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Susceptibility to Peer Influence for Engagement in Relational Aggression and Prosocial Behavior: The Roles of Popular Peers, Stress Physiology, and Gender

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SUSCEPTIBILITY TO PEER INFLUENCE FOR ENGAGEMENT IN RELATIONAL AGGRESSION AND PROSOCIAL BEHAVIOR: THE ROLES OF POPULAR PEERS, STRESS PHYSIOLOGY, AND GENDER

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Abstract

The overall goal of the current study was to determine if perceptions of popular peers’ relationally aggressive (PPSRA) and prosocial behaviors (PPSP) were related to engagement in these behaviors in a sample of emerging adults. This study also investigated if these associations were moderated by sympathetic nervous system (SNS) and parasympathetic nervous system (PNS) reactivity to peer stress and gender. Although a significant amount of research suggests that aggressive behaviors can be socialized by peers (e.g., Molano, Jones, Brown, & Aber, 2013), there is a dearth of work that has examined relational forms of aggression that tend to be more salient for females and more positive, prosocial behaviors. Further, given that some research suggests that perceptions about how peers behave, regardless of peers’ actual behavior, influences individual behavior (e.g., Song et al., 2012), the current study investigated the impact of perceptions of peer behavior. Additionally, research suggests that some individuals are more susceptible to peer influence than others (e.g., Steinberg & Monahan, 2007). Biological Sensitivity to Context (BSC) has been offered as a potential explanation for this differential susceptibility to peer influence (e.g., Boyce & Ellis, 2005). BSC theory postulates that individuals with a heightened stress response are more malleable to environmental influence, for better or worse; therefore, the interaction between PNS reactivity to stress (measured by respiratory sinus arrhythmia [RSA-R]) and SNS reactivity (measured by skin conductance level [SCL-R]) to a relational stressor was examined as a moderator in the current study. Gender was also examined as a moderator.

200 emerging adults aged 18–23 years (70% female; $M_{age}$ = 19.04) were recruited from introductory psychology courses at a Northeastern public university. Participants’ SCL-R and RSA-R were assessed during a laboratory stress protocol during which they recounted an experience of relational stress. PPSRA, PPSP, and gender were gathered via self-report.

Findings suggest that PPSRA was positively related to self-reported engagement in relational aggression and, similarly, PPSP was positively associated with self-reported engagement in prosocial behavior. However, neither interactions between RSA-R and SCL-R nor gender significantly moderated these relationships. Follow-up analyses indicated PPSP was significantly, negatively related to engagement in relational aggression for males only. Findings suggest that perceptions about the behavior of popular peers do have an important influence on college students’ behavior and highlight future directions for research into the factors that may modify this relationship.
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Introduction

A significant amount of research has demonstrated that peers have an important influence on the antisocial behavior (e.g., aggression, deviance, substance use) of children and adolescents (Molano, Jones, Brown, & Aber, 2013; Prinstein, Brechwald, & Cohen, 2011; Kandel, 1978; Allen, Porter, & McFarland, 2006). However, research in this area is limited in a number of ways. First, despite emerging evidence that individuals may be more susceptible to the influence of high status peers than lower status peers (Prinstein et al., 2011), little research has been conducted in this area. Second, most work in this area has focused on forms of aggression more prevalent in males (i.e., physical aggression) to the exclusion of forms of aggression more normative for females (i.e., relational aggression). Third, there has been limited investigation into the positive impact of peer influence, particularly on prosocial behavior (Molano et al., 2013). Fourth, evidence suggests that some individuals are more susceptible to peer influence than others (Prinstein, Brechwald, & Cohen, 2011; Monahan, Steinberg, & Cauffman, 2009), particularly when peers engage in aggressive behaviors (Molano, Jones, Brown, & Aber, 2013), but very little work has investigated the factors that impact this phenomenon, especially for prosocial behaviors. One potential explanation for variation in susceptibility to peer influence is individual differences in stress physiology (Boyce & Ellis, 2005). Furthermore, research suggests that relational aggression and prosocial behavior may be more salient for females; thus, gender may be another important factor underlying susceptibility to engage in these behaviors. Therefore, the current study was conducted to investigate whether perceptions of the behavior of popular peers were
associated with relational aggression and prosocial behavior in college students, and the moderating roles of stress physiology and gender.

A plethora of research to date has demonstrated that peers have an important impact on the behavior of children, adolescents, and young adults (Allen, Porter, & McFarland, 2006; Sijtsema, Ojanen, Veenstra, Lindenberg, Hawley, & Little, 2010; Prinstein, Brechwald, & Cohen, 2011). In fact, in one study of adolescents, the mere presence of peers doubled the amount of risk-taking in which adolescents engaged (Garder & Steinberg, 2005). Research suggests that peer influence is highest in adolescence, presumably because this is when youth spend a greater proportion of their time with peers (Brown, 2004) and when most peer interactions occur in groups (Steinberg & Monahan, 2007). It has also been postulated that the increased importance of peers during early adolescence is the result of the increased salience of peers as a reference group during this developmental transition (Brown, Clasen, & Eicher, 1986), as well as greater autonomy from parents, which leads adolescents to be more dependent on and intimate with peers (Burhmester & Furman, 1987; Steinberg, 2010). Some research suggests that it is not only changes in the salience of the peer group during adolescence but also increased individual susceptibility to peer influence that lead youth to change their behavior to be consistent with the norms and values of important peers (Brown, 1986; Steinberg & Silverberg, 1986). Accordingly, Moffitt (1993) theorized that most delinquency and antisocial behavior that occurs in adolescence is a result of a desire to impress peers.

Evidence also exists that peers have an influence on behavior in emerging adulthood, albeit the magnitude of this effect is significantly smaller than in adolescence.
Emerging adulthood is a distinct period of development characterized by identity exploration, demographic variability (e.g., housing, schooling), and an ambiguous role in society (i.e., not an adolescent but not yet an adult; Arnett, 2000). This developmental period is hypothesized to last from approximately ages 18 to 25 years and is present primarily in developed countries (Arnett, 2000). Research indicates that the relative influence of peers declines during emerging adulthood, possibly due to increased psychosocial maturity, impulse control, perspective taking, and responsibility for one’s own actions (including the ability to resist the influence of others; Berndt, 1979; Erikson, Crosnoe, & Dornbusch, 2000; Sumter, Bokhorst, Steinberg, & Westenberg, 2009; Steinberg & Monahan, 2007; Steinberg & Cauffman, 1996; Steinberg & Silverberg, 1986; Walker & Andrade, 1996).

However, this is not the case for all emerging adults. As will be discussed later, research suggests that individual differences (e.g., susceptibility to peer influence, physiological reactivity) may influence whether emerging adults exhibit a decline in the relative influence of peers on behavior (Monahan et al., 2009b; Prinstein, Brechwald, & Cohen, 2011). In fact, Sumter and colleagues (2009) posited that individual differences in the timing and pacing of the development of psychosocial maturity may be more important than age differences in predicting the influence of peers on behavior during the period of emerging adulthood, due to wide variability in development during this period. Therefore, it is proposed that peers may still play an important role in the behavior of emerging adults, especially for those who have individual characteristics that make them more likely to be susceptible to peer influence.
Research indicates that individuals tend to have more frequent contact with similar peers than with those who are dissimilar (Lazarsfeld & Merton, 1954). This phenomenon is termed “homophily” and can be explained by the effects of both selection and socialization (Kandel, 1978). Selection effects are a product of the process by which individuals choose to associate with those who possess similar attitudes and behaviors as themselves. It is theorized that associating with individuals with similar characteristics may be due to a deeper understanding and feeling of belonging between similar individuals, which may, in turn, lead to more rewarding, stable relationships (Byrne, 1971). It is also hypothesized that the validation and reinforcement that occurs in these relationships aids in the development of a social identity (Hallinan, 1980). Furthermore, research on selection effects on antisocial youth affiliation suggests that antisocial youth may be rejected or excluded from the larger peer group, resulting in fewer opportunities for developing friendships; thus, these youth may be limited in their choices of friends and may select fellow deviant or rejected friends out of necessity (Baerveldt, Volker, & Van Rossem, 2008; Dishion, Patterson, & Griesler, 1994).

Socialization effects, on the other hand, refer to processes through which peers influence an individual’s behavior. Irrespective of any prior similarities, peers may model desired behavior and reward behavior that is consistent with the expectations of the peer group, thus influencing individual group members’ behaviors. Although research regarding the relative importance of selection and socialization processes has been mixed (see Logis, Rodkin, Gest, & Ahn, 2013; Sijtsema et al., 2010; Dijkstra, Berger, & Lindenberg, 2011), recent work using longitudinal social network models that allow for the simultaneous examination of both of these processes in the same model suggest that
both selection and socialization are important indicators of behavior (see Veenstra & Dijkstra, 2011). For the purposes of the current study, the theoretical orientation will be in reference to socialization processes; however, it should be acknowledged that both processes are likely important in explaining aggressive and prosocial behavior among peers. One piece of evidence that suggests that socialization processes may be important indicators of behavior, over and above selection effects, is research that recently found that children were more likely to select their friends based on similarities in social status (e.g., popularity) but not behavior (i.e., aggression or prosociality); furthermore, the researchers found evidence for socialization of prosocial and aggressive behaviors within these groupings (Logis, Rodkin, Gest, & Ahn, 2013).

Peers can socialize behavior in a number of ways. Kohlberg (1969) suggests that late adolescents’ and adults’ behavior is influenced by both social norms (i.e., the expectations of valued others for an individual’s behavior) and personal norms (i.e., beliefs about one’s own appropriate behavior; Berndt, 1981). In many ways, peer behavior serves as an indicator of social norms. One way that peers establish social norms is through peer pressure. Peer pressure constitutes behaviors that are direct, overt attempts to encourage or discourage certain attitudes or activities within the peer group (Brown, 2004). Normative regulation is another intentional strategy used to influence peer behavior and is accomplished by using conversation (e.g., gossip, teasing) to reinforce the norms of the group (Brown, 2004). Peer modeling, on the other hand, occurs when peers model certain behaviors, which, in turn, influence the behavior of others. However, the intention of peer modeling is not necessarily to directly change the behavior of peers (Brown, 2004). Thus, it appears that peers can convey the social norms
of the peer group in both direct (e.g., peer pressure) and indirect (e.g., peer modeling) ways; these norms, in turn, influence individual behavior.

Furthermore, according to the tenets of learning theory, an individual’s behavior may not be directly related to peers’ behavior but may be impacted by perceptions of peers’ behavior (Menard & Grottpeter, 2011) due to positive outcome expectancies (Bandura, 1973). More specifically, behavior may be based on what one thinks his/her peers are doing or thinking, rather than how they actually are behaving. For instance, research indicates that college students tend to overestimate the prevalence and approval of drinking by their peers, and this is associated with heavier drinking (Baer, Stacy, & Larimer, 1991; Borsari & Carey, 2003; Neighbors, Dillard, Lewis, Bergstrom, & Neil, 2006; Perkins & Berkowitz, 1986). In fact, recent research by Song and colleagues (2012) indicated that perceptions of greater alcohol use by peers were associated with higher levels of concurrent drinking and non-violent consequences due to alcohol use. Thus, previous work suggests that perceptions of peers’ attitudes and behaviors is related to an individual’s behavior, regardless of peers’ actual behavior. It is quite possible that similar processes may exist for other types of behavior (e.g., relational aggression, prosocial behavior), but this has not yet been empirically examined.

