Interpersonal Features of Social Anxiety:
Examining the Role of Supportive Communication

A thesis presented to
the faculty of
the College of Arts and Sciences of Ohio University

In partial fulfillment
of the requirements for the degree
Master of Science

Danielle M. Cooper
April 2016

© 2016 Danielle M. Cooper. All Rights Reserved.
This thesis titled

Interpersonal Features of Social Anxiety:
Examining the Role of Supportive Communication

by

DANIELLE M. COOPER

has been approved for
the Department of Psychology
and the College of Arts and Sciences by

Timothy Anderson
Associate Professor of Psychology

Robert Frank
Dean, College of Arts and Sciences
Abstract

COOPER, DANIELLE M., M.S., April 2016, Clinical Psychology

Interpersonal Features of Social Anxiety: Examining the Role of Supportive Communication

Director of Thesis: Timothy Anderson

The present study examined how various interpersonal traits and social anxiety relate to the presence and quality of supportive communication behaviors. A sample of undergraduates ($n = 143$) completed measures of social anxiety, submissiveness, hostility, and prosocial tendencies. Participants then completed an analogue letter-writing task to directly assess supportive communication. Participants were instructed to write a letter of support electronically in response to a presumed anonymous peer who had sought support regarding a distressing situation. The letter-writing task was coded for emotional and informational categories from the Social Support Behavior Code as well as an overall impression code (agentic, communal). Results indicated a lack of relationship between all coded social support behaviors with social anxiety, hostility, submissiveness, and prosocial tendencies. However, social anxiety was positively associated with hostility, submissiveness and prosocial tendencies. Cluster analyses provided evidence for two interpersonal subtypes of socially anxious individuals: low hostility - high submissiveness (Cluster 1) and high hostility - high submissiveness (Cluster 2). Cluster 2 provided more agentic supportive behaviors (i.e., lower quality support) than Cluster 1. Together, results suggest a lack of relationship between both social anxiety and interpersonal traits with supportive communication. Several reasons are proposed for why
interpersonal characteristics were not mediated by this narrow context of social behavior. Findings may have implications for the classification and treatment of social anxiety.

**Keywords:** Social anxiety, supportive communication, interpersonal relationships, hostility, submissiveness, prosocial tendencies
# Table of Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>3</td>
</tr>
<tr>
<td>List of Tables</td>
<td>7</td>
</tr>
<tr>
<td>List of Figures</td>
<td>8</td>
</tr>
<tr>
<td>Chapter 1: Introduction</td>
<td>9</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>18</td>
</tr>
<tr>
<td>Chapter 2: Method</td>
<td>20</td>
</tr>
<tr>
<td>Participants</td>
<td>20</td>
</tr>
<tr>
<td>Measures</td>
<td>20</td>
</tr>
<tr>
<td>Procedure</td>
<td>25</td>
</tr>
<tr>
<td>Coder Training and Reliability</td>
<td>28</td>
</tr>
<tr>
<td>Data Analytic Plan</td>
<td>28</td>
</tr>
<tr>
<td>Chapter 3: Results</td>
<td>30</td>
</tr>
<tr>
<td>Missing Data</td>
<td>30</td>
</tr>
<tr>
<td>Descriptive Statistics</td>
<td>30</td>
</tr>
<tr>
<td>Tests of Main Hypotheses</td>
<td>31</td>
</tr>
<tr>
<td>Exploratory Analyses</td>
<td>32</td>
</tr>
<tr>
<td>Cluster Analysis</td>
<td>33</td>
</tr>
<tr>
<td>Chapter 4: Discussion</td>
<td>36</td>
</tr>
<tr>
<td>Social Anxiety and Social Support Behaviors</td>
<td>36</td>
</tr>
<tr>
<td>Interpersonal Traits and Social Support</td>
<td>41</td>
</tr>
<tr>
<td>Social Anxiety and Interpersonal Traits</td>
<td>42</td>
</tr>
</tbody>
</table>
List of Tables

Table 1. Means and Standard Deviations for Self-Report Measure…………………………...57
Table 2. Proportions of SSBC and Impression Codes……………………………………...57
Table 3. Gender Differences on Measures………………………………………………...58
Table 4. Correlations between study variables (Hypotheses 1-3) ………………………..59
Table 5. Analysis of Variance comparisons of the subtypes within social anxiety on hostility and submissiveness ………………………………………………………………60
Table 6. Analysis of Variance comparisons of the subtypes within social anxiety on self-report measures and social support behaviors………………………………………..60
Figure 1. Model examining social anxiety, communal/emotional support, hostility, and prosocial tendencies………………………………………………………………………………………..17

Figure 2. Model examining social anxiety, agentic/ informational support, and submissiveness…………………………………………………………………………………………….18
Chapter 1: Introduction

Social anxiety disorder (SAD) is a debilitating psychological disorder characterized by an intense and persistent fear of social evaluation (Heimberg, Brozovich, & Rapee, 2010). Much of the research on SAD has focused on the anxiety-related symptoms over the interpersonal aspects of the disorder. Among the most central features characterizing socially anxious individuals is their impairments in interpersonal interactions (e.g., Ruscio et al., 2008). Persons with SAD misperceive social information and display self-protective behaviors (e.g., Norton & Hope, 2001) and display a restricted communication style. In addition, individuals with SAD have fewer social relationships than those without SAD (Davidson, Hughes, George, & Blazer, 1994). Moreover, severity of social anxiety symptoms is related to fewer friends, higher rates of living alone, and lower involvement in social activities and clubs (Dahl, & Dahl, 2010). In addition to a smaller social network, individuals with high social anxiety have been shown to have fewer close relationships, including fewer friends, fewer dating and sexual relationships, and are less likely to get married than individuals with other anxiety disorders and the population in general (Schneier et al., 1994, Hart, Turk, Heimberg, & Leibowitz, 1999). Despite these extensive relationship difficulties, relatively little is known about the interpersonal characteristics and traits of persons with SAD as well as the influence these traits may have on actual communication behaviors. Research is needed to elucidate the specific mechanisms through which social anxiety influences dysfunctional interpersonal interactions.

Thus, the present study focused on the relationship between social anxiety, interpersonal traits and interpersonal communication behaviors. Specifically, there is
reason to believe that supportive communication behaviors are adversely affected in persons with SAD; for example, prior research has found an inverse relationship between social anxiety and social support (e.g., Porter & Chambless, 2014). In addition, several interpersonal traits suggested to be implicated in both social anxiety and social support, namely hostility, submissiveness, and prosocial tendencies, were examined as potential mediators.

Despite the established impairment in interpersonal relationships that characterizes individuals with problematic social anxiety (Ruscio et al., 2008), less is known regarding the specific interpersonal traits and behaviors implicated in social anxiety. Given the interpersonal nature of social anxiety, the interpersonal circumplex model provides a strong fit from which to understand the related problematic features. This model holds that all interpersonal behavior falls along two orthogonal dimensions, often referred to as communion and agency (Alden, Wiggins, & Pincus, 1990; Horowitz et al., 1997). Communion ranges from friendliness (or warmth) to hostility (or coldness), whereas agency ranges from dominance to submissiveness. Research has studied a broad range of applications of the interpersonal circumplex model across social interactions. For example, within psychotherapy research, Anderson, Knobloch-Fedders, Stiles, Ordonez, and Heckman (2012) found significant differences within psychotherapy processes based on levels of interpersonal hostility, where good psychotherapy processes (e.g., fewer interpretations and edifications, more reflections and questions) are characterized by low-hostile versus moderate-hostile interactions within both the therapists and patients.
Among the many forms of affiliative interpersonal behaviors falling within the interpersonal circumplex model, social support is an essential and defining aspect of adaptive relationship functioning. Specifically, the ability to provide and solicit support is central to relationship development and maintenance, and is a strong predictor of relationship satisfaction and stability (Pasch & Bradbury, 1998). Social support can be conceptualized as an overarching term encompassing the availability and presence of people we can depend on, and the communications from them that we are valued and cared about (Sarason, Levine, Basham, & Sarason, 1983). Research has differentiated between communal/emotional support (love) and agentic/esteem support (status), with the former communicating love, a sense of belonging, and acceptance, and the later aimed to increase feelings of efficacy and competence (Cobb, 1976). Given that the interpersonal model holds that interpersonal traits and social support both correspond to the two-dimensional space influencing all interpersonal interactions (Horowitz et al., 2001), interpersonal traits should influence social support behaviors. Given the need to further examine crucial components to interpersonal interactions within social anxiety, the circumplex model has implications for social anxiety as a construct and interpersonal behaviors social anxiety would predict.

To date, research examining social support and social anxiety has focused exclusively on the amount of social support, under the assumption that more social support is equivalent to better quality of support. However, research suggests that not all forms of social support are equally effective (Horowitz et al., 2001). Therefore, research is needed to distinguish among the different types of social support (e.g., providing empathy, giving advice). Specifically, research can examine supportive communication, a
subset of social support focused on the verbal and nonverbal messages that are expressed through social interactions to convey to another that they are valued and cared for. While initial research suggests that individuals with high social anxiety may provide, solicit, and receive less social support compared to those with low social anxiety (e.g., Meleshko & Alden, 1993; Porter & Chambless 2014), significant limitations remain. Research has yet to examine whether individuals with social anxiety may be more likely to display different types of social support communication (e.g., emotional, instrumental, esteem). According to the match hypothesis, certain types of problems elicit an optimal form of social support (Horowitz et al., 1997; Hotowitz et al., 2001). To understand social support, we can look to the intention and goal behind the communication. An individual who self-discloses a problem to another individual has a goal in mind, and is soliciting something from the listener. It can be argued that a supportive reaction is high quality when it is in line with the aims of the discloser. The support provider must discern the discloser’s wants, and respond in such a way as to fulfill the purpose of the supportive communication exchange. This correspondence between the support solicitation and support provision as a reflection of social support quality can thus be explained according to the match hypothesis. Based on such evidence, this study aimed to move beyond studying the mere presence of social support towards examining whether social anxiety may predict the type and quality of supportive communication. This is the first study that extended the focus to the quality of social support in relation to social anxiety severity. While existing literature has highlighted the essential role of social support in adaptive relationship functioning (e.g., Pasch & Bradbury, 1998), the vast majority of research relating to social anxiety has focused on perceived social support (e.g., Fincham &
Bradbury, 1990). For example, Torgrud, Walker, Murray, Cox, Chartier, and Kjernisted (2004) examined self-reported perceived social support among individuals seeking treatment for social anxiety disorder compared to a healthy control group and other non-clinical and clinical samples. Findings indicate that individuals with social anxiety disorder perceive less support from significant others and friends, and are less satisfied with the available social support in their social network compared to those without high social anxiety. Likewise, Cuming and Rapee (2010) found that high levels of social anxiety in women was associated with less perceived support from their significant others. Interestingly, this finding did not hold for men with high social anxiety. Taken together, these findings suggest that at least through self-reports, socially anxious individuals receive less social support and are unsatisfied with the available support. However, there currently remains a limited understanding of how individuals with social anxiety actually behave in supportive communication exchanges. Particularly within social anxiety, individuals tend to inaccurately recall their own interpersonal behaviors, thus making self-reports prone to biases (Dunkel-Schetter & Bennett, 1990).

Additionally, among the few studies examining actual supportive communication, research has solely focused on in-person dyadic exchanges. Particularly with the rise of technology, social information is often exchanged through a variety of formats, namely, skype, texting, social media sites (e.g., facebook, twitter, linked in), and online support groups. Arguably, the world has never been more connected, where younger generations are almost always accessible via some means. Today, social interactions increasingly take place through written electronic format to both develop and maintain relationships with close friends, romantic partners, acquaintances, anonymous others (e.g., an online support
group), and professional contacts. Therefore, future research is needed to incorporate other forms of common communication to accommodate this apparent shift, where social interactions are increasingly exchanged via written electronic means. Given the fear and avoidance of social interactions that characterize those with social anxiety, such individuals may be particularly likely to utilize online written exchanges as a “safe” means to engage in social communication. Written supportive communication may be an outlet for socially anxious individuals to interact with others without eliciting as significantly impairing anxiety, and thus may be better able to capture and measure their supportive communication capabilities. The present study aimed to tap into this neglected form of social communication within social anxiety research.

