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SOCIAL ANXIETY AND RELATIONAL AGGRESSION IN THE PEER RELATIONSHIPS OF COLLEGE WOMEN

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SOCIAL ANXIETY AND RELATIONAL AGGRESSION IN THE PEER

RELATIONSHIPS OF COLLEGE WOMEN

by

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ABSTRACT

Relational aggression (i.e., a type of aggression in which the aggressor harms others by damaging their relationships, reputation, and/or feelings of social acceptance) is common among emerging adults and has been linked to several adverse correlates. Research on relational aggression among college students has found some evidence that it is positively associated with social anxiety; however, the specific components of social anxiety and the possible mechanisms through which this relationship may operate are unclear. The current study examined the relationship between social anxiety and relational aggression among college women ($N = 292$), focusing on fear of negative evaluation (FNE) as the component of social anxiety most likely to be relevant to relational aggression based on Andrews and colleagues' (2019) application of Dodge and Crick's (1990) Social Information Processing (SIP) theory. We expected that FNE would be positively related to relational aggression, that hostile attribution bias would mediate this relationship, and that dispositional empathy would moderate the direct relationship between social anxiety and relational aggression. Results demonstrated that FNE was not related to relational aggression and that hostile attribution did not mediate their predicted relationship, nor did dispositional empathy moderate this relationship. Post-hoc analyses revealed that the broader social anxiety construct had a stronger relationship with relational aggression than FNE and that hostile attribution bias mediated this relationship.

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CHAPTER I - INTRODUCTION

Relational aggression involves a set of behaviors intended to harm others by damaging their social relationships, reputation, status, and/or feelings of belonging or social acceptance (Dahlen et al., 2013; Werner & Crick, 1999). Examples of relational aggression include spreading rumors about a peer or leaving someone out of group activities to make them feel isolated. Research with children and early adolescents has shown that relationally aggressive individuals tend to have psychological maladjustment and poorer interpersonal functioning when compared to their non-relationally aggressive peers (Crick & Grotpeter, 1995; Werner & Crick, 1999). For example, relationally aggressive children and adolescents are at greater risk for future adjustment problems, including both externalizing and internalizing symptoms (e.g., delinquency, peer rejection, anxiety, and depression; Crick et al., 2006). Crick and colleagues (2006) noted the importance of identifying relational aggression, instead of focusing only on overt physical aggression, to help in the prevention and treatment of externalizing and internalizing adjustment problems among adolescents. Later meta-analyses have shown that internalizing symptoms are uniquely associated with relational aggression and that the relationship between relational aggression and anxiety appears to be stronger than the relationship between relational aggression and depression (Marshall et al., 2015).

Early research on relational aggression focused primarily on children and early adolescents; however, investigations of relational aggression and its correlates among emerging adults (i.e., individuals between the ages of 18 and 29; Arnett et al., 2014) have expanded in recent years. Both overt and relational aggression in college students are moderately correlated with social anxiety, loneliness, depression, alcohol use, and drug

use (Storch et al., 2004). Moreover, relational aggression predicts problems with social anxiety, loneliness, and symptoms of depression among women, whereas overt aggression uniquely predicts alcohol use in men (Storch et al., 2004). Beyond internalizing symptoms and substance use, Werner and Crick (1999) demonstrated that relational aggression in peer relationships is positively related to antisocial personality features and peer rejection and inversely related to prosocial behaviors. Several studies have identified variables contributing to emerging adults' use of relational aggression. These include parenting factors which are associated with greater use of relational aggression (e.g., permissive parenting and parental psychological control) or reduced use (e.g., authoritative parenting; Clark et al., 2015), psychopathic traits which predicted two forms of relational aggression (e.g., peer and romantic; Czar et al., 2011), and personality traits assessed using the HEXACO model which were negative predictors (e.g., Honesty-Humility, Agreeableness, Conscientiousness, and Openness) or positive predictors (e.g., Emotionality; Knight et al., 2018). Together, these studies provide evidence that relational aggression occurs among emerging adults and has several adverse correlates that highlight a need for efforts aimed at prevention and treatment in this population, while also showing promise in the identification of predictors which may inform their design and implementation.

The current study aimed to advance the literature on relational aggression among emerging adults by focusing on the relationship between social anxiety and relational aggression. Evidence of a positive relationship between these variables has been reported (Loudin et al., 2003; Storch et al., 2004; Deason et al., 2019), but its nature and the possible mechanisms through which it operates are poorly understood. This study

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assessed fear of negative evaluation (FNE) instead of using a broader measure of social anxiety, which includes FNE as well as other components, based on both theory and empirical evidence that it is likely the most important component of social anxiety for understanding relationally aggressive behavior (Andrews et al., 2019; Loudin et al., 2003; Teachman & Allen, 2007). Based on previous work (e.g., Batanova & Loukas, 2011; Loudin et al., 2003), we tested whether hostile attribution bias mediates the expected relationship between FNE and relational aggression and whether dispositional empathy moderates the expected relationship between FNE and relational aggression.

1.1 Social Anxiety and Relational Aggression

Social anxiety includes features such as a fear of negative evaluation, heightened arousal in social situations, negative expectations of one's social abilities, and active avoidance of situations that may be perceived as likely to bring about negative social outcomes (Beidel et al., 1985). There has been much speculation about the possible role of social anxiety in relational aggression, and there is some evidence of a positive relationship between the two; however, findings have been mixed, and the nature of the relationship remains unclear. Most of the studies connecting social anxiety to overt and/or relational aggression have used adolescent samples, and the findings of these studies have been inconsistent. Some indicate that social anxiety does not predict relational aggression among adolescents but instead predicts prosocial behavior (Culotte & Goldstein, 2008). That is, socially anxious adolescents may be more likely to use prosocial behavior to gain acceptance from their peers, possibly alleviating their anxiety symptoms, instead of reacting aggressively. Other studies have found that social anxiety is only predictive of relational aggression when empathic concern is low (Batanova &

Loukas, 2011). Additionally, Zimmer-Gembeck and Pronk (2011) found a weak positive correlation between social anxiety and relational aggression but only when relational aggression was assessed with a self-report measure and not when it was peer-reported.

Although fewer studies have examined the relationship between social anxiety and relational aggression among emerging adults, there has been some evidence of such a relationship. Gros and colleagues (2009) found that social anxiety was positively related to relational aggression not only for victims but also for perpetrators. In one of the few studies of this relationship conducted with a college student sample, Storch and colleagues (2004) found that relational aggression was positively associated with several indicators of maladjustment, including social anxiety. Interestingly, the positive relationship between social anxiety and relational aggression was evident for women but not for men. Given that similar results were obtained for depression and loneliness, these findings were consistent with the possibility that relational aggression may be related to poorer outcomes among college women as compared with college men. In another study using college students, Loudin and colleagues (2003) found that social anxiety, specifically the fear of negative evaluation component, was predictive of increased relational aggression. Finally, Deason and colleagues (2019) found that college students who were higher on social anxiety, assessed using the sum of the SIAS and SPS, were more likely to report using relational aggression. They also found that social anxiety explained additional variance in relational aggression even after accounting for the Five-Factor Model and participant gender, leading the authors to note that the positive relationship between social anxiety and relational aggression among college students is

not fully explained by individual differences in normal personality traits and that elevated

social anxiety may be a risk factor for relational aggression.

When it comes to better understanding the relationship between social anxiety and

relational aggression among college students, it is worth noting that some research

suggests that certain features of social anxiety may be more important to this relationship

than others. Specifically, Loudin and colleagues (2003) found that students high in fear of

negative evaluation or who had poorer perspective-taking skills were more likely to use

relational aggression compared to their peers. Loudin and colleagues used the Social-

Evaluative Anxiety Scale (SEA; Watson & Friend, 1969) to measure two components of

social anxiety separately: FNE and social avoidance and distress. FNE was positively

related to relational aggression; social avoidance and distress was not.