**Peer Influence on Aggression**

Aggression is a behavior that is intended to hurt or harm another person and can take on multiple forms (e.g., physical, indirect, social, relational). Physical aggression seeks to harm or threaten harm to one’s physical well-being (e.g., kicking, hitting, pushing; Dodge, Coie, & Lynam, 2006). Indirect aggression, on the other hand, consists
of behaviors meant to hurt or harm others without directly confronting the victim such as gossiping, exclusion, and rejection (Feshbach, 1969; Cairns et al., 1989). Similarly, social aggression is comprised of behaviors meant to manipulate group acceptance, social status, and/or the victim’s self-esteem (e.g., character attacks; Cairns et al., 1989; Galen & Underwood, 1997). A related, but distinct, construct is relational aggression, a form of aggression particularly salient for females that involves manipulating relationships in order to harm others (e.g., social exclusion, initiating hurtful rumors, friendship withdrawal threats; Crick & Grotender, 1995; Crick, Ostrov, & Werner, 2006). Relational aggression is distinct from both indirect and social aggression in that the perpetrator of relationally aggressive acts may be known or anonymous (i.e., direct or indirect), the focus of the aggressive behaviors is on the level of interpersonal relationships, rather than groups (i.e., social aggression), and relational aggression does not include the nonverbal aggressive behaviors defined by social aggression (e.g., eye rolling; see Murray-Close, Nelson, Ostrov, Casas, & Crick, in press, for a review).

Research indicates that males tend to engage in both relational and physical aggression; however, females tend to use relational aggression as their primary modality of aggression (Card, Stucky, Sawalani, & Little, 2008). Adults who engage in high levels of relationally aggressive behavior have been found to experience social, psychological, and emotional difficulties (e.g., Werner & Crick, 1999). However, high levels of relational aggression have also been positively linked to popularity among peers (Rose, Swenson, & Waller, 2004; Mayeux & Cillessen, 2008; Rose & Swenson, 2009; Vaillancourt & Hymel, 2006) and social dominance (Hawley, 2003), and researchers
have suggested that these behaviors may be a strategy used to achieve higher social status (Hawley, Little, & Card, 2008).

According to Moffitt’s (1993) theory, it is partially adolescents’ desire to impress peers that predicts engagement in antisocial behavior, highlighting an important role of peer behavior in the development of aggressive conduct. In fact, extant work indicates that peer behavior influences the perpetration of aggression (e.g., Molano, Jones, Brown, & Aber, 2013). In a short-term longitudinal study, Espelage, Holt, and Henkle (2003) investigated how bullying (i.e., teasing, name calling, social exclusion, rumor spreading) and fighting (i.e., frequency of physical fighting, threats to hit another student, hitting back when hit first, fighting students they could easily beat) by peers predicted individual behavior over time, controlling for the effects of selection processes. Results indicated that friends’ (identified using social network data) bullying and fighting behaviors significantly predicted individual bullying and fighting over time, controlling for baseline levels of these behaviors.

Moreover, although most researchers have focused on physical forms of aggression in studies of peer socialization, the influence by the peer group may be more important to the development and maintenance of relational aggression than other forms of aggression due to the salience of the social network for this particular form of aggression (e.g., manipulation of relationships; Low, Polanin, & Espelage, 2013; Sijtsema et al., 2010; Werner & Hill, 2010). In other words, in order to effectively manipulate the social network (e.g., relationships, reputation within peer group) of others by enacting relational aggression, the aggressor must understand and behave consistently with peer group norms. Accordingly, peer group relational aggression, as well as the
presence of highly relationally aggressive friends, has been linked to increased relational aggression over time (Ellis & Zarbatany, 2007; Werner & Crick, 2004). Furthermore, in the previously mentioned work by Espelage and colleagues (2003), results indicated that the effect of peer influence was stronger for bullying behavior than fighting behavior. Although these researchers did not directly measure relational aggression, the constructs they used to define bullying (i.e., teasing, name calling, social exclusion, and rumor spreading) are similar to the defining features of relational aggression.

Based on previous work indicating that perceptions of peers’ behavior, not just observations of the behavior itself, can influence one’s own behavior, Menard and Grotpeter (2011) investigated if perceptions of friends’ attitudes toward physical aggression were related to perpetration of relational and physical aggression in a sample of elementary school children. Results indicated that both physical and relational aggression were significantly associated with the perception that friends held a favorable attitude toward the use of aggressive behavior. However, conclusions drawn from this study are limited in that they did not investigate how perceptions of peers’ relationally aggressive behavior related to relationally aggressive behavior nor did they examine whether perceptions of peer behavior, rather than attitudes, were associated with aggression. Therefore, the current study will examine how perceptions of peers’ relationally aggressive behavior relates to individual conduct.

**Peer Influence on Prosocial Behavior**

Prosocial behaviors are enacted with the intention to benefit others (Eisenberg, Fabes, & Spinrad, 2006) and include helping, sympathy, sharing, friendliness, and
compassion, among a host of behaviors (Hastings, McShane, Parker, & Ladha, 2007). Prosocial behavior has been linked to better social adjustment, higher academic achievement, and positive self-perceptions in children and adolescents (Chung-Hall & Chen, 2010; Chen et al. 2008). In fact, the development of prosocial and helping behaviors has been emphasized as a strategy to protect at-risk adolescents (e.g., Centers for Disease Control & Prevention, 2009). Although aggression and prosocial behaviors are generally conceptualized as theoretically distinct behaviors, evidence indicates that they are related. A recent meta-analysis indicates that direct aggression (i.e., hitting, pushing, tripping, name calling, taunting, or threatening) is negatively associated with prosocial behavior, whereas indirect aggression (i.e., manipulation of relationships or damage of social position) is positively correlated with prosocial behavior. It is hypothesized that this relationship exists because both indirect aggression and prosocial behaviors can be used at differing times and contexts by the same individual in order to gain resources, support, and help from others (Card, Stucky, Sawalani, & Little, 2008).

As with the enactment of aggression, peers have an influence on engagement in prosocial behavior. Extant research using both longitudinal and experimental paradigms indicates that children with prosocial peers are more likely to enact prosocial behavior (Bryan & Walbek, 1970; Elliot & Vasta, 1970; Hartup & Coates, 1967; Barry & Wentzel, 2006) and this is hypothesized to occur because prosocial peers tend to model prosocial behavior and subsequently reinforce this behavior in others (Hartup & Stevens, 1997). For example, Barry and Wentzel (2006) examined the association between 9th graders reports of their best friend’s behavior and their own prosocial behavior (measured via peer nominations) over time. Results indicated that perceptions of best friends’ prosocial
behavior predicted youths’ prosocial behavior one year later and this relationship was mediated by prosocial goals. Research by Ma, Shek, Cheung, and Lee (1996) indicated that antisocial adolescents perceived their best friends as exerting negative influences on their own behavior, whereas prosocial adolescents believed that their best friends exerted more positive influences on them. However, there is evidence to suggest that the influence of peers on prosocial behavior is less strong than on aggressive behavior (Keung, Shek, Cheung, & Tam, 2002; Molano, Jones, Brown, & Aber, 2013). This may be the case because, in a quest for identity formation, adolescents seek to establish values and behavioral patterns that are in opposition to adult expectations, making it easier for peers to influence aggressive behavior (Keung, Shek, Cheung, & Tam, 2002). However, to my knowledge, the association between perceptions of peer prosocial behavior and prosocial behavior in emerging adults has not been examined; the current study seeks to address this limitation in extant research.

**Influence of Popular Peers**

Although research suggests that the larger peer group and friends can impact an individual’s behavior (e.g., Garder & Steinberg, 2005), there is also evidence that high-status peers may be especially influential. There are two distinct dimensions of high social status that have been identified by peer researchers: sociometric popularity (i.e., preference) and perceived popularity (i.e., popularity; Cillessen & Rose, 2005). Preference is a measure of how liked or preferred one is in the peer group, whereas popularity reflects how “cool” or socially central an individual is viewed to be in the peer group (Cillessen & Rose, 2005; Lease, Kennedy, & Axelrod, 2002). Previous research
indicates that preference is associated with lower levels of relational aggression (LaFontana & Cillessen, 2002) and higher levels of prosocial and cooperative behavior (Rubin, Bukowski, & Parker, 1998).

Popularity, on the other hand, is associated with higher levels of overt and relational aggression (LaFontana & Cillessen, 2002; Rose, Swenson, & Waller, 2004) as well as prosocial behavior (Hawley, 2003). According to Hawley (2003), both aggression and prosocial behaviors may be used in the appropriate contexts to gain and maintain social dominance; thus, popular youth may use relationally aggressive and prosocial behaviors as a way of protecting and improving social status. In fact, LaFontana and Cillessen (2002) asked a sample of children how they viewed popular youth. Their responses indicated that perceived popular youth were seen as relationally and physically aggressive, prosocial, and socially powerful.

Popular peers may be particularly influential on behavior for a number of reasons. First, individuals may be more susceptible to the influence of peers that they desire to emulate (e.g., Gibbons, Gerrard, & Lane, 2003; Allen, Porter, & McFarland, 2006). Shoulberg and colleagues (2011) found that valuing popularity was associated with relational aggression, suggesting that individuals who want to be popular may engage in behaviors (i.e., relational aggression) that are perceived to lead to greater power and status in the peer group (Adler & Adler, 1998; Bierman, 2004). Second, popular peers may be especially influential because they are well connected to the peer group (Adler, Kless, & Adler, 1992; Rodkin, Farmer, Pearl, & Van Acker, 2000); as such, their behavior may be closely observed and emulated by others, and they may play a
particularly important role in establishing the social norms of the peer group (Adler & Adler, 1998).

Accordingly, research indicates that high-status peers have a unique impact on aggressive and prosocial behavior. Peters and colleagues (2010) found that best friends’ popularity positively predicted girls’ relational aggression and prosocial behavior, over and above the girl’s own social status. As previously mentioned, perceived popularity is positively related to both prosocial and relationally aggressive behaviors (Lafontana & Cillessen, 2002; Rose, Swenson, & Waller, 2004; Hawley, 2003), so the results from Peters and colleagues may suggest that popular friends were engaging in specific behaviors (i.e., relational aggression and prosocial behavior) that, in turn, predicted individuals’ own behaviors. Although this study did not examine the actual behaviors of these popular peers or the perceptions that youth had about these popular friends, the findings raise the possibility that popular friends’ behaviors (and/or youths’ perceptions of their popular friends’ behaviors) serve as a mediator between friends’ popularity and individuals’ own behaviors (i.e., relational aggression and prosocial behavior).

Similarly, Ellis and Zarbatany (2007) used a short-term longitudinal design to investigate how behavior of affiliative peer groups predicts prosocial and relationally aggressive behavior. Results indicated that youth part of high-status (i.e., popular, central), relationally aggressive peer groups exhibited increased relational aggression and prosocial behavior over time but this was not true for members of lower status, relationally aggressive peer groups. This suggests that behavior of peers may be influential on relationally aggressive behavior, but this may depend on a number of factors, including the popularity of those enacting the relational aggression. Overall, these
patterns of results suggest that popular peers may have an important influence on individual behavior.

However, research in this area is limited. First, scant research has investigated the impact of perceptions of popular peers’ behavior on the behavior on emerging adults. Second, there is a dearth of research in this area investigating how perceptions of popular peers’, not popular friends’, relationally aggressive and prosocial behavior impact behavior. It is not required to be in close interaction with popular peers in order to develop perceptions about their behavior and, as delineated earlier, perceptions of how peers are behaving may be as important as actual behavior by peers in explaining individual behavior. Thus, the current study seeks to investigate if perceptions of popular peers’ behavior impacts engagement in relational aggression and prosocial behavior.

**Susceptibility to Peer Influence**

Although the influence of peers has been discussed thus far as a universal construct, it is also true that some individuals are more susceptible to the influence of peers than others. Put another way, it is believed that some individuals have a higher “resistance to peer influence,” or ability to act autonomously in interactions with peers, than others (Steinberg & Monahan, 2007). In fact, this resistance to peer influence is thought to be a trait-like construct that varies across individuals and transfers across both peer contexts and sources of peer influence (Berndt, 1979; Steinberg & Monahan, 2007; Prinstein et al., 2011). For instance, research using an experimental paradigm to measure changes in deviant risk attitudes in response to the behavior of popular peers (online confederates) found that individuals who were more susceptible to the influence of
popular peers were also more susceptible to the behavior of their best friend (Prinstein et al., 2011).