Based on preliminary evidence from behavioral observations and self-reports, socially anxious individuals may provide less social support to others, and fail to match the communication patterns of their partner (Meleshko et al., 1993; Porter et al., 2014; Rodebaugh et al., 2011). For example, results based on self-reports within an undergraduate student sample suggest that higher social anxiety in women, but not men, was associated with wanting, receiving, and providing less support. Additionally, women with high social anxiety also reported being less satisfied in their relationship and self-disclosing less to partners than woman with low social anxiety (Porter et al., 2014). Likewise, findings from Wenzel et al. (2005) suggest that individuals with high social anxiety display more “very negative communication” behaviors (e.g., blaming, put-downs) and fewer “positive” behaviors (e.g., feeling statements, compliments, conveying empathy) when interacting with another individual. Despite such promising findings, significant inconsistencies remain regarding gender differences (eg., Porter et al., 2014;
Rodebaugh et al., 2011). Prior research within the social support literature more broadly has demonstrated significant findings in men only, women only, both, and neither, with additional others only including one gender in their sample or having too few members of a gender to draw significant conclusions. Additionally, research examining marital interaction has suggested that women’s self-reports were more closely aligned with actual interpersonal functioning than men’s self reports (Kiecolt-Glaser & Newton, 2001). Such research suggests that women may more accurately perceive their own behaviors than men, which may have been skewing the data. This study aimed to utilize behavioral observation to examine whether gender moderated the effect of social anxiety on supportive communication.

The circumplex model is particularly advantageous in its aims to accommodate both behaviors and traits. In further drawing ties between interpersonal traits and supportive communication through the interpersonal circumplex model, one can look to the specific dimensions of communion and agency. Specifically, the trait hostility is closely aligned with the dimension of communion, whereas the trait submissiveness falls along the dimension of agency. Based on the circumplex model, highly hostile individuals would display low levels of communal support, whereas highly submissive individuals would display low levels of agentic support. In addition, prosocial tendencies stands out as a third trait long implicated in affiliative social interactions that falls on the opposite end of the communion dimension from hostility. The prosocial disposition refers to an enduring tendency to feel empathy and concern for other people, think about the wellbeing and needs of others, and behave voluntarily in a way that benefits others (Penner & Finkelstein, 1998). Thus, those with prosocial personalities tend to engage in
prosocial behavior, defined as a voluntary action intended to benefit others (Eisenberg, Fabes & Spinrad, 1998). Clearly, social support (and thus supportive communication), whose primary feature is to help others, falls within the domain of prosocial behavior. Research examining prosocial tendencies has provided evidence that stable individual differences exist and predict prosocial behavior (e.g., Eisenberg, Guthrie, Murphie, Shepard, & Cumberland, 1999). Thus, it can be postulated that prosocial tendencies would likewise predict high levels of communal support.

While research is needed to further clarify the relationship between these interpersonal traits and social anxiety, research suggests that socially anxious individuals would fall on the high end of the hostility and submissiveness dimensions (Alden, Wiggins, & Pincus, 1990). However, inconsistencies within the literature remain with regards to particular subtypes within social anxiety. For example, Cain, Pincus and Holforth (2010) suggest the subtypes of friendly-submissive and cold-submissive social anxiety. In contrast, Kachin, Newman, and Pincus (2001) found evidence for a group with difficulties in submissiveness and excessive warmth, and the other group with difficulties in dominance and hostility. The link between social anxiety and prosocial tendencies appears less clear. While some research suggests that individuals with high social anxiety are less likely to engage in prosocial behaviors than those with low social anxiety (e.g., Maner et al., 2007), others suggest that a desire to create good impressions, fit in, and affiliate with others would lead to a particularly strong motivation to engage in prosocial behavior for those with social anxiety (Gilbert et al., 2005). The present study aimed to clarify the relationship between social anxiety and these three interpersonal traits.
Despite inconsistencies in past literature with regards to the direction of the relationship between social anxiety and these interpersonal traits, it is clear that a relationship between social anxiety and the traits exists (e.g., Alden et al., 1990; Kachin et al., 2001; Cain et al., 2010). Likewise, initial research suggests a link between social anxiety and social support (e.g., Porter & Chambless, 2014). Given the link between interpersonal traits and social support proposed by the interpersonal model, coupled with the potential variance in hostility, submissiveness, and prosocial tendencies within social anxiety (e.g., Alden et al., 1990; Cain et al., 2010), it is possible that the interpersonal traits significantly account for the relationship between social anxiety and social support. The present study proposed an innovative model that had yet to be addressed in prior research, examining the relationship between social anxiety, interpersonal traits, and supportive communication (Figures 1 and 2).

![Figure 1. Model examining social anxiety, communal/emotional support, hostility, and prosocial tendencies.](image-url)
Figure 2. Model examining social anxiety, agentic/ informational support, and submissiveness.

**Hypotheses**

Hypotheses for the study were as follows. First, it was expected that social anxiety would be significantly related to the provision of social support behaviors in the letter-writing task (i.e. more agentic/informational; less communal/emotional). Second, we predicted that social anxiety would be positively associated with interpersonal trait measures of hostility and submissiveness, and negatively associated with prosocial tendencies. Third, we hypothesized that hostility would be negatively related and prosocial tendencies would be positively related to communal/emotional support provided, whereas submissiveness would be negatively related to agentic/informational support provided. Fourth, it was predicted that interpersonal traits would mediate the relationship between social anxiety and supportive communication. Specifically, hostility and prosocial tendencies would mediate the relationship between social anxiety and communal/emotional support (Figure 1) and submissiveness would mediate the relationship between social anxiety and agentic/ informational support (Figure 2).
In addition, there were several exploratory hypotheses. Specifically, it was predicted that gender would moderate the relationship between social anxiety, supportive communication behaviors, and interpersonal traits. Given the inconsistent findings within the literature, the hypothesis was exploratory in nature and did not predict directionality. Additionally, we predicted that social anxiety would be significantly related to the quantity of social support (i.e., word count and timing) and the specific sub-categories of social support behaviors from the SSBC (e.g., Empathy, Suggestion/Advice). Note that these sub-categories are exploratory because the behaviors are specific and numerous (and are comprised within the broader SSBC categories used as primary dependent variables of the main hypotheses). Given the limited research within the literature, the hypotheses were exploratory in nature.
Chapter 2: Method

Participants

A total sample of 174 undergraduate students participated in this study. Of these, 31 participants did not follow instructions correctly for the letter-writing task (e.g., providing a self disclosure of their own problem rather than providing support in response to the problem presented), leaving a total of 143 participants for the final sample.

A final sample of 143 Ohio University undergraduate students in the psychology subject pool (\(M\) age = 19.31; 98 women and 43 men) were recruited in exchange for course credit. Summary demographic data are presented in Table 1. The majority of participants self-identified as Caucasian (91.6%) followed by African American (3.5%), Latino (1.4%), American Indian (.7%), Asian (1.4%), and Other (.7%). Likewise, the majority of participants self-identified as being single (54.5%), followed by involved (10.5%), and exclusive (35%). Participants were recruited from Ohio University’s psychology subject pool in exchange for course credit.

Measures

See Appendix B for copies of the full measures

**Social Phobia Scale.** (SPS; Mattick & Clarke, 1998). The SPS is a 20-item self-report questionnaire assessing fear of public scrutiny (e.g. “I become anxious if I have to write in front of other people” and ‘I am worried people will think my behavior odd”). Respondents are asked to rate on a five-point scale the extent to which they feel each statement is characteristic of them from 0 “not at all characteristic or true of/for me” to 4 “extremely characteristic or true of/for me”. Scores on the 20 items are summed together
to create a total score ranging from 0 to 80, with higher scores representing greater anxiety. Strong internal consistency has been demonstrated in clinical, community, and undergraduate samples (αs range from .89 to .94; Mattick & Clarke, 1998), and adequate retest reliability (r = .66) in a sample of undergraduates with the second test administration 1-2 weeks following the initial administration (Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992). Additionally, SPS adequately discriminated among patients with anxiety disorders (social anxiety disorder, agoraphobia, simple phobia) and between individuals with social anxiety disorder and controls (undergraduate and community samples) (Mattick & Clarke, 1998). Strong internal consistency was demonstrated in the present study (α = .94). In addition, the SPS has a cutoff score of 27 or greater, suggesting clinically meaningful social anxiety (Peters, 2000). In examining the cut off score for SPS in the present study, 35.7% of the sample (N = 51) has clinically meaningful social anxiety.

**Prosocial Tendencies Measure.** (PTM; Carlo & Randall, 2002) The PTM is a 23-item self-report scale designed to measure prosocial behavioral tendencies. The PTM was designed to be used with an undergraduate student population and consists of ratings on a 5-point Likert-Type scale ranging from 1 “does not describe me at all” to 5 “describes me greatly”. The PTM was developed to measure prosocial tendencies based on items previously developed from prosocial behavioral and disposition scales. The PTM is composed of six subtypes of prosocial tendencies: public (4 items, α = 0.78), anonymous (5 items, s α = 0.85), dire (3 items, α = 0.63), emotional (4 items, α = 0.75), compliant (2 items, α = 0.80), and altruism (5 items, α = 0.74; Carlo & Randall, 2002). As stated by Carlo and Randall (2002), the composite score is calculated by averaging the PTM items
together (23 items, $\alpha = 0.73$). The total score ranges from 1-5, with higher scores indicating greater prosocial tendencies. Only the total score was used for the purpose of this study. The validation resulted in adequate model fit using confirmatory factor analysis and evidence from convergent validity with other questionnaires assessing prosocial behavior (Carlo & Randall, 2002). Strong internal consistency on the total score was demonstrated in the present study ($\alpha = .86$)

**Submissive Behavior Scale.** (SBS; Gilbert & Allan, 1994). The SBS is a 16-item self-report measure designed to assess the general presence of submissive behaviors. Each behavior is rated on a 5-point scale ranging from 0 (never) to 4 (always). Scores on the 16 items are summed together to create a total score ranging from 0 to 64, with higher scores indicating a greater use of submissive behaviors. The SBS has satisfactory internal consistency and test–retest reliability, and it has been shown to be strongly correlated with psychopathology in both clinical and non-clinical groups (Allan & Gilbert, 1997). This scale showed good reliability presenting a Cronbach’s alpha of 0.89, and a four-month test-retest reliability of .84, $p < .001$ with a student population (Gilbert et al., 1995). The SBS has also shown adequate internal consistency in both clinical and control (both $\alpha$s > .74) samples (Schneier et al., 2006). Strong internal consistency was demonstrated in the present study ($\alpha = .88$)

**Aggression Questionnaire.** (AQ; Buss & Perry, 1992). The AQ is a 29-item self-report measure designed to assess trait tendencies toward aggressive behavior. Participants rate how much each statement reflects their behavior and character on a 7-point Likert scale from 1 “not at all” to 7 “very much”. The scale is comprised of four subscales: physical aggression (9 items), verbal aggression (5 items), anger (7 items) and
hostility (8 items). Based on the interpersonal focus of the present study, only the hostility subscale was used. Hostility is focused on various domains of feeling cheated and unfairly treated, and mild paranoia such as wondering why people are nice to someone. The hostility score (AQ-H) is obtained by summing the items together, with a final score ranging from 8 to 56. Higher scores suggest more hostility. The hostility subscale has shown adequate internal consistency of .77, \( p < .001 \) and test-retest reliability with an interval of 9 weeks of .72, \( p < .001 \) with a student population (Buss & Perry, 1992). The AQ is validated in undergraduate student and adult samples (Bernstein & Gesn, 1997; Bryant & Smith, 2001; Buss & Perry, 1992; Gerevich, Bácskai, & Czobor, 2007; Harris, 1995). Strong internal consistency was demonstrated in the present study (\( \alpha = .91 \))

**Prosocial behavior letter task.** (Adapted from Dewall et al. (2006) and Mischkowsk et al. (in press). This task was used to directly elicit and assess supportive communication behaviors to an anonymous fellow student via the internet. Specifically, this task examined the quantity of social support, type of social support, and quality of social support. Quantity of support was assessed by the word count, time taken to write the letter, and whether the participant chose to send the letter. See procedures for details.