1.2 Fear of Negative Evaluation

Fear of negative evaluation is an important component of social anxiety,

characterized by heightened awareness and concern that others will perceive one

negatively and deliver harsh criticism (Beidel et al., 1985; Teachman & Allen, 2007). It is

considered one of three essential fears, along with anxiety sensitivity and injury/illness

sensitivity, that bring about anxiety and other psychological problems (Carleton et al.,

2006). The broader construct of social anxiety is typically assessed using a variety of

brief self-report measures (Hedman et al., 2010), with two of the most common including

the Social Interaction Anxiety Scale (SIAS) and the Social Phobia Scale (SPS), both of

which were developed by Mattick and Clarke (1998). The SIAS and the SPS were

designed to assess somewhat different aspects of the social anxiety construct: the SPS

focuses on respondents' fear of being negatively evaluated, and the SIAS assesses

anxiety respondents may experience when interacting with others in social situations. Given the moderate to high correlation between scores on the SIAS and SPS, it is not uncommon for researchers to combine them to obtain an overall social anxiety score (Deason et al., 2019); however, Mattick and Clarke (1998) recommended they be administered and examined separately in treatment settings. The Social-Evaluative Anxiety Scale (SEA; Watson & Friend, 1969), used by Loudin and colleagues (2003) in their study of social anxiety and relational aggression, is like the SPS and SIAS in some ways. It assesses social anxiety with two subscales: Social Avoidance and Distress (SAD) and Fear of Negative Evaluation (FNE). Much like the SIAS and SPS, researchers often use the total SEA score as an overall measure of social anxiety. An alternative to these broader scales involves the development of short unidimensional self-report measures that focus on specific components of social anxiety (e.g., fear of negative evaluation). These options are well-suited for research or clinical settings where brevity is important, and researchers are more interested in one aspect of social anxiety than in capturing the full construct.

Most studies investigating the relationship between social anxiety and relational aggression have used multidimensional measures of social anxiety, most commonly the SEA or the combination of the SIAS and SPS. Scores on the SEA subscales or between the SIAS and SPS are highly correlated (Deason et al., 2019). In fact, many researchers have opted to resolve the problem of highly correlated subscales by using only total or composite scores, obscuring potentially meaningful differences in the predictive utility of the components that make up the broader social anxiety construct. This may be justified in studies using clinical samples where one is applying cut scores to identify participants

who have social anxiety disorder; however, some studies using non-clinical samples might be better served by focusing on the component or components of social anxiety most likely to be relevant. Combining these subscales to obtain a total score may not accurately reflect the nuance in the relationship between relational aggression and social anxiety. Given some evidence that fear of negative evaluation may be a more robust predictor of relational aggression than other aspects of social anxiety (Loudin et al., 2003), we believe that it is beneficial to examine fear of negative evaluation separately. Perhaps a narrower focus on the relationship of fear of negative evaluation to relational aggression will facilitate learning more about its role in relational aggression and may help to resolve some of the mixed findings regarding the relationship between social anxiety and relational aggression. Thus, we used the Brief Fear of Negative Evaluation – Straightforward Items (BFNE-S; Rodebaugh et al., 2004) to assess fear of negative evaluation.

1.3 Social Information Processing Theory

A review paper by Andrews and colleagues (2019) applied the social information processing (SIP) model developed by Dodge and Crick (1990) to outline several possible maladaptive cognitive, behavioral, and emotional factors that may help to explain the relationship between social anxiety and aggression. The SIP model posits a distinct process that people undergo when processing social cues and deciding to respond, outlining several crucial stages in which individuals encode cues, interpret cues, make decisions about how to respond, and ultimately respond (Dodge & Crick, 1990). In the first step, an individual uses different rules and cognitive schema developed over their lifespan to encode relevant information from their environment. Next, the information is

placed in long-term memory and given meaning. In social situations, this includes interpreting the intentions and attributions of another person. This is the point in the SIP model when an individual may exhibit biases toward certain types of cues resulting in their misinterpretation. In the case of aggression, hostile attribution bias is one of the most cited interpretative biases (e.g., the aggressor interprets the victim's mindset or behavior as hostile and responds with aggression). Following encoding and interpretation, an individual assesses possible behavioral responses from long-term memory which are accessed through associative networks. Dodge and Crick (1990) stated that easily accessible responses, due to recency or a limited response range, and responses that are strongly associated with a mental schema someone has about the situation or environmental stimuli are most likely to be brought to the foreground as a possible behavioral response. Based on what an individual has encoded and how they have interpreted the available information, they decide how to respond. A bias toward certain types of responses (e.g., aggression) may lead to inappropriate social behaviors, whereas skillful and adequate coding and interpretation of environmental cues may lead to competent social performance and responses (Dodge & Crick, 1990). Accessing a certain response does not always lead to the enactment of that particular response. After a set of responses are accessed, the SIP model suggests that individuals form social goals or desired outcomes before they choose a response, so one may respond based on what action they believe will produce a desired outcome instead of what response is easily accessible or associated with a schema. Lastly, a behavioral response will be enacted based on social scrips and protocols the individual possesses. As such, a lack of social skills or enactment skills may lead to an inadequate social response.

Andrews and colleagues (2019) highlighted the fear of negative evaluation as the key component of social anxiety, arguing that it has significant implications for how individuals perceive social exchanges and how these perceptions may provoke aggressive responses. Specifically, fear of being negatively evaluated may give rise to maladaptive thought patterns which distort one's perception of social interactions. This is consistent with empirical evidence that fear of negative evaluation has a unique positive association with relational aggression (Batanova & Loukas, 2011; Loudin et al., 2003; Loukas et al., 2005); however, some studies with children have not replicated this result (e.g., Putallaz et al., 2007). Andrews and colleagues (2019) addressed this discrepancy by suggesting that this may be because a more advanced cognitive process is involved that may not be fully developed until adolescence. In addition to prior studies suggesting that fear of negative evaluation may be more important in relational aggression than other aspects of social anxiety (Batanova & Loukas 2011; Loudin et al. 2003), the emphasis placed on this variable in the context of the SIP model by Andrews and colleagues (2019) led us to select it over other components of social anxiety.

1.4 Hostile Attribution Bias

In addition to fear of negative evaluation, hostile attribution bias is another variable proposed by Andrews and colleagues (2019), implicated by the SIP model, and supported by previous research (e.g., Muris et al. 2000) as being especially relevant to aggression. Hostile attribution bias can be described as a tendency to interpret ambiguous behaviors or situations as threatening and directed at oneself (Crick & Dodge, 1994). Hostile attribute bias seems to be exacerbated by real or perceived social threat. Because socially anxious individuals have a bias towards negative evaluation and criticism,

including hostile attribution bias as a partial mediator of the relationship between fear of negative evaluation and relational aggression may help to explain the relationship between these constructs (Crick & Dodge, 1996).

Murris and colleagues (2000) found that socially anxious children were more likely than their non-anxious peers to interpret social cues as threatening, resulting in a lower threshold for threat perception. Hostile attribution bias has shown to be present in relationally aggressive children, as well as positively associated with aggression in adults (Crick et al., 2002; Klein Tuente et al., 2019). Crick and Dodge (1996) demonstrated that the likelihood of aggressive behavior increases when a child attributes hostile intent to their peers in an ambiguous situation or with ambiguous provocations. Andrews and colleagues (2019) proposed that hostile attribution bias may lead to reactive aggression (e.g., a defensive response to provocation or frustration; Crick & Dodge, 1996) among those higher in fear of negative evaluation. In essence, individuals higher in fear of negative evaluation are predisposed to filter their social interactions through a hostile attribution bias, making relational aggression more likely.