Research investigating the neural mechanisms underlying resistance to peer influence has found significant differences in brain functioning in children with low versus high resistance to peer influence. For instance, Grosbras and colleagues (2007) scanned children’s brain activity while viewing video clips of neutral and angry hand and face movements using functional magnetic resonance imaging (fMRI). The child’s resistance to peer influence (RPI Questionnaire; Steinberg & Monahan, 2007) was also collected via self-report. Results indicated that, compared to children high in resistance to peer influence, children low in resistance to peer influence were more likely to engage two frontal brain regions (i.e., right dorsal pre-motor cortex; left dorsolateral prefrontal cortex) thought to influence preparation for motor action, attention, and inhibition, when viewing angry face or hand movements. This suggests that children more susceptible to peer influence may engage more attentional resources, display greater inhibition of dominant responses, and automatically prepare for motor action when presented with salient stimuli (e.g., angry hand movements). In contrast, results from an analysis of functional connectivity across cortical regions suggested that children who were less susceptible to peer influence may be better at explicit executive processes (i.e., Stroop task) and may exhibit more coordinated brain function when faced with complex, socially relevant stimuli (e.g., anger). Overall, these results suggest that susceptibility to influence by peers may not be due purely to contextual factors (e.g., behavior of popular peers) but may also have underlying neurological and biological underpinnings.
Although research indicates that susceptibility to peer influence is a trait-like construct, it has also been found to change with age. As might be expected, adolescents tend to be more susceptible to the influence of peers than adults. In fact, some preliminary research suggests that brain systems important in processing of social information (i.e., dopaminergic) may be developing during adolescence and, therefore, may make adolescents more aware of and attentive to the opinions and behaviors of their peers (Nelson, Leibenlutt, McClure, & Pine, 2005; Steinberg, 2008). It is postulated that individuals may become less susceptible to peer influence when nearing the end of puberty due to the development of increased executive functioning and regulatory processes (Steinberg, 2008). In fact, Steinberg and Monahan (2007) found that resistance to peer influence increased linearly and the most drastically between the ages of 14 and 18 than during any other time period examined (i.e., ages 10-30).

However, the age trend that suggests that susceptibility to influence by peers decreases with age in general does not mean that emerging adults cannot be susceptible to peer influence due to individual characteristics. In fact, results from a longitudinal study of antisocial youth indicated that youth low in resistance to peer influence at the age of 18 years remained more susceptible to the influence of their peers 3 years later (at 21 years) than youth more resistant to peer influence (Monahan, Steinberg, & Cauffman, 2009). In other words, adolescence is a developmental period of increased susceptibility to peer influence and this susceptibility generally declines linearly into adulthood.

Studying susceptibility to peer influence during a developmental period where high susceptibility to peer influence is not as normative (e.g., emerging adulthood) may be important for several reasons. For instance, it may help researchers identify processes
underlying individual differences in susceptibility to peer influence beyond developmental processes that occur during adolescence (e.g., brain development during puberty). In addition, the tendency to be highly influenced by peers during a developmental period when normative levels of susceptibility are low may portend risk for long-term adjustment difficulties. The current study sought to examine individual susceptibility to peer influence on relationally aggressive and prosocial behaviors in a sample of emerging adults.

**Biological Sensitivity to Context**

Biological sensitivity to context (BSC) is a theoretical framework that assumes that individuals differ in their individual susceptibility to environmental influence, such that those who display high levels of stress reactivity are more malleable or plastic due to neurobiological differences that make them especially developmentally receptive to environmental influences (Boyce & Ellis, 2005; Ellis, Boyce, Belsky, Bakermans-Kranenburg, & Van Ijzendoorn, 2011). According to BSC, differences in physiological reactivity to stress are thought to exist due to evolutionary processes. Specifically, individuals with differing physiological responses are thought to adapt to childhood environments differently, resulting in differing outcomes. For example, an individual living in an extremely dangerous environment might benefit from a highly reactive stress response because this would lead to better odds of survival, resulting in hypervigilance, anxiety, and greater attentional processes allocated to interpreting threat (Boyce & Ellis, 2005). It is suggested that higher autonomic nervous system (ANS) reactivity reflects both the organism’s ability to prepare for challenges, albeit with potential negative
consequences (e.g., anxiety), as well as to benefit from the resources available in supportive contexts. Thus, an individual with the same high stress response as in the previous example who is in a supportive, safe environment may also be closely attuned to social stimuli, but this may result in the individual feeling safe, sociable, and less anxious (Boyce & Ellis, 2005; Ellis, Boyce, Belsky, Bakermans-Kranenburg, & Van Ijzendoorn, 2011). Consistent with BSC theory, the current study hypothesized that those with a heightened stress response will be more susceptible to both negative (i.e., relationally aggressive) and positive (i.e., prosocial) peer influences due to a heightened receptiveness to environmental influences. It should be noted, however, that physiological reactivity may not be the only indicator of environmental plasticity. For example, Daw and colleagues (2012) demonstrated that certain genes may also serve to make some individuals more or less susceptible to the influence of drinking and smoking behavior of peers.

Research suggests that autonomic nervous system (ANS) activity may be an indicator of BSC (Boyce, Essex, Alkon, Smider, Goldsmith, Kraemer, & Kupfer, 2006; Obradović, Bush, Stamperdahl, Adler, & Boyce, 2010; Obradović, Bush, & Boyce, 2011). The ANS is comprised of two primary branches: the sympathetic nervous system (SNS) and the parasympathetic nervous system (PNS). The SNS is involved in the “fight or flight” response, whereas the PNS is involved in restorative “rest and digest” functions. The increases in physiological arousal (e.g., heart rate) that occur when an individual encounters a stressful situation provide the individual with the metabolic and attentional resources to cope with the threat. This arousal may be due to activation of the SNS system (resulting in increased arousal) and/or to withdrawal of the PNS system (also...
resulting in increased arousal; see Murray-Close, 2013, for a review). SNS arousal in response to stress is considered adaptive; however, prolonged or exaggerated responding is thought to reflect fearfulness, anxiety, and behavioral inhibition (see Murray-Close, 2013). The PNS, on the other hand, is conceptualized as a “brake” on SNS activity that allows for engagement, coping, and responding with stressors (Porges, 2007).

A common measure of SNS functioning that was used in the current study was skin conductance level reactivity (SCL-R). Activity of the sweat glands is primarily controlled by the SNS, and SCL-R is used to measure the activity of these glands (see Dawson, Schell, & Filion, 2007, for a detailed description). Specifically, increases in SNS activity result in increases in sweat production; this sweat, in turns, results in increases in the amount of electrical conductivity present in the outer layer of the skin. To measure SCL-R, electrodes pass an electrical current through the skin and measure the conductivity of the electrical current (see Murray-Close, 2013).

The measure of PNS functioning utilized in this study was respiratory sinus arrhythmia reactivity (RSA-R). The vagus nerve (i.e., tenth cranial nerve) supplies efferent PNS fibers to the body’s organs and is thought to be important in regulating internal homeostasis of the body (Porges, 2007). When an individual exhales, this leads to an increase in vagal input, which results in a deceleration in heart rate (i.e., increased regulatory influence of the PNS on the heart). When an individual inhales, the opposite is true. Thus, RSA-R is a measure of the ebbing and flowing of heart rate during respiration (i.e., high frequency heart rate variability; Porges, 2007).

Research on BSC theory indicates that a high SCL response (e.g., El Sheikh, 2005; El Sheikh, Keller, & Erath, 2007) and RSA withdrawal (e.g., Obradović, Bush,
Stamperdahl, Adler, & Boyce, 2010) in response to stress are both indicative of BSC. However, a number of researchers have suggested that it is important to examine the interaction between the SNS and PNS in predicting behavior (e.g., Porges, 1995; El Sheikh et al., 2009). Beauchaine (2001) explained that both increases and decreases in PNS reactivity have been found to predict maladjustment but it is the interaction with the SNS that can specifically predict behavioral profiles. Although these two systems should theoretically work in a reciprocal manner (i.e., SNS activation and PNS withdrawal) when reacting to a stressful situation, resulting in increased physiological arousal (e.g., heart rate) and the mobilization of attentional resources to cope with the stressor, this is not always the case.

In fact, according to the doctrine of autonomic space (Berntson, Caccioppo, & Quigley, 1991), four general stress response profiles exist: reciprocal SNS activation (i.e., increased SNS and decreased PNS, or withdrawal, resulting in increased arousal; “fight or flight” response), reciprocal PNS activation (decreased SNS and increased PNS, resulting in decreased arousal; “rest and digest” response), coactivation (increases in both SNS and PNS activity), and coinhibition (decreases in both SNS and PNS activity). Thus, based on the existing research indicating that high SCL reactivity and RSA withdrawal are indicative of the BSC phenotype and research suggesting that the interactions between these two systems are important to examine, it was hypothesized that reciprocal sympathetic activation may be the stress profile that is indicative of BSC. To my knowledge only one other study has examined reciprocal sympathetic activation as an indicator of BSC; however, that study did find support for this hypothesis (Lafko, Shoulberg, & Murray-Close, in press).
A plethora of research exists supporting BSC theory’s predictions regarding individual differences in developmental outcomes associated with positive and negative environments based on differences in reactivity to stressors (see Ellis, Essex, & Boyce, 2005 and Obradović, 2012 for reviews). For example, Obradović and colleagues (2010) investigated the role that stress physiology played in the relationship between family adversity (e.g., financial stress, marital discord) and child outcomes (i.e., externalizing, prosocial behavior, school engagement, academic competence). Results indicated that children with a high stress response (i.e., greater RSA withdrawal) from families with high levels of adversity fared the worst compared to all other children. However, children with a high stress response from families with low levels of adversity fared the best in terms of prosocial behavior, school engagement, and levels of externalizing behavior; in fact, these children fared even better than children with a less reactive stress response.

Recently, research regarding BSC has expanded beyond the scope of children’s outcomes in response to familial environmental stressors (e.g., socioeconomic status; martial conflict) and has begun to investigate other contexts where individuals may be susceptible to environmental influence. Rudolph and colleagues (2010) found that children with a high SNS stress response who were victimized were most likely to enact aggressive behavior, whereas children with a high stress response who were not victimized were least likely to enact aggressive behavior. Furthermore, research conducted by Strelau (1985) using the Asch conformity paradigm found that highly reactive individuals were more susceptible to social influence than those displaying low reactivity. These patterns of results suggest that BSC may be relevant to understanding behavioral reactions to peer experiences. However, minimal research has investigated
how BSC may help explain susceptibility to peer influence. Thus, the current study extended the research conducted using the BSC framework in order to explain individual variation in susceptibility to the influence of popular peers and to examine whether the interactions between the SNS and PNS were consistent with BSC.

Recently, Obradović, Bush, and Boyce (2011) suggested that researchers carefully choose the type of stressor being utilized to elicit a stress response (e.g., cognitive, relational) because stress reactivity “can vary across different contexts and in response to different stimuli” (p. 111). Indeed, their research indicated that physiological stress responses predicted maladaptive outcomes differentially based upon the type of laboratory stressor used. They postulated that stress responses to tasks more relevant to processes being examined in a given study may be most appropriate for examining BSC theory. Therefore, based on the relational nature of the processes being examined in the current study (i.e., peer influence on relational aggression and prosocial behavior), a relational stressor task was utilized to evoke a stress response.

**Gender Moderation**

Gender is another important factor that may moderate the relationship between perceptions of popular peers’ behavior and engagement in relationally aggressive and prosocial behavior. As previously discussed, a meta-analysis by Card and colleagues (2008) suggests that males and females engage in similar levels of relational aggression but males are more likely to also utilize physical aggression. This suggests that, although the frequency of relational aggression is similar for males and females, relational aggression may have particularly important implications for females due to its salience.
among girls. Accordingly, children have been found to believe that relational aggression is a “female type” of aggression, whereas physical aggression is a “male type” (Crick, Bigbee, & Howes, 1996; Giles & Heyman, 2005). Rudolph (2002) argued that, because female relationships tend to be characterized by more intimacy, self-disclosure, and emotional support than those of males, threats to interpersonal relationships are particularly harmful. She found that girls endorsed higher levels of anxiety and depression in response to relationship stress (e.g., conflict) than boys. This suggests that females may be particularly susceptible to the influence of peers who utilize relational aggression because, given their focus on interpersonal relationships, threats to these highly valued resources may be viewed as a particularly useful tool for gaining and maintaining social status and dominance in the peer group. In fact, research has demonstrated that relational aggression predicts perceived popularity over time for females, but not for males (Rose, Swenson, & Waller, 2004), suggesting that this type of behavior may be most often utilized by females to effectively gain higher social status. Therefore, females who believe that popular, same-sex peers often engage in relational aggression may be more likely than males to expect that such behavior will be effective in their own bids for social status.