**Social Support Behavior Code.** (SSBC; Cutrona & Suhr, 1992, 1994; Suhr, J., Cutrona, C., Krebs, K., & Jensen, S., 2002; Suhr, 1990). An adaptation of the SSBC was used to measure social support behaviors in reference to help-intended dyadic interactions in which one member of the couple discloses a personal problem to the other. The SSBC assesses the frequency of occurrence of 25 individual behaviors that fall into the five types of social support provided by the helper/support provider to the
discloser/support receiver: emotional support (communicating empathy or caring), esteem support (communicating confidence in the other’s worth, competence, or ability to solve the problem), informational support (providing information about the problem, how to appraise the problem, or how to cope with the problem), tangible support (offering assistance or tangible resources to help solve the problem), and negative behaviors (sarcasm, criticism, disagreement, interruption, complaint, refusals to help).

Because our study did not collect data on nonverbal behaviors, based our coding decisions on the 24 verbal behaviors, and excluded the one nonverbal behavior of physical affection. Obviously, the present adaptation of the SSBC only required rating of text and not other content (e.g., non-verbal behaviors, which are part of the original manual). The five subscale scores were obtained. For the written letters in the present study, coders marked a slash to separate each scoring unit by utterance. In other words, each distinct thought/clause was a scoring unit. Final scores were computed by totaling the number of behaviors observed within that category divided by the number of thought units in the letter. Each final score reflected the proportion of behaviors observed within that category in the letter. In line with the original coding system, each verbal behavior category is mutually exclusive, in that only one behavior could be coded at a time. Likewise, the categories are not exhaustive, where the content that does not fit under any category was not coded. As an adaptation for the purpose of this study, coders also indicated whether their impression of the letter was highly agentic or highly communal in nature using two one-dimensional ordinal scales ranging from 1-7, where 7 indicated the most agentic or most communal coding. During the coder training, readings, definitions and examples of agentic and communal support were provided through reviewing
relevant literature and the SSBC manual. Type of support (e.g., agentic, communal, emotional, informational) and quality of support (i.e., higher quality = communal and emotional, lower quality = agentic and informational) were assessed via the SSBC. Given that the type of problem (i.e., a romantic relationship break-up) was communal (i.e., aiming for love, acceptance and understanding) as opposed to agentic (i.e., aiming for competency and to facilitate action), the optimal quality of support should match with communal (i.e., emotional) support as opposed to agentic (i.e., informational, tangible, esteem) support.

**Procedure**

Participants were recruited via an external online study posting on SONA systems (http://psychpool-ohio.sona-systems.com) that linked participants to Qualtrics Systems (https://ohiopsych.qualtrics.com/), through which the actual study responses were obtained. The study was advertised as the “Chain Letter Study.”

After explaining the study procedures, participants were asked to provide informed consent and to complete the study questionnaires (i.e., SPS; PTM; SBS; AQ-H). All measures were trait based, and were not influenced by the placement in the study. In addition, the participants were asked to complete two tasks that require an element of deception. All participants completed the same task, as this study did not have multiple conditions.

**Prosocial behavior letter task.** (Adapted from Dewall et al. (2006) and Mischkowski et al. (in press)

This task was used to directly elicit and assess supportive communication behaviors to an anonymous fellow student via the internet. Participants were told that “the last Ohio
University student to participate in the study (whose identity will remain anonymous) had disclosed a unique current personal issue, and each participant was told to respond to the scenario with a letter of “support” to the prior participant. The participant was given the opportunity to “send [the] anonymous letter of support” via email, which the participant was be led to believe would be received by the anonymous other Ohio University student participant with that specific problem. In actuality, all participants received the same proposed unique current personal issue scenario adapted from Dewall et al. (2006) and Mischkowski et al. (in press) to ensure standardization of the intended prosociality-eliciting stimulus. However, consistent with prior studies using this paradigm [e.g., Mischkowski et al, in press], the implied sex of the letter-writer was the same sex of the participant, which was self-reported at the beginning of the study. After the completion of the study questionnaires and tasks, the participants were debriefed regarding the elements of deception, and asked to provide post-study assent to analyze their responses from the letter writing task; all letter writing task data obtained from participants who did not provide post-study assent for their responses to be analyzed were deleted, and participants nonetheless received full credit. Participants’ letters were only reviewed by members of the research team.

**Prosocial Behavior Task Observational Rating.** Responses to this task were analyzed by measuring: time taken to write the response before moving on to the next portion of the study (i.e., time devoted to “helping”; to be timed using Qualtrics systems), the number of words written in the letter (i.e., amount of effort devoted to “helping”; to be assessed using an objective word-counting program), whether the participant chooses to “send” the letter or not when directly being asked following the task (i.e., committing a
perceived prosocial action) to be assessed by whether the participant selects this option in the Qualtrics survey, and finally, by the type of support and extent the type of problem matches with the optimal type of response according to the match hypothesis (Social Support Behavior Code, adapted).

The SSBC coding process was originally developed to apply to a videotaped or audiotaped couple dialogue. For the purpose of this study, where the method of supportive communication is provided via a written letter, the coding process was adapted slightly. The first step in the original coding process was to generate a transcript of the support provider’s utterances, and to mark a slash to indicate the end of each talk turn. The original SSBC coding followed instructions to code the transcribed recordings. Likewise, this adapted coding process similarly began with reviewing the text, and marking a slash to indicate the different segments to be coded. For this study, coders marked a slash to separate each scoring unit by utterance. In other words, each distinct thought/clause was a scoring unit. Before coding began, the entire letter was read once to gain a sense of the full letter. The coder then began to read the letter slowly, stopping to code each separate behavior. All behaviors from the letter were recorded on a coding sheet. Each thought unit was coded based on one of the 24 specific scoring categories within the 5 types of social support. Letters also received two overall codes ranging from 1-7 for the dimensions of agentic and communal support, where 7 indicated the highest overall impression of support as indicated by the coders.
Coder Training and Reliability. A clinical psychology graduate student and four undergraduate research assistants were trained with the coding system. Since late Spring 2015, coders met two to four times per month (i.e., approximately 7 months). The final codings were based off of the clinical psychology graduate student and one of the undergraduate research assistants, who obtained reliability on the 4 main social support codes (i.e., Emotional, Informational, Communal, Agentic) and many of the SSBC specific codes. See Appendix D for details on coder training and reliability.

For the initial reliability check, the SSBC category codes were reliably rated (i.e., Emotional and Informational; intraclass correlations from .73 to .76, p < .001). The impression codes were marginally reliably rated (i.e., Agentic and Communal; intraclass correlations from .57 to .59, p < .001). All subscales on the SSBC utilized by both coders were reliably rated (i.e., Suggestion/Advice, Teaching, Relationship, Sympathy, Empathy, Reassurance, and Compliment; intraclass correlations from .72 to .96, p < .001). For the second reliability check, both of the SSBC category codes were similarly reliably rated (intraclass correlations = .94, p < .001). The impression codes were reliably rated (intraclass correlations from .85 to 1, p < .001). With the exception of Compliment, all subscales utilized by both coders were reliably rated (i.e., Suggestion/Advice, Teaching, Relationship, Sympathy, Empathy, Reassurance; intraclass correlations from .72 to .96, p < .001). The infrequent use of the Compliment code may partially explain the lack of reliability achieved during the second reliability test.

Data Analytic Plan

Several preconditions must be met prior to testing for mediation (e.g., see Shrout & Bolger, 2002). Specifically, the independent variable (social anxiety) must be related
to the mediators (submissiveness, hostility, prosocial tendencies; hypothesis 2), and the mediators must be related to the dependent variables (social support: agentic, communal, informational, emotional; hypothesis 3). Additionally, we would examine the direct relationship between the independent variable (social anxiety) and the dependent variables (social support: agentic, communal, informational, emotional; hypothesis 1). Hypotheses 1 through 3 tested these pre-conditions with bivariate correlations using a critical alpha of .05.

If the pre-conditions for mediation (hypotheses 2 and 3) were met, we planned to test the indirect effect of social anxiety on social support via the interpersonal traits using Preacher and Hayes (2008) meditational models. See Appendix C for details on proposed mediation analyses.

In addition, correlations were conducted to test exploratory hypotheses examining the relationship between social anxiety, hostility, submissiveness and prosocial tendencies with the additional social support variables. Due to the large quantity of variables, we used a conservative $p < .01$. The decision rule was to plug in the significant variables into the conceptual model.
Chapter 3: Results

Missing Data

Given the central focus of the letter-writing task to the study, the decision rule was made to disqualify participants who did not correctly complete the letter-writing task. For example, some participants did not provide any response, whereas others misunderstood the instructions and wrote about their own personal problem rather than writing a letter of support in response to the provided prompt. For the self-report measures, the decision rule was made to replace missing values with the variable mean when there were no more than 10% of the values missing. In the final sample, all measures fell below the 10% of values missing. On the rare occasion when there were missing items, the series mean function was used to replace the missing values.

Descriptive Statistics

The mean SPS score for this sample ($M = 21.22, SD = 15.20$) is slightly higher, but comparable to other undergraduate sample scores ($M = 14.1, SD = 10.2$) and relatively smaller than the mean for individuals diagnosed with social anxiety disorder ($M = 40.0, SD = 16.0$) (Mattick & Clarke, 1998). Likewise, based on the cutoff score of 27 or greater on the SPS (Peters, 2000), 35.7% of the sample ($N = 51$) has clinically meaningful social anxiety. The mean SBS score was 41.78 ($SD = 9.78$) out of a possible 60 points. The mean PTM score was 2.90 ($SD = .53$) out of a possible 5 points. The mean AQ-H score was 22.05 ($SD = 10.44$) out of a possible 52 points. See Table 1 for means and standard deviations of self-report measures.

Table 2 displays the proportions of supportive behaviors (i.e., via the SSBC and overall impression codes) provided by participants in the letter-writing task. On average,
participants provided more informational support ($M = .65; SD = .30$) than emotional support ($M = .32; SD = .31$). The SSBC scores ranged from 0-1 where higher scores reflect a higher proportion of the type of support provided. Likewise, on average, participants provided more agentic support ($M = 5.36; SD = 1.18$) than communal support ($M = 2.75; SD = 1.46$). These overall impression codes range from 1-7, where higher scores reflect more of the type of support provided.

Skewness and kurtosis were examined for the variables analyzed within the results. All of variables (except one) were within recommended limits of normality (-2 to +2 for skew and kurtosis). The exception was barely above 2 and given the numerous variables, we believe that there was no need to take corrective action for this one instance.

**Tests of Main Hypotheses**

Table 4 displays correlations between all study variables. According to Hypothesis 1, social anxiety would be significantly related to provision of social support that is both more agentic/informational and less communal/emotional. Contrary to Hypothesis 1, there were no significant correlations between the social support provided via codings and the SPS scores.

According to Hypothesis 2, social anxiety would be positively associated with interpersonal trait measures of hostility and submissiveness, and negatively associated with prosocial tendencies. As expected, the AQ-H was positively correlated with the SPS, $r = .34, p < .001$. Likewise, the SBS was positively correlated with the SPS, $r = .44, p < .001$. Contrary to expectations, the PTM was positively correlated with the SPS, $r = .20, p < .05$. 
According to Hypothesis 3, hostility and submissiveness would be more negatively associated and prosocial tendencies would be more positively associated with the type and quality of social support provided. Contrary to Hypothesis 3, there were no significant correlations between the AQ-H, SBS, and PTM with social support provided via the four primary dependent variable codings (i.e., Emotional, Informational, Communal, Agentic).

