school friends and relational aggression.

Figure 10. Gender moderates the association between number of popular school friends and relational aggression.

Figure 11. Three-way interaction between gender, popularity, and number of popular school friends predicting relational aggression.

Figure 12. Popularity moderates the association between playing sports with friends and overt aggression.

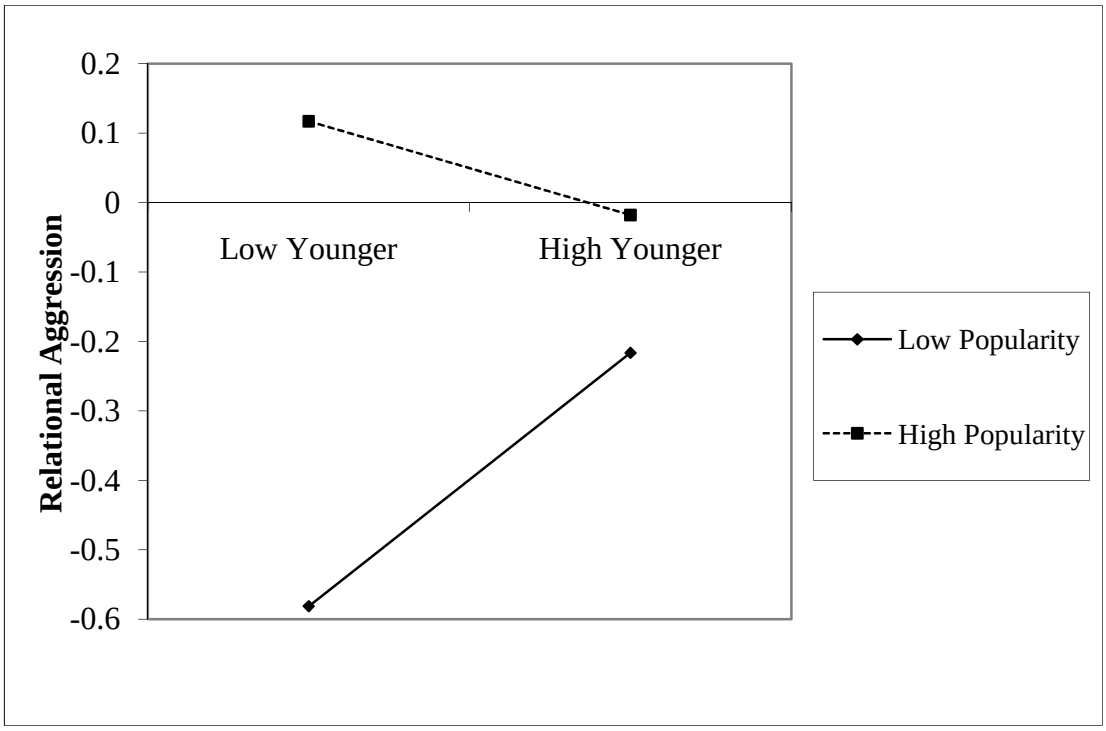
Figure 13. Popularity moderates the association between partying with friends and overt aggression.

Figure 14. Gender moderates the association between partying with friends and overt aggression.

Figure 15. Popularity moderates the association between going to school events with friends and relational aggression.