Additionally, an Integrated Gender-Linked Model of Aggression Subtypes has been proposed by Ostrov and Godleski (2010) to explain the process through which gender differences in utilization of forms of aggression (e.g., relational, physical) may emerge. Specifically, this theory proposes that individuals possess gender schemas that guide beliefs about acceptable gender-congruent behavior (see Bem, 1984 and Martin & Halverson, 1981, for discussions of gender schema theories) and that these schemas are
more readily accessible than non-gender-congruent schemas. This theory also postulates that these gender schemas help individuals access and act upon gender-appropriate responses (e.g., physical aggression, relational aggression, no aggressive behavior) to situations. Overall, this theory suggests that relational aggression is more congruent with a female gender schema (Crick, Bigbee, & Howes, 1996; Giles & Heyman, 2005), and, therefore, is more likely to be accessed as a response and enacted by females (Ostrov & Godleski, 2010). The current study postulated that females may be more susceptible to influence by relationally aggressive peers due to a propensity to choose to engage in this type of gender-congruent behavior.

This theory has been postulated to be less relevant at later developmental stages due to an increased flexibility in gendered interactions (e.g., unsegregated friendship groups, romantic relationships; Ostrov & Godleski, 2010). However, adults have been found to believe that physical aggression is more appropriate for boys than girls (Condry & Ross, 1985; Lyons & Serbin, 1986; Susser & Keating, 1990), suggesting that this model may still be appropriate for emerging adults. In fact, one study using a sample of emerging adults found that relationally aggressive behaviors were described as the most commonly used aggressive behaviors for females and physically aggressive were cited as most commonly used by males (Nelson, Springer, Nelson, & Bean, 2008).

Research also indicates that girls enact more prosocial behavior than males (Coie, Dodge, & Copotelli, 1982; Crick & Grotpeter, 1995; Rys & Bear, 1997) and tend to respond to conflict in a more prosocial manner (Chung & Asher, 1996; Hopmeyer & Asher, 1997; Rose & Asher, 1999). Some research also suggests that these results become more consistent with age (Hops, Alpert, & Davis, 1997; Strough & Berg, 2000).
Thus, females may be particularly sensitive to the influence of peers on prosocial behavior due to its salience for females and its utility for maintaining harmony within important interpersonal relationships (Rudolph, 2002).

Finally, some research suggests that gender may be an important indicator of susceptibility to influence. However, the direction of effects has been mixed across studies: whereas some studies indicate that males are more susceptible to influence by peers than are females (Steinberg & Silverberg, 1986; Steinberg & Monahan, 2007), others suggest the opposite (Chassin, Presson, Sherman, Montello, & McGrew, 1986). Research by Sumter, Bokhorst, Steinberg, and Westenberg (2009) found that females displayed higher resistance to peer influence (self-report; Steinberg & Monahan, 2007), but, when age was included in the model, this was largely accounted for by the earlier psychosocial maturity of females (Cohn, 1991) and the gender difference was much smaller in emerging adulthood. However, none of this research investigated gender differences in susceptibility to peer influence on relational aggression or prosocial behavior. Therefore, this pattern of results suggests that gender may play an important role in susceptibility to peer influence, but the magnitude of these effects and the specific types of behavior being influenced (e.g., relational aggression and prosocial behavior) need further exploration.

The Current Study

Aims & Hypotheses

The purpose of the current study was to examine how perceptions of same-sex popular peers’ relationally aggressive and prosocial behaviors were associated with
engagement in these behaviors in a sample of emerging adults. In addition, the current study examined the moderating roles of ANS stress reactivity (indexed by SCL- and RSA-R) and gender in these associations.

Although research suggests that the behaviors exhibited by youths’ best friends and members of their social networks can have a significant impact on their own behavior (see Ellis & Zarbatany, 2007; Werner & Crick, 2004; Barry & Wentzel, 2006), there is a dearth of research investigating the influence of popular peers on individuals’ engagement in relational aggression and prosocial behavior. Additionally, according to the tenants of social learning theory (Bandura, 1973) and supporting research (Menard & Grotpeter, 2011; Song et al., 2012; Molano, Jones, Brown, & Aber, 2013; Prinstein, Brechwald, & Cohen, 2011; Kandel, 1978; Allen, Porter, & McFarland, 2006), perceptions of peer behavior (and the perceived associated outcomes), regardless of the actual behavior of peers, is an important predictor of individual behavior. This may be especially true for perceptions of behavior enacted by popular peers (Prinstein, Brechwald, & Cohen, 2011). Thus, the first aim of the current study was to extend the previous research in this area to investigate the influence of perceptions of popular peers’ conduct on behaviors that are relatively salient for females (i.e., relational aggression and prosocial behavior; Crick & Grotpeter, 1995). It was hypothesized that perceptions of popular peers’ engagement in relational aggression and prosocial behavior would be significantly, positively associated with individual engagement in relational aggression and prosocial behavior, respectively (Hypothesis 1).

Research indicates that some individuals are more susceptible to peer influence than others (Berndt, 1979; Steinberg & Monahan, 2007; Prinstein et al., 2011). One
explanation of this differential susceptibility to peer influence can be found in BSC theory, which postulates that individuals with a heightened stress response are more malleable to environmental influence (Boyce & Ellis, 2005; Ellis, Boyce, Belsky, Bakermans-Kranenburg, & Van Ijzendoorn, 2011). Thus, the second aim of the current study was to test this hypothesis by investigating the moderating effect of physiological stress reactivity (i.e., SCL-R, RSA-R) to relational stress on the relationship between perceptions of popular peers’ perpetration of relational aggression and prosocial behavior and emerging adults’ engagement in such conduct. More specifically, it was hypothesized that perceptions of popular peers’ relationally aggressive and prosocial behavior would be most strongly associated with engagement in these behaviors among emerging adults with a stress response hypothesized to be indicative of BSC (i.e., reciprocal SNS activation; SNS activation accompanied by PNS withdrawal, resulting in increased arousal) in response to relational stress (Hypothesis 2) (Lafko, Shoulberg, & Murray-Close, 2013). In contrast, it was hypothesized that the association between perceptions of popular peers’ behavior and emerging adults’ own conduct would be not be as strong among those with other profiles of ANS reactivity (i.e., reciprocal PNS activation; coinhibition; coactivation).

Research also suggests that relational aggression and prosocial behavior may be particularly salient behaviors for females (Crick & Grotpeter, 1995; Crick, Bigbee, & Howes, 1996; Giles & Heyman, 2005; Coie, Dodge, & Copotelli, 1982; Rys & Bear, 1997), potentially due to the increased importance of interpersonal relationships within girls’ and women’s relationships (Rudolph, 2002). In fact, Ostrov and Gotleski (2010) suggest that relationally aggressive responses are more easily accessible and are more
likely to be acted upon by females because this type of behavior is consistent with female
gender schemas. Therefore, the current study sought to investigate the moderating effect
of gender on the relationship between perceptions of popular peers’ behavior and
emerging adults’ engagement in these behaviors. It was hypothesized that perceptions of
popular peers’ relationally aggressive and prosocial behavior would be more strongly
associated with heightened engagement in these behaviors among females than among
males (Hypothesis 3).

Taken together, the research suggests that physiological stress reactivity may be
indicative of a susceptibility to be influenced by peers and that gender may also be
particularly important in understanding how popular peers influence engagement in
relational aggression and prosocial behavior. Thus, the final aim of the current study was
exploratory in nature and sought to examine if perceptions of popular peers’ behavior and
physiological susceptibility to peer influence (i.e., BSC) predicted behavior differentially
for males and females. Given the salience of both relational aggression and prosocial
behavior for females and the relationship between these behaviors and high social status
(Hawley, Little, & Card, 2008), it is possible that females high in stress reactivity may be
more likely to engage in these behaviors when they believe that their popular peers are
also behaving in this way. It was hypothesized that RSA-R, SCL-R, and gender would
moderate the relationship between perceptions of popular peers’ engagement in relational
aggression and prosocial behavior and individual engagement in these behaviors.
Specifically, it was hypothesized that the positive relationship between perceptions of
popular peers’ relational aggression and prosocial behavior and engagement in relational
aggression and prosocial behavior, respectively, would be strongest amongst females
displaying reciprocal sympathetic activation to stress (Hypothesis 4).

Lastly, the processes underlying susceptibility to peer influence have rarely been investigated in developmental stages beyond adolescence (e.g., emerging adulthood; Monahan, Steinberg, & Cauffman, 2009). According to the developmental psychopathology perspective, it is important to investigate developmental processes during all periods of development (i.e., life-span approach) and it should not be assumed that the mechanisms underlying behavior are the same at all stages in development (Rutter & Stroufe, 2000). Thus, although it was postulated that the processes underlying susceptibility to peer influence that have been investigated at younger ages will be present in emerging adulthood, this requires empirical testing. Therefore, the final aim of the current study was to extend the previous work in this area to include a sample of emerging adults.

**Method**

**Participants**

Participants were drawn from a larger study examining the association between ANS activity and psychological functioning. The final sample for the present study included 200 emerging adults aged 18–23 years (70% female; $M_{age}= 19.04$). Participants for this study were predominantly Caucasian (94%) college students recruited from introductory psychology courses at a Northeastern public university. Participants were provided with course credit for their participation.
Procedure

Participants provided written consent and were given a tour of the laboratory and physiological equipment before completing a two hour individual interview. Participants completed a variety of stressor tasks and measures of baseline arousal while attached to physiological sensors in order to assess autonomic arousal. Participants also completed self-report measures of their perceptions of same-sex popular peers’ prosocial and relationally aggressive behavior, their own engagement in prosocial behavior and relational aggression, and additional tasks and questionnaires not used in the present study.

Assessment of Physiological Activity

Participant’s physiological reactivity was assessed during an adapted version of the Social Competence Interview (SCI), a semi-structured interview developed by Ewart and colleagues (Ewart & Kolodner, 1991; 1993). During the current SCI procedure, participants are given a deck of five cards describing differing types of stress that can occur with peers, friends, or in school (e.g., you don’t get invited to something; you slept through your alarm and wake up while your final exam is taking place), are asked to choose the situation that happened to them the most, and then reconstruct the event using standard imagery techniques. The SCI interviews for the current study were adapted from their original version to assess reactivity to relational and academic situations, respectively, and the order of relational and academic interviews were counterbalanced across participants. Physiological reactivity to the relational SCI was used in the current study.
Autonomic arousal was assessed using a custom-made physiological acquisition system from James Long Company (Caroga Lake, NY). This system, including a Pentium computer, Snapmaster software, and James Long Company bioamplifier, allowed continuous physiological recordings during baseline and stress responses. SCL (expressed in microsiemens) was assessed with two Ag/AgCl skin conductance electrodes attached to the distal phalanges of the first and second fingers of the participant’s non-dominant hand with double-sided adhesive collars to limit gel to a 1 cm diameter circle. Participants washed and dried their hands prior to SCL measurement.

RSA was assessed using an electrocardiogram (ECG). Each participant placed disposable electrode stickers in a bipolar configuration on opposite sides of his or her chest and a ground lead was placed on the sternum. The ECG channel high-pass filter was set to 0.1 Hz and the low-pass filter was set to 1000 Hz. Cardiac inter-beat intervals (IBI) were measured as time in milliseconds between successive R waves of the ECG. To assess respiration, pneumatic bellows attached to a pressure transducer were placed around the participant’s chest and fixed with a metal bead chain. The James Long Company IBI Analysis System Program software algorithm was used to extract R-waves. Misspecified R-waves were visually inspected and manually edited. RSA was calculated using the ‘peak-to-valley’ method (Grossman and Svebak, 1987), which calculates RSA based on the minimum IBI during inspiration and the maximum IBI during expiration. RSA was calculated using both ECG and respiration measurements to control for respiration (Grossman et al., 1991). RSA was measured in seconds.