Given that the preconditions were not met to test for mediation, as only a relationship between the independent variable and mediators was significant (e.g., see Shrout & Bolger, 2002), hypothesis 4 was not tested. Please see Appendix D for further details on the planned meditational analyses.

**Exploratory Analyses: SSBC Specific Codes, Quantity of Support and Gender Effects**

For the exploratory analyses, correlations were conducted to examine the relationship between social anxiety, hostility, submissiveness and prosocial tendencies with the additional variables (i.e., SSBC specific codes and quantity of support). There were no significant correlations between the SPS, AQ-H, PTM, or SBS with any of the specific SSBC codes or quantity of support provided. Fisher’s r-to-z transformation was conducted to test whether there exist any significant differences in correlations between males and females. Results suggest that there were no significant differences between genders on any of the correlations, all $zs < .54$, all $ps > .58$.

In examining the self-report measures, there were no differences between males and females on the SPS, AQ-H, or PTM. Females reported higher levels of submissiveness on the SBS ($M = 42.91$, $SD = 9.78$) than males ($M = 38.60$; $SD = 8.90$).
In examining the type of social support provided via the codes, there were no significant differences between males and females with two exceptions. Specifically, there was a significant difference in the Relationship SSBC specific code, where males had a higher proportion of relationship codings ($M = .01, SD = .03$) than females ($M = .002, SD = .01$). Likewise, there was a significant difference in the Compliment SSBC specific code, where females had a higher proportion of relationship codings ($M = .03, SD = .08$) than males ($M = .01, SD = .04$). In examining the quantity of support provided, while there were no differences between males and females with regards to the timing it took to write the letter, females wrote significantly longer letters via word count ($M = 85.26; SD = 56.93$) than males ($M = 70.21; SD = 34.39$). See Table 3 for means and standard deviations on all measures.

**Cluster Analysis**

To test the possibility that distinctive subtypes of interpersonal problems exist within individuals with social anxiety, we cluster analyzed their scores on the two dimensions of submissiveness (SBS) and hostility (AQ-H). To specifically test the subset of the sample with clinically meaningful social anxiety, we selected only those participants who met the clinical cut off score on the SPS ($N = 51$). Based on past literature (e.g., Kachin et al., 2000) we similarly examined two and three cluster solutions. Similar to Kachin et al. (2000), a two-cluster solution was replicated across Ward’s (1963) hierarchical clustering method and an agglomerative clustering method (SPSS K-Means [KM]) using squared Euclidean distances: 75.6% of Ward’s Cluster 1 ($N = 45$) were grouped into KM Cluster 1 ($N = 34$) and 100% of Ward’s Cluster 2 ($N = 6$) were grouped into KM Cluster 2 ($N = 17$). See Table 7, Appendix A. The three cluster
solution was similarly robust: 100% of Ward’s Cluster 1 \((N = 18)\) were grouped into KM Cluster 1 \((N = 12)\), 81.8% of Ward’s Cluster 2 \((N = 27)\) were grouped into KM Cluster 2 \((N = 33)\) and 100% of Ward’s Cluster 3 \((N = 6)\) were grouped into KM Cluster 3 \((N = 6)\). See Table 8, Appendix A. Similar to Cain et al. (2010), the KM cluster analyses will be retained for all subsequent analyses. While both two and three cluster solutions were similarly robust, since the KM three-cluster solution resulted in one cluster having a very small sample size from which to infer meaningful distinctions across subtypes (cluster 3 \(N = 6\)), we are favoring the KM two-cluster solution. Likewise, the two dimensions on the interpersonal circumplex model and past literature similarly favoring the two-cluster solution within social anxiety (e.g., Kachin et al., 2001; Cain et al., 2010) provide further evidence supporting the two-cluster solution.

Cluster 1 \((N = 34)\) consists of the low hostility \((M = 20.67, SD = 43.51)\) and high submissiveness \((M = 20.67, SD = 43.51)\) socially anxious individuals, whereas Cluster 2 \((N = 17)\) consists of the high hostility \((M = 35.70, SD = 6.18)\) and high submissiveness \((M = 51.93, SD = 7.6)\) socially anxious individuals. High submissiveness was elevated in both clusters (though even higher in Cluster 2) in comparison to SBS scores in an undergraduate student sample \((M = 21.4, SD = 7.6)\) (Allan & Gilbert, 1997). Likewise, high hostility was elevated in Cluster 2 in comparison to AQ-H scores in an undergraduate student sample of males \((M = 21.3, SD = 5.5)\) and females \((M = 20.2, SD = 6.3)\). To confirm the results of the cluster analysis, a one-way ANOVA was conducted to examine differences in hostility and submissiveness levels in the two interpersonal clusters. As expected, significant differences in hostility \(F(1,49) = 66.17, p < .001\), and submissiveness \(F(1,49) = 18.96, p < .001\), were found between the groups. See Table 5.
**Self-Report and Social Support Comparisons.** A One-way ANOVA was conducted to examine subtype differences between self-reports of social anxiety and prosocial tendencies levels, as well as differences between subtypes on social support behaviors. In examining the self-report measures, there were no differences between subtypes on the SPS or PTM. Likewise, there were no differences between subtypes on the social support behaviors, with one exception. Specifically, the high hostility high submissiveness group had a higher level of agentic support provided ($M = 5.94$, $SD = .90$) than the low hostility high submissiveness group ($M = 5.29$, $SD = 1.03$), $F (1,49) = 4.84, p < .05$. See Table 6.

**Gender.** The low hostility high submissiveness group consisted of 17.6% males ($N = 6$) and 82.4% females ($N = 28$), whereas the high hostility high submissiveness group consisted of 31.3% males ($N = 5$) and 68.8% females ($N = 11$). We conducted chi-square analyses to examine any differences between the clusters on gender. Chi-square analyses indicated no significant differences in percentage of men and women in each cluster $\chi^2(1) = 1.173, p = .279$. 
Chapter 4: Discussion

The present study aimed to examine whether social anxiety is associated with certain interpersonal traits, as well as the quantity, type, and quality of social support provided via an online written letter to an anonymous peer within young adults. This was the first study to examine these variables in an integrated model.

Social Anxiety and Social Support Behaviors

The lack of relationship found between the coded letters providing social support and the self-report of social anxiety level could partially be the result of the relative infrequency of emotional and communal support provided, compared to agentic and informational support (e.g., approximately twice as much), as well as a potentially overall restricted range of responses in all of the supportive communication. Having a broader range of both agentic/informational and communal/emotional support could provide a stronger test of the relationship between social anxiety and supportive communication. Despite the fact that the type of problem presented to all participants conveyed a communal goal (i.e., a romantic loss conveys feelings of loneliness and rejection), participants in this study provided more agentic and informational support than communal and emotional support. Prior research has suggested that agentic and informational reactions may be especially common among undergraduate students (e.g., Horowitz et al., 2001; Goldsmith, 1994). Goldsmith (1994) found that while undergraduate students were more likely to provide advice while in the role of the support provider, they were also more likely to deem advice as less helpful when in the role of the support receiver. In research on psychotherapy, there is evidence that communication patterns may consist of therapist “telling” (advice) clients what to do...
versus “listening” and that there is more interpersonal hostility expressed during the advice-giving segments (Anderson, Knobloch-Fedders, Stiles, Ordonez & Heckman, 2012). Further, when the type of problem discussed is framed by the help-seeker by these types of problems (agentic versus emotional), Horowitz et al. (2001) found a significant difference in the type of support provided. For example, the frame “I don’t know what to do” increased agentic reactions, whereas “I feel alone and rejected” increased communal reactions in both types of problems (i.e., communal or agentic problems). While the present study did include some communal framing (e.g., “I've been really down”), it is possible that more strong and clear framing emphasizing the communal goals of the problem could have reduced the ambiguity of the goals of the support solicitor, and elicited a more broad range of communal responses that would allow for a stronger test of quality of support provided. Likewise, the present study only included one type of letter (i.e., the communal problem of romantic loss). It is possible that including an agentic and communal problem, as well as an agentic and communal frame, resulting in four forms of support solicitation letters, could have elicited an even broader range of type and quality of supportive responses.

Context also may have played a role in other aspects of the letter writing task procedure from the present study. For example, the SSBC used to code the provision of social support was originally developed for in-person dyadic interactions. In contrast, this study adapted the SSBC for a single, one-way electronic written communication. Given the nature of the task, it is possible that individuals would perceive writing a letter to be a “safe” means of communication, with a relatively low level of social evaluative threat, compared to an in-person interaction. Most research now suggests that behavior is more
complex and flexible than the chronic behavioral deficiency implied by social skills deficits within social anxiety. Specifically, research suggests that dysfunctional social behaviors can be a product of safety behaviors, encompassing overt or covert actions meant to manage or avoid a perceived threat and increase feelings of security (Salkovskis, 1991). While potentially mistaken for deficits in social skills within socially anxious individuals, these maladaptive safety behaviors may instead be an intentional strategy aimed to manage perceived threats in their social environment. Given that the support was not provided in a social setting, had no time restriction, instilled no pressure to maintain an ongoing dialogue, was anonymous, and was to an anonymous peer of the same sex, it is likely that the letter-writing task used in the present study did not elicit significant state anxiety or fears of social threat. If this were the case, it is possible that a more threatening social situation would elicit a broader range of supportive communication behaviors, where social anxiety may be associated with providing the most informational and agentic support, and less communal and emotional support.

The lack of relationship found between social anxiety and social support may suggest that social anxiety severity does not inherently influence individuals’ capability to provide supportive communication, particularly in less intimidating settings. Especially considering the increasingly prevalent use of technology for social communication, providing social support via a written exchange (e.g., email, texting, online messaging) may be a gateway to encourage supportive communication behaviors within socially anxious individuals (compared to the heightened pressure of an in-person social dialogue). Future research could examine other contexts of social support provision, such as through an electronic written dialogue (e.g., instant messaging).
through voicemails, phone conversations, skype, and in live face-to-face interactions. It is possible that discrepancies in social support behaviors would be more apparent in situations where social evaluative threat would be higher (e.g., in person conversations). While limited research has investigated such topics, Wenzel et al. (2005) found that socially anxious individuals displayed more very negative behaviors and fewer positive behaviors in an in-person conversation with a romantic partner. In addition, future research should examine supportive communication within other relational contexts, such as with a romantic partner, close friend, family member, opposite sex individual, or an individual perceived to be of a different social rank (e.g., authority figure). It is possible that a lack of anonymity, and increase in perceived investment in the relationship could add additional pressure and fear of rejection, thus eliciting more maladaptive safety behaviors and clearly discernable discrepancies in social support behaviors.

In addition, the majority of research suggesting a link between social anxiety and social support has overwhelmingly utilized self-report methodology, whereas the present study found an insignificant relationship when utilizing behavioral measures. Therefore, it is possible that previous findings relating social anxiety to lower satisfaction with received support (e.g., Kraus et al., 2006), as well as lower self-reports of provided, received, and desired support (e.g., Chambless et al., 2014), may be more due to the tendency of individuals with social anxiety to misperceive interpersonal interactions (e.g., Clark et al., 1995; Norton & Hope, 2001; Rapee & Lim, 1992). Thus, it’s possible that socially anxious persons may exaggerate their summative self-reports of interpersonal relations when actual maladaptive patterns of communicating with others are more modest. In a study examining both perceptions of received social support and actual
support interactions, Kraus et al. (2006) provided evidence suggesting that the relationship between social anxiety and social support may be a product more of support perception and negative cognitive biases, rather than actual supportive behaviors. It is possible that socially anxious individuals’ negative perceptions of social support may result in a self-fulfilling prophecy, where they begin to distance themselves and exhibit maladaptive patterns of communication in anticipation of inadequate social support. In contrast, positive perceptions of social support may bolster feelings of efficacy and confidence in the ability of socially anxious persons to make favorable impressions, promote future supportive communication, and increase the ability to develop and maintain relationships. It is possible that successfully providing support in a “safe” format (e.g., electronic written exchange) may sufficiently increase perceptions of their social competency, and encourage future social support behaviors. Future research should examine the relationship between perceptions of social support and actual social support behaviors, as well as include measures to address their impact on relationship development, maintenance, and satisfaction.