Figure 16. Popularity moderates the association between going out to local places with friends and relational aggression.

Figure 17. Gender moderates the association between going out to local places with friends and relational aggression.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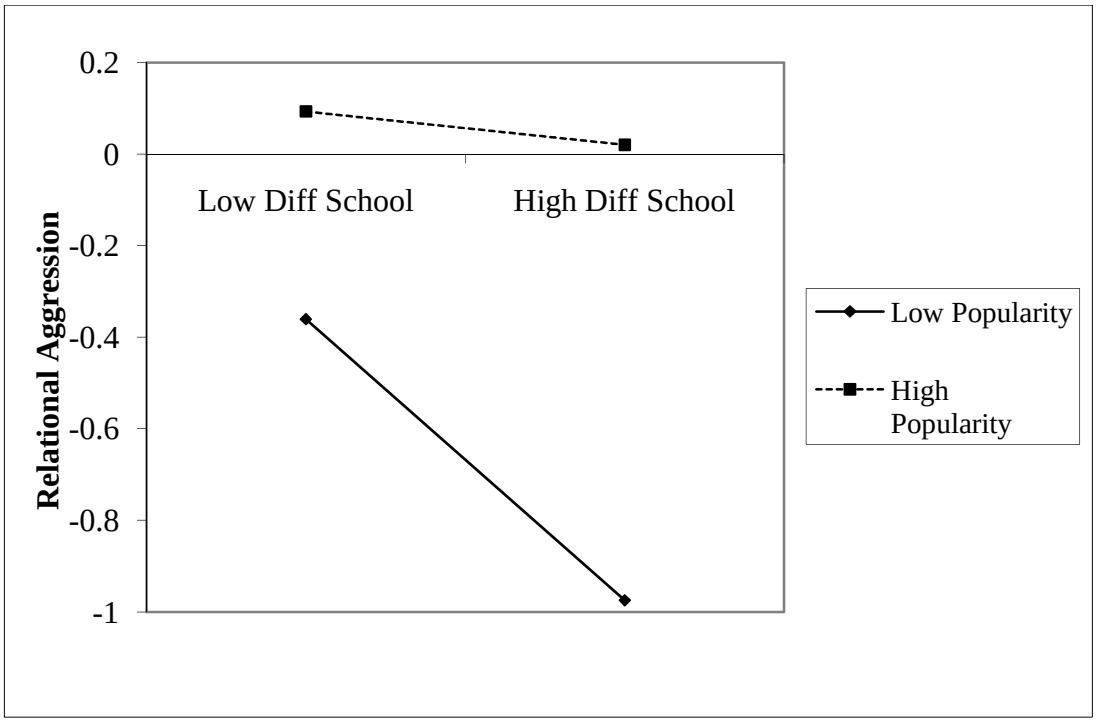
