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This thesis study extends previous research by examining cognitive processes in social anxiety related to heterosexual dating initiation situations. Participants were 100 undergraduate students (50 male and 50 female, ages 18 to 20) enrolled in Introductory Psychology. Negative interpretations and avoidant behavior were examined using a series of vignettes depicting potential heterosexual dating initiation situations. Anticipatory processing was assessed using an experimental manipulation in which participants were informed that they would take part in either an in-person or instant messaging interaction with an opposite-sex stranger. Negative interpretations, avoidant behaviors and anticipatory processing each positively predicted social anxiety. In addition, anticipatory processing positively predicted self-reported state anxiety – but not physiological reactivity, prior to an impending opposite-sex interaction. These findings suggest that specific maladaptive cognitive and behavioral processes may contribute to the maintenance of trait social anxiety.

SOCIAL ANXIETY AND HETEROSEXUAL DATING INITIATION

By

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CHAPTER I

INTRODUCTION

Social anxiety is associated with disrupted interpersonal relationships throughout the lifespan. During childhood, social anxiety is associated with poor social skills performance, negative peer interactions, and low levels of social acceptance (Beidel, Turner, & Morris, 1999; Ginsburg, La Greca, & Silverman, 1997), whereas during adolescence, social anxiety is associated with having fewer and less intimate friendships (La Greca & Lopez, 1998; Vernberg, Abwender, Ewell, & Berry, 1992). Disruptions in social relationships can continue into adulthood, affecting the development of satisfying romantic relationships. Adults with high levels of social anxiety report fewer dating behaviors, fewer sexual encounters and lower rates of marriage than do adults with low levels of social anxiety (Hart, Turk, Heimberg, & Liebowitz, 1999; Sanderson, DiNardo, Rapee, & Barlow, 1990). In addition, when adults with social anxiety form romantic relationships, they often report negative perceptions of those relationships, with social anxiety correlated positively with chronic interpersonal stress (Davila & Beck, 2002) and correlated negatively with emotional and social intimacy (Wenzel, 2002). This paper will present a study examining some of the cognitive and behavioral processes associated with social anxiety in heterosexual dating relationships, beginning with a review of relevant cognitive-behavioral models.

CHAPTER II

REVIEW OF THE LITERATURE

Cognitive-Behavioral Models of Social Anxiety

Why does social anxiety continue to affect social functioning across the lifespan despite frequent exposure to feared social situations? Some theoretical models focus on the role of cognitive processes in the maintenance of social anxiety (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997). According to these theoretical models, life experiences interact with innate dispositions and can lead to the development of certain assumptions about the self and others in social situations. The assumptions of people with high levels of social anxiety can include beliefs that others have high expectations for social performance, that the self lacks appropriate skills needed to succeed in social situations, and that the potential for negative consequences related to social failure is high (Clark and Wells, 1995).

Specific characteristics of any given social situation may increase the salience of these negative assumptions for adults with high levels of social anxiety, which, in turn, may influence the moment-to-moment cognitive processes involved in preparing for and participating in social interactions. For example, adults with high levels of social anxiety have been found to ruminate excessively in anticipation of entering a social situation (Hinrichsen & Clark 2003; Vassilopoulos, 2005) and to negatively interpret ambiguous social cues that occur during social interactions (Amir, Foa, & Coles, 1998; Stopa & Clark, 2000; Voncken, Bogels, & Vries, 2004; Wilson & Rapee, 2005). These and other

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cognitive and behavioral processes may then lead to and be exacerbated by specific

symptoms of state anxiety (e.g., blushing, trembling hands, physiological and affective

responses). This cycle can increase the likelihood for both imagined and real failure in

the situation, further strengthening previously held assumptions (Clark and Wells, 1995).

Empirical Findings

　　Negative interpretation of ambiguous social cues. The tendency to negatively

interpret ambiguous social information represents a specific cognitive process associated

with social anxiety (Amir, Foa, & Coles, 1998; Stopa & Clark, 2000; Voncken, Bogels,

& Vries, 2004; Wilson & Rapee, 2005). Studies in this area use vignettes of social and

non-social situations containing either ambiguous or slightly negative cues. After reading

the vignettes, participants rank the probability that they would either positively,

negatively or neutrally interpret the situations described. Adults with high levels of

social anxiety are more likely than those with low levels of social anxiety to negatively

interpret ambiguous social cues (Amir, Foa, & Coles, 1998; Stopa & Clark, 2000;

Voncken, Bogels, & Vries, 2004; Wilson & Rapee, 2005). In addition, this inclination to

negatively interpret ambiguous social cues is specific to social situations and persists

regardless of concurrent levels of depression and other anxiety disorders (Amir, Foa, &

Coles, 1998; Stopa & Clark, 2000; Voncken, Bogels, & Vries, 2004; Wilson & Rapee,

2005).

　　One limitation of previous studies in this area is that they examine *general* social

situations (e.g., being approached by a stranger on the street needing directions) without

considering differences between *specific* types of social interactions (e.g., best

friendships, employer-employee relationships, romantic dyads). Constans, Penn, Ihen, and Hope (1999), however, adopted a more situation-specific approach by exploring interpretative biases related to a blind date scenario. Participants in this study were separated into groups with either high or low levels of social anxiety and presented with a series of vignettes describing a blind date between two college students. The vignettes contained several ambiguous statements in relation to interpersonal and non-personal evaluation. Following presentation of the vignettes, participants completed forced-choice questionnaires intended to assess interpretation of the ambiguous statements. Members of the low social anxiety group rated the ambiguous social statements more positively than did members of the high social anxiety group. Although this study focused on a specific type of social interaction (i.e., a blind date), other forms of heterosexual dating interactions (e.g., meeting a member of the opposite sex for the first time and attempting to initiate a date) were not considered. The current study extends this research by examining negative interpretations of ambiguous social information across a range of heterosexual dating initiation situations. In addition, this study examines the association between negative interpretations and avoidant patterns of responding. The link between social anxiety and avoidant interpersonal behavior is well established in the literature (cf., Alden & Phillips, 1990; Darcy, Davila & Beck, 2005; Twentyman & McFall, 1975), and the current study proposes to add to this literature by simultaneously examining negative interpretations and avoidant interpersonal behaviors in dating initiation situations.

Anticipatory processing. Clark and Wells (1995) suggest that individuals with high levels of social anxiety engage in excessive rumination (i.e., anticipatory processing)

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prior to entering feared social situations. Whereas many low-anxious individuals might

be expected to plan for impending social encounters, the anticipatory processing of

individuals with high levels of social anxiety likely differs from that of their non-anxious

counterparts on both level and content. For adults with high levels of social anxiety,

anticipatory processing is thought to be excessive and tends to focus on past social

failures, negative observer-perspective images of the self, and the potential for failure in

the anticipated situation. In addition, these highly anxious adults are thought to carefully

plan for and rehearse anticipated social interactions.

Relatively few studies have examined the role of anticipatory processing in social

anxiety (i.e., Hinrichsen & Clark, 2003; Tanner, Stopa & De Houwer, 2006;

Vassilopoulos, 2004; Vassilopoulos, 2005). These studies have used a mixture of

retrospective reporting and experimental methodologies to examine the role of

anticipatory processing in social anxiety. Two studies (Hinrichsen & Clark, 2003;

Vassilopoulos, 2004) using semi-structured interviewing and self-report questionnaires

found that adults with high levels of social anxiety report engaging in anticipatory

processing characterized by increased tendencies to recall past social failures, interpret

somatic sensations as being negative, carefully analyze what might happen, and think

about how one would look to others in the anticipated situation. These studies are

limited, however, in their reliance on retrospective reporting.

Research using experimental manipulations to examine anticipatory processing

has yielded mixed results. In two of these studies, participants were divided into groups

with either high or low levels of trait social anxiety and informed that they would give

video-taped speeches (Hinrichsen & Clark 2003; Vassilopoulos, 2005). Half of the members of each group were then provided with a distraction task; the other half were instructed to think about the anticipated social situation and about previous similar situations, which resulted in a type of intentional anticipatory processing. Hinrichsen and Clark (2003) found that participants in the anticipatory processing condition, regardless of their group assignment (i.e., high or low social anxiety), maintained high levels of self-reported state anxiety, whereas Vassilopoulos (2005) found that the anticipatory processing condition was associated with maintained levels of state anxiety only for participants with high levels of trait social anxiety. Vassilopoulos (2005) points to differences in the instructions for the anticipatory processing condition between these two studies as a possible reason for the divergent findings. Hinrichsen and Clark (2003) instructed participants to recall situations similar to the speech task that had not gone well and during which they felt others had formed a poor impression of their performance; Vassilopoulos (2005) simply instructed participants to recall a prior experience similar to the speech task, but gave no instructions regarding the valence of the memory. According to Vassilopoulos (2005), a possible explanation for the discrepant findings is that high socially anxious individuals may naturally recall more negative past experiences than individuals with lower levels of social anxiety, thereby resulting in higher levels of state anxiety.

In another experimental study of anticipatory processing, Tanner, Stopa and De Houwer (2006) divided participants into high and low social anxiety groups and informed them that they would have to give a short speech to an audience of six postgraduates.

Participants were then given two to three minutes to think about the speech and then were instructed to speak out loud into a tape recorder what they had thought about during the waiting period. They were also asked to complete a paper and pencil self-report of anticipatory thoughts about the speech. Results indicated that participants in the high social anxiety group reported a greater number of and belief in anxious thoughts on the paper and pencil measure. The results of the out-loud thought listing procedure, however, indicated that depression, rather than social anxiety, accounted for differences in negative thinking about the anticipated speech. These findings highlight the importance of additional research on anticipatory processing that controls for the possible effects of depression.

There are several limitations to the existing literature on the role of anticipatory processing in the maintenance of social anxiety. First, previous studies have focused solely on anticipatory processing prior to public speaking tasks. Further investigation is needed to explore whether similar processes occur prior to other types of social interactions, particularly dyadic social exchanges such as dating initiation situations. In addition, researchers in most of these studies provided participants with specific instructions to either intentionally ruminate or distract themselves prior to the speaking tasks. Additional research is needed to examine cognitive processes that occur without specific directions from the experimenter. Finally, these studies have relied solely on self-report measures when assessing the relationship between anticipatory processing and increases in state general anxiety. Research indicates that in addition to increases in subjective assessments of anxious arousal, social anxiety may also be associated with

increases in more objective physiological arousal (Beidel, Turner & Dancu, 1985). Although the link between social anxiety and physiological responding has not been found consistently (e.g., Mauss, Wilhelm & Gross, 2004; Stangier, Heidenreich & Schermellch-Engel, 2006), further investigation into the association of anticipatory processing with subjective and objective measures of anxious arousal is warranted.

The current study examines anticipatory processing prior to an anticipated opposite-sex encounter with a stranger because such interactions are often an essential aspect in the development of romantic relationships (e.g., preparing for a blind date or speaking to a potential romantic partner in a public setting). Specifically, the study examines anticipatory processing in both high (face-to-face interaction with an observer present) and low-threat (anonymous instant messaging interaction) conditions. In addition, participants will not be provided with any instructions regarding what they should think about prior to the interaction. Finally, the current study investigates the relationship between anticipatory processing and changes in state general anxiety, as measured by self-report and physiological data collection techniques.

Characteristics of the social situation. Rapee and Heimberg (1997) suggest that observer and situational characteristics play an important role in the assumptions made by adults with social anxiety in various social situations. They propose that adults with high trait social anxiety compare a mental representation of how they believe they are seen by others with the performance expectations that they believe those others hold them to in a given situation. A discrepancy between the perceived expectations of others and the

self's perceived characteristics in that situation can negatively influence the cognitions and behaviors of adults with social anxiety.