Each SCI interview was preceded by a 6-minute resting baseline (i.e., sitting quietly) and followed by a 6-minute recovery period. Each interview lasted
approximately 12 minutes. Physiological reactivity scores were calculated by subtracting mean arousal during the baseline period from mean arousal during the SCI interview. Previous research with a different sample has successfully used this protocol to investigate the association between physiological activity and peer processes (Murray-Close, 2011; Lafko, Shoulberg, & Murray-Close, 2014).

Measures

**Perceptions of Popular Peers’ Behavior.** Participants’ perceptions about the factors that are related to popularity and likeability were assessed with a new 20-item measure developed for the larger study. Participants were asked to rate whether popular males and females in their peer group behaved in relationally aggressive and prosocial ways on a scale from 1 (not at all true) to 5 (really true). For the present study, only participants’ responses about their same-sex popular peers were used. Two subscales from the full measure were used in the present study: perceptions of popular same-sex peers’ relational aggression (3 items; e.g., the popular guys at my school try to exclude or keep certain students from being in their group) and perceptions of popular same-sex peers’ prosocial behavior (e.g., the popular guys at my school help others join a group or make friends). The items were developed based on previous measures (i.e., peer nominations) of aggression and prosocial behavior (Crick, Bigbee, & Howes, 1996). For the current study, the introductory statement “The popular guys/women at my school…” was added to items to provide an assessment of perceptions of popular peers’ engagement in relational aggression and prosocial behavior. Both the relational aggression (Cronbach’s α for males = .83; females = .88) and prosocial (Cronbach’s α for males =
.83; females = .82) subscales demonstrated good internal consistency in the present study. In order to confirm the factor structure of the Perceptions of Popular Students’ Behavior measure, confirmatory factor analyses were run in Mplus version 6 (Muthén & Muthén, 1998-2013). The values of the fit indices suggested acceptable to good fit for this measurement model ($\chi^2(32, n = 199) = 70.193, p < .001$, RMSEA = .08, CFI = .96, TLI = .94, and SRMR = .06). Constraining factor loadings across gender did not result in a significant decrease in model fit, indicating that the loadings were equivalent for males and females.

**Aggression & Social Behavior.** The Self-Report of Aggression & Social Behavior Measure (SRASBM) was used to assess self-reports of participants’ aggression and prosocial behavior (Bailey & Ostrov, 2008; Linder et al., 2002; Murray-Close et al., 2010). Two subscales from this 59-item instrument were used in the present study. First, to assess overall levels of relational aggression, scores were averaged across items (11 items; e.g., "I have threatened to share private information about my friends with other people in order to get them to comply with my wishes", “When I am not invited to do something with a group of people, I will exclude those people from future activities”). The second subscale assessed engagement in prosocial behavior. Although the original measure included 11 prosocial behavior items (e.g., “I am usually kind to other people”), only 8 items were used in the present study. Specifically, based on the results of a Confirmatory Factor Analysis conducted on the prosocial subscale, factor loadings less than $\lambda = .40$ were removed; therefore, three items were dropped from the prosocial behavior measure (i.e., “I usually follow through with my commitments”, “I am usually
willing to lend my belongings [car clothes etc.] to other people”, and “I try to help out others when they need it”). Participants responded on a scale from 1 (not at all true) to 7 (very true). Both the relational aggression (Cronbach’s α = .79) and prosocial (Cronbach’s α for males = .85) subscales demonstrated good internal consistency in the present study.

Results

Preliminary Analyses

Descriptive Analyses. Descriptive statistics for study variables are presented in Table 1. Based upon the recommendations outlined by Tabachnick and Fidell (2007) to evaluate data for violations of normality (i.e., skewness or kurtosis statistically significant at p < .01 or p < .001), violations of acceptable skewness and/or kurtosis were present for most variables assessed. Thus, assumptions of normality were not met with the current data and the recommendations of Russell and Dean (2000) for addressing violations of normality in models that test moderation by utilizing bootstrapping techniques were followed in all regression analyses. Furthermore, visual and numerical inspection of the distributions of all variables indicated that two outliers may warrant further investigation. The first outlier indicated a very high SCL-R value as compared to the other SCL-R values in the dataset. The second outlier indicated a high level of RSA-R withdrawal. To investigate the potential impact of these outliers, all analyses were run with the outliers included and then again with the outliers excluded. Results did not significantly differ; therefore, all reported results are from the dataset including the potential outliers.

Missing data. Percentages of missing data for all study variables are presented in Table 2. According to Graham (2009), missing data at levels around 5% are unlikely to
bias results. Most current study variables had less than 5% missing data and the only variable missing more than 5% of data was RSA-R (6% of RSA-R measures were missing). Little’s Missing Completely at Random (MCAR) test was also employed to statistically examine if missing data were missing completely at random. Little’s MCAR test was not significant \( \chi^2(39) = 52.59, p > .05 \), suggesting that data were MCAR. Overall, these preliminary analyses suggest that missing data for the current study are ignorable.

**Bivariate Correlations.** Intercorrelations among study variables are presented in Table 3. Age was significantly associated with gender (\( r = -.26, p < .01 \)) such that the females tended to be younger than the males in this sample. Age was also correlated with perceptions of popular peers’ relational aggression (\( r = -.17, p < .05 \)) such that older participants reported that their popular peers engaged in less relational aggression. Gender was significantly correlated with prosocial behavior (\( r = .27, p < .01 \)) such that females reported higher levels of engagement in prosocial behavior. Gender was also associated with perceptions of popular peers’ relational aggression (\( r = .38, p < .01 \)) and perceptions of popular peers’ prosocial behavior (\( r = .19, p < .01 \)) such that females reported that their popular peers engaged in higher levels of relationally aggressive and prosocial behaviors. Finally, gender was also correlated with RSA-R (\( r = .18, p < .05 \)) such that females exhibited greater increases in RSA during the SCI relational stressor task than males. Based on these preliminary analyses, age was controlled for in all primary analyses.

**Primary Analyses**

**Bivariate Correlations.** Consistent with Hypothesis 1, correlation analyses
revealed that perceiving popular peers as relationally aggressive was associated with more engagement in relational aggression ($r = .27, p < .01$) and perceiving popular peers as prosocial was associated with engagement in higher levels of prosocial behavior ($r = .29, p < .01$; Table 3).

**Bootstrapping.** Graham (2009) suggests that it is advisable to address missing data using techniques such as multiple imputation even when missing data are unlikely to bias findings, as is the case for the current sample. However, preliminary explorations of the data suggested that, in the current study, the main area of concern for biased estimates was likely due to extreme violations of normality rather than bias due to missing data. Therefore, listwise deletion was used for all hierarchical regression analyses as bootstrapping techniques are not compatible with multiple imputation in SPSS 22 (IBM SPSS, Inc., 2013).

For each regression analysis, one thousand bootstrap samples were drawn with replacement. The unstandardized regression coefficients (i.e., the actual unstandardized regression coefficient for the current sample), bias (i.e., difference between the sample unstandardized regression coefficient and value of the unstandardized regression coefficients averaged across the bootstrap samples), the bootstrap standard error (i.e., average standard error from the bootstrap samples), and the bias-accelerated and corrected (BCa) 95% confidence intervals are reported for all analyses. BCa confidence intervals account for bias and skewed distributions of the standard errors in the bootstrap samples. When utilizing the BCa confidence intervals, effects are considered significant if the interval does not contain zero (Preacher, Rucker, & Hayes, 2007).
Hierarchical Regression Analyses. Results for the models examining the associations between perceptions of popular peers’ behavior, RSA-R, SCL-R, and engagement in relational aggression and prosocial behavior (Hypothesis 2), respectively, are presented in Table 4. In these models, age was entered as a covariate in the first step. In the second step of the model, the perception of popular peers’ engagement in the focal behavior (i.e., relational aggression, prosocial behavior), RSA-R, and SCL-R were entered. The three two-way interaction terms were included in the third step of the model and the three-way interaction term was included in the final step. Contrary to Hypothesis 2, neither the three-way interaction between perceptions of popular peers’ relational aggression, RSA-R, and SCL-R predicting engagement in relational aggression (b = .87; BCa 95% CI: [-.61, 2.13]) nor the three-way interaction between perceptions of popular peers’ prosocial behavior, RSA-R, and SCL-R predicting engagement in prosocial behavior (b = 1.25; BCa 95% CI: [-.48, 4.23]) were significant.

The second set of analyses investigated the moderating effect of gender on the relationship between perceptions of popular peers’ behavior and engagement in relational aggression and prosocial behavior, respectively (Hypothesis 3; Table 5). In these models, age was entered as a covariate in the first step. In the second step of the model, the perception of popular peers’ engagement in the focal behavior (i.e., relational aggression, prosocial behavior) and gender were entered. The two-way interaction was entered in the third step of the model. The interaction between gender and perceptions of popular peers’ relational aggression was not significantly related to engagement in relational aggression (b = -.02; BCa 95% CI: [-.24, .20]). Additionally, gender did not significantly interact
with perceptions of peers’ prosocial behavior to predict engagement in prosocial behavior \((b = -0.09; \text{BCa 95\% CI: [-0.40, 0.24]})\).

The final set of analyses examined the moderating effects of gender, RSA-R, and SCL-R on the relationship between perceptions of popular peers’ behavior and engagement in relational aggression and prosocial behavior, respectively (Hypothesis 4; Table 6). In these models, age was entered as a covariate in the first step of the model. In the second step of the model, the perception of popular peers’ engagement in the focal behavior (i.e., relational aggression, prosocial behavior), gender, RSA-R, and SCL-R were entered. The six two-way interaction terms were included in the third step of the model. In the fourth step, the four three-way interactions were entered. Finally, the last step of the model included the four-way interaction between perceptions of popular peers’ engagement in the focal behavior (i.e., relational aggression, prosocial behavior), gender, RSA-R, and SCL-R. Results indicated that the four-way interaction between perceptions of peers’ relational aggression, gender, RSA-R, and SCL-R was not a significant predictor of relational aggression \((b = -1.05; \text{BCa 95\% CI: [-8.06, 4.92]})\). Further, the four-way interaction between perceptions of peers’ prosocial behavior, gender, RSA-R, and SCL-R was also not a significant predictor of prosocial behavior \((b = -0.99; \text{BCa 95\% CI: [-7.56, 4.09]})\).

**Follow-up Analyses**

In order to further explore the data, a series of follow-up analyses were run testing all previously delineated hypotheses as related to cross-behavior associations (e.g., perceptions of popular peers’ *prosocial behavior* and gender predicting engagement in
relational aggression). The only significant interaction that emerged suggested that perceptions of peers’ prosocial behavior interacted with gender to predict engagement in relational aggression \((b = .25; \text{BCa 95\% CI: } [.05, .44]; \text{Table 7})\). Follow-up simple slope analyses indicated that the perception that popular peers engage in prosocial behavior was significantly, negatively associated with engagement in relational aggression among males \((t = -3.01, p < .05; \text{Figure 1})\) but not among females \((t = -.09, \text{N.S.})\).

A final exploratory follow-up analysis investigated if age moderated the relationship between perceptions of peer behavior and engagement in that behavior. Results indicated that the interaction between perceptions of popular peers’ relational aggression and age was not a significant predictor of relational aggression \((b = .03; \text{BCa 95\% CI: } [-.04, .10])\). Further, the interaction between perceptions of popular peers’ prosocial behavior and age was also not a significant predictor of prosocial behavior \((b = -.03; \text{BCa 95\% CI: } [-.13, .06])\).