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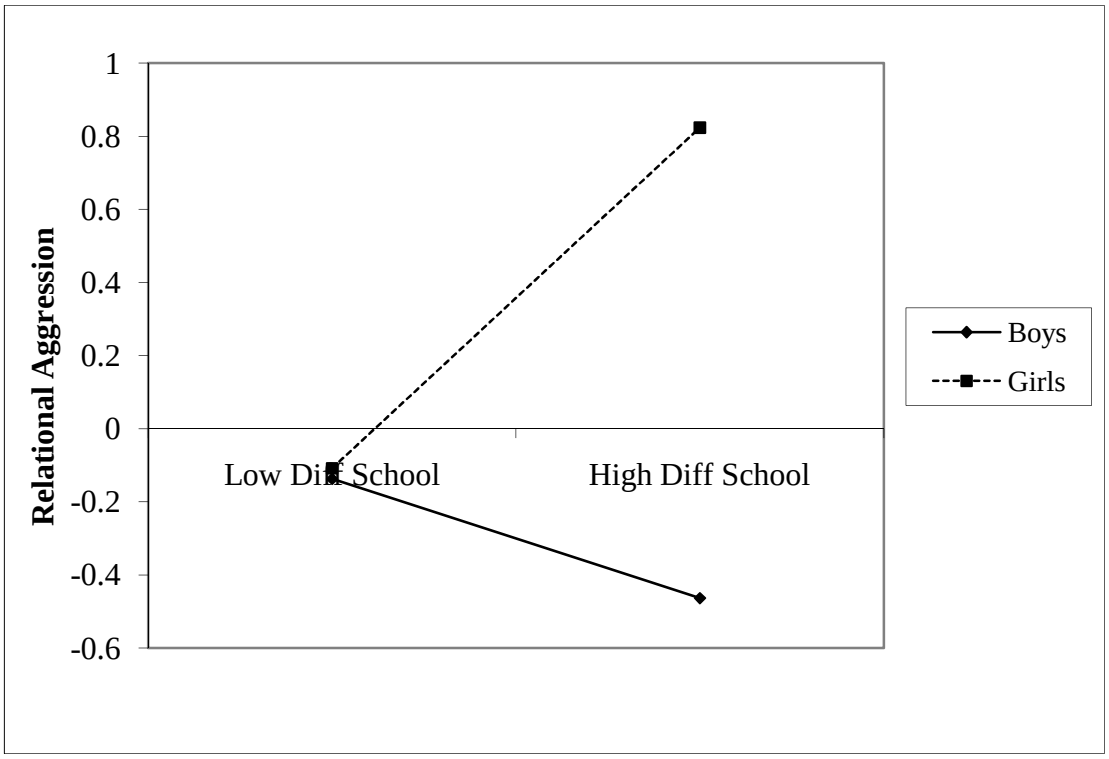
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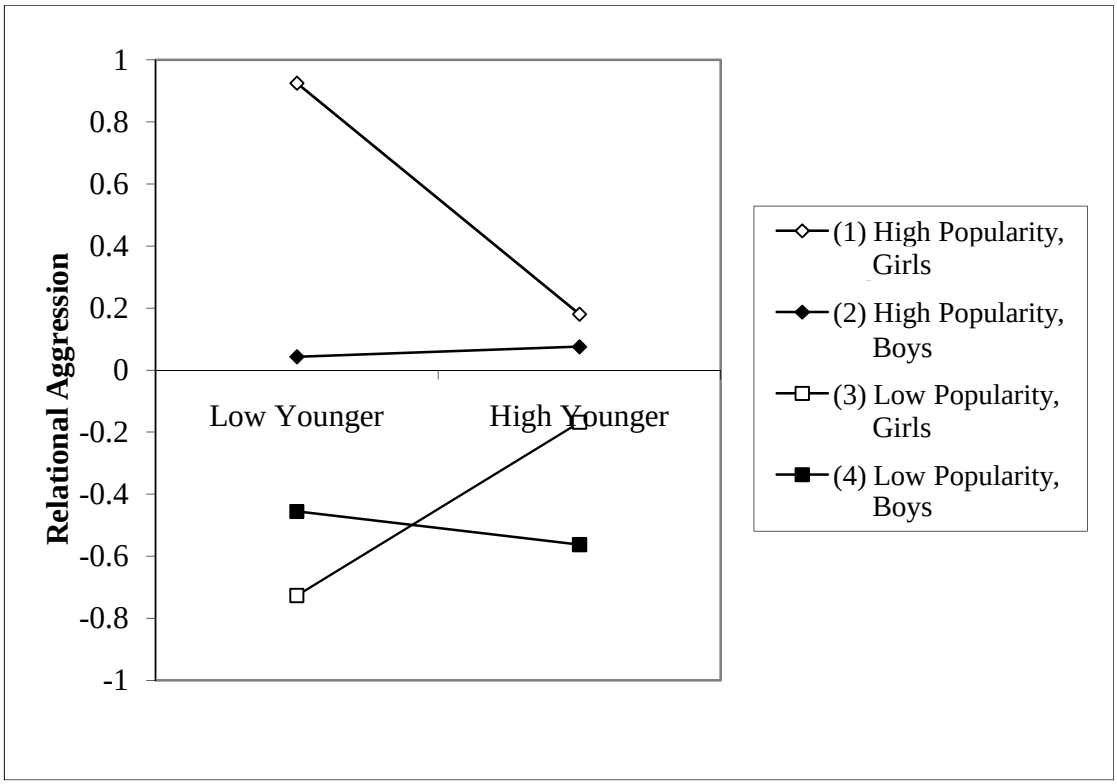
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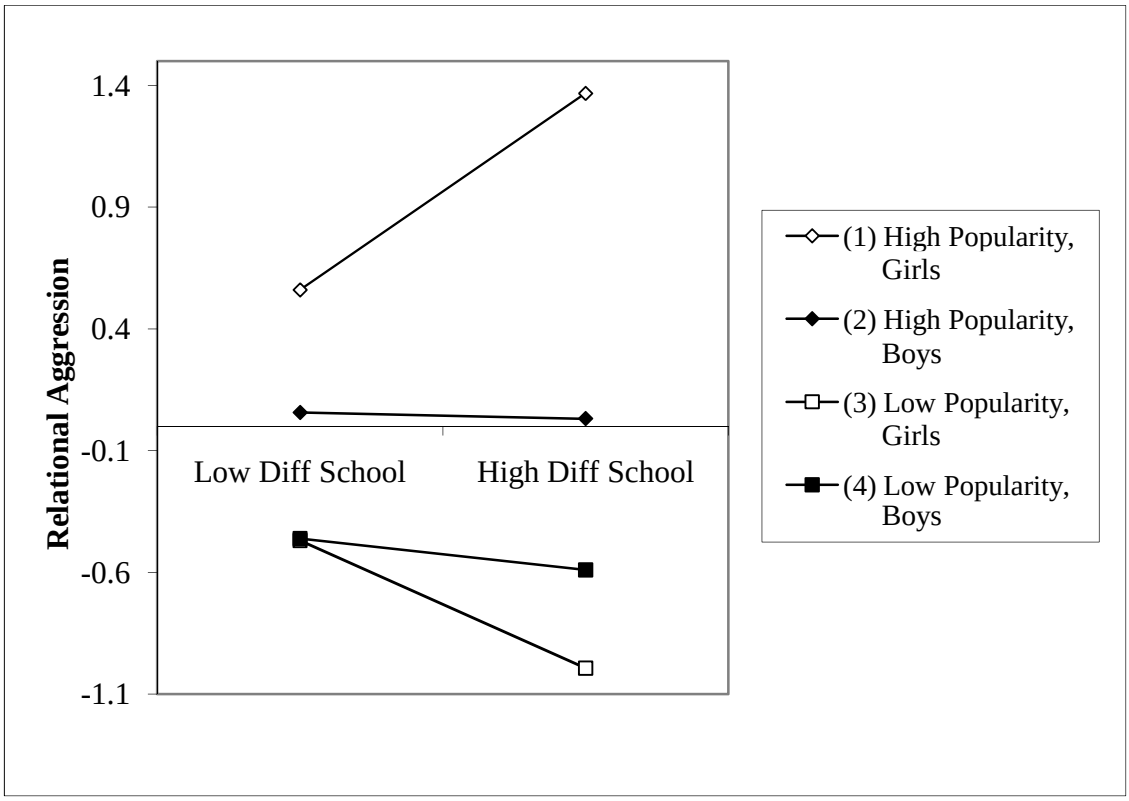
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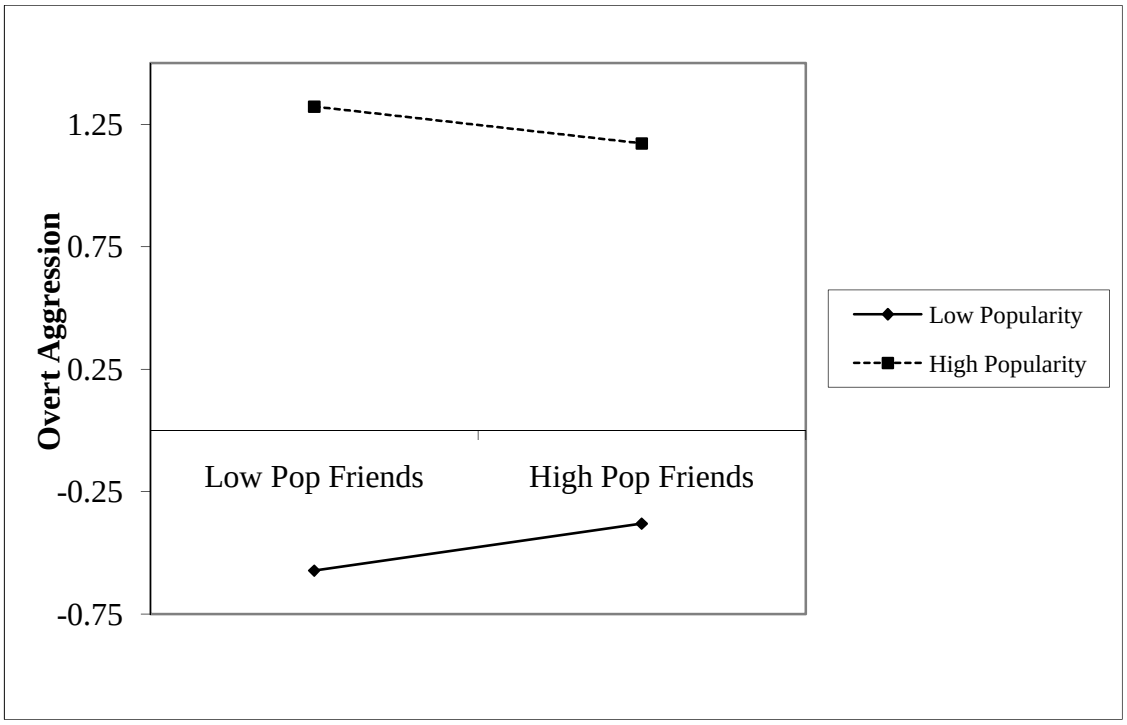