Social information processing models suggest that aggression may serve a retaliatory function where the aggressor seeks to protect themselves from perceived threats through aggressive responses. These reactions to perceived threats do not rely only on social cues but are heavily influenced by the way the social cues and information are processed (Klein Tuente et al., 2019). As mentioned, the second step in the SIP model involves the interpretation of encoded social cues. This step is crucial for how the subsequent steps are enacted. If socially anxious individuals are encoding social cues with the perception that they will be negatively evaluated, then misinterpreting these

ambiguous situations in a hostile manner, this could explain why some socially anxious individuals are more likely to react with relational aggression as a form of retaliation to perceived hostile intent by others in their social environment.

1.5 Empathy

Although empathy was not directly addressed by Andrews and colleagues (2019) as part of social information processing theory, we believe that it is potentially relevant in the context of social anxiety and relational aggression and tested it as a moderator of the expected relationship between fear of negative evaluation and relational aggression. Empathy is an important factor in social cognition and has been helpful in understanding the process individuals undergo when responding to others' emotions and experiences. Dispositional empathy has generally been associated with prosocial behaviors (Miller & Eisenburg, 1988; Schroeder et al., 2015), and we expect that the relationship between fear of negative evaluation and relational aggression may be weaker for emerging adults at higher levels of empathy.

In their study of social anxiety and relational aggression among college students, Loudin and colleagues (2003) highlighted the role of fear of negative evaluation in relational aggression and attempted to gain a better understanding of other variables that may be relevant to understanding the relationship between social anxiety and relational aggression. They found that the fear of negative evaluation component of social anxiety and the perspective taking component of dispositional empathy were predictors of college students' peer relational aggression. Specifically, students who scored higher on a measure of fear of negative evaluation or lower on a measure of perspective taking were more likely to report relational aggression. While their finding that the fear of negative

evaluation component of social anxiety but not the social avoidance and distress component of social anxiety predicted relational aggression was the most notable result, their work also suggested that empathy may warrant further investigation as a potential predictor of relational aggression among college students.

Psychological research on empathy has been hindered by the development of multiple measures of the construct, ambiguity in the factor structures of some popular measures, and different and limited evidence-based applications of various measures (e.g., combining two subscales from one measure and claiming they measure one theoretically relevant aspect of empathy without providing empirical data suggesting that this is the case; Chrysikou & Thompson, 2016; Gantiva et al., 2021). Perspective taking, highlighted in Loudin and colleagues' (2003) as predictive of college students' relational aggression, is widely recognized as one component of dispositional empathy, along with sympathy, personal distress, emotional contagion, and theory of mind (Davis, 1983; Spreng et al., 2009). More broadly, dispositional empathy is typically defined as an individual's reactions to the experience and/or emotions of another person, which includes both cognitive and affective components (Davis, 1983). The findings from Loudin et al. (2003) demonstrated a cognitive component of empathy, perspective taking, was associated with relational aggression use, such that higher levels of perspective taking were associated with less relational aggression use.

The question of how best to measure dispositional empathy among college students is not an easy one to answer. Many of the most common measures, such as the Interpersonal Reactivity Index (IRI; Davis, 1980) used in Loudin and colleagues' (2003) study, are multidimensional measures that include subscales attempting to measure 2-4

different components of empathy and are not intended to produce a usable total score. Although theorists generally agree that empathy is a multidimensional construct, concerns about the factor structures and validity of some of the more common measures have been raised (Chrysikou & Thompson, 2016). Before attempting to determine how any individual component of empathy might moderate the relationship between fear of negative evaluation and relational aggression while also considering the mediating role of hostile attribution bias (i.e., students who fear negative evaluation may be less likely to respond with relational aggression when they are higher in empathy), we believe that it would be helpful to examine dispositional empathy at its broadest level by using a unidimensional measure of the construct intentionally designed to assess empathy at the broadest level. Thus, we selected the Toronto Empathy Questionnaire (TEQ; Spreng et al., 2009) for this purpose.

1.6 A Focus on Women

Research on gender and aggression among emerging adults has generally shown that physical aggression is more common among men, but that relational aggression is equally common for women and men (White et al., 2015, Czar et al., 2011). Aggression among women has been receiving increasing attention in the literature, as there is mounting evidence that some of the gender-related stereotypes about aggression may be inaccurate. It also appears that various forms of aggression may be associated with different functions and outcomes for women than for men. Relational aggression is often regarded as a normative aspect of development for women that utilizes the social connections which are central in female development (Archer & Coyne, 2005). Moreover, relational aggression has been shown to be linked to more negative

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consequences and maladaptive factors (e.g., reduced life satisfaction, depressive

symptoms, and personality disorder symptomatology) for emerging adult women when

compared to their male counterparts (Ostrov & Houston, 2008; Werner & Crick, 1999).

Relevant to this study, Storch and colleges (2004) found that social anxiety was

associated with relational aggression for women but not for men. Although relatively

little is known about the relationship of fear of negative evaluation component of social

anxiety to relational aggression and even less about how hostile attribution bias and

empathy might impact this relationship, we believe that it makes sense to assess these

relationships among women as an initial step. Given Storch and colleagues' (2004)

findings, it seems like we would have the best chance of detecting significant

relationships between social anxiety and relational aggression in a sample of women.

Thus, we collected data from a sample of college women for this initial investigation.

1.7 The Current Study

The present study extended previous research on the relationship between social

anxiety and relational aggression among college students in three ways. First, drawing on

Andrews and colleagues' (2019) compelling arguments for focusing on fear of negative

evaluation in the context of aggression and previous findings that fear of negative

evaluation may be more closely related to relational aggression than other aspects of

social anxiety (Loudin et al., 2003), we assessed fear of negative evaluation using the

Brief Fear of Negative Evaluation Scale – Straightforward Items (BFNE-S; Rodebaugh et

al., 2004), a brief unidimensional self-report measure developed specifically to assess the

fear of negative evaluation component of social anxiety. We hoped that this would

provide information about the relationship between fear of negative evaluation and

relational aggression without introducing other highly correlated components of social

anxiety into the mix. Second, we tested hostile attribution bias as a partial mediator of the

expected relationship between fear of negative evaluation and relational aggression,

consistent with Andrews and colleagues' (2019) presentation of Dodge and Crick's

(1990) social information processing theory. We expected that fear of negative evaluation

would be positively related to relational aggression and that hostile attribution bias would

partially mediate this relationship. Third, we tested dispositional empathy as a moderator

of the predicted relationship between fear of negative evaluation and relational

aggression using a unidimensional measure (i.e., the Toronto Empathy Questionnaire)

developed by Spreng and colleagues (2009) to assess empathy at the broadest level.

Consistent with the findings of Loudin and colleagues (2003), we expected that the

relationship between fear of negative evaluation and relational aggression would be

stronger for respondents at lower levels of empathy. The hypothesized model is presented

in Figure 1.
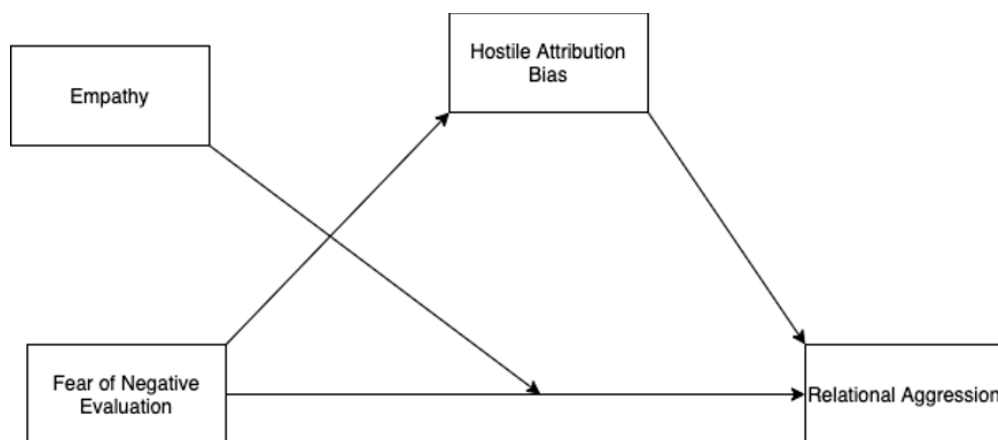
Figure 1.1 *Testing Hostile Attribution as a Mediator and Empathy as a Moderator of the Relationship Between Fear of Negative Evaluation and Relational Aggression*

As depicted in Figure 1, we were interested in testing empathy as a moderator of the direct relationship between fear of negative evaluation and relational aggression as a simpler alternative to a moderated mediation where we focused on the path from fear of negative evaluation to hostile attribution bias or from hostile attribution bias to relational aggression. In part, this was due to our desire to determine whether a similar moderating effect as that reported by Loudin and colleagues (2003) will be found in a model that adds hostile attribution bias and assesses fear of negative evaluation using a different measure. But mostly, we focused on running the analyses as pictured because we lacked a clear theoretical rationale for predicting that empathy will moderate the predicted mediational relationship.