Anxiety responses often vary depending on the characteristics of the social situation, including the presence or absence of observers and the type of interaction (e.g., giving a speech in class, speaking on the phone, sending an e-mail). Prior studies using structured interviews and daily behavioral diaries reveal that levels of self-reported state general anxiety and avoidance are greater for formal versus informal public speaking and in opposite-sex versus same-sex interactions (Dodge, Heimberg, Nyman, & O'Brien, 1987; Turner, Beidel, Dancu, & Keys, 1986). Other studies have used laboratory interactions to examine how the characteristics of a social situation can influence the behavioral responses associated with social anxiety. Thompson and Rapee (2002) found that females with high levels of social anxiety perform better in structured versus unstructured interaction tasks. Alden and Bieling (1998) divided participants into high and low socially anxious groups and randomly assigned them to either a positive or negative social evaluative situation. A group x condition interaction indicated that in the negative situation individuals in the high social anxiety group were rated as less appropriate and likable than non-anxious individuals but did not differ significantly from non-anxious individuals in the positive situation. Thus, the behavior of adults with social anxiety can vary depending on the specific characteristics of a given social situation.

In one of the few studies examining social anxiety in a romantic context, Wenzel, Graff-Dolezal, Macho, and Brendle (2005) prompted romantically involved couples to participate in conversations on positive, negative, or neutral topics. The interactions were

videotaped and behaviors were coded on a scale from "very negative" to "very positive." Individuals with social anxiety displayed more "very negative" behaviors in the negative condition and fewer "positive" behaviors across all conditions, again suggesting that the behavior of adults with social anxiety is at least somewhat dependent on the demands of a given social situation.

Existing studies have not explored the role of observers and the social environment in heterosexual dating initiation situations. Although Wenzel and colleagues (2005) examined anxiety in a romantic context, the participants in that study were already partners in existing dyadic relationships as opposed to adults attempting to initiate relationships with opposite-sex strangers. In addition, most studies examining adults with high levels of social anxiety have only considered how the characteristics of social situations affect overt behavioral responses without also exploring cognitive processes. Additional research is needed to examine whether differences in the social characteristics of various opposite-sex dating initiation situations affect the cognitive and behavioral processes associated with social anxiety.

Conclusion. Social anxiety is associated with difficulties in forming and maintaining satisfying adult romantic relationships (cf., Hart et al., 1999). These difficulties may be related to some of the cognitive and behavioral processes associated with social anxiety. For example, adults with social anxiety make negative interpretations of ambiguous social cues and experience excessive anticipatory processing in general social situations (c.f., Stopa & Clark, 2000; Vassilopoulos, 2004). In addition, observer and situational characteristics can play a role in the expression of

anxiety-related behavioral symptoms (Alden & Bieling, 1998; Thompson & Rapee, 2002; Wenzel et al., 2005). The current project, therefore, extends previous research by further exploring the associations between social anxiety and cognitive and behavioral processes.

CHAPTER III

GOALS AND HYPOTHESES

The current study expands upon the current literature in a number of ways. Previous research has found evidence for negative interpretation of ambiguous social cues, anticipatory processing and the utilization of avoidant behaviors for adults with high levels of trait social anxiety in general social interactions. The current research examined these processes in a specific type of social situation – heterosexual dating initiation. In addition, the current study investigated how characteristics of the social situations in which different mixed-sex interactions occur relate to the cognitions and behaviors associated with trait social anxiety. Extending research on anticipatory processing, the current study examined how participants process information prior to an anticipated opposite-sex interaction and investigated the relationship between anticipatory processing and state anxiety using self-report as well as physiological data collection techniques. Finally, the current research conceptualizes social anxiety as a continuous construct and examines cognitive and behavioral processes in a normative university sample.

Hypothesis 1 explores the differential effects that characteristics of the social situation have on the relationship between a) negative interpretation of ambiguous social cues and social anxiety and b) avoidant responding and social anxiety. Hypotheses 1a and 1b anticipate that negative interpretations of ambiguous social cues and avoidant responding will each positively predict social anxiety, and that the strength of these

relationships will depend on the degree to which opposite-sex interactions imply dating initiation. Hypothesis 2 examines anticipatory processing using two different methods. Hypothesis 2a posits that anticipatory processing will positively predict social anxiety and that this relationship will be moderated by characteristics of the social situation (i.e., anticipating an in-person interaction versus anticipating a computer-based instant messaging interaction). Hypothesis 2b explores the correlation of anticipatory processing with state anxiety; levels of state anxiety, measured via questionnaire and physiological monitoring equipment, are expected to be positively correlated with levels of anticipatory processing.

CHAPTER IV

METHODS

Participants

Participants were undergraduate students in the psychology pool at the University

of North Carolina at Greensboro. The literature indicates that romantic relationships

become increasingly important during adolescence and early adulthood (Connolly, Craig,

Goldberg, & Pepler, 2004), making college undergraduates a seemingly ideal population

in which to study dating initiation. Participant ages ranged from 18 years 0 months to 20

years 10 months old ($M = 18.98$, $SD = .74$). After conducting an a priori power analysis,

it was determined that approximately 100 participants would be needed to detect a

medium effect size for planned analyses. One hundred seventeen participants took part in

the data collection; however, seven identified themselves as not being heterosexual, two

exceeded the age limit, and eight had missing data. The final sample was comprised of

100 participants: 75 Caucasians, 13 African Americans, 8 Asian/Pacific Islanders, 3

Multiracial, and 1 Hispanic. This racial and ethnic composition is representative of the

general undergraduate population at the University of North Carolina at Greensboro

(UNCG). Because the psychology pool at UNCG is predominately female, two separate

sections were conducted (one using male participants and one using female participants)

to ensure that the final sample included an equal number of males and females. All

participants identified their current marital status as "single/never married." At the time

of data collection, 26 males and 20 females indicated that they were not currently

involved in a monogamous romantic relationship, 9 males and 11 females indicated that they were currently involved in a monogamous romantic relationship that had been ongoing for fewer than six months, and 15 males and 19 females indicated that they were currently involved in a monogamous romantic relationship that had been ongoing for six months or more.

Procedure

Research assistant training. Undergraduate research assistants (RA's) were provided with training manuals that included data collection procedures, written scripts, and copies of all measures. In addition, RA's attended multiple training sessions during which they practiced data collection techniques, including use of blood pressure cuffs. Following the initial training session, RA's were given blood pressure cuffs to take home and practice using on themselves. Finally, RA's completed video-taped "dress rehearsals" of complete data collection sessions prior to participating in actual data collection. All data were collected in the Child and Family Assessment Lab in Room 275 of the Eberhart building on the campus of UNCG. RA's were matched with same-sex participants to reduce the potential for participants to respond in a socially desirable manner. One additional male undergraduate from another psychology lab was hired to assist with data collection for the male section of the study. Participant names were not included on any questionnaires and all data were kept in a locked filing cabinet in the Child and Family Assessment Lab after data collection was completed.

Data collection. When the participant arrived, he or she was given a consent form, which he or she had to sign prior to participating in the study. After the participant

signed the consent form, the RA explained the digital blood pressure cuffs and helped the

participant to correctly place the monitors around his or her wrist.   The RA then

collected the first set of physiological data, and the participant completed the first

Subjective Experience of Anxiety Questionnaire (SEAQ). The participant had been

seated for approximately five minutes prior to the collection of this initial set of self-

report and physiological data.

The participants then completed the questionnaire and interview portion of the

study. The SPS/SIAS, BDI-II, Dating History Questionnaire, and the GADQ-IV were

counterbalanced across participants. For half of the participants, the Dating Situations

Interview (DSI) was administered first followed by the questionnaire packet. For the

remainder of the participants, the DSI followed the questionnaires.

As soon as the participant completed the SPS/SIAS, the RA scored it while the

participant completed the remaining questionnaires. Norms obtained from previous mass

screenings at UNCG using the seven-point SPS/SIAS provided quartile cut-off scores.

The RA used these cut-off scores to match participants according to level of trait anxiety

and assign them to either the high threat (i.e., in person) or low threat (i.e., instant

messaging) interaction condition for the second portion of the study. This matching

procedure ensured that each experimental condition was completed by an equal number

of high and low-social anxiety participants.

After the participant completed the DSI and all questionnaires, the RA collected

the second set of physiological data and the participant completed the second SEAQ.

The participant was then informed that he or she would begin the second portion of the

study. If one participant was in a data collection session, then the second portion of the study began immediately. If two participants were in the session, then participants were first separated before beginning the second portion of the study. One participant was taken into a second lab room across the hall from 475 Eberhart. Depending on the condition to which the participants were assigned, the RA read one of the following two threat-induction scripts:

(1) (High Threat Condition) For the second part of the study, we are interested in learning how girls/boys think and feel prior to and while meeting a guy/girl for the first time. In a few minutes you will be meeting an undergraduate guy/girl. You will have a brief amount of time to get acquainted with him/her. Once you have been introduced, you can talk about whatever you would like.

(2) (Low Threat Condition) For the second portion of this study, we are interested in learning how girls/guys think and feel prior to and while carrying on an IM conversation with a guy/girl they have never met before. In a few minutes, I will log you onto the computer and you will be carrying on an anonymous online chat with an undergraduate guy/girl. You will be provided with a screen name to use during the chat. You will have a brief amount of time to get acquainted with him/her. Once you are logged on you can talk about whatever you would like.

Following the threat induction, the RA collected the third set of physiological data and the participant completed the third SEAQ. Then, following a previously developed script, the RA informed the participant that there would be a brief delay while the RA

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went to another part of the building to see if the participant's partner for the upcoming interaction was ready. The RA then left each participant alone for five minutes. Upon returning, the RA informed the participant that the interaction partner was not quite ready and that there would be time to complete one more blood pressure check and questionnaire before beginning the interaction. The RA collected the fourth set of physiological data and the participant completed the fourth SEAQ. After completing the SEAQ, the participant completed the Anticipatory Social Behaviors Questionnaire (ASBQ), which assessed the level and content of anticipatory processing in which the participant engaged during the five-minute wait period. The RA asked the participant to complete the ASBQ while the RA went to another part of the building to check on the participant's interaction partner. Upon returning, the RA collected the ASBQ and informed the participant that he or she would not have to complete the interaction portion of the study due to time constraints. The RA then collected the final set of physiological data and the participant completed the fifth SEAQ. The RA then completed the manipulation check by asking the participant to rank how much he or she had believed that he or she would be participating in a social interaction. Finally, the RA debriefed the participant, explaining the background and purposes of the study and asking that the participant not discuss the details of the study with other UNCG undergraduate students.

Measures

     Social Phobia Scale and Social Interaction Anxiety Scale (SPS/SIAS; Mattick & Clarke, 1998*).* The SPS and SIAS are complementary self-report measures designed to assess two dimensions of social anxiety. The SPS is a 20-item self-report measure that

assesses fears of being scrutinized during routine activities (e.g., writing in front of others, eating in front of a stranger at a restaurant). The SIAS, which is also comprised of 20 self-report items, measures fears of general social interaction (e.g., meeting people at parties, mixing with co-workers). Mattack and Clarke (1998) indicate that the SPS and SIAS show high intercorrelation ($r = .72$) and suggest that, whereas these scales are designed to assess two separate types of social fears (i.e., scrutiny fears and interaction anxiety), they should be used together as "companion measures" when assessing social anxiety (Mattick & Clarke, 1998, p. 469). This assertion is supported by Safren, Turk and Heimberg (1998) who report that items on the SPS and SIAS, when subjected to a hierarchical factor analysis, load onto a single higher-order factor (i.e., social anxiety). A revised version of this scale that has been administered regularly during UNCG mass screenings was used for the current study. Items are rated on a seven-point Likert scale from 1 ("Strongly disagree") to 7 ("Strongly agree"). The SPS and SIAS demonstrate good internal consistency (α's ranging from .86 - .94; Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992; Mattick & Clarke, 1998; Osman, Gutierrez, Barrios, Kopper, & Chiros, 1998) and 4 to 12 week test-retest reliability (r's ranging from .66 - .93; Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992; Mattick & Clarke, 1998; see Appendix A for complete SPS/SIAS).