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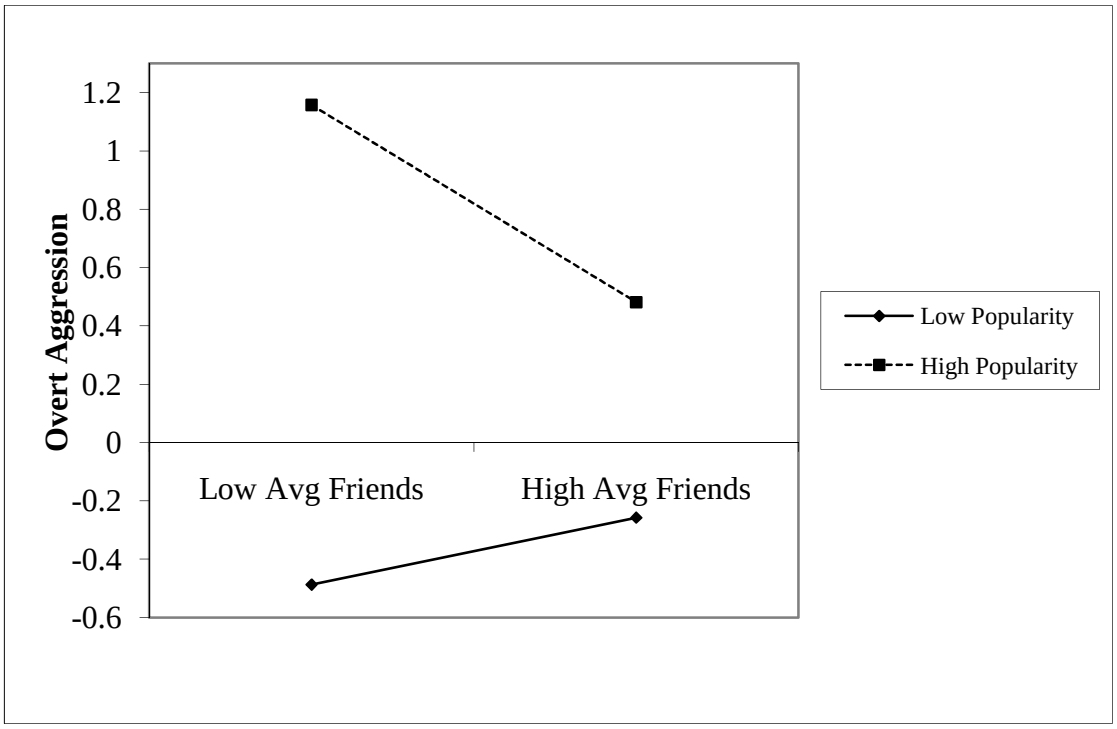
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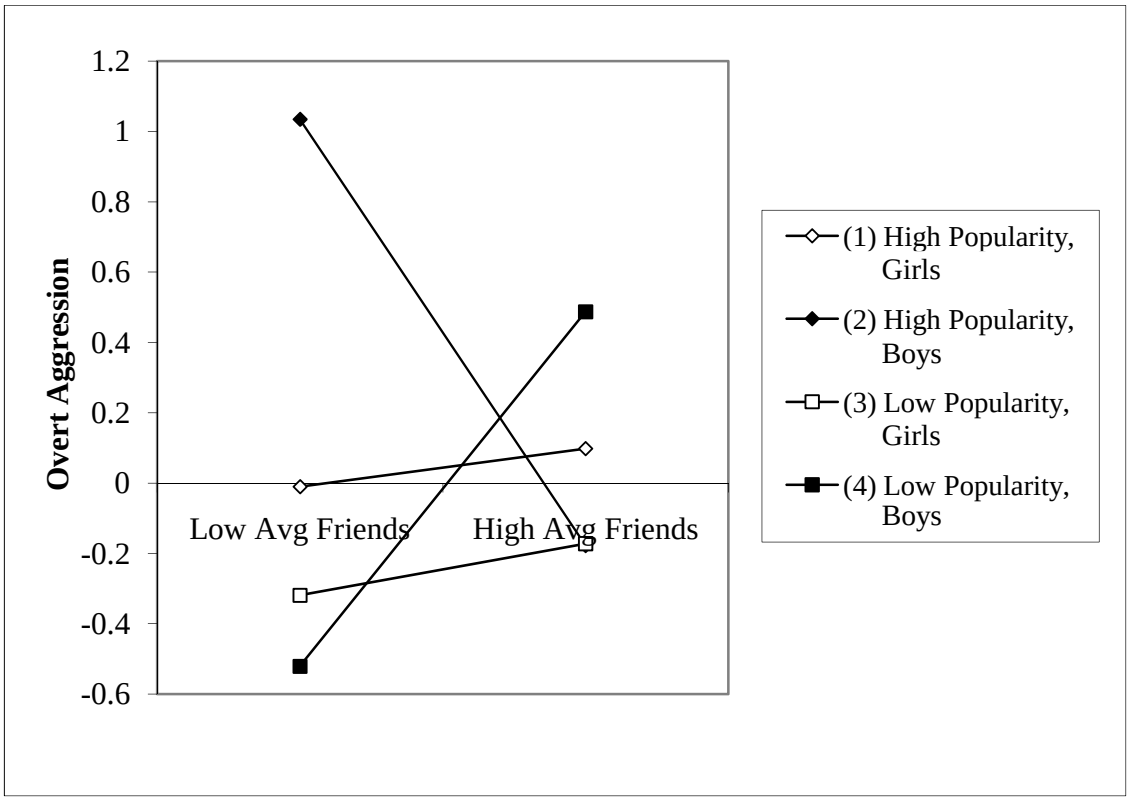
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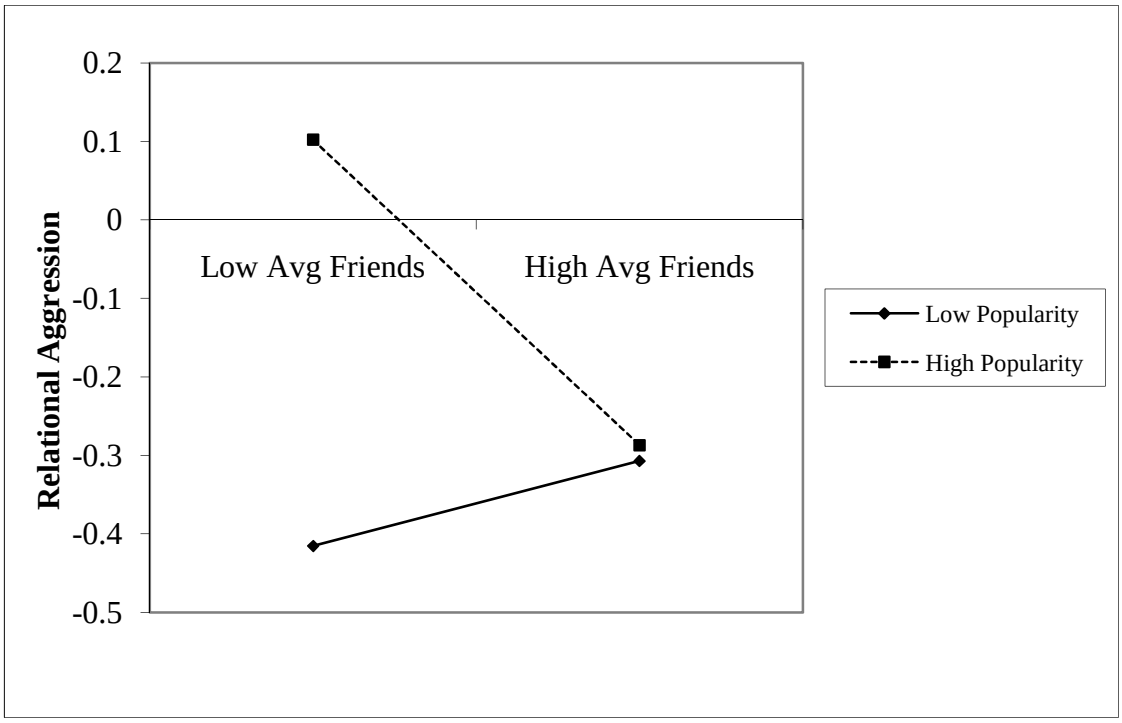
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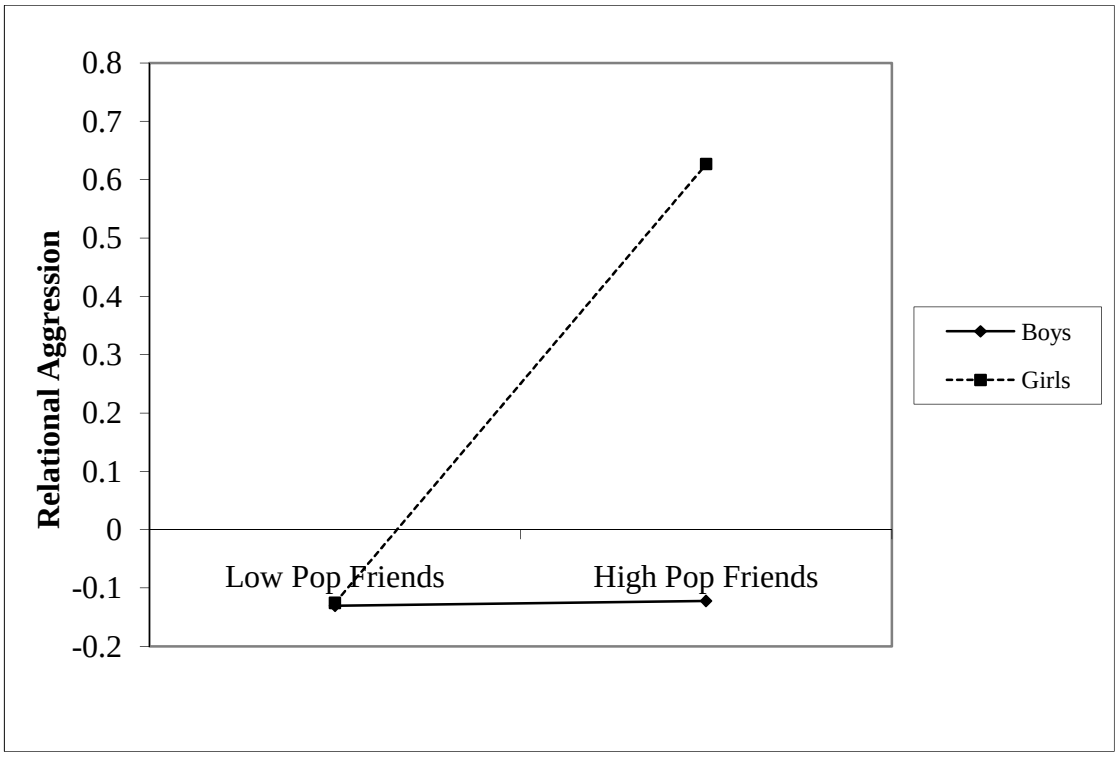