CHAPTER II - METHODS

2.1 Participants and Procedure

The sample for this study included 292 college women (i.e., reported female sex assigned at birth) between the ages of 18 and 29 (M age = 19.88 years) recruited through the online participant pool used in the School of Psychology at the University of Southern Mississippi (i.e., Sona Systems Ltd.). With respect to ethnicity, 4.5% of the participants identified themselves as Hispanic/Latinx. Participants self-identified their race as follows: 27.1% African American/Black, 65.8% White, 1% American Indian/Alaska Native, and 2.7% Asian. Regarding gender identity, 95.5% of participants identified themselves as women, .3% as transgender, 1.7% as genderqueer/gender fluid, 2.1% as non-binary, and 0.3% preferred not to disclose their gender identity. Participants reported their sexual orientations as 72.6% straight, 4.5% gay or lesbian, 17.5% bisexual, 2.4% pansexual, 1% asexual, 1.4% preferred to use other labels, and .7% preferred not to disclose. The distribution of college status was 40.8% freshman, 18.2% sophomore, 18.8% junior, 21.9% senior and 0.3% graduate student or other. With respect to membership in Greek organizations, 17.8% of participants indicated that they were members of a sorority or fraternity. Participants were asked to report their cumulative college GPA unless they were in their first semester of college and did not yet have a GPA to report. Only 179 participants (61.3% of the sample) reported a cumulative GPA ($M = 3.37$, $SD = .59$).

Potential participants were recruited through the university's web-based research system, Sona Systems Ltd. After reading a brief description of the study, including information about the time required to complete it and the use of quality assurance checks, those who signed up were provided with a URL directing them to the online

consent form (see Appendix A) and all study measures. Potential participants who read and electronically signed the online consent form were directed to the study to complete all the measures online. Consistent with School of Psychology policies, participants who completed the study without failing the quality assurance checks implemented to promote data integrity received research credit through Sona. This project and these procedures were approved by the University of Southern Mississippi's Institutional Review Board (see Appendix A).

2.2 Instruments

2.2.1 Qualification Questionnaire

A brief qualification questionnaire developed for this study was used to assess the inclusion criteria (i.e., female sex assigned at birth and between the ages of 18 and 29) and facilitate the use of quotas in Qualtrics to track data collection and enable us to close the survey to specific groups of participants once we met group-specific sampling targets. For example, the study was open to all women over the age of 18, but we wanted to make sure that we obtained enough participants within the 18-29 age range before completing data collection.

2.2.2 Demographic Questionnaire

A demographic questionnaire developed for this study was used to collect basic demographic information about participants for the purpose of describing the sample. Examples of item content included ethnicity, race, and gender identity.

2.2.3 Brief Fear of Negative Evaluation – Straightforward Items (BFNE-S)

Respondents' fear of negative evaluation, a key component of social anxiety, was assessed using the 8-item BFNE-S (Rodebaugh et al., 2004). The BFNE-S is a shortened

version of the BFNE (Leary, 1983), which includes 8 straightforwardly worded questions for measuring someone's fear of being negatively evaluated. Items are rated on a 5-point scale ranging from 0 ("not at all characteristics of me") to 4 ("extremely characteristic of me"), and scores on the 8 items are summed to yield a total score so that higher scores reflect greater fear of negative evaluation. Scores on the BFNE-S have been shown to have high internal consistency ($\alpha > .92$) and good construct validity in college student samples (Carleton et al., 2007; Rodebaugh et al., 2004). Moreover, there is some evidence that the straightforwardly worded items included on the BFNE-S are psychometrically superior to the reverse-scored items on the BFNE when used with college students and individuals receiving treatment for social anxiety (Carleton et al., 2011; Rodebaugh et al., 2004; Weeks et al., 2005).

2.2.4 General/Peer Relational Aggression Scale

Relational aggression was assessed with the 7-item General/Peer Relational Aggression scale from the 56-item Self-Report of Aggression and Social Behavior Measure (SRASBM; Linder et al., 2002; Morales & Crick, 1998). Respondents rate items using a 7-point scale, ranging from 1 ("not at all true") to 7 ("very true") to indicate how characteristic each item is of them. Higher scores indicate more relational aggression. Scores on the subscales have shown acceptable internal consistency (as = .69 to .88) with college student samples (Dalen et al, 2013; Deason et al., 2019), and support for construct validity has been provided through comparisons with other measures of relational aggression and similar constructs (Linder et al., 2002). Although the focus of our study is on relation aggression, we also administered the 4-item Peer Relational Victimization

subscale to collect information regarding experiences with peer victimization in our sample.

2.2.5 Social Information Processing-Attribution Bias Questionnaire (SIP-AEQ)

Hostile attribution bias was assessed using the SIP-AEQ (Coccaro et al., 2009), which includes 8 written vignettes describing socially ambiguous situations with an adverse action directed towards a person in the story which the respondent is asked to relate to. Each vignette is followed by four questions to assess the intent of the person depicted in the story using a 4-point scale ranging from 0 ("not at all likely") to 3 ("very likely"). Direct hostile intent (e.g., "This person wanted to physically hurt me"), indirect hostile intent (e.g., "This person wanted to make me look bad"), instrumental non-hostile intent (e.g., "This person wanted to win the match") and benign intent (e.g., "This person did this by accident") are the components of intent measured. Following the attribution items, are two items to assess negative emotional responses rated on the same scale. Given how the measure was constructed and our concern that removing items other than those assessing hostile attribution might have unintended effects, we administered the full measure even though hostile attribution is the primary area of interest. The 48-item SIP-AEQ yields four factors (i.e., hostile attribution, instrumental attribution, benign attribution, and negative emotional response) which have acceptable internal consistency (αs = .90, .76, .80, and .91, respectively; see Coccaro et al., 2009). Coccaro and colleagues (2009) also demonstrated that the SIP-AEQ had acceptable construct validity with the factors showing adequate correlations to other measures of convergent and discriminate factors.

2.2.6 Toronto Empathy Questionnaire (TEQ)

Dispositional empathy was assessed with the 16-item TEQ (Spreng et al., 2009). According to Spreng and colleagues (2009), they developed the TEQ through exploratory factor analysis (EFA) to provide a measure of empathy "at the broadest level" (p. 2). Thus, the TEQ is a unidimensional measure of empathy, which its authors compared to the "g factor" that emerged from early research on intelligence tests (i.e., one underlying factor extracted from multiple measures of the construct). In fact, their EFA of data from several self-report measures of empathy was computed in such a way that items were required to load on a single factor, ensuring a unidimensional measure. Items on the TEQ assess frequencies of behavior which respondents' rate on a 5-point Likert-type scale ranging from 0 ("never") to 4 ("always") so that higher scores reflect greater empathy. The TEQ has shown good internal consistency among college students ($\alpha = .87$), impressive test-retest reliability ($r = .81$) over a mean interval of 66.1 days (SD = 6.35), and support for convergent and discriminant validity were provided through comparisons with other measures of empathy, including both self-report and behavioral measures, and symptoms of autism spectrum (Spreng et al., 2009).