Dating Situations Interview (DSI). This interview assesses participant interpretations and behavioral responses in a variety of ambiguous heterosexual dating initiation situations. The DSI was designed specifically for this study and is based on previous questionnaires used to study interpretative biases (e.g., Stopa & Clark, 2000).

Vignettes describe heterosexual interaction situations that differ in the degree to which a potential dating initiation situation is implied. Experts in clinical psychology and social anxiety provided feedback on the initial vignettes and response choices. An initial form of the questionnaire with 22 items was administered to 23 undergraduate psychology students who rated the degree to which each item implied a dating situation. Based on this pilot data, 12 items were selected subsequently for inclusion in the final interview. Specifically, six heterosexual interaction items that were ranked as strongly implying a potential dating initiation situation (e.g., "You are talking to an attractive guy in one of your classes following the final exam of the spring semester. You ask him if he would like to come over and watch a movie with you that night and he says that he can't") and six items ranked as only weakly implying a potential dating initiation situation (e.g., "Your instructor assigns a project for your class that can be completed either individually or in groups and tells the students to form their own groups before the next class. After class, you are walking alone down the hall when you notice that an attractive guy from the class is walking beside you. You ask him if he would like to join your project group. He declines") were included. Although these vignettes are titled Dating and Non-Dating vignettes, all situations on the DSI are intended to describe heterosexual interactions that could potentially lead to dating but they differ in the degree of romantic intimacy implied in the context of the situations.

The DSI requests that participants provide open-ended interpretations and possible behavioral responses to the vignettes. In addition, each vignette is accompanied by positive (e.g., "He would like to work with you, but has already agreed to join another

group"), negative (e.g., "He does not want to work with you") and neutral (e.g., "He prefers to work alone") interpretations as well as proactive (e.g., "I would try to convince him to join us"), avoidant (e.g., "I would not mention it again") and neutral (e.g., "I would tell him that he would be welcome to join us if he changes his mind") responses. Participants rate each of the three forced-choice interpretations based on the likelihood that each interpretation would be their initial thought if they were in the situation described in the vignette. Participants also rate each of the three forced-choice responses based on the likelihood that they would respond in the manner described in each forced-choice response. Ratings are made on a five-point Likert scale with 1 = "Not at all likely" and 5 = "Extremely likely." Scores for the DSI can be derived for four subscales: Negative Interpretations in Dating Situations (DSI-NID), Negative Interpretations in Non-Dating Situations (DSI-NIND), Avoidant Responding in Dating Situations (DSI-ARD) and Avoidant Responding in Non-Dating Situations (DSI-ARND; see Appendix B for complete DSI).

Anticipatory Social Behaviours Questionnaire (*ASBQ;* Hinrichsen & Clark, 2003). The ASBQ is a 12-item questionnaire that assesses cognitive strategies used by participants in anticipation of social situations. Items are rated on a four-point scale, with 0 = "Not at All" and 3 = "A lot." An example item is "I rehearse conversations in my mind." The original ASBQ is intended to assess participants' retrospective reporting of cognitions *typically* experienced prior to an anxiety-provoking social situation. The ASBQ was modified for this study so that verb tenses were changed from present to past tense (e.g., "I rehearsed conversations in my mind"), to assess participants' cognitions

prior to an anticipated opposite-sex interaction. Internal consistency for the original

ASBQ is high (α = .88; Hinrichsen & Clark, 2003; see Appendix C for complete ASBQ).

Dating History Questionnaire. This brief self-report questionnaire was developed

for this study to collect basic demographic and dating history information. Questions

assess sex, age, race, sexual orientation and dating background (e.g., current relationship

status, number of dates in the previous year, duration of the longest monogamous

relationship). Responses on this questionnaire were used to control for the possible

effects of current relationship status on measures of social anxiety used in the current

study (see Appendix D for complete DHQ).

Beck Depression Inventory-II (*BDI-II;* Beck, Steer, & Brown, 1996). The BDI-II

is a well-validated 21-item measure commonly used to assess severity of depressive

symptoms. Items are rated on a scale from zero to three, with item scores summed to

produce a total score ranging from 0 to 63. Internal consistency is high (α = .93 in a

college sample, α = .92 in an outpatient sample; Beck et al., 1996) and Dozois, Dobson

and Ahnberg (1998) found a high correlation between the BDI-II and the original BDI,

providing support for the convergent validity of the BDI-II.

Generalized Anxiety Disorder Questionnaire-IV (GADQ-IV; Newman, Zuellig,

Kachin, Constantino,Przeworski, Erickson, & Cashman-McGrath, 2002*).* The GADQ-IV

is a 9-item self-report measure designed as a screening measure for generalized anxiety

disorder based on DSM-IV criteria (American Psychological Association, 2000). This

measure contains a mixture of "Yes/No," listing, checklist, and Likert items and can be

used to provide a continuous measure of generalized anxiety symptoms. The GADQ-IV

has good internal consistency ($\alpha = .84$) and 2-week test-restest reliability ($r = .81$; Newman et al., 2002). The GADQ-IV demonstrates good discriminate validity with measures of social anxiety ($r = .34$) and post traumatic stress disorder ($r = .45$; Newman et. al., 2002; see Appendix E for full GADQ-IV).

Subjective Experience of Anxiety Questionnaire (SEAQ). The SEAQ was developed for this study based on the Symptom Questionnaire (Kellner, 1987), which is a 92-item instrument used to assess depression, anxiety, somatization and anger-hostility. The SEAQ is a more focused instrument containing 10 items that assess various affective, cognitive and somatic anxiety-responses occurring at the time the questionnaire is completed. Six of the items on the SEAQ serve as filler items (e.g., "I feel hungry," "I feel bored"). Two of the items – "I feel like my heart is beating faster than normal" and "I feel like my blood pressure is higher than normal" – are designed to allow for a comparison between participants' subjective assessment of physiological reactivity with objective measures (i.e., data collected using digital blood pressure cuffs). The scores from the remaining two items – "I feel nervous" and "I feel anxious" – are combined to assess participants' subjective impression of their anxiety. Participants are instructed to rate each item on the SEAQ using a seven-point Likert scale based on how they feel at the moment they complete the questionnaire. Possible ratings range from 1 = "Not at all" to 7 = Very Much." Participants completed the SEAQ at five time points during the data collection session: Baseline One (after completing consent forms), Baseline Two (after completing the questionnaire portion of the study), Post Threat Induction (after learning about the social interaction), Post Anticipation (five minutes after learning about the

social interaction) and Baseline Three (after learning that there would be no social interaction; see Appendix F for full SEAQ).

Physiological Data. In addition to self-reports of anxiety, physiological data were collected to provide objective indices of anxiety for each participant during the study. Omron HEM-650 wrist-worn digital blood pressure cuffs were used to measure systolic blood pressure, diastolic blood pressure, and heart rate. Physiological measures were taken prior to completion of the SEAQ at five time points during the data collection session. Prior to data collection, research assistants and the principle investigator completed multiple self-assessments using the blood pressure cuffs to develop a working knowledge of proper equipment operation and to ensure accuracy of measurements. In addition, blood pressure cuffs were calibrated using heart rate and blood pressure monitoring equipment at UNCG student health services.

Manipulation Check. A manipulation check was completed to ensure that participants actually thought that they would be engaging in a social interaction. At the end of each data collection section, participants were asked: "On a scale from 1 to 5, with 1 being 'Not at all' and 5 being 'Completely,' how much did you believe that you were actually going to participate in an interaction today?" Participants' ratings of this question were recorded by research assistants and later analyzed to check for the effectiveness of the experimental manipulation. Following analysis of the manipulation check data, three participants who responded "Not at all" were eliminated from further analysis. Results of the remaining data indicated that the experimental manipulation was successful ($M = 4.01$, $SD = 1.10$).

CHAPTER V

RESULTS

Descriptive Statistics

      Cronbach's Alphas were computed for all relevant scales. Alphas for the BDI (α = .86), GADQ-IV (α = .81), and the combined SPS/SIAS (α = .95) were comparable to published norms (Beck et al., 1996; Newman et al., 2002; Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992; Mattick & Clarke, 1998; Osman, Gutierrez, Barrios, Kopper, & Chiros, 1998). Acceptable alphas were also obtained for the new and revised study scales including the ASBQ-R (α = .88), DSI-Negative Interpretations in Dating Situations (DSI-NID; α = .83); DSI-Negative Interpretations in Non-Dating Situations (DSI-NIND; α = .87); DSI-Avoidant Responding in Non-Dating Situations (DSI-ARND; α = .81) and DSI-Avoidant Responding in Dating Situations (DSI-ARD; α = .80). One item from the DSI-ARD subscale that displayed low inter-item correlation was deleted; its removal improved subscale reliability from α = .76 to α = .80.

      Means, standard deviations, and ranges for main scales are reported in Table 1. Descriptive statistics for the BDI and GADQ-IV are comparable to published norms. When compared to means and standard deviations from previous SPS/SIAS administrations to 1,284 undergraduates at UNCG (M = 124.92, SD = 39.36), data from the current study (M = 117.22, SD = 39.04) are comparable. Skew and kurtosis were calculated for relevant scales with all scales falling in the acceptable range.

Because research indicates differences between males and females on measures of anxiety and depression (cf., Habke, Hewitt, Norton & Asmundson, 1997), independent samples t-tests were conducted to examine potential sex differences in the current sample. Significant differences were detected for levels of depression $t(98) = 2.04$, $p <$ .05 and generalized anxiety $t(98) = 2.24$, $p < .05$, with females (BDI-II: $M = 9.78$, $SD =$ 6.98; GADQ-IV: $M = 16.12$, $SD = 6.86$) on average scoring higher than males (BDI-II: $M = 7.60$, $SD = 6.34$; GADQ-IV: $M = 12.94$, $SD = 7.33$). Differences in levels of social anxiety showed a trend toward significance $t(98) = 1.93$, $p = .06$, with females ($M = 124.64$, $SD = 40.78$) again scoring higher than males ($M = 109.80$, $SD = 36.11$).

T-tests were also conducted to examine potential differences between participants attending single-participant data collection sessions and those attending two-participant sessions. Descriptive data indicated that 66 participants attended two-participant sessions, 30 participants attended single-participant sessions and the status of 4 participants could not be determined due to record keeping error on the part of session administrators. Results indicate a difference between participants attending single-participant ($M = 107.40$, $SD = 34.89$) and two-participant ($M = 122.21$, $SD = 41.18$) sessions in levels of trait anxiety (SPS/SIAS) that approached significance ($t(94) = -1.71$, $p = .09$). This difference was most likely due to random factors and probably contributed to other differences noted between participants attending single versus two-participant sessions. Specifically, significant differences identified for subjective measures of state anxiety (SEAQ) at Baseline 1 ($t(94) = -2.05$, $p < .05$; single-participant sessions $M = 4.43$, $SD = 2.31$; two-participant sessions $M = 5.50$, $SD = 2.39$) and Post

Threat Induction 2 (t(94) = -1.98, p =.05; single-participant sessions M = 5.13, SD = 2.71; two-participant sessions M = 6.45, SD = 3.15) most likely reflect higher levels of trait anxiety on average for participants attending the two-participant sessions.