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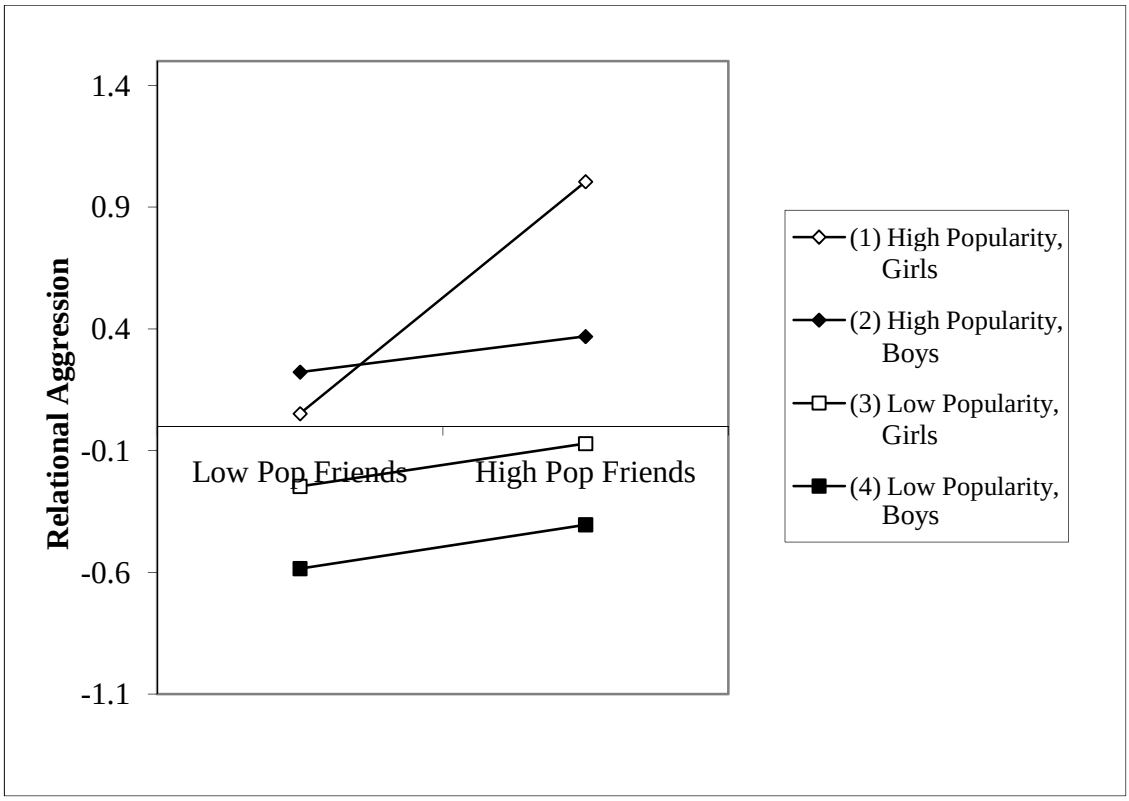
Boys
Girls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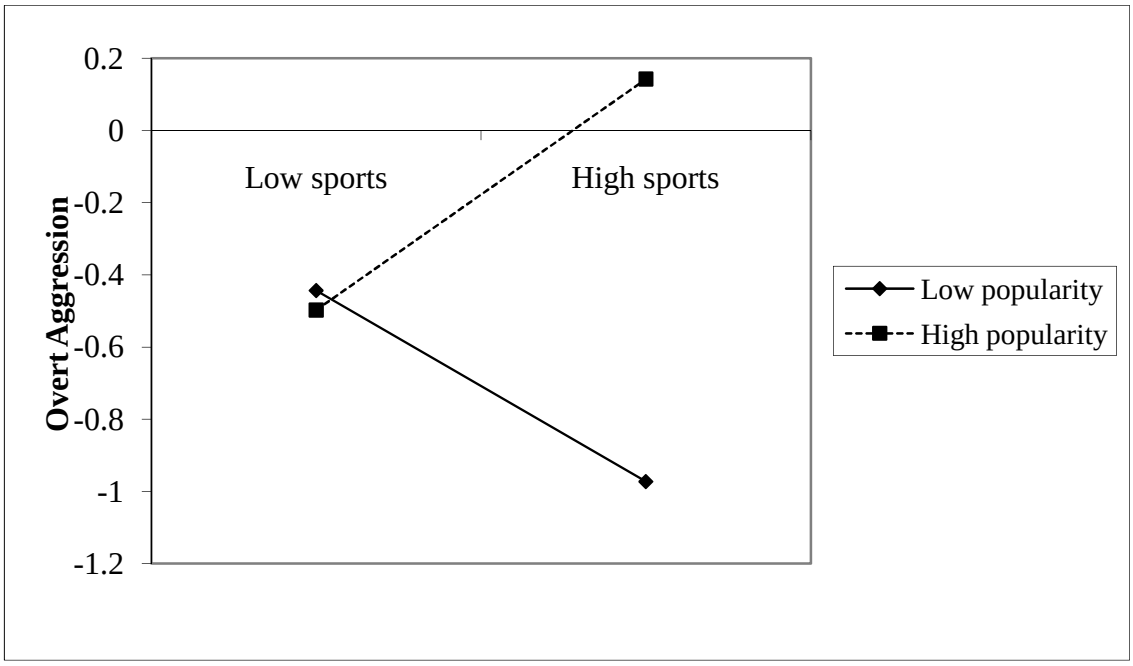
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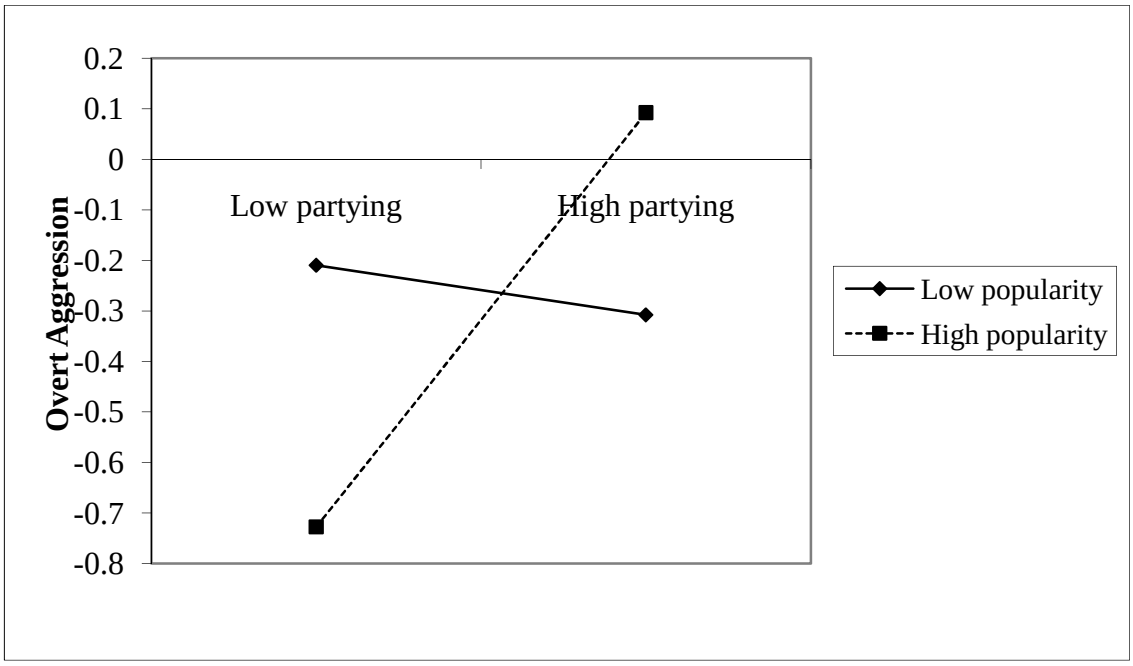
Low popularity
High popularity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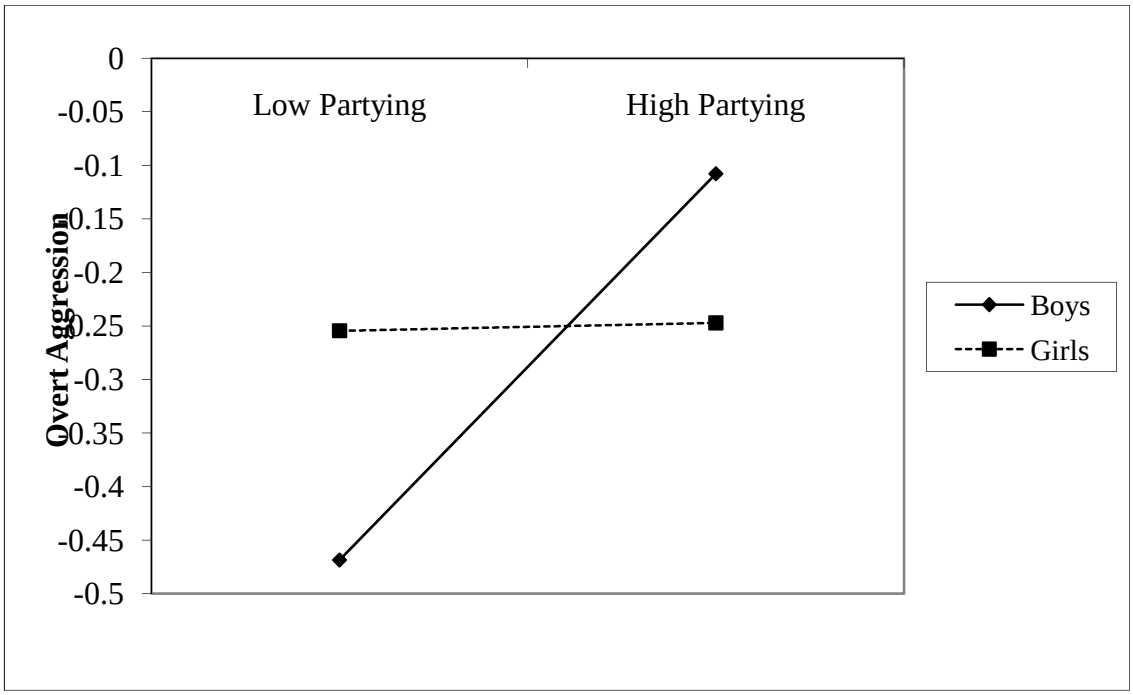