2.2.7 Generalized Anxiety Disorder Scale (GAD-7)

The GAD-7 (Spitzer et al., 2006) was used to assess generalized anxiety, and scores on this measure may be used as a covariate in the planned analysis as described below. The GAD-7 incudes 7 items rated on a 4-point Likert-type scale ranging from 0 ("not at all") to 3 ("nearly every day") to indicate the frequency with which symptoms of generalized anxiety are experienced (e.g., "Feeling nervous, anxious, or on edge?" and "Worrying too much about different things?"). Item scores are summed to form a total

score, as the GAD-7 appears to be a unidimensional measure (Löwe et al., 2008). The measure is constructed so that higher scores indicate greater levels of generalized anxiety, and the authors suggest that scores of 10 or higher suggest that the respondent is experiencing sufficient generalized anxiety to warrant treatment. The GAD-7 has shown good internal consistency with alpha coefficients in the .89 to .92 range (Löwe et al., 2008; Spitzer et al., 2006). The construct validity of scores on the GAD-7 has been supported through comparisons with other measures of anxiety and various indices of functional impairment (Spitzer et al., 2006).

2.2.8 Severity Measure for Social Anxiety Disorder (Social Phobia) – Adult (SAD-D)

The SAD-D (LeBeau et al., 2012) was used to assess the severity of social anxiety symptoms that participants may be experiencing in tandem with their level of fear of negative evaluation. The SAD-D has 10-items rated on a 7-point Likert-type scale ranging from 0 (Never) to 4 (All of the time). The SAD-D has shown good internal consistency with an alpha coefficient of .86 (LeBeau et al., 2016). LeBeau and colleagues (2016) have demonstrated adequate convergent and discriminant validity to be adequate through comparisons between the SAD-D and other self-report scales of social anxiety (SIAS $r = .38$; SPS $r = .55$) and showing non-significant relationship with the Mini Mood and Anxiety Symptom Questionnaire (Clark & Watson, 1995) general depression subscale ($r = .30$).

2.2.9 Balanced Inventory of Desirable Responding Short Form (BIDR-16)

The BIDR-16 (Paulhus, 1991; Hart et al., 2015) was used to assess the extent to which participants may have a bias to respond in a socially desirable way. The BIDR-16 is a 16-item short version of the 40-item BIDR. The BIDR-16 maintains the two-factor

structure of the original version with two subscales: self-deceptive enhancement (SDE) and impression management (IM). Items are rated on a 7-point Likert-type scale ranging from 1 (not true) to 7 (very true). Hart and colleagues (2015) demonstrated that the BIDR-16 has good test-retest reliability over a 2-week interval for both dimensions of SDE (r = .79) and IM (r = .74). Both subscales have also shown adequate construct validity, with IM (r = .53) correlating more strongly to similar measures than the SDE (r = .32).

CHAPTER III - RESULTS

3.1 Data Clean-Up and Preliminary Analyses

The electronic data file was downloaded from Qualtrics and converted into an SPSS file. All study variables were formed via SPSS syntax, and frequency distributions were examined to identify potential coding errors. Of the 353 cases initially present in the data file, 18 were deleted for not meeting inclusion criteria for age (i.e., ages 18-29), and 5 cases were deleted for not meeting the criteria for sex (i.e., female). Next, 17 cases were removed for failing either of the two directed response items (e.g., "please select 'strongly agree'") used as quality assurance checks. Next, survey completion time was examined to identify participants who completed the survey so quickly that they could not have been responding attentively (i.e., 2 *SD*s below the sample's median survey completion time). This led to the removal of another 11 participants. Finally, the data set was examined for missing data. An additional 10 cases were removed due to excessive missing data (i.e., they were missing enough data on at least one of the key questionnaires that prevented the measure from being scored). Thus, all analyses were conducted with a final sample of 292 participants.

Alpha coefficients, means, and standard deviations for all variables used in the primary analyses are presented in Table 1. All alpha coefficients exceeded .70 except the BIDR-16 subscales, which is common for this measure (Hart et al., 2015). The dependent variable (i.e., general/peer relational aggression) was examined for normality and was significantly skewed (i.e., > +/- 2.58; Field & Miles, 2010). Next, all independent variables were examined for normality and the BFNE-S, BIDR-16, and TEQ were significantly skewed. We utilized bootstrapping in the regression analyses to create 95%

bias-corrected and accelerated (BCa) confidence intervals with 10,000 resamples of the

data as a means of correcting non-normally distributed data given that data

transformations are known to inflate Type-II error in moderation analyses (Field, 2013).

Table 3.1

Scale Reliabilities, Means, and Standard Deviations

Variable	α	*M*	*SD*
BFNE-S	.96	28.83	9.09
SRASBM	.70	13.61	5.62
TEQ	.82	45.78	6.48
SIP-AEQ	.86	17.41	7.00
GAD-7	.90	10.15	5.58
BIDR-16			
IM	.63	4.26	.93
SDE	.69	3.68	.93
SAD-D	.93	16.96	10.06

Note. BFNE-S = Brief Fear of Negative Evaluation – Straightforward Items; SRASMB = Self-Report of Aggression and Social

Behavior Measure (7-item General/Peer Relational Aggression scale;) TEQ = Toronto Empathy Questionnaire; SIP-AEQ = Social

Information Processing-Attribution Bias Questionnaire; GAD-7 = Generalized Anxiety Disorder Scale; BIDR-16 = Balanced

Inventory of Desirable Responding Short Form (IM = Impression Management scale and SDE = Self-Deceptive Enhancement scale;)

SAD-D = Severity Measure for Social Anxiety Disorder (Social Phobia).

Bivariate relationships among variables were examined next using Pearson

correlation coefficients (see Table 2). Contrary to what was expected, fear of negative

evaluation was not significantly related to relational aggression, though generalized

anxiety and social anxiety were both positively correlated with relational aggression. In

addition, hostile attribution bias was positively correlated with relational aggression,

while dispositional empathy was negatively correlated with relational aggression. With respect to social desirability as assessed with the BIDR-16, impression management was inversely related to relational aggression while self-deceptive enhancement was not significantly related to relational aggression.

Table 3.2

Intercorrelations Among Variables

	1	2	3	4	5	6	7
1. SIP-AEQ	--						
2. SRASBM	.24**	--					
3. GAD-7	.14*	.17**	--				
4. BFNE-S	.08	.08	.49**	--			
5. TEQ	-.09	-.28**	.05	.13*	--		
6. SAD-D	.20**	.16**	.68**	.60**	.00	--	
7. SDE	-.07	-.09	-.48**	-.55**	-.02	-.52**	--
8. IM	-.02	-.40**	-.15**	-.19**	.17**	-.10	.30**

Note. BFNE-S = Brief Fear of Negative Evaluation – Straightforward Items; SRASBM = Self-Report of Aggression and Social Behavior Measure (7-item General/Peer Relational Aggression scale;) TEQ = Toronto Empathy Questionnaire; SIP-AEQ = Social Information Processing-Attribution Bias Questionnaire; GAD-7 = Generalized Anxiety Disorder Scale; BIDR-16 = Balanced Inventory of Desirable Responding Short Form (IM = Impression Management scale and SDE = Self-Deceptive Enhancement scale;) SAD-D = Severity Measure for Social Anxiety Disorder (Social Phobia).

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

To determine whether fear of negative evaluation predicted relational aggression while taking social desirability into account, a hierarchical multiple regression was computed. The two BIDR-16 subscales (i.e., Impression Management and Self-Deceptive Enhancement) were entered on Step 1, and the BFNE-S was entered on Step 2. The full

regression model was significant, F(3, 288) = 18.44, p < .001, with an R2 = .16; however, the only variable to emerge as a significant predictor of relational aggression on Step 2 was the Impression Management scale of the BIDR-16 (see Table 3). Additionally, R2 was no longer significant in step 2, thus, fear of negative evaluation did not predict relational aggression while taking socially desirable responding into account.