Table 2 presents the zero-order correlations among the main study variables. Level of social anxiety was correlated positively with level of depression (r = .57, p < .01) and with level of generalized anxiety (r = .60, p < .01). Social anxiety was correlated positively with negative interpretations in dating situations (DSI-NID: r = .54, p < .01) and non-dating situations (DSI-NIND: r = .52, p < .01). These variables were correlated moderately with levels of depression (DSI-NID: r = .35, p < .01; DSI-NIND: r = .35, p < .01), and generalized anxiety (DSI-NID: r = .36, p < .01; DSI-NIND: r = .34, p < .01). Social anxiety was also correlated positively with avoidant responding in dating situations (DSI-ARD: r = .43, p < .01) and non-dating situations (DSI-ARND: r = .45, p < .01). As with negative interpretations, avoidant responding in both types of heterosexual interaction situations was correlated moderately with levels of depression (DSI-ARDS: r = .28, p < .05; DSI-ARNDS: r = .32, p < .01) and generalized anxiety (DSI-ARDS: r = .27, p < .05; DSI-ARNDS: r = .29, p < .01).

Negative Interpretations and Social Anxiety

Hypothesis 1 predicted that aspects of the characteristics of social situations would have differential effects on the relationships between a) negative interpretation of ambiguous social cues and social anxiety and b) avoidant responding and social anxiety. Hypothesis 1a and 1b anticipated that negative interpretations of ambiguous social cues and avoidant responding would each positively predict social anxiety and that strength of

these relationships would depend on the degree to which opposite-sex interactions implied dating initiation. Using hierarchal regression, demographic variables (i.e., age, race, biological sex, and dating relationship status) were entered in Step 1. Levels of depressive (BDI-II) and generalized anxiety (GADQ-IV) symptoms were entered in Step 2. In Step 3, scores for negative interpretations in non-dating situations (DSI-NIND) were added. Finally, scores for negative interpretations in dating situations (DSI-NID) were added in Step 4. Results of this analysis are presented in Table 3. The addition of negative interpretations in dating situations accounted for a significant amount of the variability in social anxiety when controlling for all other variables, including negative interpretations in non-dating situations ($R^2 \Delta = .03$, $F(1,91) = 4.86$, $p < .05$). This finding suggests that, as levels of social anxiety increase, adults are more likely to negatively interpret ambiguous social cues that occur in dating situations, even above and beyond their tendency to do so in non-dating situations. In the full model, three variables contributed significantly to the prediction equation: depressive symptoms ($t(91) = 2.18$, $p < .04$), generalized anxiety symptoms ($t(91) = 2.70$, $p < .01$), and negative interpretations in dating situations ($t(91) = 2.21$, $p < .04$).

The regression model used in this analysis examined a single group on two continuous predictor variables (i.e., all 100 participants completed the DSI and thus have scores on both the dating and non-dating subscales). Because of the design of this model, and because the question of interest was whether different situational characteristics (i.e., dating versus non-dating situations) differentially affect the relationship between negative interpretations and social anxiety, the method outlined by Chatterjee and Hadi (2006),

rather than methods outlined by Baron & Kenny (1986) and Aiken and West (1991) for testing interactions, was employed. Using the Chatterjee and Hadi (2006) method, the slope of the regression line for the full model containing separate variables for negative interpretations in dating and non-dating situations was compared to the slope of the regression line for the reduced model in which the variable for negative interpretations in dating situations was combined with the variable for negative interpretations in non-dating situations. Results of this analysis indicated that the full model did not explain a significant amount of variance above the reduced model (F (1,91) = .47, p > .05). This result suggests that different situational characteristics did not differentially affect the relationship between negative interpretations and social anxiety.

Avoidant Responding and Social Anxiety

The same analyses used to test hypothesis 1a were repeated for Hypothesis 1b (See Table 4). Avoidant responding in non-dating situations accounted for a significant amount of the variability in social anxiety when controlling for the effects of demographic variables, depression, and generalized anxiety (R^2 Δ = .07, F (1,92) = 12.54, p < .01). However, the addition of avoidant responding in dating situations failed to increase the predictive ability of the model (R^2 Δ = .00, F (1,91) = .76, p > .05). In the full model, only depression (t (91) = 2.32, p < .05) and generalized anxiety (t (91) = 3.12, p < .01) contributed significantly to the prediction equation. No follow-up tests for moderation were conducted as the final model produced no significant main effects for avoidant responding in either non-dating or dating situations.

Because the subscales of the DSI were moderately to highly correlated, follow-up regression analyses were conducted to examine the possibility of increased predictive ability if the dating and non-dating subscales of the DSI were combined. Using the overall scale scores for the DSI instead of separate subscale scores resulted in significant prediction of social anxiety by both negative interpretations (F (1,92) = 22.41, p <.01) and avoidant responding (F (1,92) = 13.30, p <.01). Results of these regression analyses are presented in Tables 5 and 6. These findings suggest that the DSI may be most useful as a measure of negative interpretations and avoidant responding across different types of heterosexual social interactions.

Anticipatory Processing and Social Anxiety

Hypothesis 2a explored the association between anticipatory processing and social anxiety. Hierarchal regression analysis was used to examine this relationship (See Table 7). In Step 1, demographics and current relationship status were entered as dependent variables with social anxiety entered as the dependent variable. In Step 2, depression and generalized anxiety were entered. In Step 3, a dummy variable was entered for participant assigned condition (i.e., in-person versus IM conversation), and in Step 4 the degree of anticipatory processing was added. In Step 5, the method described by Baron and Kenny (1986) was used to test for moderation. A product term for the interaction of anticipatory processing and condition was calculated and added to the regression equation. Results of the regression analysis indicated that anticipatory processing added significantly to the prediction of social anxiety (R^2 Δ = .04, F (1,91) = 7.65, p < .01) even when controlling for the effects of depression and generalized anxiety.

The test for moderation, however, revealed that the interaction of anticipatory processing and condition assignment did not add significantly to the model ($R^2 \Delta = .00$, $F(1,90) = .00$, $p > .05$). This finding indicates that participants with higher levels of social anxiety did not experience increased levels of anticipatory processing in the high threat condition significantly more than did participants with lower levels of social anxiety.

Hypothesis 2b predicted that biased anticipatory processing would be correlated positively with increases in self-report anxiety levels and physiological responding from baseline to five-minutes following threat induction. Self-reported levels of state anxiety for each participant, as measured by the Subjective Experience of Anxiety Questionnaire (SEAQ), blood pressure and heart rate were recorded at five points during the study. Scores on the SEAQ, systolic blood pressure measurements, diastolic blood pressure measurements and heart rate measurements at Baseline 2 (just prior to threat induction) were subtracted from scores at Post Threat Induction 2 (following the five-minute anticipation period) to calculate the self-reported anxiety, blood pressure and heart rate change scores. The change in self-reported anxiety from Baseline 2 to Post Threat Induction 2 was significantly correlated with anticipatory processing ($r = .23$, $p < .05$); however, no linear correlation between anticipatory processing and changes in systolic blood pressure ($r = .04$, $p = .67$), diastolic blood pressure ($r = .06$, $p = .53$) or heart rate ($r = .01$, $p < .90$) were found. The zero-order correlation between anticipatory processing and change in self-report anxiety from Post Threat Induction 1 (just following threat induction) to Post Threat Induction 2 (following the five-minute anticipation period) was also examined. The result of this analysis found that changes in self-report anxiety

following the five-minute wait period were not correlated with anticipatory processing (r = .10, p > .05).

To further examine the relationship between anticipatory processing and self-reported levels of state anxiety as measured by the SEAQ, a hierarchical regression analysis was conducted (See Table 8). In Step 1, demographic and dating status variables were entered as independent variables and self-reported anxiety following the five-minute wait period was entered as the dependent variable. In Step 2, scores from the BDI-II and GADQ-IV were entered to control for the effects of depression and generalized anxiety. In Step 3, a dummy variable for condition assignment (i.e., in person versus instant messaging interaction) was entered, and in Step 4 self-reported anxiety at baseline was entered. In Step 5, scores from the SPS/SIAS were entered, and anticipatory processing was entered in Step 6. Results indicated that anticipatory processing accounted for a significant amount of the variance in self-reported anxiety following the five-minute waiting period when controlling for baseline levels of state anxiety, depression, generalized anxiety, and trait social anxiety (R^2 Δ = .03, F (1,88) = 5.37, p < .05). This result suggests that overall levels of anticipatory processing predict self-reported anxiety following the five minute waiting period over and above trait social anxiety.

Three regression analyses identical to the analysis predicting self-report anxiety were conducted substituting heart rate, systolic blood pressure and diastolic blood pressure as dependent variables to examine the relationship between anticipatory processing and physiological reactivity,. A significant relationships was not found between anticipatory processing and heart rate (R^2 Δ = .00, F (1,85) = .06, p = .803),

systolic blood pressure ($R^2 \Delta = .00$, $F(1,85) = .00$, $p = .959$) or diastolic blood pressure ($R^2 \Delta = .00$, $F(1,85) = .01$, $p = .905$). These findings suggest that anticipatory processing may be associated with subjective, but not physiological, experiences of anxiety as an anticipated social interaction approaches.

Because the regression analyses suggested a discrepancy between self-report and physiological data, additional analyses were conducted. For the sake of parsimony, self-report and heart rate data from three crucial time points (i.e., just prior to threat-induction, immediately following threat-induction, and immediately following the five-minute anticipatory period) were examined. Mean scores for self-report levels of state anxiety as measured by the Subjective Experiences of Anxiety Questionnaire (SEAQ) were analyzed in a three-way Time (three time points described previously) by Group (high versus low social anxiety) by Condition (in-person versus instant messaging) repeated measures ANOVA, with group and condition as between-groups factors and time as a within-groups factor. Analyses indicated significant main effects for time ($F(1.79,169.79) = 35.17$, $p < .01$) and group ($F(1,95) = 21.83$, $p < .01$), and a significant time by group interaction ($F(1.79,169.79) = 8.00$, $p < .01$). To further examine the significant interaction, two SEAQ change scores were calculated by subtracting SEAQ at Time 2 (prior to threat induction) from SEAQ at Time 3 (just following threat induction), and SEAQ at Time 3 (just following threat induction) from SEAQ at Time 4 (just following the five-minute anticipatory period). Post hoc t-tests indicated a significant difference in the change in self-report anxiety between the high and low social anxiety

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groups from Time 2 to Time 3 ($t(97) = -3.69$, $p < .01$) and from Time 3 to Time 4 ($t(98) = -2.46$, $p < .05$).

Mean scores for heart rate were analyzed in a second three-way Time by Group by Condition repeated measures ANOVA, with group and condition as between-groups factors and time as a within-groups factor. Analyses indicated no significant main effects but a significant time by condition interaction ($F(2,184) = 6.79$, $p < .01$). To further examine the significant interaction, two heart rate change scores were calculated by subtracting heart rate at Time 2 (prior to threat induction) from heart rate at Time 3 (just following threat induction), and heart rate at Time 3 (just following threat induction) from heart rate at Time 4 (just following the five-minute anticipatory period). Post hoc t-tests indicated a significant difference in the change in heart rate between the in-person and instant messaging conditions from Time 2 to Time 3 ($t(94) = -3.27$, $p < .01$) and from Time 3 to Time 4 ($t(94) = -3.19$, $p < .01$). These findings indicate that although changes in self report state anxiety were associated with social anxiety but not with condition assignment, changes in heart rate were associated with condition assignment but not with social anxiety.