The lack of a significant relationship between social anxiety and the provision of social support could also be related to an insufficient severity of social anxiety that would be needed to elicit different patterns of communication. These results suggest the severity of social anxiety according to scores on the SPS were in line with norms for undergraduate students, as opposed to norms for individuals diagnosed with social anxiety disorder. In our sample, 36% of participants met the suggested cutoff score on the SPS, indicating the likely presence of social anxiety disorder. However, without a diagnostic interview, the presence of genuine social anxiety disorder cannot be
ascertained. Future research should utilize a clinical sample to further clarify the relationship between social anxiety and social support.

In further discussing demographic characteristics, it should be noted that the sample was comprised of 43 males (versus 98 females). The main significant difference between genders discovered was that women wrote longer letters of support than men (i.e., word count). These results are not surprising, given that some research suggests females are more verbal and use more words in a given day than males (Wallentin, 2009). Likewise, the finding that females reported higher submissiveness than males is in line with prior research on gender differences in submissiveness (e.g., Costa, Terracciano, & McCrae, 2001). Males also provided more relationship support and females provided more compliments. These correlations were checked by partialing out gender. However, both Relationship and Compliment SSBC results had a very restricted range, with infrequent use. Therefore, little can be inferred from these findings. Future research should include more male participants to better understand the relationship between gender and the other study variables.

**Interpersonal Traits and Social Support**

The lack of relationship between the coded letters providing social support and the self-reported hostility, submissiveness and prosocial tendencies could partially be due to the common finding within interpersonal research, where traits and behaviors are distinct, and cannot be so ready interchanged. Within personality research, traits are often conceptualized as patterns of emotions, cognitions, and behaviors, rather than as stable traits (e.g., Weinstein, Capitano, & Gosling, 2008). Mischel, Shoda and Mendoza-Denton (2002) support the notion that personality should be understood through a
relationship between situations and behaviors, where behaviors are stable within situations. For example, in a certain situation, people should behave in an overall consistent and predictable manner. However, other situations may elicit a different pattern of responses. Based on this conceptualization, it’s possible that the study’s traits were not reflected and fully expressed in this specific situation. Consequently, it’s possible that in a situation that elicited higher state anxiety, these traits would more directly manifest themselves.

Furthermore, these insignificant findings may partially be due to inaccurate perceptions of one’s own traits. For example, research suggests that individuals with social anxiety tend to over-report their own flaws (e.g., Rodebaugh et al., 2010), such as believing they are too dominant, when in fact they may overcompensate and become too submissive. In addition, research found that when anticipating giving a speech, high socially anxious individuals display a memory bias, and recall fewer positive traits about themselves than low socially anxious individuals (Mansell & Clark; 1998).

In this case, the self-report measures of traits would not be fully accurate. Future research should utilize additional sources of information to measure these interpersonal traits, such as through peer or parent ratings.

Social Anxiety and Interpersonal Traits

The main contribution of this study was the finding of two clusters of social anxiety. As expected, social anxiety was positively associated with hostility and submissiveness. Contrary to expectations, social anxiety was also positively associated with prosocial tendencies. Given inconsistent research regarding the relationship between interpersonal traits with social anxiety (e.g. Cain et al., 2010; Kachin et al., 2001), the
study additionally explored the presence of subtypes based on the interpersonal traits of hostility and submissiveness. Through cluster analyses, two distinct subgroups of socially anxious individuals emerged: a low hostility high submissiveness cluster (Cluster 1) and a high hostility high submissiveness cluster (Cluster 2). These subtype results are overall replicated by past research. Specifically, Cain et al. (2010) found a friendly-submissive cluster and a cold-submissive cluster. In contrast, Kachin et al. (2001) found a friendly-submissive cluster and a cold-dominant cluster. Therefore, we did not replicate their cold-dominant cluster. While our nonclinical student sample was similar to Kachin et al. (2001)’s sample, our results were more similar to the socially anxious outpatients seeking psychotherapy from the Cain et al. (2010) study. Therefore, it is unlikely that the present study’s sample characteristics played a significant role in distinguishing between social anxiety subtypes.

However, when comparing the two subtypes on the rest of the self-report measures and social support behaviors, no significant differences were found with the exception of the agentic codes, where Cluster 2 provided more agentic supportive behaviors than Cluster 1. Given the match-hypothesis, Cluster 2 appears to be providing lower quality of social support compared to Cluster 1. This small finding may suggest the existence of meaningful differences in interpersonal behavior patterns between these two groups. Research should continue to explore potential differences between the subtypes.

**Future directions.** Previous research suggesting a link between these distinct interpersonal difficulties with potential underlying motivations may provide insight into the different interpersonal strategies. Specifically, Grosse, Holtforth, Pincus, Grawe, and Mauler (2007) found that higher scores on cold-submissive interpersonal problems were
related to a fear of being vulnerable to others, whereas higher scores on friendly-
submissive problems were related to fearing separation from others, being hostile, and
placing high value on interpersonal recognition. In line with speculations from Cain et al.
(2010), Cluster 1 may be excessively friendly, compliant, and overly accommodating to
others in order to be liked and recognized, and avoid displeasing others, being disliked, or
ignored in social settings. In contrast, to decrease the possibility of social rejection and
avoid vulnerability, Cluster 2 may limit social contact and act in a distant and self-
protective manner. Ironically, these rigid maladaptive behavior patterns will likely result
in a self-fulfilling prophecy, where the behaviors may elicit the feared social
consequences, exacerbating interpersonal difficulties (e.g., Horowitz, 2004). In this case,
Cluster 1 may provoke others to exploit and disrespect them, whereas Cluster 2 may push
others away and lead to rejection.

Future research is needed to clarify the extend to which these subtypes differ in
clinically meaningful ways. The presence of meaningful subtypes within social anxiety
may have implications for the classification and treatment. Specifically, incorporating
interpersonal features within the classification of social anxiety may enhance diagnostic
clarity by providing a more accurate measure of maladaptive behavior patterns and
interpersonal difficulties. Relatedly, gaining a greater understanding of these distinctions
between the subtypes may inform treatment. Initial research suggests that the two groups
may vary on psychotherapy outcomes. For example, Cain et al. (2010) found that
friendly-submissive individuals reported more psychological well-being and less social
anxiety after psychotherapy compared to cold-submissive individuals. Likewise, other
research has suggested that cold-dominant interpersonal difficulties are negatively related
to post-treatment outcomes, whereas friendly submissive problems are positively related to post-treatment outcomes across both psychodynamic therapy and CBT (Borkovec et al., 2002; Horowitz et al., 1993). Future research should continue to examine differences in psychotherapy outcomes between the two subtypes.

If these SAD subtypes prove clinically meaningful, future research might enhance treatment outcomes by more directly targeting the specific interpersonal difficulties of SAD. Promising initial research has highlighted the importance and efficacy of incorporating strategies to specifically target interpersonal difficulties into traditional interventions for anxiety disorders. For example, Newman, Castanaguay, Borkovec, Fisher, and Nordberg (2008) found that combining CBT and additional techniques to target interpersonal difficulties lead to clinically significant decreases in GAD symptoms and interpersonal difficulties through follow-ups 1 year later. Moreover, a study specifically examining an integrated interpersonal-CBT (ICBT) intervention for SAD found significant increases in relationship satisfaction and social approach behaviors and decreases in social anxiety symptom severity post-treatment compared to traditional CBT recipients (Alden & Taylor, 2011). Taken together, these results highlight the importance of incorporating the assessment and targeting of interpersonal difficulties within existing interventions.

Despite promising initial results on incorporating relational strategies into traditional psychotherapy, research in the area is still limited, and has yet to explore different interpersonal modifications based on these subtypes. While all individuals with SAD may benefit from such interventions, each subtype may respond most optimally to different components. Specifically, based on their behaviors suggested to avoid rejection and
vulnerability, Cluster 2 may initially be less responsive to interventions focused on increasing intimacy in relationships. As Cain et al. (2010) suggested, such individuals may have higher attrition rates and noncompliance, as a self-protective strategy. This group may benefit more from treatments that first address issues surrounding vulnerability and to increase compliance. In contrast, Cluster 1, who may be more motivated to increase intimacy, could potentially benefit more from relational skills training.

Related to the therapy process, research suggests that the therapeutic alliance, a key factor in treatment outcomes, is strongly tied to interpersonal features. For example, Muran et al. (1994) suggested that friendly-submissive patients are able to form a strong therapeutic alliance much more readily than cold-dominant patients. Given the suggested distinctions in interpersonal behaviors between the two subtypes, it is possible that they have meaningful differences in the ability to develop a therapeutic alliance. Socially anxious individuals often provoke others to respond in a complementary fashion. This restricted range of communication extends to therapist interactions. If therapists are cognizant of these specific maladaptive interpersonal behaviors, they may avoid perpetuating these patterns and encourage alternative healthier social interactions (Anchin & Pincus, 2010). As suggested by Cain et al. (2010), individuals within Cluster 1 may be easily exploitable, and therapists may unknowingly take advantage of these individuals’ desire to form close relationships and receive praise. If these behavior patterns were identified, therapists working with such individuals may try to actively encourage independence, self-esteem, and avoid forming an overly dependent therapeutic relationship. In contrast, those interacting with a cold and distant individual within
Cluster 2 may become frustrated and overly domineering. A therapist who understood that this behavior was driven by fears of rejection may be able to better respond with empathy. Therefore, future research should examine differences in the ability to develop the therapeutic alliance between the two subtypes, as well as whether different strategies employed by the therapist would be more beneficial in strengthening the therapeutic alliance depending on the socially anxious individual’s subtype.
References


Mischkowski et al., in press.


Norton, P. J., & Hope, D. A. (2001). Kernels of truth or distorted perceptions: Self and


Peters, L. (2000). Discriminant validity of the social phobia and anxiety inventory (SPAI), the social phobia scale (SPS) and the social interaction anxiety scale (SIAS). *Behaviour Research and Therapy*, 38(9), 943-950.


### Tables

#### Table 1
Means and Standard Deviations for Self-Report Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>M(SD)</th>
<th>Range</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS</td>
<td>21.22 (15.20)</td>
<td>0-60</td>
<td>.94</td>
</tr>
<tr>
<td>SBS</td>
<td>41.78 (9.78)</td>
<td>16-70</td>
<td>.88</td>
</tr>
<tr>
<td>PTM</td>
<td>2.90 (.53)</td>
<td>1-5</td>
<td>.86</td>
</tr>
<tr>
<td>AQ-H</td>
<td>22.05 (10.44)</td>
<td>8-52</td>
<td>.91</td>
</tr>
</tbody>
</table>

Note. SPS = Social Phobia Scale. SBS = Submissive Behavior Scale. PTM = Prosocial Tendencies Measure. AQ-H = Aggression Questionnaire- Hostility Subscale.