Table 3.3

Hierarchical Multiple Regression for Social Desirability and Fear of Negative Evaluation Predicting General/Peer Relational Aggression (N = 292)

Variable	B	SE B	β	BCa 95% CI	R^2	ΔR^2
Step 1					.16	.16*
IM	-2.47	.34	-.41*	**[-3.14, -1.80]**		
SDE	.21	.34	.04	[-.46, .88]		
Step 2					.16	.00
BFNE-S	.02	.04	.03	[-.06, .10]		

Note. BIDR-16 = Balanced Inventory of Desirable Responding Short Form (IM = Impression Management scale and SDE = Self-Deceptive Enhancement scale). Standard errors and 95% confidence intervals (CIs) estimated with 10,000 bootstrap resamples of the data. Significant values (i.e., CIs that do not contain 0) are in bold.

* p < .01

3.2 Primary Analyses

A multiple regression using Model 5 from Hayes' (2018) PROCESS macro for SPSS was utilized to test the model depicted in Figure 1. That is, we sought to determine whether hostile attribution bias would mediate the predicted relationship between fear of negative evaluation and relational aggression, as well as whether dispositional empathy would moderate the direct relationship between fear of negative evaluation and relational

aggression. First, before looking at the full model, the simple regression to determine

whether the mediator (i.e., hostile attribution bias) regressed onto the independent

variable (i.e., fear of negative evaluation) was not significant, $F(1, 290) = 1.68$, $p = .20$,

$R2 = .01$. This indicates that there was not a significant relationship between fear of

negative evaluation and hostile attribution bias ($\beta = .06$, $p = .20$ [-.03, .15]). The full

regression model in which relational aggression was regressed on fear of negative

evaluation, hostile attribution bias, and dispositional empathy was significant, $F(4, 287) =$

5.26, $p < .001$, with an $R2 = .07$. While hostile attribution bias predicted relational

aggression in this model ($\beta = .18$, $p < .001$ [.09, .27]), fear of negative evaluation did not

($\beta = -.03$, $p = .38$ [-.04, .10]), and there was no evidence that dispositional empathy

moderated the expected relationship between fear of negative evaluation and relational

aggression ($\beta = -002$, $p = .84$ [-.01, .02]). Finally, the indirect effect of the mediator (IE =

.01) was not significant [-.006, .03], indicating that hostile attribution bias did not

mediate the expected relationship between fear of negative evaluation and relational

aggression.

Table 3.4

PROCESS Model 5 Mediation and Moderation (N = 292)

	B	R^2	F	*df*1	*df*2	*p*	BCa 95% CI
FNE on HA		.01	1.68	1	290	.20	
FNE	.06					.20	[-.03, .15]
Full Model		.07	5.26	4	287	.000	
BFNE-S	.03					.39	[-.04, .10]

Table 3.4 (continued)

SIP-AEQ	.18		.000	**[.09, .27]**
TEQ	.11		.17	[-.05, .27]
BFFNE-S X TEQ	.00		.84	[-.01, .02]

Note. BFNE-S = Brief Fear of Negative Evaluation – Straightforward Items; SIP-AEQ = Social Information Processing-Attribution Bias Questionnaire; TEQ = Toronto Empathy Questionnaire. Standard errors and 95% confidence intervals (CIs) estimated with 10,000 bootstrap resamples of the data. Significant values (i.e., CIs that do not contain 0) are in bold.

3.3 Post Hoc Analyses

We used the PROCESS macro to run the same analysis described above with the addition of the two BIDR-16 subscales as covariates. The outcome was the same except that Impression Management also predicted relational aggression in the full model (β = -2.46, p < .001 [-3.12, -1.80]). We then repeated this analysis using generalized anxiety as a covariate instead of the BIDR-16 subscales. This also did not change the outcome, aside from generalized anxiety having a small but statistically significant effect in predicting relational aggression (β = .14, p < .05 [.00, .27]).

Next, we examined hostile attribution bias as a mediator of the relationship between fear of negative evaluation and relational aggression without dispositional empathy as a moderator. The results did not change. We then examined dispositional empathy as a moderator of the relationship between fear of negative evaluation and relational aggression without including hostile attribution bias as a mediator. The results were again the same as described above.

Given previous literature supporting the broader construct of social anxiety as being positively associated with relational aggression, we tested the model described in Figure 1 using social anxiety (i.e., scores on the SAD-D) as the independent variable in

place of fear of negative evaluation. Results showed that hostile attribution bias regressed on social anxiety, $F(1, 290) = 11.52$, $p < .001$, $R^2 = .04$ ($\beta = .14$, $p < 001$ [.06, .21]. The full regression model in which relational aggression was regressed on social anxiety, hostile attribution bias, and dispositional empathy was significant, $F(4, 287) = 6.51$, $p <$ .001, with an $R^2 = .08$. In this model, hostile attribution bias predicted relational aggression ($\beta = .18$, $p < .001$ [.09, .27]); however, no other variables were significant predictors, and there was no evidence that dispositional empathy moderated the relationship between social anxiety and relational aggression ($\beta = -.01$, $p = .13$ [-.02, .00]). The indirect effect of social anxiety via hostile attribution bias on relational aggression was positive (IE = .02) and statistically significant [008, .047], consistent with mediation. A simplified version of this model without dispositional empathy was significant, $F(2,289) = 11.89$, $p < .001$, $R^2 = .08$, and showed that social anxiety ($\beta = .09$, $p < .05$ [.00, .18]) and hostile attribution bias ($\beta = .26$, $p < .001$ [.13, .39]) predicted relational aggression. Moreover, the indirect effect of social anxiety via hostile attribution bias on relational aggression was consistent with partial mediation (IE = .04 [01, .07]).

Further, our sample had relatively high scores on the SAD-D and GAD-7, indicating the report of significant anxiety symptoms. Using the cut of scores of 10 recommended for identifying probable cases on the GAD-7 (Spitzer et al., 2006), an independent samples t-test was computed to determine whether there were between-groups differences in relational aggression based on participants' level of anxiety (i.e., below the cut score vs. above the cut score). Standard errors and 95% confidence intervals were estimated with 10,000 bootstrap resamples of the data. There was evidence that the low and high anxiety groups reported different levels of relational aggression, t

(280.55) = 2.375, p = .019 [.42, 4.01], Cohen's d = .28. Participants who exceeded the

GAD-7 cut score of 10 recommended for identifying probable cases reported more

relational aggression (M = 16.45, SD = 8.63) than those who fell below the cut score (M

= 14.25, SD = 7.17). Using the cut score of 19 recommended by Rice and colleagues

(2021) for the 10-item version of the SAD-D, a similar independent samples t-test was

computed. Similarly, there was evidence that the low and high social anxiety groups

reported different levels of relational aggression, t (226.88) = 2.78, p = .006 [.79, 4.60],

Hedges' g = .34. Participants who exceeded the SAD-D cut score of 19 reported more

relational aggression (M = 16.91, SD = 8.87) than those who fell below the cut score (M

= 14.21, SD = 7.11).

CHAPTER IV - DISCUSSION

The present study extended the literature on the relationship between social anxiety and relational aggression among college women by focusing on the fear of negative evaluation component of social anxiety. The literature has demonstrated mixed findings regarding this relationship (Culotte & Goldstein, 2008; Batanova & Loukas, 2011; Gros et al., 2009; Storch et al. 2004; Loudin et al., 2003); however, it has been suggested that the relationship of social anxiety to relational aggression may be driven by fear of negative evaluation (Andrews et al., 2019; Loudin et al., 2003). Contrary to what we expected based on this literature, fear of negative evaluation was unrelated to relational aggression in this sample. Given the lack of a bivariate relationship between these variables, it was not surprising that also we found no support for the prediction that hostile attribution bias would partially mediate the expected relationship between fear of negative evaluation and relational aggression. Moreover, we found no support for the prediction that dispositional empathy would moderate the expected relationship between fear of negative evaluation and relational aggression.