Overt Aggression
Low partying
High partying
Low popularity
High popularity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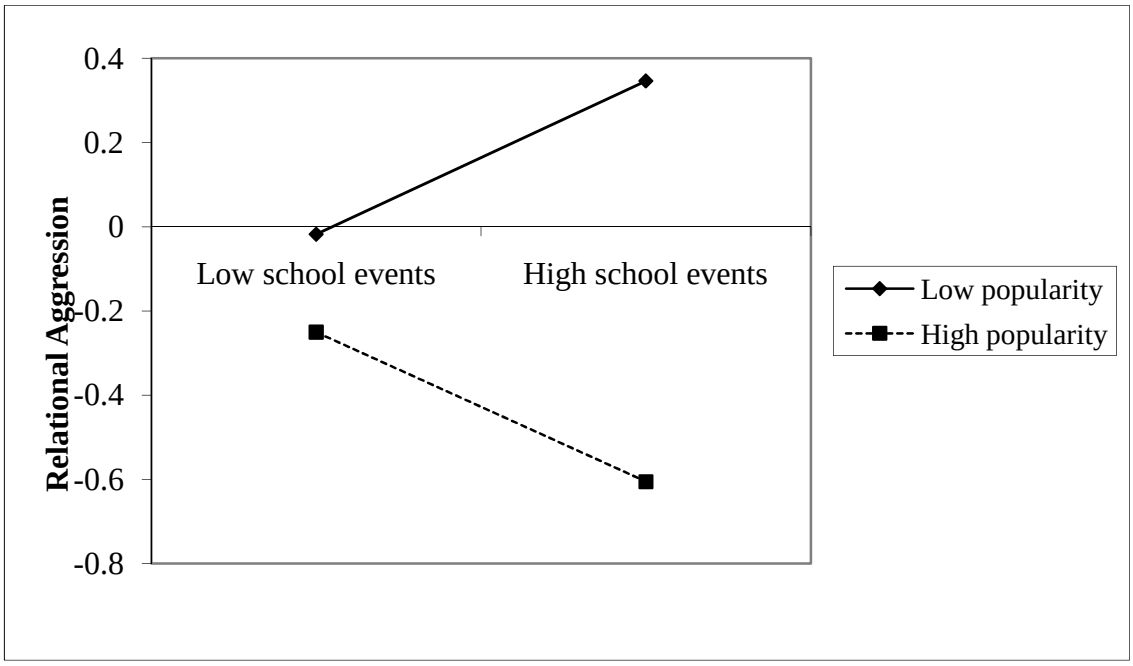
Overt Aggression
Low Partying
High Partying
Boys
Girls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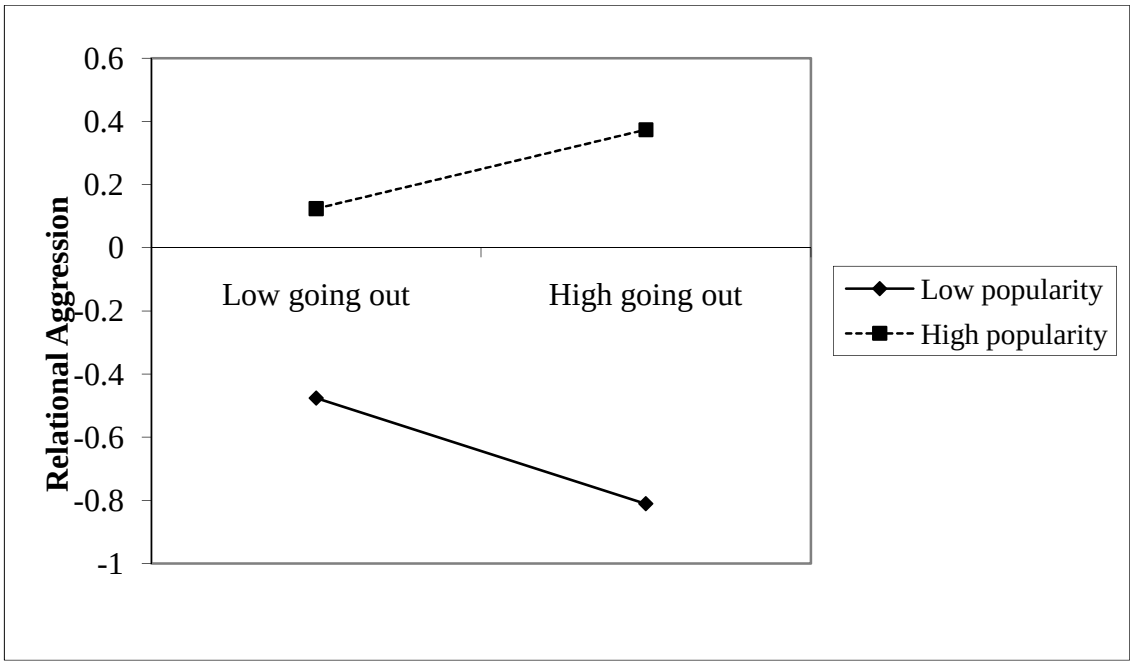