#### Table 2
Proportions of SSBC and Impression Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>M (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSBC Category Codes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional</td>
<td>.32 (.31)</td>
<td>0-1</td>
</tr>
<tr>
<td>Informational</td>
<td>.65 (.30)</td>
<td>0-1</td>
</tr>
<tr>
<td>SSBC Specific Codes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggestion/Advice</td>
<td>.28 (.21)</td>
<td>0-1</td>
</tr>
<tr>
<td>Teaching</td>
<td>.49 (.25)</td>
<td>0-1</td>
</tr>
<tr>
<td>Relationship</td>
<td>.001 (.02)</td>
<td>0-.13</td>
</tr>
<tr>
<td>Sympathy</td>
<td>.01 (.04)</td>
<td>0-2</td>
</tr>
<tr>
<td>Understanding/Empathy</td>
<td>.04 (.09)</td>
<td>0-.7</td>
</tr>
<tr>
<td>Reassurance</td>
<td>.14 (.17)</td>
<td>0-.8</td>
</tr>
<tr>
<td>Compliment</td>
<td>.03 (.09)</td>
<td>0-.5</td>
</tr>
<tr>
<td>Impression Codes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agentic</td>
<td>5.36 (1.18)</td>
<td>1-7</td>
</tr>
<tr>
<td>Communal</td>
<td>2.75 (1.46)</td>
<td>1-7</td>
</tr>
</tbody>
</table>

Note. SSBC = Social Support Behavior Code
<table>
<thead>
<tr>
<th>Self-Report Measures</th>
<th>Males (N = 43)</th>
<th>Females (N = 98)</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Males</strong></td>
<td><strong>Females</strong></td>
<td><strong>M</strong></td>
<td><strong>SD</strong></td>
</tr>
<tr>
<td>SPS</td>
<td>17.58</td>
<td>14.78</td>
<td>22.66</td>
</tr>
<tr>
<td>AQ-H</td>
<td>23.00</td>
<td>10.34</td>
<td>21.34</td>
</tr>
<tr>
<td>SBS</td>
<td>38.60</td>
<td>8.90</td>
<td>42.91</td>
</tr>
<tr>
<td>PTM</td>
<td>2.86</td>
<td>.47</td>
<td>2.91</td>
</tr>
<tr>
<td>SSBC Category</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional</td>
<td>.32</td>
<td>.30</td>
<td>.30</td>
</tr>
<tr>
<td>Informational</td>
<td>.64</td>
<td>.29</td>
<td>.67</td>
</tr>
<tr>
<td>SSBC Specific</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggestion/Advice</td>
<td>.26</td>
<td>.18</td>
<td>.28</td>
</tr>
<tr>
<td>Teaching</td>
<td>.48</td>
<td>.24</td>
<td>.49</td>
</tr>
<tr>
<td>Relationship</td>
<td>.01</td>
<td>.03</td>
<td>.002</td>
</tr>
<tr>
<td>Sympathy</td>
<td>.01</td>
<td>.03</td>
<td>.01</td>
</tr>
<tr>
<td>Understanding/Empathy</td>
<td>.03</td>
<td>.08</td>
<td>.04</td>
</tr>
<tr>
<td>Reassurance</td>
<td>.15</td>
<td>.19</td>
<td>.13</td>
</tr>
<tr>
<td>Compliment</td>
<td>.01</td>
<td>.04</td>
<td>.03</td>
</tr>
<tr>
<td>Impression Codes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agentic</td>
<td>5.19</td>
<td>1.18</td>
<td>5.44</td>
</tr>
<tr>
<td>Communal</td>
<td>2.74</td>
<td>1.47</td>
<td>2.76</td>
</tr>
<tr>
<td>Quantity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word Count</td>
<td>70.21</td>
<td>34.39</td>
<td>85.26</td>
</tr>
<tr>
<td>Timing</td>
<td>252.50</td>
<td>374.54</td>
<td>178.90</td>
</tr>
</tbody>
</table>

Note. SPS = Social Phobia Scale. AQ-H = Aggression Questionnaire-Hostility Subscale. SBS = Submissive Behavior Scale. PTM = Prosocial Tendencies Measure. *p < .05, **p < .01
### Table 4
Correlations between study variables (Hypotheses 1-3)

<table>
<thead>
<tr>
<th></th>
<th>SPS</th>
<th>AQH</th>
<th>SBS</th>
<th>PTM</th>
<th>EMO</th>
<th>INF</th>
<th>S/A</th>
<th>TE</th>
<th>RA</th>
<th>SYM</th>
<th>EM</th>
<th>RA</th>
<th>COP</th>
<th>AGN</th>
<th>COM</th>
<th>WC</th>
<th>TI</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AQ-H</td>
<td>.34**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SBS</td>
<td>.43**</td>
<td>.40**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTM</td>
<td>.20*</td>
<td>.13</td>
<td>.32**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional</td>
<td>.11</td>
<td>.12</td>
<td>-.03</td>
<td>-.07</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informational</td>
<td>-.13</td>
<td>-.12</td>
<td>.01</td>
<td>.08</td>
<td>-.98**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggestion/Advice</td>
<td>-.05</td>
<td>-.11</td>
<td>.04</td>
<td>-.03</td>
<td>-.16</td>
<td>.19*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching</td>
<td>.03</td>
<td>.13</td>
<td>.14</td>
<td>.09</td>
<td>-.06</td>
<td>.09</td>
<td>-.1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.7**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship</td>
<td>-.08</td>
<td>-.08</td>
<td>-.13</td>
<td>-.04</td>
<td>-.01</td>
<td>-.02</td>
<td>-.1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sympathy</td>
<td>.12</td>
<td>-.04</td>
<td>-.32</td>
<td>-.03</td>
<td>.07</td>
<td>-.06</td>
<td>-.08</td>
<td>-.11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding/Empathy</td>
<td>-.07</td>
<td>-.14</td>
<td>-.04</td>
<td>.04</td>
<td>.27**</td>
<td>-.28**</td>
<td>-</td>
<td></td>
<td>.12</td>
<td>.10</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reassurance</td>
<td>.004</td>
<td>-.02</td>
<td>-.17*</td>
<td>-.04</td>
<td>.26**</td>
<td>-.26</td>
<td>-.12</td>
<td>-.11</td>
<td>-.09</td>
<td>-.08</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compliment</td>
<td>.04</td>
<td>.01</td>
<td>-.11</td>
<td>-.07</td>
<td>-.08</td>
<td>.01</td>
<td>.03</td>
<td>-</td>
<td>.04</td>
<td>.05</td>
<td>.05</td>
<td>-.06</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.28**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agentic</td>
<td>.07</td>
<td>.07</td>
<td>.09</td>
<td>.10</td>
<td>-.08</td>
<td>.09</td>
<td>.30*</td>
<td>.12</td>
<td>-.11</td>
<td>-.12</td>
<td>-</td>
<td>-.16*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communal</td>
<td>-.08</td>
<td>.004</td>
<td>-.12</td>
<td>-.07</td>
<td>.17*</td>
<td>-.2**</td>
<td>-</td>
<td>-.17</td>
<td>.27**</td>
<td>.35*</td>
<td>.32</td>
<td>.32**</td>
<td>-.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.18*</td>
<td>.36*</td>
<td>.36*</td>
<td>.36*</td>
<td>.36*</td>
<td>.36*</td>
<td>.36*</td>
<td>.36*</td>
<td>.36*</td>
<td>.36*</td>
<td>.36*</td>
<td>.36*</td>
<td>.36*</td>
<td>.36*</td>
<td>.36*</td>
<td>.36*</td>
<td>.36*</td>
<td>.36*</td>
</tr>
<tr>
<td>**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word Count</td>
<td>-.05</td>
<td>.08</td>
<td>.12</td>
<td>.09</td>
<td>-.08</td>
<td>.05</td>
<td>-.05</td>
<td>-.07</td>
<td>.11</td>
<td>.16</td>
<td>-.01</td>
<td>.01</td>
<td>.24**</td>
<td>.18*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.19*</td>
<td>.24*</td>
<td>.24*</td>
<td>.24*</td>
<td>.24*</td>
<td>.24*</td>
<td>.24*</td>
<td>.24*</td>
<td>.24*</td>
<td>.24*</td>
<td>.24*</td>
<td>.24*</td>
<td>.24*</td>
<td>.24*</td>
<td>.24*</td>
<td>.24*</td>
<td>.24*</td>
<td>.24*</td>
</tr>
<tr>
<td>Timing</td>
<td>-.10</td>
<td>-.10</td>
<td>.03</td>
<td>-.03</td>
<td>-.12</td>
<td>.11</td>
<td>-.01</td>
<td>.06</td>
<td>.12</td>
<td>.01</td>
<td>.03</td>
<td>-.13</td>
<td>-.05</td>
<td>.08</td>
<td>.04</td>
<td>.4**</td>
<td>1</td>
</tr>
</tbody>
</table>

SPS = Social Phobia Scale, AQH = Aggression Questionnaire-Hostility Subscale, SBS = Submissive Behavior Scale, PTM = Prosocial Tendencies Measure, EMO = SSBC Emotional Category, INF = Informational SSBC Category, S/A = Suggestion/Advice SSBC Specific Code, TE = Teaching SSBC Specific Code, RA = Reassurance SSBC Specific Code, SYM = Sympathy SSBC Specific Code, EM = Understanding/Empathy SSBC Specific Code, RA = Reassurance SSBC Specific Code, COP = Compliment SSBC Specific Code, AGN = Agentic Impression Code, COM = Communal Impression code, WC = Word Count (length of letter), TI = Timing to write letter. *p < .05, **p < .01.
Table 5
Analysis of Variance comparisons of the subtypes within social anxiety on hostility and submissiveness

<table>
<thead>
<tr>
<th>Self-Report Measure</th>
<th>Cluster 1: Low Hostility-High Submissiveness (N = 34)</th>
<th>Cluster 2: High Hostility-High Submissiveness (N = 17)</th>
<th>F(1,49)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQ-H</td>
<td>20.67 (6.24)</td>
<td>35.70 (6.18)</td>
<td>66.17*</td>
</tr>
<tr>
<td>SBS</td>
<td>43.51 (5.90)</td>
<td>51.93 (7.61)</td>
<td>18.96*</td>
</tr>
</tbody>
</table>

*p < .001

Table 6
Analysis of Variance comparisons of the subtypes within social anxiety on self-report measures and social support behaviors

<table>
<thead>
<tr>
<th>Measure</th>
<th>Cluster 1: Low Hostility-High Submissiveness (N = 34)</th>
<th>Cluster 2: High Hostility-High Submissiveness (N = 17)</th>
<th>F(1,49)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Report Measure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPS</td>
<td>37.29 (8.42)</td>
<td>41.41 (10.08)</td>
<td>2.38</td>
</tr>
<tr>
<td>PTM</td>
<td>2.98 (.44)</td>
<td>3.05 (.52)</td>
<td>.25</td>
</tr>
<tr>
<td>SSBC Category</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional</td>
<td>.28 (.29)</td>
<td>.34 (.37)</td>
<td>.45</td>
</tr>
<tr>
<td>Informational</td>
<td>.69 (.28)</td>
<td>.62 (.36)</td>
<td>.68</td>
</tr>
<tr>
<td>SSBC Specific</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggestion/Advice</td>
<td>.31 (.21)</td>
<td>.22 (.19)</td>
<td>2.25</td>
</tr>
<tr>
<td>Teaching</td>
<td>.46 (.24)</td>
<td>.60 (.28)</td>
<td>3.60</td>
</tr>
<tr>
<td>Relationship</td>
<td>.01 (.02)</td>
<td>.00 (.00)</td>
<td>1.02</td>
</tr>
<tr>
<td>Sympathy</td>
<td>.02 (.05)</td>
<td>.00 (.01)</td>
<td>3.38</td>
</tr>
<tr>
<td>Understanding/Empathy</td>
<td>.03 (.07)</td>
<td>.01 (.03)</td>
<td>1.13</td>
</tr>
<tr>
<td>Reassurance</td>
<td>.14 (.17)</td>
<td>.11 (.16)</td>
<td>.26</td>
</tr>
<tr>
<td>Compliment</td>
<td>.02 (.04)</td>
<td>.04 (.07)</td>
<td>1.26</td>
</tr>
<tr>
<td>Impression Codes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agentic</td>
<td>5.29 (1.03)</td>
<td>5.94 (.90)</td>
<td>4.84*</td>
</tr>
<tr>
<td>Communal</td>
<td>2.56 (1.44)</td>
<td>2.41 (1.23)</td>
<td>.13</td>
</tr>
<tr>
<td>Quantity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word Count</td>
<td>67.20 (37.55)</td>
<td>92.18 (78.93)</td>
<td>2.37</td>
</tr>
<tr>
<td>Timing</td>
<td>151.01 (112.39)</td>
<td>194.30 (123.53)</td>
<td>1.57</td>
</tr>
</tbody>
</table>