We conducted several post hoc analyses to better understand why these findings might have differed from what we had expected. Repeating the analyses with the two subscales from the BIDR-16 (i.e., Impression Management and Self-Deceptive Enhancement) and generalized anxiety (i.e., scores on the GAD-7) as covariates did not affect the results, aside from demonstrating that participants higher in impression management reported less relational aggression. Fear of negative evaluation was still unrelated to relational aggression, suggesting that the lack of a relationship between these variables was unlikely to be an artifact of social desirability or generalized anxiety.

Separating our mediation and moderation analyses (i.e., running the mediation without the moderator and running the moderation without the mediator) also did not change the results. Fear of negative evaluation was still unrelated to relational aggression, and there was no evidence that hostile attribution bias mediated the relationship between them, or that dispositional empathy moderated the relationship between them. When we examined the full model depicted in Figure 1 using the broader social anxiety construct (i.e., scores on the SAD-D) as the independent variable in place of the narrower fear of negative evaluation component (i.e., scores on the BFNE-S), we found that hostile attribution bias was the only variable to predict relational aggression and some evidence that hostile attribution bias mediated this relationship between social anxiety and relational aggression. When we repeated this analysis without dispositional empathy as a moderator, both social anxiety and hostile attribution bias predicted relational aggression, and hostile attribution bias partially mediated the relationship between social anxiety and relational aggression.

Results from the post hoc analyses were consistent with the literature demonstrating that the likelihood of aggressive behaviors among children increases when hostile intent is attributed to ambiguous situations or provocations (Crick & Dodge, 1996). Andrews and colleagues (2019) argued that this relationship would be seen with fear of negative evaluation because individuals high in fear of negative evaluation would be predisposed to filter their social interactions through hostile attribution bias, thus making relational aggression more likely. Although the present study did not find support for this, the finding that hostile attribution bias partially mediated the relationship between social anxiety and relational aggression when dispositional empathy was omitted

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from the model suggests that the fear of negative evaluation component alone may not be responsible for this relationship. Due to fear of negative evaluation being a key component of social anxiety, perhaps the combination of the different mechanisms within social anxiety are interacting with hostile attribution bias, which is then leading to subsequent relational aggression use. Future studies may find it beneficial to explore other components of social anxiety in this relationship.

Dispositional empathy is associated with prosocial behaviors (Miller & Eisenburg, 1988; Schroeder et al., 2015), leading us to expect that the relationship between fear of negative evaluation and relational aggression may be weaker for emerging adults at higher levels of empathy. The present study did not find support for this with either fear of negative evaluation or the broader social anxiety construct. It is possible that dispositional empathy, at least when measured as a broader construct, is not relevant in this relationship. This differs from previous findings that some components of empathy were relevant to relational aggression (Loudin et al., 2003), suggesting that differences in how dispositional empathy was operationally defined may help to explain the divergent findings. Perhaps our attempt at broadening empathy and simplifying its measurement limited its relevance to relational aggression.

Overall, these results suggest that fear of negative evaluation may not be the component of social anxiety that is responsible for its relationship with relational aggression. Scores on a measure of the broader social anxiety construct (i.e., the SAD-D) were positively related to relational aggression while scores on a measure of the narrower fear of negative evaluation construct (i.e., the BFNE-S) were not. When simple mediation was examined without including dispositional empathy as a moderator, social anxiety and

dispositional empathy predicted relational aggression, and hostile attribution bias partially mediated the relationship between social anxiety and relational aggression. While the design of the present study does not support causal inferences, this finding is consistent with the possibility that college women higher in social anxiety may be more likely to interpret socially ambiguous situations in a threatening manner, leading them to engage in more relationally aggressive behavior.

4.1 Limitations and Future Directions

The present study has some limitations that should be considered when interpreting the findings. First, the sample was limited to emerging adult (i.e., individuals between the ages of 18 and 29; Arnett et al., 2014) college women. The results may not generalize to college men or to the broader adult population. Given that relational aggression may develop and function differently for men and women (Storch et al., 2004; Archer & Coyne, 2005) and may change throughout the lifespan (Poor, 2023), it would be advantageous for researchers to collect data from more diverse samples that would allow for comparisons by gender and across various ages. Perhaps the relationship between the various components of social anxiety and relational aggression differs by gender or age.

The reliance on self-report measures of all variables was another limitation, raising concerns about socially desirable responding and participants' willingness to self-disclose. Aggressive behavior is socially undesirable, and concerns about how self-report measures are impacted by social desirability are valid (Vigil-Colet et al., 2012). On the other hand, relational aggression is often more subtle and covert than other forms of aggression, limiting the utility of other methods of assessment (e.g., informant ratings).

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The same is likely true of social anxiety and hostile attribution bias in the sense that observations by others may be of limited utility in assessing these variables. Although the use of an anonymous survey and the BIDR-16 helped to account for social desirability, the addition of other assessment methods should be considered in future research. For example, daily diary methods might help to avoid problems with recall and reduce a tendency to minimize the frequency of socially undesirable behavior. Where possible, supplementing self-report measures with informant ratings could be helpful. Several studies have utilized informant via teachers and parent ratings for younger students' relational aggression use (Crick & Grotpeter, 1995; Archer & Coyne, 2005), though some of these options are less viable for emerging adults and adults. However, these methods might prove useful for other adults but interviewing supervisors or co-workers in the work setting.

The research design was another limitation in that the correlational nature of the present study does not allow for causal inferences. Studies that collected data at multiple points in time instead of all at one time would be one step in the right direction. For example, measures of social anxiety, dispositional empathy, and hostile attribution bias could be collected first, followed by an interval of time, followed by measures of relational aggression that occurred since the initial data collection period. Lab-based studies utilizing experimental designs would be a more valuable step in overcoming this limitation. Experimental designs are frequently used when studying some forms of aggression, and future studies may consider paradigms allowing for participants to aggress in controlled settings while manipulating variables of interest (e.g., studies using confederates).

Our measurement of relational aggression using the General/Peer Relational Aggression subscale of the SRASBM may have been another limitation. More research is being conducted around the use of aggression on the internet, typically in the context of cyberbullying. (Modecki et al., 2014). Modecki and colleagues (2014) meta-analysis highlighted that cyber aggression and tradition aggression are highly correlated and overlap in many situations. With our sample consisting of a younger generation (i.e., emerging adults), had us consider the possibility that they may be engaging more with online aggression and possibly as an avenue for their relational aggression. At the item level, the SRASBM does not include questions to examine for aggressors' online aggression or use of relationally aggressive behaviors in a cyber context. This may have limited our ability to pick up on the use of relationally aggressive behaviors in our sample, as they may not be focusing the use of these behaviors in person. Future studies may want to focus efforts on other measures and ways to capture a more modern use of relational aggression.

Assessing dispositional empathy as a broad unitary construct may have been another limitation. Research on empathy and its relationship to aggression has often focused on the specific components of empathy (e.g., perspective taking; Loudin et al., 2003) instead of conceptualizing empathy as a unitary construct. Concerns about the factor structures and validity of popular measures of empathy led us to examine it at its broadest level using the TEQ (Chrysikou & Thompson, 2016). Although the TEQ has demonstrated acceptable reliability and validity (Spreng et al. 2009), it is possible that assessing specific components of empathy, as is more common in the literature, would

have produced different results. Thus, it seems premature to rule-out the possible role of empathy in the context of social anxiety and relational aggression.