CHAPTER VI

DISCUSSION

General Discussion

Whereas previous studies have examined the cognitive and behavioral processes associated with social anxiety across general social situations, the current study adopted a more situation-specific approach by examining those processes in heterosexual dating initiation situations. Dating relationships are particularly salient during adolescence and early adulthood (Connolly, Craig, Goldberg, & Pepler, 2004), and the association between social anxiety and cognitive processing prior to and during dating initiation situations may contribute to the maintenance of social anxiety in these specific types of social situations. Results support the tenets of existing cognitive and cognitive-behavioral models (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997), which suggest that multiple cognitive and behavioral processes help to maintain social anxiety. Specifically, anticipatory processing predicted social anxiety prior to an opposite-sex interaction and also predicted increased levels of self-reported state anxiety, but not physiological reactivity, five minutes following threat induction. In addition, participant responses to a series of vignettes depicting various dating initiation situations indicated that negative interpretations of ambiguous social cues and avoidant responding predicted trait social anxiety. Contrary to predictions, however, results provided little evidence supporting differential effects of characteristics of the social situation on the relationship between cognitive and behavioral processes and social anxiety. Implications and limitations of these findings are discussed.

Prior to entering into an anticipated interaction with an opposite-sex peer, participants with high levels of social anxiety were more likely than those with low levels of social anxiety to ruminate excessively about the impending social encounter. Supporting previous findings by Hinrichsen and Clark (2003), participants in the current sample endorsed that the content of their ruminations included recalling memories of previous failed social interactions as well as detailed planning and rehearsal for the upcoming interaction. As a result of this anticipatory processing, levels of state anxiety were maintained at a high level relative to that of participants who engaged in lower levels of anticipatory processing over a five minute period prior to the anticipated social interaction. These findings extend previous research examining anticipatory processing prior to public speaking tasks (Hinrichsen & Clark 2003; Vassilopoulos, 2005) by providing evidence that anticipatory processing also contributes to the maintenance of high levels of self-reported anxiety prior to opposite-sex interactions. Although participants in the current study did not actually participate in a social interaction, results suggest that, due to excessive anticipatory processing, adults with social anxiety enter into opposite-sex interactions with elevated subjective feelings of anxiety. In addition, detailed planning for and rehearsal of social encounters cause them to enter into these situations with a detailed script of how they should behave. The combination of these factors – increased anxious arousal and a rigid behavioral script – may reduce the potential for success in the actual interaction, leading to the exact types of social rejection that adults with high levels of social anxiety are attempting to avoid.

An additional finding of interest from the investigation of anticipatory processing was the inconsistency between participants' self-reports of anxiety and their actual measures of heart-rate and blood pressure. Despite increases in anticipatory processing and self-reported anxiety following threat induction, no relationship was found between anticipatory processing and physiological reactivity. In addition, whereas changes in self-reported state general anxiety were associated with trait social anxiety (SPS/SIAS), changes in heart rate were associated with condition assignment. Mixed results regarding the role of physiological reactivity in social anxiety have been reported in the literature (cf., Beidel, Turner & Dancu, 1985; Mauss, Wilhelm, & Gross, 2004). The current findings suggest that physiological reactivity may be more closely associated with tasks demands in opposite-sex interactions than with trait social anxiety.

In addition to evidence that maladaptive cognitive processes are associated with social anxiety prior to dating initiation situations, the current study also found that cognitive and behavioral processes predict social anxiety during dating initiation situations. Specifically, the tendency to negatively interpret ambiguous social cues in heterosexual interactions positively predicted levels of trait social anxiety. This trend was particularly true when comparing dating and non-dating situations. These results extend previous findings that adults with social anxiety negatively interpret ambiguous social cues in more general social situations (Stopa & Clark, 2000; Amir, Foa, & Coles, 1998; Voncken, Bogels, & Vries, 2004; Wilson & Rapee, 2005) In addition, the tendency to respond in an avoidant manner (e.g., end the interaction quickly and avoid further interactions) also positively predicted trait social anxiety. Negatively interpreting

the behaviors of potential dating partners may lead adults with social anxiety to perceive that they are being rejected, even when that may not be the case. When combined with subsequent avoidance of the potential dating partner, the socially anxious adult has no way to gather evidence to disconfirm the perceived rejection. These patterns of negative interpretations accompanied by behavioral avoidance greatly decrease the potential for exposure to dating initiation situations which in turn could result in a reduction of social anxiety.

Contrary to predictions, results of the current study did not find that characteristics of different heterosexual social situations differentially affected the relationship between cognitive-behavioral processes and social anxiety. Items on the Dating Situations Interview (DSI) were written and piloted to create two distinct types of heterosexual social situations: situations that strongly imply potential dating and situations that loosely imply potential dating. Presumably, situations that weakly imply dating should be less threatening than situations that strongly imply dating. However, participants in the current study apparently found both types of situations to be similarly threatening. Likewise, participants with high levels of social anxiety appear to have found the in-person and the IM interactions to be similarly threatening in the evaluative context of a psychology experiment. Additional research, perhaps using an ideographic approach, is needed to identify specific situational variables that differentiate levels of threat among various types of heterosexual interactions for adults with social anxiety.

Clinical Implications

Cognitive-behavioral treatments for social anxiety (cf., Hope, Heimberg, Juster & Turk, 2000) emphasize cognitive restructuring tasks as an important treatment component. Results of the current study lend additional empirical support to the link between maladaptive automatic thoughts and social anxiety. Specifically, results suggest that adults with social anxiety are likely to negatively interpret ambiguous behaviors from potential romantic partners. Failure to identify and dispute these negative interpretations is likely to result in avoidance and escape behaviors that will strengthen previously held assumptions and exacerbate feelings of anxiety in future interactions.

Whereas typical cognitive-behavioral treatments emphasize the importance of disputing dysfunctional thoughts, less attention is given to anticipatory processing. Results of the current study suggest that much of the thought content generated by adults with social anxiety prior to opposite-sex interactions included excessive planning, and not just negatively distorted ideas. For example, in addition to thinking about past failures and trying to suppress thoughts of the upcoming interaction, participants in the current study also rehearsed possible conversations, planned what they would say, thought about how they would look to others and tried to think of everything that might happen in the anticipated situation. This type of rumination presumably represents an attempt to control feelings of anxiety that were evoked by threat induction procedures.

In the current study, anticipatory processing maintained anxious affect at high levels even after participants with social anxiety had time to habituate to an impending social interaction. This finding supports the suggestions of third-wave cognitive-

behavioral theorists (e.g. Hayes & Smith, 2005; Eifert & Forsyth, 2005) that excessive cognitive control strategies may contribute to maintaining anxiety and increasing behavioral avoidance. Consequently, clinicians may consider including some third-wave strategies such as the use of metaphor, stories and paradox to "weaken the literal meaning of language and its connection with the self and behavioral actions" (Eifert & Forsyth, 2005, p. 103). Such strategies may help clients with social anxiety reduce the emotional impact of their anticipatory processing.

Limitations

The current study examined cognitive and behavioral processes associated with social anxiety prior to and during dating initiation situations. Although this study had a number of strengths, some limitations should be discussed. First, the Dating Situations Interview (DSI) is in the early stages of development and planned refinement of this instrument should improve its utility as a measure of contextually-bound (i.e., sensitive to situational characteristics among different types of heterosexual interactions) interpretations and behaviors. The dating and non-dating subscales of the DSI were developed to detect difference in opposite-sex dating initiation situations, ranging from classroom interactions with only limited implications for future dating to interactions taking place during an actual first date. The high correlations among the DSI subscales suggest that additional revision of some items may be needed to create vignettes describing more distinct opposite-sex interactions.

In addition, the physiological recording instruments used in the current study represent another possible limitation. Digital blood pressure monitors provided a

relatively unobtrusive and inexpensive method to gather blood pressure and heart rate data for this initial study into the effects of anticipatory processing on state anxiety. Future research should employ physiological recording instruments with increased sophistication and with the ability to continuously monitor physiological reactivity throughout an experiment.

A final limitation relates to the generalizability of the current findings. A university sample is well-suited for studying processes related to dating initiation, as late adolescence and early adulthood is a developmental time period during which intimate relationships are particularly important. However, university samples can be somewhat homogeneous in respect to educational background and life experiences. Additional research using community samples could provide useful information regarding the role of social anxiety in dating initiation in a more heterogeneous sample.

Future Directions

Future research is needed to examine the continuity of cognitive and behavioral processes prior to and during heterosexual interactions. In the current study, participants were asked to endorse several types of thoughts that they might have experienced while anticipating an opposite-sex interaction. Thought-listing techniques could be used to more clearly identify the idiosyncratic content of participants' thoughts as those thoughts occur. In addition, questions remain regarding the effect that increases in anxious arousal and detailed scripting and rehearsal have on adults with high levels of social anxiety when they actually enter into an opposite-sex social interaction. For example, having

participants engage in actual opposite-sex interactions could help examine the effects of anticipatory processing on subsequent behaviors.

By including an actual social interaction, future studies can also examine the role of information processing and behavior as participants are engaged in opposite-sex social exchanges. In the current study participants with high levels of social anxiety were more likely than those with low levels to negatively interpret ambiguous information presented in vignettes. Future research using confederates as interaction partners would allow for investigation of how adults interpret and respond to the ambiguous behaviors of others during an actual interaction. Also, social anxiety is most likely maintained through bi-directional processes, as the behaviors of the socially anxious adult elicit particular behaviors from interaction partners. Examining participants during actual interactions would allow for the observation of both participant and partner behaviors.

Conclusion

The current study adds to the literature on cognitive and behavioral processes associated with social anxiety in several ways. First, a situation-specific approach provided evidence that social anxiety is associated with negative interpretations and avoidant responding in heterosexual dating initiation situations. This association was significant even when controlling for the effects of depression and generalized anxiety. In addition, results indicated that social anxiety is associated with high levels of anticipatory processing prior to a mixed-sex social interaction, and that such processing maintains high levels of state anxiety.

REFERENCES

Aiken, L.S., & West, S.G. (1991). *Multiple regression: Testing and interpretation interactions.* Thousand Oaks, CA: Sage Publications, Inc.

Alden, L.E., & Bieling, P. (1998). Interpersonal consequences of the pursuit of safety. *Behaviour Research and Therapy, 36*, 53-64.

Alden, L.E., & Phillips, N. (1990). An interpersonal analysis of social anxiety and depression. *Cognitive Therapy and Research, 14*, 499-512.

American Psychiatric Association (2000). *Diagnostic and Statistical manual of mental disorders* (4th ed., Text Revision). Washington, DC: American Psychiatric Association.

Amir, N., Foa, E.B., & Coles, M.E. (1998). Negative interpretation bias in social phobia. *Behaviour Research and Therapy*, *36*, 945-957.

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173-1182.

Beck, A.T., Steer, R.A., & Brown, G.K. (1996). *Beck Depression Inventory manual* (2nd ed.). San Antonio. TX: Psychological Corporation.

Beidel, D.C., Turner, S.M., & Dancu, C.V. (1985). Physiological, cognitive and behavioral Aspects of social anxiety. *Behavioral Research and Therapy, 23,* 109-117.

Beidel, D.C., Turner, S.M., & Morris, T.L. (1999). Psychopathology of childhood social

    phobia. *Journal of the American Academy of Child and Adolescent Psychiatry,*

    38, 643-650.