*p < .05
### Appendix A: Additional Tables

Table 7
Ward’s (1963) hierarchical clustering method and a K-Means Cluster Analysis: 2 Cluster Solution

<table>
<thead>
<tr>
<th>K-Means Cluster</th>
<th>Count</th>
<th>Ward’s Method Clusters</th>
<th>% within Ward’s Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>34</td>
<td>1</td>
<td>75.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>66.7%</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>1</td>
<td>24.4%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>33.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>45</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>51</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 8
Ward’s (1963) hierarchical clustering method and a K-Means Cluster Analysis: 3 Cluster Solution

<table>
<thead>
<tr>
<th>K-Means Cluster</th>
<th>Count</th>
<th>Ward’s Method Clusters</th>
<th>% within Ward’s Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>18.2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>66.7%</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>81.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>33.3%</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>11.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>12</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>51</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>
Appendix B: Copies of all Instruments

Copies of all Instruments

Demographics

Age

Date of Birth (MM/DD/YYYY)

Weight (in pounds)

Height (in inches)

What is your gender?
• Male
• Female
• Other

What is your race?
• White
• Black or African American
• Latino
• American Indian or Alaskan Native
• Asian
• Native Hawaiian or Pacific Islander
• Other (please specify)

What is your primary (native) language?
• English
• Spanish
• Other (please specify)

What is your religion?
• Protestant
• Catholic
• Jewish
• Other (please specify)

What is your yearly family income (in US dollars)?
• $0 - 15,000
• $15,001 – 20,000
• $20,001 – 30,000
• $30,001 – 40,000
• $40,001 – 50,000
• $50,001 – 60,000
• $60,001 – 70,000
• $70,001 – 80,000
• $80,001 – 90,000
• $90,001 – 100,000
• $100,001 – 125,000
• $125,001 – 150,000
• $150,001 – 200,000
• Over $200,000

What is your current relationship status?
• Single
• Romantically involved, but not exclusively
• Romantically involved, exclusively (monogamously)

What is your sexual orientation?
• Exclusively heterosexual
• Heterosexual, with some homosexual experience
• Bisexual
• Homosexual, with some heterosexual experience
• Exclusively homosexual
• Unsure/Questioning
Social Phobia Scale

For each statement, please select the appropriate numbered response on the scale provided to indicate the degree to which you feel the statement is characteristic of you. The rating scale is as follows:

0 – Not at all characteristic or true of me
1 – Slightly characteristic or true of me
2 – Moderately characteristic/true of me
3 – Very characteristic or true of me
4 – Extremely characteristic or true of me

1. I become anxious if I have to write in front of other people.
3. I can suddenly become aware of my own voice and of others listening to me.
4. I get nervous that people are staring at me as I walk down the street.
5. I fear I may blush when I am with others.
6. I feel self-conscious if I have to enter a room where others are already seated.
7. I worry about shaking or trembling when I’m watched by other people.

8. I would get tense if I had to sit facing other people on a bus or a train.
9. I get panicky that others might see me faint, or be sick or ill.
10. I would find it difficult to drink something if in a group of people.
11. It would make me feel self-conscious to eat in front of a stranger at a restaurant.
12. I am worried people will think my behavior odd.
13. I would get tense if I had to carry a tray across a crowded cafeteria.
14. I worry I’ll lose control of myself in front of other people.
15. I worry I might do something to attract the attention of other people.
16. When in an elevator, I am tense if people look at me.

17. I can feel conspicuous standing in a line.
18. I can get tense when I speak in front of other people.
19. I worry my head will shake or nod in front of others.
20. I feel awkward and tense if I know people are watching me.
Prosocial Tendencies Measure

Below are a number of statements that may or may not describe you. Please indicate HOW MUCH EACH STATEMENT DESCRIBES YOU by using the following scale:

1 (Does not describe me at all),
2 (Describes me a little),
3 (Somewhat Describes me),
4 (Describes me well),
5 (Describes me greatly)

1. I can help others best when people are watching me.
2. It is most fulfilling to me when I can comfort someone who is very distressed.
3. When other people are around, it is easier for me to help needy others.
4. I think that one of the best things about helping others is that it makes me look good.
5. I get the most out of helping others when it is done in front of others.
6. I tend to help people who are in a real crisis or need.
7. When people ask me to help them, I don’t hesitate.
8. I prefer to donate money anonymously.
9. I tend to help people who hurt themselves badly.
10. I believe that donating goods or money works best when it is tax-deductible.
11. I tend to help needy others most when they do not know who helped them.
12. I tend to help others particularly when they are emotionally distressed.
13. Helping others when I am in the spotlight is when I work best.
14. It is easy for me to help others when they are in a dire situation.
15. Most of the time, I help others when they do not know who helped them.
16. I believe I should receive more recognition for the time and energy I spend on charity work.
17. I respond to helping others best when the situation is highly emotional.
18. I never hesitate to help others when they ask for it.
19. I think that helping others without them knowing is the best type of situation.
20. One of the best things about doing charity work is that it looks good on my resume.
21. Emotional situations make me want to help needy others.
22. I often make anonymous donations because they make me feel good.
23. I feel that if I help someone, they should help me in the future.
The Submissive Behavior Scale

Below are a series of statements which describe how people act and feel about social situations. Circle the number to the right of the statements which best describes the degree to which a statement is true for you.

Please use the following scale:

0 = NEVER  1 = RARELY  2 = SOMETIMES  3 = MOSTLY  4 = ALWAYS

1. I agree that I am wrong even though I know I’m not
   0 1 2 3 4
2. I do things because other people are doing them, rather than because I want to
   0 1 2 3 4
3. I would walk out of a shop without questioning, knowing that I had been short changed
   0 1 2 3 4
4. I let others criticise me or put me down without defending myself
   0 1 2 3 4
5. I do what is expected of me even when I don’t want to
   0 1 2 3 4
6. If I try to speak and others continue, I shut up
   0 1 2 3 4
7. I continue to apologise for minor mistakes
   0 1 2 3 4
8. I listen quietly if people in authority say unpleasant things about me
   0 1 2 3 4
9. I am not able to tell my friends when I am angry with them
   0 1 2 3 4
10. At meetings and gatherings, I let others monopolise the conversation
    0 1 2 3 4
11. I don’t like people to look straight at me when they are talking
    0 1 2 3 4
12. I say ‘thank you’ enthusiastically and repeatedly when someone does a small favour for me
    0 1 2 3 4
13. I avoid direct eye contact
    0 1 2 3 4
14. I avoid starting conversations at social gatherings
    0 1 2 3 4
15. I blush when people stare at me
    0 1 2 3 4
16. I pretend I am ill when declining an invitation
    0 1 2 3 4
Aggression Questionnaire

Please rate each of the following items in terms of how characteristic they are of you. Use the following scale for answering these items.

1  2  3  4  5  6  7

extremely uncharacteristic extremely characteristic
uncharacteristic of me of me

1) Once in a while I can't control the urge to strike another person.

2) Given enough provocation, I may hit another person.

3) If somebody hits me, I hit back.

4) I get into fights a little more than the average person.

5) If I have to resort to violence to protect my rights, I will.

6) There are people who pushed me so far that we came to blows.

7) I can think of no good reason for ever hitting a person.

8) I have threatened people I know.

9) I have become so mad that I have broken things.

10) I tell my friends openly when I disagree with them.

11) I often find myself disagreeing with people.

12) When people annoy me, I may tell them what I think of them.

13) I can't help getting into arguments when people disagree with me.

14) My friends say that I'm somewhat argumentative.

15) I flare up quickly but get over it quickly.

16) When frustrated, I let my irritation show.

17) I sometimes feel like a powder keg ready to explode.
18) I am an even-tempered person.

19) Some of my friends think I'm a hothead.

20) Sometimes I fly off the handle for no good reason.

21) I have trouble controlling my temper.

22) I am sometimes eaten up with jealousy.

23) At times I feel I have gotten a raw deal out of life.

24) Other people always seem to get the breaks.

25) I wonder why sometimes I feel so bitter about things.

26) I know that "friends" talk about me behind my back.

27) I am suspicious of overly friendly strangers.

28) I sometimes feel that people are laughing at me behind me back.

29) When people are especially nice, I wonder what they want.
Letter Writing Tasks:

Prosocial Behavior Task

Letter writing instructions, Part A: (goes to participant)
Please find a letter below from the last Ohio University student to participate in the study (whose identity will remain anonymous):

Instructions: Please describe a recent experience in which you felt sad, angry, or upset.

Two days ago I broke up w/ my boyfriend[/girlfriend]. We’ve been going together since our Jr. year in HS and have been really close, and it’s been great being at OU together. I thought he[/she] felt the same, but things have changed… Now, he[/she] wants to date other people. He[/she] says he[/she] still cares a lot about me, but doesn’t want to be tied down to just one person. I’ve been real down. Its all I think about. My friends all tell me that I’ll meet other guys[/girls] and they say that all I need is for something good to happen to cheer me up. I guess they’re right, but so far that hasn’t happened.

Letter writing instructions, Part B: (goes to participant)

Instructions: In the space below, please write a letter of support that could help this person feel better (if you were to send it).

Take as much time as you need.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Letter writing instructions, Part C: (goes to participant)

Instructions: If you wish, you may send your letter of support to this anonymous student via SONA systems – whether or not you send the letter which you wrote, you will obtain full credit for completing this study, and it is entirely your choice whether or not you do so. Furthermore, no identifying information from you would be associated with your letter, should you choose to send it, and you will therefore remain anonymous.

Answers:
“Yes, I would like to send my anonymous letter of support”
“No, I would not like to send my anonymous letter of support”
Ohio University Consent Form

Title of Research: Chain Letter Study

Researchers: Danielle M Cooper, MA, Justin W. Weeks, Ph.D., Timothy Anderson, Ph.D

You are being asked to participate in research. For you to be able to decide whether you want to participate in this project, you should understand what the project is about, as well as the possible risks and benefits in order to make an informed decision. This process is known as informed consent. This form describes the purpose, procedures, possible benefits, and risks. It also explains how your personal information will be used and protected. Once you have read this form and your questions about the study are answered, you will be asked to provide consent by clicking “Yes, I agree”. This will allow your participation in this study. You are encouraged to print a copy of this document for your records or future reference.

Explanation of Study

This study is being done to examine how participants of varying personalities react to other people’s problems and how writing to them can affect emotions. Students who offer support, empathy, and advice may help other students cope with any current difficulties occurring in their lives. The present study will provide you with the opportunity to anonymously respond to a peer undergoing hard times, and will then offer the opportunity for you to receive advice about your own difficulties in a confidential manner, if you wish to do so. The aim is to foster a confidential and supportive environment of Ohio University peers, and to examine the resulting improvements in the community. This study will also examine interpersonal relationship dynamics. **This study will take approximately 120 minutes to complete.**

Risks and Discomforts

Some individuals may experience mild, transient discomfort while reading and answering questions about emotional reactions to social situations, including mood and anxiety. If you have questions or concerns regarding this study, you may contact Danielle M. Cooper, MA or Justin W. Weeks, Ph.D. (see Contact Information below) to discuss your concerns. You may also terminate your participation in this study at any time with no negative consequence.

Benefits

After completing the study, you will be provided with a debriefing of the hypotheses of the study, and you will learn about the procedures used in this psychological research
study. Furthermore, as needed or requested, the experimenter will offer you resources and referrals for psychological counseling if you wish (see Contact Information below).