Another limitation worth noting is that the scores on the BFNE-S in this sample were significantly skewed and showed evidence of a ceiling effect. Overall, the sample reported unusually high levels of fear of negative evaluation with 13.4% of participants obtaining the highest possible score on the measure. While we have not yet been able to find descriptive data from a college student sample to provide a point of comparison, the mean BFNE-S score in the present sample was comparable to the mean reported from a sample receiving treatment for principal diagnoses of social anxiety disorder in an outpatient anxiety clinic (Carleton et al., 2011). This likely affected our results by limiting the size of the relationship scores on this measure could have with scores on other measures. It is possible that this reflects a problem with the BFNE-S; however, the lack of reports of similar issues in prior studies using this measure raises the question of whether it could be sample-specific. We did not see similar issues with the distribution of the SAD-D; however, applying a cut score of 19 suggested that approximately 19% of the present sample reported distressing levels of social anxiety (Rice et al., 2021). A similar issue was apparent on the GAD-7. The GAD-7 is a commonly used screening tool that assesses the severity of anxiety disorder symptoms, and a score of 10 is commonly used to identify probable cases (Spitzer et al., 2006). The average GAD-7 score in this sample was 10.15 (SD = 5.58). Of the college women who completed this study, 45.5% would be identified as probable cases based on their GAD-7 scores. Thus, there is reason to believe that the present sample was unusually high in reported anxiety symptoms. There are several reasons for this, with the age range for our sample being one. Recent literature

has highlighted a higher prevalence of anxiety among younger generations globally (Jefferies & Ungar, 2020), which might suggest the levels of anxiety reported by this sample are less unusual than they seem when using older norms and cut scores. Additionally, post hoc analyses demonstrated that reported use of relational aggression was higher when comparing reported symptoms of anxiety. Specifically, participants in this sample reported more relational aggression use when they exceeded the cut score on either the GAD-7 or SAD-D compared to those who fell below the cut score. Future studies examining the relationship between the different forms of anxiety and relational aggression may want to focus on the levels of anxiety as a mechanism for this relationship as well.

A final limitation that may have impacted our study is the context of a post COVID-19 sample. Research since the beginning of the COVID-19 pandemic has begun to examine the effects this pandemic has had on mental health. Specifically, it has been demonstrated that negative emotions (i.e., depression, anxiety, and stress) have increased globally, with younger and student populations being most effect (Daniali et al., 2023). In our sample of emerging adult college students, it is possible that the high levels of reported anxiety symptoms could be related to the COVID-19 pandemic. Future researchers are encouraged to account for this when examining populations and psychopathology that has been affected by COVID-19. Perhaps including a measure to gage who participants have been effect by COVID-19 or even by comparing pre- and post-pandemic sample.

There is ample evidence that relational aggression is associated with significant problems among college students (Czar et al., 2011; Dahlen et al., 2013; Storch et al.,

2004). While the literature on social anxiety and relational aggression has produced

mixed results, it would be premature to abandon the study of social anxiety in this

context. Future studies are encouraged to examine the potential role of social anxiety in

relational aggression using multidimensional measures that would allow a comparison of

different forms of social anxiety. In addition, the inclusion of other variables which may

be relevant to understanding social anxiety and relational aggression is recommended.

For example, there is some evidence that anxiety may mediate the relationship between

parental attachment and relational aggression (Voulgaridou & Kokkinos, 2020). Students

high in anxious attachment might be more likely to experience social anxiety, and this

could make them more likely to utilize maladaptive coping strategies like relational

aggression in their valued relationships. It is also possible that social anxiety leads to

prosocial behavior (e.g., offering to help someone, sharing, comforting someone,

volunteering time, co-operating, etc.) rather than relational aggression, at least in some

conditions (Culotte & Goldstein, 2008; Batanova & Loukas, 2011). This suggests that

research might focus on identifying moderators of these relationships.

4.2 Conclusion

In summary, the results of the present study suggest that the fear of negative

evaluation component of social anxiety is not the key aspect of the construct contributing

to the relationship between social anxiety and relational aggression. Fear of negative

evaluation was unrelated to relational aggression, and there was no evidence that hostile

attribution bias mediated this relationship, or that dispositional empathy moderated it. A

broader measure of social anxiety was weakly related to relational aggression, and there

was some evidence that hostile attribution bias mediated this relationship. Based on these

findings, broader measures of social anxiety are likely to be more useful in understanding relational aggression than narrower measures focused on the fear of negative evaluation. It should be noted that participants in the present study scored in the clinical range on fear of negative evaluation, social anxiety, and general anxiety symptoms, indicating unusually high levels of anxiety. Thus, the results reported here should be interpreted with caution, as there is reason to believe that this sample of college women may not be representative of college women in general.

APPENDIX A - IRB Approval Letter

Office of Research Integrity

THE UNIVERSITY OF SOUTHERN MISSISSIPPI.

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NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the Incident submission on InfoEd IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.

PROTOCOL NUMBER: 22-438
PROJECT TITLE: Anxiety and social perception in the peer relationships of college women.
SCHOOL/PROGRAM Psychology
RESEARCHERS: PI: Summer Boggs
Investigators: Boggs, Summer~Dahlen, Eric R~
IRB COMMITTEE ACTION: Approved
CATEGORY: Expedited Category
PERIOD OF APPROVAL: 18-Apr-2022 to 17-Apr-2023

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

APPENDIX B - Consent Form

Consent Form

PROJECT INFORMATION

Project Title: Anxiety and Social Perception in the Peer Relationships of College Women
Principle Investigator: Summer Boggs
Email: Summer.Boggs@usm.edu
College: Education and Human Sciences
School: Psychology

RESEARCH DESCRIPTION

Purpose

This study will examine the relationship of anxiety and social perception to college women's behavior in peer relationships.

Description of Study

If you agree to participate, you will be asked to complete an online survey containing questionnaires about various aspects of your social behavior, experiences with anxiety, and perceptions of various social situations. The study is completely online and should take no more than 30 minutes to complete. If you complete the survey, you will receive 0.5 research credits. You may skip questions you are uncomfortable answering but will need to reach the end of the survey to receive credit. Quality assurance checks will be used to make sure participants are reading every question carefully and answering thoughtfully. If you do not pass these checks, you will NOT receive research credit for completing the study.

Benefits

Participants who complete the study and pass all quality assurance checks will receive 0.5 research credits; those who do not complete the study or do not pass all quality assurance checks will not receive research credit. Participants will receive no other direct benefits; however, the results of the study will enable the researchers to better understand how students' experiences of anxiety and social perception inform their behavior in peer relationships.

Risks

There are no foreseeable risks associated with participating in this study. If you feel your participation has resulted in distress, please stop the survey and notify the researcher, Summer Boggs (Summer.Boggs@usm.edu). If you should continue to be troubled by

your participation in this study, you may contact the research supervisor, Dr. Eric Dahlen (Eric.Dahlen@usm.edu) and/or a local mental health agency such as Student Counseling Services (601.266.4829) or the USM Center for Behavioral Health (601.266.4588). If you are completing this study outside the Hattiesburg area and are in need of mental health services, please contact SAMHSA's National Helpline (800.662.4357).

Confidentiality

The online questionnaires are intended to be anonymous, and all information you provide will be kept strictly confidential. Any potentially identifying information will not be retained with your responses. Research data will be stored electronically and will be password-protected. Only the researcher team members will have access to the information you provide, and all are required to have completed training in confidentiality and human subjects research procedures.

Alternative Procedures

Students who do not wish to participate in this study may sign up for another study or talk with their instructor(s) about non-research options.

Participant's Assurance

This project and this consent form have been reviewed by the Institutional Review Board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5125, Hattiesburg, MS 39406-0001, 601-266-5997.

Any questions about the research should be directed to the Principal Investigator using the contact information provided above.

<div align="center">

CONSENT TO PARTICIPATE IN RESEARCH

</div>

I understand that participation in this project is completely voluntary, and I may withdraw at any time without penalty, prejudice, or loss of benefits. Unless described above, all personal information will be kept strictly confidential, including my name and other identifying information. All procedures to be followed and their purposes were explained to me. Information was given about all benefits, risks, inconveniences, or discomforts that might be expected. Any new information that develops during the project will be provided to me if that information may affect my willingness to continue participation in the project.

<div align="center">

CONSENT TO PARTICIPATE IN RESEARCH

</div>

By clicking the box below, I give my consent to participate in this research project. ***If you do not wish to participate in this study, please close your browser now.***

☐ Yes, I consent to participate.

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