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Depression, Social Anxiety, and Attachment as Predictors of the Use and Quality of Cyber Communication

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**DEPRESSION, SOCIAL ANXIETY, AND ATTACHMENT AS PREDICTORS OF
THE USE AND QUALITY OF CYBER COMMUNICATION.**

by

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B.S. May 2006, Michigan State University

A Thesis Submitted to the Faculty of
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ABSTRACT

DEPRESSION, SOCIAL ANXIETY, AND ATTACHMENT AS PREDICTORS OF THE USE AND QUALITY OF CYBER COMMUNICATION.

Stefan E. LaTulip
Old Dominion University, 2013
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This study examined the influence of depression symptoms, social anxiety symptoms, and adult attachment style on the use and the perceptions of the quality of cyber communications with close friends, romantic partners, and family members. One hundred thirty-five individuals completed an initial survey, with sixty five of the original group completing a follow-up survey five weeks later. Results indicated that anxious attachment was associated with a greater reported usage of social networking sites, whereas avoidant attachment predicted less instant message use over time. Depression symptoms and avoidant attachment were generally associated with perceptions of higher negativity and lower positivity with some of the target groups, where as social anxiety symptoms were generally associated with perceptions of more positive interactions. These findings indicate that depression symptoms, social anxiety symptoms, and attachment are differentially associated with quantity and perceived quality of use of cyber communication. Implications for understanding the relationship between psychological symptoms and problematic interpersonal behavior via social networking activities are discussed.

This thesis is dedicated to my friends and family. Their love and undying support greatly eased my stress and worry during the entire process.

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CHAPTER I

INTRODUCTION

The use of online communication is ubiquitous in modern culture. As of September 2012, the social networking site Facebook boasted 1.01 billion users worldwide (The Associated Press, 2012). In the U.S., users spend on average, 8 hours per month on Facebook (Parr, 2012). In 2009 it was estimated that around 1 billion people around the world utilized some form of instant messaging, with nearly 9 billion messages being sent per day (Pingdom, 2010). These statistics give an idea of the popularity of social networking sites (SNS) and instant messaging use within contemporary culture. These instant and multifarious online communications present a relatively new arena for psychopathology to play out and be maintained. Thus, understanding how individuals with different psychological traits perceive their interactions on these common, online modes of communication can help to inform clinicians of the possibility of maladaptive online communication behavior. Indeed, research has begun to investigate how individual differences in depression symptoms and social anxiety symptoms are associated with the quantity and quality of the communications within these two media (Davila, Hershenberg, Feinstein, Gorman, Bhatia, & Starr, 2012; Feinstein, Bhatia, Hershenberg, & Davila, 2012). However, to my knowledge, researchers have not investigated how adult attachment theory relates to the quality and quantity of communication within these interactions. Thus, the purpose of this study was to a) Replicate the findings of past research concerning the relationships of depression symptoms and social anxiety symptoms with the quantity and quality of online interactions, b) Apply adult attachment

theory to examine if anxious and avoidant attachment account for additional variance in the quantity and quality of online interaction, beyond that accounted for by depression symptoms and social anxiety symptoms.

Effects of Internet Use on Psychopathology

Many past studies have investigated how online interactions predict anxious and depressive symptoms and have shown mixed findings. Bessière, Kiesler, Kraut, and Boneva (2008) found in a longitudinal study that how an individual uses the internet can predict changes in depression; those that used the internet mainly for entertainment or information experienced no change in depression, however those that used the internet to communicate with friends and family showed lower depression scores over time. Further, the study found that individuals that used the internet to meet new people or talk in online groups experienced changes in depression that depended on their initial level of social support: those that started with high or medium social support had higher depression scores over time but those that had low social support did not exhibit this increase. This indicates that initial social support moderates the effect of meeting new people online, as those that have a moderate to high amount of social support seem to become more depressed when trying to meet new people online and talking in chat rooms. A longitudinal study by van den Eijnden, Meerkerk, Vermulst, Spijkerman, and Engels (2008) discovered that instant message and chat room use positively predicted compulsive internet use six months later and that instant message use predicted greater depression scores six months later. Another longitudinal study of Dutch adolescents found that, for those who initially perceived themselves as having low friendship quality, communication use on the internet predicted lower depression scores one year later

(Selfhout, Branje, Delsing, ter Bogt, & Meecus, 2009). Selfhout et al. (2009) also found that using the internet for non-communication purposes predicted increases in social anxiety and depression. Overall these studies seem to have conflicting results. Two studies (Bessière et al., 2008; Eijnden et al., 2008) found that use of instant messaging and chat rooms to meet new people and talk to friends was positively associated with depression, but Bessière et al. (2008) found that initial social support moderated this association so that this effect was only true for those that had moderate to high initial social support. However, this moderating effect seemed to be stronger in a study by Selfhout et al. (2009), so that those with poor initial friendship quality actually experienced significantly lower depression scores when using the internet to communicate with friends and new individuals. Two of the studies showed conflicting findings concerning using the internet for non-communication purposes vs. communication purposes: Bessière et al. (2008) found using the internet for non-communication purposes was associated with no change in depression, whereas Selfhout et al. (2009) found an increase in depression and social anxiety. These three recent studies illustrate the conflicting findings of how the type of internet use is associated with depression symptoms, and how initial social support and friendship quality can complicate this relationship further.