Confidentiality and Records

All information that is collected from you during your participation in this study will be protected by the investigator. No identifying information will be paired with your study responses, and thus, your participation will be anonymous. Additionally, should you elect to discontinue participation in the study before completion, none of your survey responses will be included in any of the study analyses. After completion of the study, participants will be instructed, “For maximum confidentiality, please clear your browser history and close the browser before leaving the computer.”

Additionally, while every effort will be made to keep your study-related information confidential, there may be circumstances where this information must be shared with:
* Federal agencies, for example the Office of Human Research Protections, whose responsibility is to protect human subjects in research;
* Representatives of Ohio University (OU), including the Institutional Review Board, a committee that oversees the research at OU;

Compensation

All participants who sign up for this study will receive the full 2 research credits. You may withdraw from this study at any time without fear of penalty.

Contact Information

If you have any questions regarding this study, please contact Danielle M Cooper (principal investigator, dc100912@ohio.edu) or her advisor, Justin W. Weeks, Ph.D., Director of the Center for Evaluation and Treatment of Anxiety, Ohio University at (740) 597-3299.

If you have any questions regarding your rights as a research participant, please contact Jo Ellen Sherow, Director of Research Compliance, Ohio University, (740) 593-0664.

By clicking “Yes, continue” below, you are agreeing that:
* you have read this consent form (or it has been read to you) and have been given the opportunity to ask questions and have them answered
• you have been informed of potential risks and they have been explained to your satisfaction.
• you understand Ohio University has no funds set aside for any injuries you might receive as a result of participating in this study
• you are 18 years of age or older
• your participation in this research is completely voluntary
• you may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you and you will not lose any benefits to which you are otherwise entitled.

—Please click “Yes, continue” below.

Version Date:

10/31/11
<table>
<thead>
<tr>
<th>Study Name</th>
<th>Chain Letter Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>The purpose of this study is to examine how individuals of varying personalities react to other people’s problems.</td>
</tr>
<tr>
<td>Sign-Up Restrictions</td>
<td>N/A</td>
</tr>
<tr>
<td>Duration</td>
<td>120</td>
</tr>
<tr>
<td>Credits</td>
<td>2 Credits</td>
</tr>
<tr>
<td>Researcher</td>
<td>Danielle M. Cooper, MA</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:dc100912@ohio.edu">dc100912@ohio.edu</a></td>
</tr>
<tr>
<td>Deadlines</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Debriefing Form

Chain Letter Study

Thank you for taking part in this study. You are encouraged to print this page for your records.

The primary purpose of this series of questionnaires was to test the relationship between social anxiety and paranoia, with the hope to better inform our understanding of these related constructs. While phenomena pertaining to social anxiety were our primary interest in this study, we were interested to recruit participants with a wide range of experiences with social anxiety. In other words, no inclusion criteria or restrictions were used for enrollment in this study.

Social anxiety has recently been linked to low positive emotions, behaviors, and thoughts. The study in which you just took part aims to examine the influence of social anxiety and paranoia on the likelihood to participate in prosocial behavior, and how engaging in prosocial behavior may then influence symptoms and mood.

To elicit prosocial behavior, this study was presented under the notion that each participant is writing a letter in response to a unique issue posed by an anonymous peer in the community. In turn, you were led to believe that you had the opportunity to send your letter to that anonymous peer and then disclose an issue of your own for another participant to later send advice in response. However, for the purpose of our study, each participant received the exact same prompt/scenario (which was written by a researcher, and not a student), and all letters were received and reviewed in confidence only by members of this research team. Similarly, only members of this research team viewed any disclosures made, and thus no participants in this study will receive a “letter of support” from a previous participant. The purpose of this aspect of deception was to heighten standardization and create more valid indicators of prosocial behavior and self-disclosure.

We believe that research such as this can provide counselors with more information about the nature of social anxiety symptoms and problems. This information is valuable because it can ultimately lead to improving diagnostic assessments of, and treatments for, social anxiety-related problems, and can therefore help individuals cope with social anxiety.

If you have any questions about this study or your own reactions to the material, please feel free to contact Danielle Cooper (de100912@ohio.edu) at (740) 597-3299, Justin W. Weeks, Ph.D. at (740) 593-1094, or Timothy Anderson, Ph.D. at (740) 5093-1062
Now that you have been made aware of the elements of deception, we will be asking for your consent to use this information obtained in this study.

For your information, if you or someone you know is interested in learning more about, or receiving treatment for, social anxiety problems, or any other psychological problems, you may contact one of the offices below. You are encouraged to print this page for your own reference.

**Personal Counseling Services at Ohio University:**

Psychology and Social Work Clinic (002 Porter Hall) (740) 593-0902

Counseling and Psychological Services (Hudson Health Center, 3rd floor) (740) 593-1616
Ohio University Post Study Consent Form

Title of Research: Chain Letter Study

Permission to use letter-writing task data for research purposes

Researchers: Danielle M. Cooper, MA, Justin W. Weeks, Ph.D., Timothy Anderson, Ph.D.

This consent form will allow the use of data from the letter-writing tasks, which were obtained while you completed the online study. You should print out a copy of this document to take with you.

Confidentiality and Records

All information that is collected from you during your participation in this study will be protected by the investigator. No identifying information will be paired with your study responses, and thus, your participation will be anonymous.

If you agree to allow us to examine the letters you wrote, please indicate this by clicking “Yes, I agree for you to examine my responses to this study” below; if you do not agree to allow us to examine the letters you wrote, please indicate this by clicking “No, I do not agree for you to examine my responses to this study” below. If you agree for us to examine the letters you wrote, we will examine them for signs of prosocial behavior, and your letters will be retained indefinitely (but will not be linked to your identity in any way). If you do *not* agree for us to examine the letters you wrote, your letter will never be examined and will be deleted within a few weeks of your participation in the study.

By clicking “Yes, I agree for you to examine my responses to this study” below, you are agreeing that:

- you have read this consent form (or it has been read to you) and have been given the opportunity to ask questions
- known risks to you have been explained to your satisfaction.
- you understand Ohio University has no policy or plan to pay for any injuries you might receive as a result of participating in this research protocol
- you are 18 years of age or older
- your participation in this research is given voluntarily

For maximum confidentiality, please clear your browser history and close the browser before leaving the computer
IRB Approval Form

The following research study has been approved by the Institutional Review Board at Ohio University for the period listed below. This review was conducted through an expedited review procedure as defined in the federal regulations as Category(ies):

Project Title: Chain Letter Study

Primary Investigator: Danielle Marissa Cooper
Co-Investigator(s):

Faculty Advisor: Justin Weeks

Department: Psychology

Robin Stack, CIP, Human Subjects Research Coordinator
Office of Research Compliance

Approval Date: 4/10/14
Expiration Date: 4/9/15

This approval is valid until expiration date listed above. If you wish to continue beyond expiration date, you must submit a periodic review application and obtain approval prior to continuation.

Adverse events must be reported to the IRB promptly, within 5 working days of the occurrence.

The approval remains in effect provided the study is conducted exactly as described in your application for review. Any additions or modifications to the project must be approved by the IRB (as an amendment) prior to implementation.

S
Appendix C: Proposed Mediation Analyses

Hypothesis 4: The indirect effect of social anxiety on social support via the interpersonal traits will be tested with Preacher and Hayes (2008) meditational models. Given that prosocial tendencies and hostility both fall within the same dimension on the circumplex model, we will use the decision rule to include either (or both) traits that is significantly related to social anxiety and the social support variables. Given the two dimensions of the circumplex model coupled with the two corresponding pairs of social support variables, four meditational models will be examined.

A. Hostility/Prosocial Tendencies

1. The indirect effect of social anxiety on communal support (impression code) via hostility/prosocial tendencies will be tested with Preacher and Hayes (2008) meditational model.
2. The indirect effect of social anxiety on emotional support (SSBC code) via hostility/prosocial tendencies will be tested with Preacher and Hayes (2008) meditational model.

B. Submissiveness

1. The indirect effect of social anxiety on agentic support (impression code) via submissiveness will be tested with Preacher and Hayes (2008) meditational model.
2. The indirect effect of social anxiety on informational support (SSBC code) via submissiveness will be tested with Preacher and Hayes (2008) meditational model.
Appendix D: Coder Training and Reliability

A clinical psychology graduate student and four undergraduate research assistants were trained with the coding system. Since late Spring 2015, coders met two to four times per month (i.e., approximately 7 months). Thought units were identified as the smallest codable unit of meaning. Specifically, a thought unit has been identified in past research as an independent clause, a nonrestrictive dependent clause, an element of a compound predicate, or a term of acknowledgement, evaluation or address (Stiles, 1992). During all discussions aimed to identify thought units within each letter, there was an ease and high degree of agreement between the graduate student, undergraduate students, and professor. In early cases reviewed, thought units were reviewed by all of the coders together prior to coding the letters. As it was clear there were minimal differences between coders during these meeting reviews, and all coders understood the idea of thought units, thought units were reviewed and agreed upon by the graduate student and at least one undergraduate student prior to coding any of the letters. The graduate student made the final approval of all thought units, which very rarely required minor revisions. During the whole process of breaking up thought units and coding letters, all letters were reviewed electronically, and each thought unit was placed on a separate line of the Excel spreadsheet. After training to understand the SSBC codes, coders practiced coding the letters both in session and for homework between sessions. Each session included a review of the coded letters to increase reliability and understanding of the coding system. Specifically, all codes assigned for homework for the session were reviewed in the subsequent session. All coders actively participated in each discussion, bringing up
disparities in individual codes, followed by discussion of different interpretations until a single code was understood and agreed upon by all coders.

After ample training (i.e., 7 months of required RA meetings held 2-4 times per month to review codes), an initial formal reliability check was conducted using codes from 30 letters before any further assignments were made. Each coder entered their codes into a spreadsheet, individually prepared by the primary investigator. Independence of codes were assured by assigning the codes for homework and completing the excel spreadsheets separately prior to any discussion. Some codes were discussed during coder training meetings, but original coder responses were finalized before any discussion among coders.

Reliability was originally tested using interclass correlations for all 5 coders on the 30 letters. However, throughout the training process and based on the initial ICCs, it was clear that one undergraduate coder was by far more reliable than the others. As the original SSBC was coded by two coders, coupled with the more reliable and higher quality data from this undergraduate coder, the decision was made to continue with only the single undergraduate student coder and the graduate student coder.

Our hypotheses and analyses focused on the four social support dependent variables (i.e., emotional, informational, communal, and agentic). For the two primary codes from the SSBC, the proportion of thought units coded as emotional or informational were used. For the two overall impression codes, the number value from 1-7 were used, where 7 indicates the strongest presence of the type of support. In addition, we tested for reliability on the specific codes of the SSBC (e.g., suggestion/advice, reassurance, empathy) for the SSBC, as the proportion of thought units coded as the specific code. The
critical standard for achieving reliability on all codes was intraclass correlations (ICCs) of .70 and above. As a decision rule, we only used codes if they were significant, and we only required reaching reliability on at least one pair of social support variables (either SSBC categories or overall impression codes). If only the two impression or two SSBC codes reached reliability, only the set of two support codes would be used in the analyses.

Once inter-rater reliability was achieved, coders were ready to use the SSBC independently. Following attaining reliability, each letter had a single primary coder. To diminish the chance of rater drift, a second reliability check was conducted with an additional randomly selected overlapping 30 letters assigned to both coders. Both coders were unaware of which letters were used for the second reliability check during the coding process. Likewise, coders were informed that their codes would be checked throughout the coding process in order to maintain coder quality and reliability. In addition, meetings were held regularly throughout the coding process for calibration (i.e., continued discussing coding decisions and correction by the primary investigator). For all letters, including those 60 letters used to achieve reliability (i.e., 30 letters for the initial reliability check, and 30 letters for the second reliability check), the primary coder whose codes would be used as the official data point was assigned at random.