Chatterjee, S. & Hadi, A.S. (2006). *Regression analysis by example.* New Jersey:

    John Wiley and Sons, Inc.

Clark, D.M. & Wells, A. (1995). A cognitive model of social phobia. In R. Heimberg,

    M. Liebowitz, D.A. Hope, & F.R. Schneier (Eds.), *Social phobia: Diagnosis,*

    assessment, and treatment. (pp. 69-93). New York: Guilford Press.

Connolly, J., Craig, W., Goldberg, A., & Peepler, D. (2004). Mixed-gender groups,

    dating, and romantic relationships in early adolescence. *Journal of Research on*

    Adolescence, 14, 185-207.

Constans, J.I., Penn, D.L., Ihen, G.H., & Hope, D.A. (1999). Interpretive biases for

    ambiguous stimuli in social anxiety. *Behaviour Research and Therapy, 37*, 643-

    651.

Darcy, K., Davila, J., & Beck, J.G. (2005). Is social anxiety associated with both

    interpersonal avoidance and interpersonal dependence? *Cognitive Therapy and*

    Research, 29, 171-186.

Davila, J., & Beck, J.G. (2002). Is social anxiety associated with impairment in close

    relationships? A preliminary investigation. *Behavior Therapy, 33*, 447-464.

Dodge, C.S., Heimberg, R.G., Nyman, D., & O'Brien, G.T. (1987). Daily heterosocial

interactions of high and low socially anxious college students: A diary study. *Behavior*

Therapy, 18, 90-96.

Dozois, J.A., Dobson, K.S., & Ahnberg, J.L. (1998). A psychometric evaluation of the Beck

Depression Inventory – II. *Psychological Assessment, 10*, 83-89.

Eifert, G.H. & Forsyth, J.P. (2005). *Acceptance and commitment therapy for anxiety*

disorders. Oakland, CA: New Harbinger Publications.

Ginsburg, G.S., La Greca, A.M., & Silverman, W.K. (1997). Social anxiety in children

with anxiety disorders: Relation with social and emotional functioning. *Journal*

of Abnormal Child Psychology, *26*, 175-185.

Habke, A.M., Hewitt, P.L., Norton, G.R., & Asmundson, G. (1997). The social phobia and

social interaction anxiety scales: An exploration of the dimensions of social anxiety

and sex differences in structure and relations with pathology. *Journal of*

Psychopathology and Behavioral Assessment, 19, 21-39.

Hart, T.A., Turk, C.L., Heimberg, R.G., & Liebowitz, M.R. (1999). Relation of marital

status to social phobia severity. *Depression and Anxiety, 10*, 28-32

Hayes, S.C. & Smith, S. (2005). *Get out of your mind and into your life.* Oakland, CA:

New Harbinger Publications.

Hinrichsen, H., & Clark, D.M. (2003). Anticipatory processing in social anxiety: two

pilot studies. *Journal of Behavior Therapy and Experimental Psychiatry, 34*, 205-

218.

Heimberg, R.G., Mueller, G.P., Holt, C.S., Hope, D.A., & Liebowitz, M.R. (1992). Assessment of anxiety in social interaction and being observed by others: The Social Interaction Anxiety Scale and the Social Phobia Scale. *Behavior Therapy*, *23*, 53-73.

Hope, D.A., Heimberg, R.G., Juster, H.R., & Turk, C.L. (2000). *Managing social anxiety: A cognitive-behavioral therapy approach.* United States: Graywind Publications.

Kellner, R. (1987). A symptom questionnaire. *The Journal of Clinical Psychiatry, 48*, 268-274.

La Greca, A.M., & Lopez, N. (1998). Social anxiety among adolescents: Linkages with peer relations and friendships. *Journal of Abnormal Child Psychology, 26*, 83-94.

Mattick, R.P., & Clarke, J.C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy*, *36*, 455-470.

Mauss, I.B., Wilhelm, F.H., & Gross, J.J. (2004). Is there less to social anxiety than meets the eye? Emotion experience, expression, and bodily responding. *Cognition and Emotion, 18*, 631-662.

Newman, M.G., Zuellig, A.R., Kachin, K.E., Constantino, M.J., Przeworski, A., Erickson, T., & Cashman-McGrath, L. (2002). Preliminary reliability and validity of the Generalized Anxiety Disorder Questionnaire-IV: A revised self-report diagnostic measure of generalized anxiety disorder. *Behavior Therapy, 33*, 215-133.

Osman, A., Gutierrez, P.M., Barrios, F.X., Kopper, B.A., & Chiros, C.E. (1998). The

    social phobia and social interaction anxiety scales: Evaluation of psychometric

    properties. *Journal of Psychopathology and Behavioral Assessment, 20*, 249-264.

Rapee, R.M., & Heimberg, R.G. (1997). A cognitive-behavioral model of anxiety in

    social phobia. *Behavioral Research and Therapy, 35*, 741-756.

Safren, S.A., Turk, C.L., & Heimberg, R.G. (1998). Factor structure of the Social Interaction

    Anxiety Scale and the Social Phobia Scale. *Behaviour Research and Therapy, 36*,

    443-453.

Sanderson, W.C., DiNardo, P.A., Rapee, R.M., & Barlow, D.H. (1990). Syndrome

    comorbidity in patients diagnosed with a DSM-III-R anxiety disorder. *Journal of*

    Abnormal Psychology, 99, 308-312.

Stangier, U., Heidenreich, T. & Schermellch-Engel, K. (2006). Safety behaviors and social

    performance in patients with generalized social phobia. *Journal of Cognitive*

    Pyschotherapy, 20, 17-31.

Stopa, L. & Clark, D.M. (2000). Social phobia and interpretation of social events.

    Behavior Research and Therapy, 38, 273-283.

Tanner, R.J., Stopa, L., & De Houwer, J. (2006). Implicit views of the self in social anxiety.

    Behaviour Research and Therapy, 44, 1397-1409.

Thompson, S., & Rapee, R.M. (2002). The effect of situational structure on the social

    performance of socially anxious and non-anxious participants. *Journal of Behavior*

    Therapy, 33, 91-102.

Turner, S.M., Beidel, D.C., Dancu, C.V., & Keys, D.J. (1986). Psychopathology of social

    phobia and comparison to avoidant personality disorder. *Journal of Abnormal*

    Psychology, 95, 389-394.

Twentyman, C.T. & McFall, R.M. (1975). Behavioral training of social skills in shy males.

    Journal of Consulting and Clinical Psychology, 43, 384-395.

Vassilopoulos, S.P. (2004). Anticipatory processing in social anxiety. *Behavioural and*

    Cognitive Psychotherapy, 32, 303-311.

Vassilopoulos, S.P. (2005). Anticipatory processing plays a role in maintaining social

    anxiety. *Anxiety, Stress, and Coping, 18*, 321-332.

Vernberg, E.M., Abwender, D.A., Ewell, K.K., & Beery, S.H. (1992). Social anxiety and

    peer relationships in early adolescence: A prospective analysis. *Journal of*

    Clinical Child Psychology, 21, 189-196.

Voncken, M.G., Bogels, S.M., & de Vries, K. (2004). Interpretation and judgmental

    biases in social phobia. *Behaviour Research and Therapy*, *41*, 1481-1488.

Wenzel, A. (2002). Characteristics of close relationships in individuals with social

    phobia; A preliminary comparison with nonanxious individuals. In J.H. Harvey &

    A. Wenzel (Eds.), *Maintaining and enhancing close relationships: A clinician's*

    guide (pp. 199-213). New York: Lawrence Erlbaum Associates.

Wenzel, A., Graff-Dolezal, J., Macho, M., & Brendle, J.R. (2005). Communication and

    social skills in socially anxious and nonanxious individuals in the context of romantic

    relationships. *Behaviour Research and Therapy, 43*, 505-519.

Wilson, J.K., and Rapee, R.M. (2005). Interpretative biases in social phobia: Content specificity and the effects of depression. *Cognitive Therapy and Research, 29*, 315-331.

APPENDIX A. MEASURES

DSI-F

I am going to read you a series of situations in which it is not quite clear what is happening. Following each situation, I will ask you a series of questions. For each question, you should answer with the <u>first thing</u> that comes to your mind without thinking for too long. Remember that there are no correct or incorrect answers, so just answer as truthfully as possible. Throughout the interview, any time you hear the phrase "an attractive guy," assume that this refers to a male <u>whom you would be attracted to and whom you would be interested in dating</u>.

1.   You are at a party when you run into an attractive guy from one of your classes. As the party is winding down you are talking with a group of people that includes the attractive guy. You ask him if he would like to have dinner with you the next night, but he says that he can't.

Why?

On a scale from 1 to 5, rate each of the following possible explanations for the situation described based on how likely each explanation would be to be **the first** explanation to come to your mind. Be sure to consider all of the explanations before completing the ratings.

a)   He is not interested in spending time with you.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

b)   He already has plans, but might be interested in going out with you some other time.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

c)   He has an important class project that he needs to finish.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

If you were in the situation described, how would you respond?

On a scale from 1 to 5, rate each of the following possible responses based on how likely you would be to respond in the way described. Be sure to consider all of the responses before completing the ratings.

a)   I would ask him if he would be interested in going out next weekend.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
     1   2   3   4   5

b)   I would say "maybe some other time" and see how he responds.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
     1   2   3   4   5

c)   I would just end the conversation as soon as possible.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
     1   2   3   4   5

2.   You are in the cafeteria eating with a group of friends. You notice Tom, an attractive guy from your class, apparently looking around for somewhere to sit. When he looks in your direction you wave and point to the empty seat at your table, but he doesn't acknowledge you.

Why?

On a scale from 1 to 5, rate each of the following possible explanations for the situation described based on how likely each explanation would be to be **the first** explanation to come to your mind. Be sure to consider all of the explanations before completing the ratings.

a)   He didn't notice you.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
     1   2   3   4   5

b)   He would like to sit with you, but he thinks you are waving to someone else.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
     1   2   3   4   5

c)   He doesn't want to sit with you.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
     1   2   3   4   5

If you were in the situation described, how would you respond?

On a scale from 1 to 5, rate each of the following possible responses based on how likely you would be to respond in the way described. Be sure to consider all of the responses before completing the ratings.

a) **I would wait to see if he looks in my direction and, if he does, then wave again.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
      1   2   3   4   5

b) **I would not look at him again and finish eating my lunch.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
      1   2   3   4   5

c) **I would call his name to get his attention.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
      1   2   3   4   5

3.   You are talking to an attractive guy in one of your classes following the final exam of the spring semester. You ask him if he would like to come over and watch a movie with you that night and he says that he can't.

Why?

On a scale from 1 to 5, rate each of the following possible explanations for the situation described based on how likely each explanation would be to be **the first** explanation to come to your mind. Be sure to consider all of the explanations before completing the ratings.

a) **He does not really like you.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
      1   2   3   4   5

b) **He already has other plans.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
      1   2   3   4   5

c) **He may be attracted to you but doesn't want to start dating someone at the end of the school year**.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
      1   2   3   4   5

If you were in the situation described, how would you respond?

On a scale from 1 to 5, rate each of the following possible responses based on how likely you would be to respond in the way described. Be sure to consider all of the responses before completing the ratings.

a) **I would ask if he would like to go out some other time.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
       1   2   3   4   5

b) **I would end the conversation and leave.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
       1   2   3   4   5

c) **I would try to find out why he declined by asking something like "oh, do you already have plans?"**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
       1   2   3   4   5

4. While attending a get-together at a friend's house, you are telling a story to a group of people that includes an attractive guy from one of your classes. In the middle of your story, you notice that the attractive guy is talking quietly to another guy in the group.