**Discussion**

The overall goal of the current study was to determine if perceptions of popular peers’ relationally aggressive and prosocial behavior were related to engagement in these behaviors in a sample of emerging adults and if ANS reactivity to relational stress and gender moderated these associations. Although a significant amount of research suggests that aggressive behaviors can be influenced by peers (e.g., Molano, Jones, Brown, & Aber, 2013), there is a dearth of work that has examined the relational forms of aggression that tend to be more salient for females. Further, given that some research suggests that perceptions about how peers are behaving, regardless of peers’ actual
behavior, influences individual behavior (Song et al., 2012; Baer, Stacy, & Larimer, 1991; Borsari & Carey, 2003; Neighbors, Dillard, Lewis, Bergstrom, & Neil, 2006; Perkins & Berkowitz, 1986), the current study investigated if perceptions of peers’ relational aggression and prosocial behavior were related to engagement in those behaviors.

Consistent with study hypotheses, findings suggested that perceptions of popular peers’ engagement in relational aggression was positively related to self-reported engagement in relational aggression and, similarly, perceptions of popular peers’ prosocial behavior was positively associated with self-reported engagement in prosocial behavior (Hypothesis 1). These findings extend previous work (e.g., in the substance use domain; Song et al., 2012) by suggesting that beliefs about peers’ behaviors can have an important influence on other types of behaviors. These findings are important for several reasons. First, the results suggest that self-reported perceptions of popular peers’ behavior are significantly related to behavior in emerging adults. Most previous research in the areas of relational aggression and prosocial behavior has examined direct links between peer behavior and individual behavior. However, there is reason to believe, both theoretically and empirically, that perceptions of how popular peers behave may have an important influence on behavior (Bandura, 1973; Menard & Grotpeter, 2011; Song et al., 2012). For example, an individual who witnesses a popular peer engaging in relationally aggressive behavior may form the belief that all popular peers are relationally aggressive and/or that they engage in these behaviors at particularly high rates, even when these beliefs are not accurate. Thus, this individual’s perceptions about how popular peers behave may be driving her engagement in relational aggression rather than the actual
level of relational aggression engaged in by popular peers. It is important to note that these perceptions are likely based, at least in part, on the actual behavior of popular peers; that is, actual behavior of peers and perceptions of peers are likely positively correlated. However, although some perceptions of popular peers’ behavior may be based on observations of peer behavior, some may be based on other factors such as stereotypes about the behavior of popular peers. Future work would benefit from determining the correlation between perceptions of popular peers’ behavior and actual peer behavior and then comparing the relative magnitude of effects.

Second, these findings suggest that self-reported information about peers’ behavior can provide important information about emerging adult’s functioning. As gathering information about peers’ actual behavior during emerging adulthood can be challenging (e.g., different possibilities for a “peer group” in college), the findings from the current study underscore the utility of measures that assess perceptions of peers’ behaviors in studies of peer influence during emerging adulthood. Third, these findings suggest that perceptions about how popular peers behave remain significantly associated with behavior in a developmental period during which peer influence is expected to decline (Berndt, 1979; Erikson, Crosnoe, & Dornbusch, 2000; Sumter, Bokhorst, Steinberg, & Westenberg, 2009; Steinberg & Monahan, 2007; Steinberg & Cauffman, 1996; Steinberg & Silverberg, 1986; Walker & Andrade, 1996); therefore, emerging adulthood appears to be an important, albeit understudied, area to investigate peer influence processes.

Fourth, the current study is consistent with the hypothesis that both positive (i.e., prosocial) and negative (i.e., relational aggression) behaviors are amenable to peer
influence. Interestingly, the correlations between perceptions of popular peers' engagement in relational aggression and individual’s engagement in relational aggression and between perceptions of popular peers’ prosocial behavior and individual’s engagement in prosocial behavior were almost identical ($r = .27$ vs. $r = .29$, respectively). This is in contrast to previous research demonstrating that peer influence has a stronger effect on aggression than prosocial behavior in adolescent samples (Keung, Shek, Cheung, & Tam, 2002; Molano, Jones, Brown, & Aber, 2013). Perhaps this reflects the propensity for emerging adults to engage in less antisocial behavior (Steinberg & Monahan, 2007; Steinberg & Cauffman, 1996; Steinberg & Silverberg, 1986), therefore, they may be more likely to be influenced by both positive and negative behaviors. This suggests that the literature should continue to move beyond discussions of the negative influence of peers to include the potentially as robust, positive impact of peers.

Consideration of both positive and negative peer influences in social behavior may be critical in order to develop more comprehensive, efficacious intervention and prevention programs. For example, intervention programs could seek to change perceptions about the prosocial behavior of popular peers in an attempt to enact positive change in participants.

Research also suggests that some individuals are more susceptible to peer influence than others (Berndt, 1979; Steinberg & Monahan, 2007; Prinstein et al., 2011); thus, the current study examined factors that may influence the strength of the relationship between perceptions of popular peers’ behavior and engagement in that behavior. As BSC theory postulates that individuals with a heightened stress response are more malleable to environmental influence (Boyce & Ellis, 2005; Ellis, Boyce, Belsky, 42
Bakermans-Kranenburg, & Van Ijzendoorn, 2011), stress physiology was examined as a potential moderator in the current study. Contrary to expectations (Hypothesis 2), the strength of the associations between perceptions of popular peers’ relationally aggressive and prosocial behavior and engagement in relational aggression and prosocial behavior, respectively, were not significantly impacted by stress physiology (i.e., RSA-R & SCL-R). There are several plausible explanations for this lack of significant findings. It is possible that methodological constraints prohibited a generalizable assessment of physiological functioning. More specifically, although previous research suggests that the SCI is a valid elicitor of a physiological stress response in emerging adults (Murray-Close, 2011), it is not a standardized stressor. Some individuals may choose to discuss peer experiences that are not particularly stressful either because they do not feel comfortable discussing a more stressful event with the interviewer or because they do not have as many stressful peer experiences to recount. Future research should seek to investigate BSC in this framework using a standardized stressor in order to reduce the confound of individual variability in severity of relational stressor reported.

A second explanation is that the individual differences in BSC may be limited when only examining the ANS. Recent genetic research suggests that whereas specific genes often fail to predict behavior, *constellations* of genes may provide greater predictive power (Plomin, 2012). Perhaps examining the autonomic nervous system in isolation is similar to searching for specific genes; in other words, perhaps the autonomic nervous system is only one small part of an entire bodily system indicative of BSC (e.g., HPA axis, brain structures, genes). Additionally, there are several measures of the ANS (e.g., salivary alpha amylase [sAA]) such that it may be important to also integrate across
measures within the ANS. Thus, in order to extend BSC research into new realms of psychology (e.g., peer research) we may need to integrate additional measures of the ANS (e.g., sAA) and additional systems (e.g., HPA axis, genes) into a more complex, comprehensive model of BSC.

Third, it is possible that BSC is not an appropriate framework in which to understand peer influence processes, at least in emerging adults. For instance, factors unrelated to BSC (e.g., desire for popularity) may be more important in explaining susceptibility to peer influence in older age groups. The potential role of BSC in susceptibility to peer influence should be further examined in both emerging adulthood and younger cohorts (i.e., adolescents) that, in general, tend to be more susceptible to peer influence. Finally, it is possible that reciprocal sympathetic arousal is not indicative of BSC. Only one other study has suggested that this particular pattern of physiological functioning is indicative of BSC (Lafko et al., in press) and this study utilized a sample of adolescent girls. Therefore, it remains to be seen if the pattern of results found by Lafko and colleagues (in press) persists when examining different age groups and genders. Of note, however, the current study also did not find evidence for SCL-R or RSA-R, separately, as moderators, and these measures have been used as indicators of BSC in a number of previous studies (e.g., El Sheikh, Keller, & Erath, 2007; Obradović, Bush, Stamperdahl, Adler, & Boyce, 2010). Thus, PNS and SNS functioning, when examined both separately and together, did not serve to modify the impact of perceptions of popular peers’ behavior. This suggests that the failure to find support for BSC is not simply due to examining SNS and PNS interactions.
Research suggests that both relational aggression and prosocial behavior may be differentially salient among males and females and, as such, gender was included as an additional moderator variable. Given that relational aggression and prosocial behavior are especially useful tools for gaining status in the peer group for females (e.g., Rose, Swenson, & Waller, 2004), we expected that these behaviors would be more readily imitated by females than males who believed that their popular peers engaged in them. However, contrary to expectations, gender did not moderate the associations between perceptions of popular peers’ engagement in relationally aggressive and prosocial behavior and participants’ own engagement in such conduct (Hypothesis 3). Instead, perceptions of popular peers’ engagement in relational aggression and prosocial behavior were related to individual engagement in these behaviors for both males and females. Card and colleagues (2008) found that males and females engage in similar levels of relational aggression so perhaps utilization of relational aggression is not necessarily a useful tool for only females. However, research does suggest that prosocial behavior may be a particularly helpful tool for maintaining social harmony for females (Rudolph, 2002), so this finding deserves further attention in future research. Perhaps this findings reflects our main factor of interest: perceptions of popular peers’ behavior. Specifically, regardless of the actual effect of relational aggression and prosocial behavior on popularity, perhaps the belief that peers behave prosocially or relationally aggressively may be enough to predict engagement in these behaviors, even in males. Finally, it is also of note that the current study included significantly more female than male participants. It is possible that there was not adequate statistical power to detect gender differences in the current sample.
The interaction between RSA-R, SCL-R, and gender also did not modify the magnitude of the relationship between perceptions of popular peers’ engagement in relationally aggressive and prosocial behaviors and individuals’ engagement in relational aggression and prosocial behavior, respectively. Apart from the previously outlined explanations for the lack of findings in the prior analyses, the most obvious explanation for the lack of significant findings is low statistical power. Four-way interactions are notoriously difficult to detect and it is likely that the sample size did not allow for adequate detection of smaller effects.

Interestingly, follow-up analyses indicated that perceptions of popular peers’ engagement in prosocial behavior was significantly, negatively related to engagement in relational aggression for males only. In other words, greater perceptions of popular peers’ engagement in prosocial behavior was related to lower levels of relational aggression. These findings suggest that perceptions of popular peers’ prosocial behavior matters for males’ relationally aggressive behavior but not for females’ behavior. Although speculative, perhaps males’ use of relational aggression is more malleable based on peers’ positive, prosocial behavior than females. For example, a male who views his popular peers as prosocial may be more apt to refrain from relational aggression because he does not believe that engaging in relational aggression is necessary to make him more popular; in effect, he may believe that enacting more positive, prosocial behaviors will allow him to garner high social status. However, based on her historical experience that relational aggression is highly related to popularity in females (e.g., Rose, Swenson, & Waller, 2004), a female may be less likely to believe that she can attain high social status without engaging in relational aggression. As such, she may be less willing to change her
aggressive behaviors based on the prosocial behavior of her popular peers. This cross-behavior effect suggests that prosocial behavior may be an important target for research and intervention seeking to reduce relational aggression in males. However, as noted previously, there were significantly more females in the current study than males. Therefore, any findings including gender should be evaluated with caution. In order to fully understand and explain this unexpected finding, further research is warranted in samples that are more gender balanced.

**Strengths and Limitations**

The current study included a number of strengths that contribute to a greater understanding of the socialization of both aggressive and prosocial behaviors. First, the current study examined a sample of emerging adults, a population that is vastly underrepresented in the peer influence literature. Perhaps this population has been understudied due to findings that suggest that peer influence declines into emerging adulthood (Berndt, 1979; Erikson, Crosnoe, & Dornbusch, 2000; Sumter, Bokhorst, Steinberg, & Westenberg, 2009; Steinberg & Monahan, 2007; Steinberg & Cauffman, 1996; Steinberg & Silverberg, 1986; Walker & Andrade, 1996); however, findings from the current study suggest that perceptions of peer behavior are, in fact, related to emerging adult’s engagement in that same behavior. Second, in line with the tenants of developmental psychopathology (Cicchetti, 2006; Cummings, Davies, & Campbell, 2000), the current study included multiple levels and methods of analysis (i.e., physiological, behavioral; self-report). According to Cummings and colleagues (2000), “…children’s adaptations to contexts of development are complex and occur on many different dimensions of
functioning that also vary in response to the multiple contexts that the child encounters on a daily basis. Thus, different methodologies requiring widespread expertise are needed” (p. 57). Consistent with this argument, the current methodology allows for the examination of different dimensions of functioning that may interact to predict behavior.