Relational Aggression
Low school events
High school events
Low popularity
High popularity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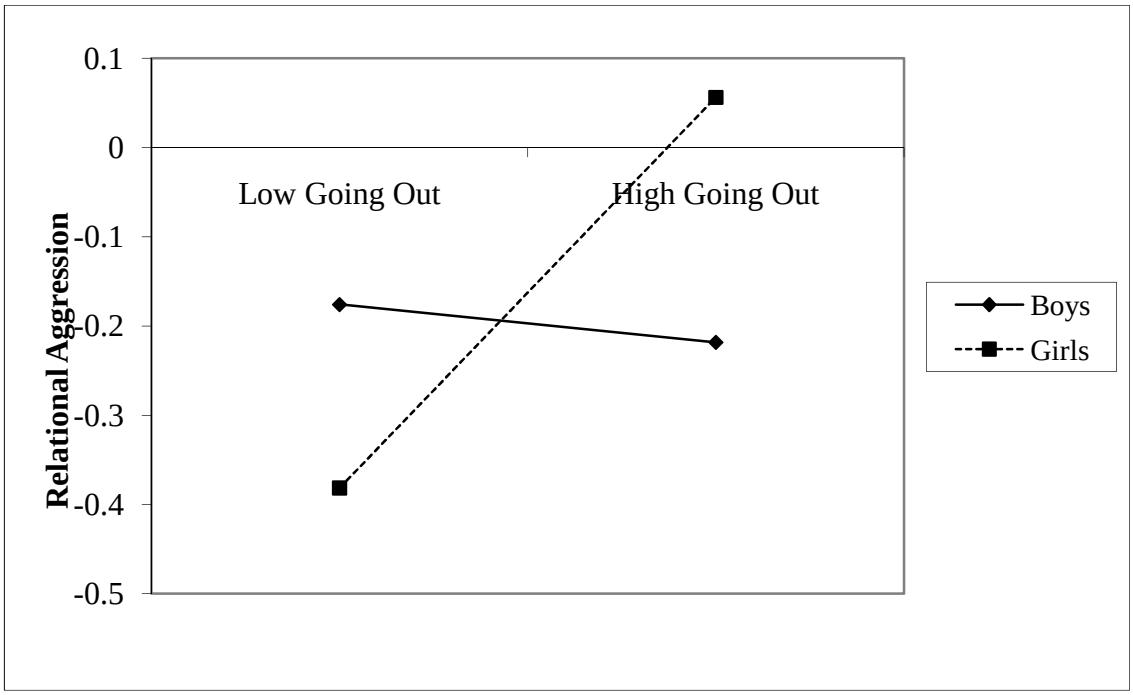
Relational Aggression
Low going out
High going out
Low popularity
High popularity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Relational Aggression
Low Going Out
High Going Out
Boys
Girls