Why?

On a scale from 1 to 5, rate each of the following possible explanations for the situation described based on how likely each explanation would be to be **the first** explanation to come to your mind. Be sure to consider all of the explanations before completing the ratings.

a) **The other person asked him a question and he is responding.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
       1   2   3   4   5

b) **He is telling the other guy that he thinks you are attractive.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
       1   2   3   4   5

c) **He is bored with you and is not paying attention to what you are saying.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
       1   2   3   4   5

If you were in the situation described, how would you respond?

On a scale from 1 to 5, rate each of the following possible responses based on how likely you would be to respond in the way described. Be sure to consider all of the responses before completing the ratings.

a) **I would avoid him for the rest of the night.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
    1   2   3   4   5

b) **I would make eye contact with him and see what he does.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
    1   2   3   4   5

c) **I would finish my story and then try to initiate a conversation with him.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
    1   2   3   4   5

5.   Your first date with a guy from class is a dinner date with him, some of his friends, and their girlfriends. During dinner you are talking about your day and you notice that your date is glancing at his watch.

Why?

On a scale from 1 to 5, rate each of the following possible explanations for the situation described based on how likely each explanation would be to be **the first** explanation to come to your mind. Be sure to consider all of the explanations before completing the ratings.

a) **He is bored and is anxious for the date to end.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
    1   2   3   4   5

b) **He is thinking about asking you if you want to go to a movie with him after dinner, and he is making sure there is enough time.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
    1   2   3   4   5

c) **He is just wondering what time it is.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
    1   2   3   4   5

If you were in the situation described, how would you respond?

On a scale from 1 to 5, rate each of the following possible responses based on how likely you
would be to respond in the way described. Be sure to consider all of the responses before
completing the ratings.

**a)   I would ask him to tell me something about himself so that he could carry the
conversation.**

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
1   2   3   4   5

b)   I would stop talking.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
1   2   3   4   5

c)   I would say something like "I'm not keeping you out too late, am I?"

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
1   2   3   4   5

6.   Your instructor assigns a project for your class that can be completed either individually
        or in groups and tells the students to form their own groups before the next class. After
        class, you are walking alone down the hall when you notice that an attractive guy from
        the class is walking beside you. You ask him if he would like to join your project group.
        He declines.

Why?

On a scale from 1 to 5, rate each of the following possible explanations for the situation described
based on how likely each explanation would be to be **the first** explanation to come to your mind.
Be sure to consider all of the explanations before completing the ratings.

a)   He prefers to work alone.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
1   2   3   4   5

b)   He does not want to work with you.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
1   2   3   4   5

c)   He would like to work with you, but has already agreed to join another group.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
1   2   3   4   5

If you were in the situation described, how would you respond?

On a scale from 1 to 5, rate each of the following possible responses based on how likely you would be to respond in the way described. Be sure to consider all of the responses before completing the ratings.

a)   I would try to convince him to join us.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
         1   2   3   4   5

b)   I would not mention it again.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
         1   2   3   4   5

c)   I would tell him that he would be welcome to join us if he changes his mind.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
         1   2   3   4   5

7.   You have made plans to go on a date with an attractive guy from your class. He leaves you a voice mail the day of the date saying that he needs to cancel.

Why?

On a scale from 1 to 5, rate each of the following possible explanations for the situation described based on how likely each explanation would be to be **the first** explanation to come to your mind. Be sure to consider all of the explanations before completing the ratings.

a)   He has met someone else or changed his mind about wanting to date you.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
         1   2   3   4   5

b)   He must not feel up to being social tonight.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
         1   2   3   4   5

c)   He wants to go out, but something important has come up.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
         1   2   3   4   5

If you were in the situation described, how would you respond?

On a scale from 1 to 5, rate each of the following possible responses based on how likely you would be to respond in the way described. Be sure to consider all of the responses before completing the ratings.

a) **I would call him back to find out why he canceled.**

Not at all Likely	Only a little Likely	Somewhat Likely	Very Likely	Extremely Likely
1	2	3	4	5

b) **I would make sure to run into him in class and see what he says.**

Not at all Likely	Only a little Likely	Somewhat Likely	Very Likely	Extremely Likely
1	2	3	4	5

c) **I would steer clear of him until he contacts me**.

Not at all Likely	Only a little Likely	Somewhat Likely	Very Likely	Extremely Likely
1	2	3	4	5

8.   You are walking with a group of your friends to the cafeteria for lunch. You run into an attractive guy from one of your classes and some of his friends. You start talking and ask him if he and his friends would like to eat lunch with your group. He declines.

Why?

On a scale from 1 to 5, rate each of the following possible explanations for the situation described based on how likely each explanation would be to be **the first** explanation to come to your mind. Be sure to consider all of the explanations before completing the ratings.

a) **He might be interested in hanging out with you some other time when he isn't with his friends.**

Not at all Likely	Only a little Likely	Somewhat Likely	Very Likely	Extremely Likely
1	2	3	4	5

b) **He isn't interested in spending time with you outside of class.**

Not at all Likely	Only a little Likely	Somewhat Likely	Very Likely	Extremely Likely
1	2	3	4	5

c) **He has eaten lunch already.**

Not at all Likely	Only a little Likely	Somewhat Likely	Very Likely	Extremely Likely
1	2	3	4	5

If you were in the situation described, how would you respond?

On a scale from 1 to 5, rate each of the following possible responses based on how likely you would be to respond in the way described. Be sure to consider all of the responses before completing the ratings.

a) **I would end the conversation as quickly as possible and go eat.**

Not at all Likely	Only a little Likely	Somewhat Likely	Very Likely	Extremely Likely
1	2	3	4	5

b) **I would say "maybe some other time" and then go eat.**

Not at all Likely	Only a little Likely	Somewhat Likely	Very Likely	Extremely Likely
1	2	3	4	5

c) **I would ask him if he would want to do something with just me this weekend.**

Not at all Likely	Only a little Likely	Somewhat Likely	Very Likely	Extremely Likely
1	2	3	4	5

9. Several members of your class exchanged screen names in order to discuss class materials. One night you are instant messaging with an attractive guy from your class and discussing an upcoming exam. You tell him that tomorrow night several members of your class will be studying together in the library, and you invite him to join in with the group. He declines.

Why?

On a scale from 1 to 5, rate each of the following possible explanations for the situation described based on how likely each explanation would be to be **the first** explanation to come to your mind. Be sure to consider all of the explanations before completing the ratings.

a) **He would like to study with you, but he has already agreed to study with some other students.**

Not at all Likely	Only a little Likely	Somewhat Likely	Very Likely	Extremely Likely
1	2	3	4	5

b) **He is not interested in studying with you.**

Not at all Likely	Only a little Likely	Somewhat Likely	Very Likely	Extremely Likely
1	2	3	4	5

c) **He prefers to study alone.**

Not at all Likely	Only a little Likely	Somewhat Likely	Very Likely	Extremely Likely
1	2	3	4	5

If you were in the situation described, how would you respond?

On a scale from 1 to 5, rate each of the following possible responses based on how likely you would be to respond in the way described. Be sure to consider all of the responses before completing the ratings.

a)   I would tell him exactly when and where we were studying and let him know that he should join us if he changes his mind.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

b)   I would say "let me know if you change your mind."

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

c)   I would change the subject and end the conversation.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

10.   You are in the library studying for an exam with an attractive guy from one of your classes. You tell him that you need a snack to help you concentrate and you ask him if he would like to finish studying at a local pizza restaurant. He declines.

Why?

On a scale from 1 to 5, rate each of the following possible explanations for the situation described based on how likely each explanation would be to be **the first** explanation to come to your mind. Be sure to consider all of the explanations before completing the ratings.

a)   He is ready to go home and study some more on his own.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

b)   He is not interested in dating you and does not want you to get the wrong idea.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

c)   He is not hungry, but would be interested in doing something else with you if you ask.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

If you were in the situation described, how would you respond?

On a scale from 1 to 5, rate each of the following possible responses based on how likely you would be to respond in the way described. Be sure to consider all of the responses before completing the ratings.

a)   I would not mention getting together again.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
           1   2   3   4   5

b)   I would ask him if he would like to just come along while I get something.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
           1   2   3   4   5

c)   I would say "Maybe some other time," and see how he responds.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
           1   2   3   4   5

11.   Two nights ago you went out on a first date with an attractive guy from one of your classes. You are not sure how the first date went, so you decide to call your date to ask him if he would like to get together again on the upcoming weekend. He says that he can't.

Why?

On a scale from 1 to 5, rate each of the following possible explanations for the situation described based on how likely each explanation would be to be **the first** explanation to come to your mind. Be sure to consider all of the explanations before completing the ratings.

a)   You did something to make him not want to go out with you again.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
           1   2   3   4   5

b)   He already has plans for the weekend.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
           1   2   3   4   5

c)   He likes you a lot but wants to take things slowly.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
           1   2   3   4   5

If you were in the situation described, how would you respond?

On a scale from 1 to 5, rate each of the following possible responses based on how likely you would be to respond in the way described. Be sure to consider all of the responses before completing the ratings.

a)   I would suggest doing something on the following weekend.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

b)   I would end the conversation as quickly as possible.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

c)   I would say "well, maybe some other time" and see what he says.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

12.   You are at an Italian restaurant on a first date with an attractive guy from one of your classes, his best friend and his best friend's girlfriend. When you are giving your order to the waiter, you notice that your date whispers something to his best friend.

Why?

On a scale from 1 to 5, rate each of the following possible explanations for the situation described based on how likely each explanation would be to be **the first** explanation to come to your mind. Be sure to consider all of the explanations before completing the ratings.

a)   He is telling the other guy that he thinks that you are really fun.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

b)   He is asking where the restroom is.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

c)   He thinks that you said something foolish and is making a joke about it.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

If you were in the situation described, how would you respond?

On a scale from 1 to 5, rate each of the following possible responses based on how likely you would be to respond in the way described. Be sure to consider all of the responses before completing the ratings.

a)   I would not say anything.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

b)   I would ask him what he was whispering about.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

c)   I would wait until later and ask the other guy what my date had said.