Third, the current study further extended the traditional approach to examining aggressive behaviors (e.g., physical aggression), to include a relational form of aggression that is related to multiple maladaptive outcomes (e.g., Werner & Crick, 1999) but is not as readily recognized as a “legitimate” form of aggressive behavior, especially when examining the dearth of school intervention programs that include a relational aggression component (Leff et al., 2010). Fourth, the current study examined the interaction between the SNS and the PNS, an approach that been recommended for fully understanding the functioning of these systems (Beauchaine, 2001). Finally, confidence intervals were utilized to report statistical significance, an approach encouraged as a way to circumvent some of the inherent biases present in traditional Null Hypothesis Testing (Cohen, 1994).

The current study was also limited in several important ways. First, participants were primarily Caucasian, heterosexual individuals. Research suggests that both relational aggression and prosocial behavior are present across racial/ethnic groups (e.g., Kawabata et al., 2012). However, very limited research has investigated the use of relational aggression and prosocial behavior in homosexual men (e.g., Kelley & Robinson, 2008) and none have investigated this exclusively in homosexual women. Thus, it cannot be assumed that the factors that impact the strength of peer influence in one population will exhibit the same magnitude of influence in a different population. For
example, research suggests that sexual behavior is an important factor in determining social status in mixed-sex contexts (Prinstein, Meade, & Cohen, 2003), and recent research indicates that when women view another woman as a sexual competitor (e.g., she is dressed provocatively), they tend to use indirect aggression to derogate and chastise her in order to maintain social advantages (Vaillancourt & Sharma, 2011).

Although this process may potentially be similar in homosexual individuals, we cannot generalize to this population without empirical evidence. Research should seek to use more diverse samples, both racially and in terms of sexual orientation, when examining peer influence on relational aggression and prosocial behavior.

Second, the sample was comprised of entirely college students. Arnett (2000) described individuals who do not attend college after high school as the “forgotten half” (p. 476). This “forgotten half” is vastly understudied due to the relative difficulty accessing these individuals (as compared to readily available college students) and their heterogeneity in terms of demographic status, life circumstances (e.g., parent vs. non-parent), and employment (Arnett, 2000). However, it is this extreme heterogeneity that is characteristic of emerging adulthood (Arnett, 2000). Thus, the current study cannot claim to include a sample of emerging adults but instead reflects a sample of emerging adults in college. It is possible that individuals who do not attend college are less likely to be embedded in cohesive, discrete peer groups (e.g., a sorority group; a residential floor) as college students and, as such, find relational aggression harder to implement and/or less related to social status. Relatedly, the participants in the current study were relatively young ($M_{age} = 19.04$); as such, the sample is not representative of the full age range of emerging adults. Older emerging adults may be less concerned with the behavior of
popular peers; as such, these social influence processes may be less relevant in older samples. Future research would greatly benefit from including emerging adults both in college and not in college and that fully reflect the age range of emerging adulthood in order to better investigate these processes in this developmental period.

Third, the current study was cross-sectional in nature. Due to this study design, the differential impact of selection and socialization processes cannot be disentangled. For example, we cannot determine the direction of effects regarding the positive association between perceptions of popular peers’ behavior and participants’ own engagement in such conduct. Relationally aggressive emerging adults may report that their popular peers are relationally aggressive as a result of a false consensus bias (Ross, Greene, & House, 1977; in effect, these individuals may choose to believe that their peers engage in similar behaviors in order to justify their own conduct. Thus, although the present study provides a good starting point for research on peer influence on relational aggression during emerging adulthood, the next step will require a longitudinal examination of peer influence over time in order to disentangle some of the possible explanations for the findings of the current study.

Fourth, the current study focused on peer influence processes during emerging adulthood. Although this is a potential strength because it is a relatively understudied population in the peer influence literature, it may also be a limitation because peers may not play as great a role in predicting behavior in emerging adulthood as in younger age groups (e.g., adolescence; Brown, 2004). Future work should seek to understand the dynamic interactions that help explain peer influence both over time and across age groups. For example, future work may benefit from cross-sectionally examining the
strength of peer influence in different age groups (e.g., adolescence, emerging adulthood) or longitudinally examining how peers socialize relational aggression and prosocial behavior over time.

Fifth, examining perceptions of popular peers’ behavior in isolation may not provide an accurate depiction of popular peer influence processes. For example, it is possible that perceptions of popular peers’ behavior impacts engagement in these behaviors, but only for those who want to be popular themselves. Shoulberg, Sijtsema, and Murray-Close (2011) found that having a reputation for valuing popularity was associated with engagement in relational aggression in a sample of adolescent girls. Further, this relationship was moderated by actual popularity status and stress physiology such that the stress profile that was related to engagement in relational aggression differed between popular and unpopular girls who highly valued being popular. Given the importance of valuing popularity in this previous research, it is possible that perceptions of popular peers’ behavior may on be related to individuals’ own engagement in such conduct when they have a strong desire to be popular themselves. More specifically, individuals who highly value popularity may be especially likely to emulate popular peers’ behavior in an effort to gain social status themselves. As such, the desire to be popular and actual popularity of the emerging adult is another area that should be explored in this model as a moderator and/or as a statistical control.

Sixth, the current study examined perceptions of popular peers’ behavior and not actual behavior. Future research will greatly benefit from examining the differential magnitude of effects of actual and perceived peer behavior on emerging adults’ engagement in that behavior. Seventh, the present study only examined perceptions of
popular peers’ behavior. Although there is evidence to suggest that popular peers impact individual behavior (e.g., Gibbons, Gerrard, & Lane, 2003; Allen, Porter, & McFarland, 2006), there is also research to suggest that friends are important socializers of behavior (e.g., Garder & Steinberg, 2005). Additionally, the current study did not gather information regarding whether the “popular peers” were the participant’s friends or not. Thus, we were unable to draw firm conclusions as to who the actual socializers of these behaviors were in the current study (e.g., popular friends versus popular peers). Future research should seek to examine the relative magnitude of effects for popular peers versus friends and should include a cleaner measurement of perceptions of popular peer behavior such that it is clear if the individual is friends with the popular peers he/she is describing.

Eighth, the current study only included self-reports of relational aggression and prosocial behavior. Due to the nature of some of questions asked, it is possible that participants under-reported (e.g., aggression) or over-reported (e.g., prosocial behavior) engagement in these behaviors due to the social desirability (or undesirability) of these activities. For example, participants who desire to be socially acceptable may over-report engagement in prosocial behavior and under-report relationally aggressive behaviors. Further, research suggests that gathering information from multiple reporters can provide a more comprehensive assessment of behavior (e.g., van Dulmen & Egeland, 2011). Future research should employ multiple techniques to assess relational aggression and prosocial behavior (e.g., peer nomination procedures, observation, experimental paradigm) in order to attain a more comprehensive understanding participant conduct.
Finally, the analyses utilized in the current study are not optimal for evaluating profiles of behavior and physiological reactivity. For example, the current study cannot determine differential susceptibility between individuals with different profiles of prosocial and relationally aggressive behaviors (e.g., high relational aggression, low prosocial behavior; Hawley, 2003) nor can it create profiles according to levels of physiological reactivity (e.g., high SNS reactivity coupled with moderate PNS reactivity). Future research should seek to utilize person-centered analyses (see Bergman & Magnusson; 1997) to better understand the factors that may impact peer influence processes (e.g., physiological functioning) in distinct groups of individuals.

Conclusions

Despite the limitations of the current study, this study was one of the first of its kind to examine individual differences in BSC as related to peer influence processes regarding relational aggression and prosocial behavior in emerging adults. In addition to documenting that perceptions of popular peers’ behavior is associated with the behavior of emerging adults, the current study also sought to determine multiple factors that may impact the strength of this relationship. As relational aggression is related to multiple maladaptive outcomes (e.g., Werner & Crick, 1999) and prosocial behavior is associated with positive outcomes (Chung-Hall & Chen, 2010; Chen et al. 2008), it is important to investigate the impact of peer influence on engagement in these behaviors. Moreover, intervention and prevention efforts will benefit from future work that seeks to understand what factors impact (or do not impact) peer influence processes and for whom these factors are important.
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doi:http://dx.doi.org.ezproxy.uvm.edu/10.1016/j.dr.2007.08.002


### Table 1

**Means, Standard Deviations, and Normality Statistics**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
<th>Skewness (S.E.)</th>
<th>Kurtosis (S.E.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>19.04</td>
<td>1.17</td>
<td>18.0–23.0</td>
<td>1.17***</td>
<td>.72</td>
</tr>
<tr>
<td>2. Gender</td>
<td>1.7</td>
<td>.46</td>
<td>1.00–2.00</td>
<td>-.90***</td>
<td>-.121***</td>
</tr>
<tr>
<td>3. RA</td>
<td>1.81</td>
<td>.64</td>
<td>1.00–4.09</td>
<td>.92***</td>
<td>.39</td>
</tr>
<tr>
<td>4. PRO</td>
<td>5.82</td>
<td>.84</td>
<td>2.63–7.00</td>
<td>-1.18***</td>
<td>1.68***</td>
</tr>
<tr>
<td>5. PPSRA</td>
<td>2.80</td>
<td>1.08</td>
<td>1.00–5.00</td>
<td>.13</td>
<td>-.78</td>
</tr>
<tr>
<td>6. PPSP</td>
<td>3.06</td>
<td>.90</td>
<td>1.00–5.00</td>
<td>-.29</td>
<td>-.44</td>
</tr>
<tr>
<td>7. RSA-R</td>
<td>-.02</td>
<td>.04</td>
<td>-.24–.07</td>
<td>-1.54***</td>
<td>3.70***</td>
</tr>
<tr>
<td>8. SCL-R</td>
<td>1.91</td>
<td>1.65</td>
<td>-.94–10.92</td>
<td>1.63***</td>
<td>4.74***</td>
</tr>
</tbody>
</table>

Notes: RA = Relational Aggression. PRO = Prosocial Behavior. PPSRA = Perceptions of same-sex popular students’ relationally aggressive behaviors. PPSP = Perceptions of same-sex popular students’ prosocial behaviors. RSA-R = Respiratory Sinus Arrhythmia Reactivity. SCL-R = Skin Conductance Level Reactivity. Gender coded: 1 = Male, 2 = Female.  
**p ≤ .01, ***p ≤ .001
Table 2

Overview of missing data for study variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cases missing data</th>
<th>Percentage of data missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>2</td>
<td>1.0%</td>
</tr>
<tr>
<td>2. Gender</td>
<td>1</td>
<td>0.5%</td>
</tr>
<tr>
<td>3. RA</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>4. PRO</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>5. PPSRA</td>
<td>8</td>
<td>4.0%</td>
</tr>
<tr>
<td>6. PPSP</td>
<td>10</td>
<td>5.0%</td>
</tr>
<tr>
<td>7. RSA-R</td>
<td>12</td>
<td>6.0%</td>
</tr>
<tr>
<td>8. SCL-R</td>
<td>7</td>
<td>3.5%</td>
</tr>
</tbody>
</table>

Notes: RA = Relational Aggression. PRO = Prosocial Behavior. PPSRA = Perceptions of same-sex popular students’ relationally aggressive behaviors. PPSP = Perceptions of same-sex popular students’ prosocial behaviors. RSA-R = Respiratory Sinus Arrhythmia Reactivity. SCL-R = Skin Conductance Level Reactivity.
### Table 3

*Intercorrelations Among Study Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Gender</td>
<td>-.26**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. RA</td>
<td>-.04</td>
<td>-.05</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. PRO</td>
<td>.03</td>
<td>.27**</td>
<td>-.21**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. PPSRA</td>
<td>-.17*</td>
<td>.38**</td>
<td>.27**</td>
<td>.09</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. PPSP</td>
<td>-.06</td>
<td>.19**</td>
<td>-.10</td>
<td>.29**</td>
<td>.00</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. RSA-R</td>
<td>.00</td>
<td>.18*</td>
<td>.05</td>
<td>.01</td>
<td>.10</td>
<td>-.02</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>8. SCL-R</td>
<td>.03</td>
<td>-.05</td>
<td>.00</td>
<td>-.03</td>
<td>-.04</td>
<td>.02</td>
<td>-.10</td>
<td>--</td>
</tr>
</tbody>
</table>