Not at all Likely   Only a little Likely   Somewhat Likely   Very Likely   Extremely Likely
        1   2   3   4   5

Dating History Questionnaire

For the following items, dating is defined as a voluntary social activity with someone to whom you are attracted. To be considered a date, both parties involved should be aware that the social activity involves more than friendship and has the potential to develop into a romantic and/or sexual interaction. **All responses to the following questions are confidential. No names will be placed on this questionnaire.**

1) Age: _____ Years _____ Months

2) Ethnicity:
    _____ Asian/Pacific Islander
    _____ Black/African American/African Canadian
    _____ Hispanic
    _____ Native/Aboriginal
    _____ White/Caucasian
    _____ Multiracial
    _____ Other _____

3) Sex:
    _____ Female
    _____ Male

4) Sexual Orientation:
    _____ Straight
    _____ Gay
    _____ Lesbian
    _____ Bisexual
    _____ Transgender
    _____ Other _____

5) Current Marital Status:

    _____ Single/Never Married
    _____ Married
    _____ Divorced
    _____ Separated/Still Married
    _____ Widow/Widower

6) How many different people have you dated in the <u>last year</u>?
    _____ One

____ Two
____ Three
____ Four
____ Five
____ Six to ten
____ Eleven to fifteen
____ More than fifteen

7) Do you consider yourself to be currently involved in a monogamous dating relationship in which neither you nor your partner engage in dating with any other individuals?
    ____ Yes   ____ No

8) If you are currently involved in a monogamous dating relationship, how long have you been involved with your current partner?
    ____ One month or less
    ____ Greater than one month but less than six months
    ____ Six months to one year
    ____ Greater than one year but less than two years
    ____ Two years or more
    ____ Not Applicable (Not currently involved in a monogamous dating relationship)

9) If you are not currently involved in a monogamous dating relationship, how much time has passed since your last date?
    ____ Less than one week
    ____ One to two weeks
    ____ More than two weeks but less than one month
    ____ One month
    ____ Greater than one month but less than six months
    ____ Six months to one year
    ____ Greater than one year
    ____ I have never been on a date
    ____ Not Applicable (Currently involved in a monogamous dating relationship)

10) If you are not currently involved in a monogamous dating relationship, how many dates, with either the same person or with different people, have you had in the last month?
    ____ One
    ____ Two
    ____ Three
    ____ Four
    ____ Five
    ____ Six to ten

_____ Eleven to fifteen
_____ More than fifteen
_____ Not Applicable (Currently involved in a monogamous dating relationship)

11) If you are not currently involved in a monogamous dating relationship, when were you last involved in a monogamous dating relationship?
   _____ Six months or less from today
   _____ More than six months but less than one year from today
   _____ One year or more but less than two years from today
   _____ Two years or more from today
   _____ I have never been involved in a monogamous dating relationship
   _____ Not Applicable (Currently involved in a monogamous dating relationship)

12) If you are not currently involved in a monogamous dating relationship, how long were you involved in your most recent monogamous dating relationship before it ended?
   _____ One month or less
   _____ Greater than one month but less than six months
   _____ Six months to one year
   _____ Greater than one year but less than two years
   _____ Two years or more
   _____ I have never been involved in a monogamous dating relationship
   _____ Not Applicable (Currently involved in a monogamous dating relationship)

13) To the best of your memory, how long was/is your longest monogamous dating relationship?
   _____ One week or less
   _____ Greater than one week but less than six months
   _____ Six months to one year
   _____ Greater than one year but less than two years
   _____ Two years or more
   _____ I have never been involved in a dating relationship

14) Are you currently residing with your romantic partner?
   _____ Yes   _____ No

15) If you are currently residing with your romantic partner, what is the duration of the living arrangement?
   _____ One month or less
   _____ More than one month but fewer than six months
   _____ Six months to one year
   _____ More than one year
   _____ Not Applicable (Not currently residing with a romantic partner)

SEAQ

On a scale from 1 to 7, with 1 being "Not at All" and 7 being "Very Much," rate each of the following items based on the extent to which you are feeling what is described in the item **right now.**

	Not at All		**Somewhat**			**Very Much**	
1. Feeling nervous	1	2	3	4	5	6	7
2. Feeling cheerful	1	2	3	4	5	6	7
3. Feeling confident	1	2	3	4	5	6	7
4. Feeling like my heart is beating faster than normal	1	2	3	4	5	6	7
5. Feeling bored	1	2	3	4	5	6	7
6. Feeling like my hands are sweaty	1	2	3	4	5	6	7
7. Feeling hungry	1	2	3	4	5	6	7
8. Feeling aches or pains in my muscles	1	2	3	4	5	6	7
9. Feeling anxious	1	2	3	4	5	6	7
10. Feeling like my blood pressure may be higher than normal	1	2	3	4	5	6	7

APPENDIX B. TABLES

Table 1

Means, Standard Deviations, and Ranges of Main Study Measures

Measure	Mean	S.D.	Range	
			Minimum	Maximum
SPS/SIAS	117.22	39.04	40.00	196.00
DSI-NID	17.34	4.52	7.00	30.00
DSI-NIND	16.84	4.84	6.00	30.00
DSI-ARD	11.82	4.37	5.00	25.00
DSI-ARND	15.67	4.72	6.00	30.00
BDI-II	8.42	6.77	0.00	35.00
GADQ-IV	14.53	7.24	0.00	33.00
ASBQ	8.77	6.57	0.00	29.00

SPS/SIAS = Combined Total of Social Phobia Scale and Social Interaction Anxiety Scale; DSI NID = Dating Situations Interview – Negative Interpretations in Dating Situations Subscale; DSI-NIND = Dating Situations Interview – Negative Interpretations in Non-Dating Situations Subscale; DSI-ARD = Dating Situations Interview – Avoidant Responding in Dating Situations Subscale; DSI-ARND = Dating Situations Interview – Avoidant Responding in Non-Dating Situations Subscale; BDI-II = Beck Depression Inventory-II; GADQ-IV = Generalized Anxiety Disorder Questionnaire-IV; ASBQ = Anticipatory Social Behaviors Questionnaire.

Table 2

Zero-Order Correlations Between Main Study Variables

Measures	1	2	3	4	5	6	7	8
1. SPS/SIAS	__	.57**	.60**	.54**	.52**	.43**	.45**	.47**
2. BDI		__	.70**	.35**	.35**	.28**	.32**	.39**
3. GADQ-IV			__	.36**	.34**	.27*	.29**	.49**
4. DSI-NID				__	.78**	.64**	.65**	.41**
5. DSI-NIND					__	.66**	.75**	.31**
6. DSI-ARD						__	.79**	.19
7. DSI-ARND							__	.26**
8. ASBQ								__

Note. SPS/SIAS = combined score from the Social Phobia Scale and Social Interaction Anxiety Scale; BDI = Beck Depression Inventory-II; GADQ-IV =Generalized Anxiety Disorder Questionnaire-IV; DSI-NID = Dating Situations Interview-Negative Interpretations in Dating Situations Subscale; DSI-NIND = Dating Situations Interview-Negative Interpretations in Non-Dating Situations Subscale DSI-ARD = Dating Situations Interview-Avoidant Responding in Dating Situations Subscale; DSI-ARND = Dating Situations Interview Avoidant Responding in Non-Dating Situations Subscale; ASBQ = Anticipatory Social Behaviors Questionnaire.

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

Table 3

Hierarchical Regression Analysis Summary for Negative Interpretations in Dating and Non-Dating Situations Predicting Social Anxiety

_____

Step and Predictor Variable	B	SEB	ß	R^2	ΔR^2
Step 1				.05	
Age	-.29	.32	-.07		
Race	-.18	1.95	-.01		
Sex	-7.21	6.19	-.09		
Relationship Status	3.71	3.19	.09		
Step 2				.42	.37**
BDI-II	1.29	.59	.22*		
GADQ-IV	1.50	.56	.28**		
Step 3				.51	.09**
DSI-NIND	1.05	.96	.13		
Step 4				.54	.03*
DSI-NID	2.35	1.07	.27*		

Note. BDI-II = Beck Depression Inventory – II; GADQ-IV = Generalized Anxiety Disorder Questionnaire – IV; DSI-NIND = Dating Situations Interview – Negative Interpretations in Non-dating Situations Subscale; DSI-NID = Dating Situations Interview – Negative Interpretations in Dating Situations Subscale.

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

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Table 4

Hierarchical Regression Analysis Summary for Avoidant Responding in Dating and Non-Dating Situations Predicting Social Anxiety

Step and Predictor Variable	B	SEB	ß	R^2	ΔR^2
Step 1				.05	
Age	-.43	.34	-.10		
Race	.22	2.07	.01		
Sex	-1.17	6.16	-.02		
Relationship Status	3.86	3.33	.09		
Step 2				.42	.37**
BDI-II	1.43	.62	.25*		
GADQ-IV	1.79	.57	.33**		
Step 3				.49	.07**
DSI-ARND	1.62	1.03	.19		
Step 4				.50	.00
DSI-ARD	.98	1.12	.11		

Note. BDI-II = Beck Depression Inventory – II; GADQ-IV = Generalized Anxiety Disorder Questionnaire – IV; DSI-ARND = Dating Situations Interview – Avoidant Responding in Non-dating Situations Subscale; DSI-ARD = Dating Situations Interview – Avoidant Responding in Dating Situations Subscale.

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

Table 5

Hierarchical Regression Analysis Summary for Negative Interpretations (Combined Subscales) Predicting Social Anxiety

Step and Predictor Variable	B	SEB	ß	R^2	ΔR^2
Step 1				.05	
Age	-.31	.32	-.07		
Race	-.17	1.95	-.01		
Sex	-5.99	5.91	-.08		
Relationship Status	3.86	3.17	.09		
Step 2				.42	.37**
BDI-II	1.30	.59	.23*		
GADQ-IV	1.53	.55	.28**		
Step 3				.54	.11**
DSI-NITOT	1.66	.35	.38**		

Note. BDI-II = Beck Depression Inventory – II; GADQ-IV = Generalized Anxiety Disorder Questionnaire – IV; DSI-NITOT = Dating Situations Interview – Negative Interpretations Total.

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

Table 6

Hierarchical Regression Analysis Summary for Avoidant Responding (Combined Subscales) Predicting Social Anxiety

Step and Predictor Variable	B	SEB	ß	R^2	ΔR^2
Step 1				.05	
Age	-.42	.33	-.10		
Race	.33	2.03	.01		
Sex	-.93	6.09	-.01		
Relationship Status	3.90	3.31	.09		
Step 2				.42	.37**
BDI-II	1.45	.61	.25*		
GADQ-IV	1.79	.57	.33**		
Step 3				.50	.07**
DSI-ARTOT	1.31	.36	.29**		

Note. BDI-II = Beck Depression Inventory – II; GADQ-IV = Generalized Anxiety Disorder Questionnaire – IV; DSI-ARTOT = Dating Situations Interview – Avoidant Responding Total.

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

Table 7

Hierarchical Regression Analysis Summary for Anticipatory Processing Predicting Social Anxiety

Step and Predictor Variable	B	SEB	ß	R^2	ΔR^2
Step 1				.05	
Age	-.59	.35	-.13		
Race	.63	2.14	-.02		
Sex	-6.33	6.59	-.08		
Relationship Status	1.46	3.51	.03		
Step 2				.42	.37**
BDI-II	1.60	.63	.28*		
GADQ-IV	1.37	.64	.25*		
Step 3				.43	.00
Condition	-1.49	3.04	-.04		
Step 4				.47	.04**
ASBQ	10.05	3.74	.26**		
Step 5				.47	.00
Condition*ASBQ	.11	3.21	.00		

Note. BDI-II = Beck Depression Inventory – II; GADQ-IV = Generalized Anxiety Disorder Questionnaire – IV; ASBQ = Anticipatory Social Behaviors Questionnaire.

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

Table 8

Hierarchical Regression Analysis Summary for Anticipatory Processing Predicting Self-reported Anxiety Following Five-Minute Wait Period

Step and Predictor Variable	B	SEB	ß	R^2	ΔR^2
Step 1				.05	
Age	.04	.03	.11		
Race	.16	.17	.07		
Sex	.01	.51	.00		
Relationship Status	-.36	.27	-.10		
Step 2				.25	.19**
BDI-II	-.01	.05	-.01		
GADQ-IV	.01	.05	.01		
Step 3				.25	.00
Condition	.14	.47	.02		
Step 4				.44	.19**
SEAQ-Time 2	.53	.11	.43**		
Step 5				.48	.04**
SPS/SIAS	.02	.01	.22*		
Step 6				.51	.03*
ASBQ	.10	.05	.22*		

Note. BDI-II = Beck Depression Inventory – II; GADQ-IV = Generalized Anxiety Disorder Questionnaire – IV; SEAQ = Subjective Experience of Anxiety Questionnaire; SPS/SIAS = Social Phobia Scale/Social Interaction Anxiety Scale; ASBQ-R = Anticipatory Social Behaviors Questionnaire.

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