Notes: RA = Relational Aggression. PRO = Prosocial Behavior. PPSRA = Perceptions of same-sex popular students’ relationally aggressive behaviors. PPSP = Perceptions of same-sex popular students’ prosocial behaviors. RSA-R = Respiratory Sinus Arrhythmia Reactivity. SCL-R = Skin Conductance Level Reactivity. Gender coded: 1 = Male, 2 = Female.  
* p < .05, ** p < .01
Table 4
Regression Model for Perceptions of Popular Peer’s Behavior and Physiology Predicting Behavior

<table>
<thead>
<tr>
<th>Model</th>
<th>Step</th>
<th>Variable</th>
<th>$b$(bias; SE)</th>
<th>BCa 95% CI</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>DV: Relational Aggression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Age</td>
<td>-.01(.00; .04)</td>
<td>-.07, .07</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>PPSRA</td>
<td>.15(.00; .04)</td>
<td>.07, .22</td>
<td>.07**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RSA-R</td>
<td>.47(.04; .93)</td>
<td>-1.47, 2.52</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SCL-R</td>
<td>.02(.00; .03)</td>
<td>-.03, .08</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>SCL-R x RSA-R</td>
<td>.73(.01; .58)</td>
<td>-.42, 2.02</td>
<td>.04*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SCL-R x PPSRA</td>
<td>.04(.00; .03)</td>
<td>-.01, .09</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>RSA-R x PPSRA</td>
<td>-1.28(.06; .93)</td>
<td>-2.85, .83</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>RSA-R x SCL-R x PPSRA</td>
<td>.87(-.01; .62)</td>
<td>-.61, 2.13</td>
<td>.01</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>DV: Prosocial Behavior</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Age</td>
<td>-.01(-.01; .05)</td>
<td>-.12, .09</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>PPSP</td>
<td>.27(.00; .07)</td>
<td>.12, .44</td>
<td>.09**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RSA-R</td>
<td>-1.08(.06; 1.25)</td>
<td>-3.57, 1.47</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SCL-R</td>
<td>-.01(.00; .03)</td>
<td>-.06, .07</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interaction</td>
<td>Coefficient</td>
<td>Lower CI</td>
<td>Upper CI</td>
<td>p</td>
</tr>
<tr>
<td>---</td>
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<td>-------------</td>
<td>----------</td>
<td>----------</td>
<td>------</td>
</tr>
<tr>
<td>3</td>
<td>SCL-R x RSA-R</td>
<td>.25(-.04; .68)</td>
<td>-1.22, 1.36</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SCL-R x PPSP</td>
<td>.03(.00; .05)</td>
<td>-.06, .13</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RSA-R x PPSP</td>
<td>.45(.02; 1.55)</td>
<td>-.254, 3.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>RSA-R x SCL-R x PPSP</td>
<td>1.25(.15; .95)</td>
<td>-.48, 4.23</td>
<td>.01</td>
<td></td>
</tr>
</tbody>
</table>

Notes: bs are unstandardized coefficients at the predictor’s entry into the equation. CI = confidence interval. PPSRA = Perceptions of same-sex popular students’ relationally aggressive behaviors. PPSP = Perceptions of same-sex popular students’ prosocial behaviors. RSA-R = Respiratory Sinus Arrhythmia Reactivity. SCL-R = Skin Conductance Level Reactivity.  
* p ≤ .10,  * p ≤ .05,  ** p ≤ .01,  *** p ≤ .001
Table 5

Regression Model for Perceptions of Popular Peer’s Behavior and Gender Predicting Behavior

<table>
<thead>
<tr>
<th>Model</th>
<th>Step</th>
<th>Variable</th>
<th>$b$ (bias; SE)</th>
<th>BCa 95% CI</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td><strong>DV: Relational Aggression</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Age</td>
<td>-.01 (.00; .04)</td>
<td>-.09, .07</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Gender</td>
<td>-.17 (.00; .10)</td>
<td>-.38, .06</td>
<td>.08**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PPSRA</td>
<td>.17 (.00; .04)</td>
<td>.09, .25</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Gender x PPSRA</td>
<td>-.02 (.00; .11)</td>
<td>-.24, .20</td>
<td>.00</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td><strong>DV: Prosocial Behavior</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Age</td>
<td>-.03 (.00; .05)</td>
<td>-.14, .08</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Gender</td>
<td>.38 (.00; .14)</td>
<td>.13, .64</td>
<td>.13**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PPSP</td>
<td>.24 (.00; .06)</td>
<td>.11, .37</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Gender x PPSP</td>
<td>-.09 (.01; .16)</td>
<td>-.40, .24</td>
<td>.00</td>
</tr>
</tbody>
</table>

Notes: $b$s are unstandardized coefficients at the predictor’s entry into the equation. CI = confidence interval. PPSRA = Perceptions of same-sex popular students’ relationally aggressive behaviors. PPSP = Perceptions of same-sex popular students’ prosocial behaviors. RSA-R = Respiratory Sinus Arrhythmia Reactivity. SCL-R = Skin Conductance Level Reactivity.

* $p \leq .10$, ** $p \leq .05$, *** $p \leq .01$, **** $p \leq .001$
Table 6
*Regression Model for Perceptions of Popular Peer’s Behavior, Gender, and Physiology Predicting Behavior*

<table>
<thead>
<tr>
<th>Model Step</th>
<th>Variable</th>
<th>$b$ (bias; SE)</th>
<th>BCa 95% CI</th>
<th>$\Delta R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DV: Relational Aggression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>-.01 (.00; .04)</td>
<td>-.08, .08</td>
<td>.00</td>
</tr>
<tr>
<td>2</td>
<td>PPSRA</td>
<td>.18 (.00; .04)</td>
<td><strong>.09, .27</strong></td>
<td>.09**</td>
</tr>
<tr>
<td></td>
<td>RSA-R</td>
<td>.76 (.05; .94)</td>
<td>-1.04, 2.75</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SCL-R</td>
<td>.02 (.00; .03)</td>
<td>-.03, .10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>-.21 (.00; .11)</td>
<td><strong>-43, -02</strong></td>
<td></td>
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<tr>
<td>3</td>
<td>SCL-R x RSA-R</td>
<td>.37 (-.01; .64)</td>
<td>-.94, 1.61</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>SCL-R x PPSRA</td>
<td>.01 (.00; .03)</td>
<td>-.05, .07</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RSA-R x PPSRA</td>
<td>-1.38 (.00; .97)</td>
<td>-3.09, .33</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SCL-R x Gender</td>
<td>.12 (-.01 -.25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RSA-R x Gender</td>
<td>.12 (.06; 2.11)</td>
<td>-4.09, 4.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gender x PPSRA</td>
<td>-.04 (-.01; .12)</td>
<td>-.25, .15</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>RSA-R x SCL-R x Gender</td>
<td>1.47 (.09; 1.55)</td>
<td>-1.94, 4.94</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td>RSA-R x SCL-R x PPSRA</td>
<td>.48 (.01; .80)</td>
<td>-1.11, 2.10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RSA-R x Gender x PPSRA</td>
<td>-.69 (.11; 3.40)</td>
<td>-7.09, 7.43</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SCL-R x Gender x PPSRA</td>
<td>.08 (.00; .09)</td>
<td>-.10, .27</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>RSA-R x SCL-R x Gender x PPSRA</td>
<td>-1.05 (-.38; 3.41)</td>
<td>-8.06, 4.92</td>
<td>.00</td>
</tr>
</tbody>
</table>
**DV: Prosocial Behavior**

1. Age  
   - Standardized Coefficient: -.01 (.00; .05)  
   - Unstandardized Coefficient: -.12, .10  
   - P-value: .00

2. PPSP  
   - Standardized Coefficient: .24 (.00; .06)  
   - Unstandardized Coefficient: .11, .37  
   - P-value: .12**
   - RSA-R  
     - Standardized Coefficient: -1.64 (.01; 1.29)  
     - Unstandardized Coefficient: -4.14, 1.16
   - SCL-R  
     - Standardized Coefficient: -.00 (.00; .03)  
     - Unstandardized Coefficient: -.07, .07  
   - Gender  
     - Standardized Coefficient: .34 (.00; .15)  
     - Unstandardized Coefficient: .04, .66

3. SCL-R x RSA-R  
   - Standardized Coefficient: .47 (-.02; .85)  
   - Unstandardized Coefficient: -1.23, 2.16  
   - P-value: .02
   - SCL-R x PPSP  
     - Standardized Coefficient: .03 (.01; .05)  
     - Unstandardized Coefficient: -.08, .17
   - RSA-R x PPSP  
     - Standardized Coefficient: .12 (-.10; 1.56)  
     - Unstandardized Coefficient: -2.88, 2.92
   - SCL-R x Gender  
     - Standardized Coefficient: -.08 (-.02; .10)  
     - Unstandardized Coefficient: -.31, .03
   - RSA-R x Gender  
     - Standardized Coefficient: 2.87 (-.02; 2.94)  
     - Unstandardized Coefficient: -2.45, 9.00
   - Gender x PPSP  
     - Standardized Coefficient: -.07 (-.02; .17)  
     - Unstandardized Coefficient: -.40, .19

4. RSA-R x SCL-R x Gender  
   - Standardized Coefficient: .91 (.03; 2.11)  
   - Unstandardized Coefficient: -3.27, 5.60  
   - P-value: .02
   - RSA-R x SCL-R x PPSP  
     - Standardized Coefficient: .76 (.20; 1.33)  
     - Unstandardized Coefficient: -1.92, 4.35
   - RSA-R x Gender x PPSP  
     - Standardized Coefficient: -3.91 (-.38; 4.32)  
     - Unstandardized Coefficient: -11.55, 3.33
   - SCL-R x Gender x PPSP  
     - Standardized Coefficient: .06 (.00; .13)  
     - Unstandardized Coefficient: -.19, .30

5. RSA-R x SCL-R x Gender x PPSP  
   - Standardized Coefficient: -.99 (-.47; 3.46)  
   - Unstandardized Coefficient: -7.56, 4.09  
   - P-value: .00

Notes: *b* are unstandardized coefficients at the predictor’s entry into the equation. CI = confidence interval. PPSRA = Perceptions of same-sex popular students’ relationally aggressive behaviors. PPSP = Perceptions of same-sex popular students’ prosocial behaviors. RSA-R = Respiratory Sinus Arrhythmia Reactivity. SCL-R = Skin Conductance Level Reactivity.  
* *p < .10, * *p < .05, ** *p < .01, *** *p < .001
Table 7

Follow-up Analysis: Regression Model for Perceptions of Popular Peer’s Prosocial Behavior and Gender Predicting Relational Aggression

<table>
<thead>
<tr>
<th>Model Step</th>
<th>Variable</th>
<th>b (bias; SE)</th>
<th>BCa 95% CI</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
<td>-.01 (.00; .04)</td>
<td>-.09, .07</td>
<td>.00</td>
</tr>
<tr>
<td>2</td>
<td>Gender</td>
<td>.03 (.00; .10)</td>
<td>-.15, .21</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td>PPSP</td>
<td>-.09 (.00; .05)</td>
<td>-.19, .02</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>PPSP x Gender</td>
<td>.25 (.00; .10)</td>
<td><strong>.05, .44</strong></td>
<td>.03*</td>
</tr>
</tbody>
</table>

Notes: bs are unstandardized coefficients at the predictor’s entry into the equation. CI = confidence interval. PPSP = Perceptions of same-sex popular students’ prosocial behaviors.

* p ≤ .10, † p ≤ .05, ‡ p ≤ .01, §§ p ≤ .001
Figure 1

*Follow-up Analysis: Interaction of Perceptions of Popular Peer’s Prosocial Behavior and Gender Predicting Relational Aggression*

Note: PPSP = Perceptions of same-sex popular students’ prosocial behaviors.

*p < .05*