A Different Perspective of Analysis

Feinstein et al. (2012) have stressed that it is important to investigate how depression symptoms and social anxiety symptoms affect the frequency and quality of the use of SNS and instant messaging. Those with higher levels of depression symptoms and social anxiety symptoms may interact differently online compared to those with lower

levels of these characteristics. Further, adult attachment theory predicts that those with more avoidant and or anxious attachment should interact differently with their friends and significant others compared to those with lower levels of these two traits. Past study indicates depression symptoms, social anxiety symptoms, and attachment style will be related to the quality of interactions through online communication, and that attachment style will be related to the quantity of use of online communication. Therefore, this study will use Feinstein and colleagues (2012) suggested predictive direction: using depression symptoms, social anxiety symptoms, and attachment as predictors of the quality and quantity of online interactions. This is justified not only because past research has demonstrated this directional effect, but because it is important to ascertain how individual differences in these areas can affect online communication. These insights may aid in understanding how those with depression symptoms, anxiety, and insecure attachment act differently or perceive their interactions differently online.

Effects of Depression Symptoms on Online Communication

A few studies have investigated how depression symptoms predict the quantity of interactions via the internet. Kraut and colleagues (1998) found that depression symptoms at initial testing was not associated with a significant increase or decrease in number of hours spent communicating via the internet after 12 to 24 months. However, Kraut et al. (1998) did not control for initial internet usage. A study by van den Eijnden et al. (2008) did control for initial internet usage, and after six months found that depression symptoms did not predict any significant changes in the use of instant messaging. One cross-sectional study and one longitudinal study by Davila et al. (2012) also controlled for initial internet use and found similar results. They found that depressive symptoms

were not associated with any retrospective memory of an increase in time spent using Facebook and instant messaging in the cross-sectional study, and also found that depressive symptoms did not predict increases in the use of Facebook and instant messaging over a three week period in the longitudinal study. Similarly, a study by Feinstein and colleagues (2012) found that initial depression symptoms did not predict a significant increase or decrease in time spent social networking online while controlling for initial social networking use. These three studies indicate that depression symptoms may not be associated with a significant change in the use of online communications.

Possible mediators

While depression symptoms have not been found to predict significant changes of frequency of online communication, two theories may suggest some reasons why depression would be associated with a perception of higher negativity via online interactions. Coyne's (1976) excessive reassurance theory states that those who are depressed attempt to improve their mood by constantly seeking positive support from others. However, this constant pursuit of reassurance serves to aggravate others and causes them to react more negatively to the depressed individual or reject the depressed individual. Indeed, a study by Joiner, Metalsky, Gencoz, and Gencoz (2005) found that there was an association between excessive reassurance seeking and depression from a clinical sample of children and adults. Depressed individuals may attempt to gain reassurance through interactions via SNS and instant messaging, and this constant reassurance-seeking may annoy others and cause an increase in negative interactions.

Another aspect of depression that may suggest an increase in perceived negative interactions online communication is rumination. Those with depression symptoms often

have negative thoughts and perceptions that are maintained through rumination, as individuals constantly remind themselves of past situations that corroborate their negative experiences and perceptions (Nolen-Hoeksema 1991; 2000). Studies by Gotlib and Joorman (2010) and by Koster, De Lissnyder, Derakshan, and De Raedt (2011) have found that depressed individuals have problems diverting their attention away from negative stimuli once they attend to them. It is suggested that this is because depressed individuals find it difficult to stop ruminating over negative information and stimuli (Gotlib & Joorman, 2010; Koster et al. 2011). An inability to divert attention away from negative interactions on SNS and instant messaging may cause depressed individuals to report more negative interactions over time because they are unable to forget or let go of them. Gotlib and Joorman (2010) state that it could be excessive rumination that causes individuals to fail to forget negative events, as these individuals keep reminding themselves of the negative events. To my knowledge, only two studies have investigated if depression predicts an increase in negative interactions via online communication. Feinstein et. al (2012) found that depression did predict increases in negative affect following online interactions, and more negative, online interactions with the person's close friends and romantic partner after three weeks. Likewise, Davila et al. (2012) found that depressive symptoms predicted more negative interactions via Facebook and online instant messaging.

Effects of Social Anxiety Symptoms on Online Communication

Some theories also propose that social anxiety symptoms predict increases in the frequency of online communication and more negative interactions, however there have been conflicting findings. Davis (2001) delineated a cognitive-behavioral model of

pathological internet use (PIU) implicating maladaptive cognitions, including social anxiety cognitions, as proximal causes of PIU. Further, Caplan (2003, 2005, 2007) in multiple studies has implicated social anxiety symptoms as being associated with a preference for online communication which may lead to PIU and negative interactions with others. Caplan (2003) found that poorer psychosocial health was associated with preferences for online communication instead of face-to-face interaction which in turn was associated with negative outcomes from problematic internet use. Caplan (2005) further found that those who have lower self-presentation skills are more likely to prefer online communication, and that this preference was related to compulsive internet use and negative outcomes. Finally, Caplan (2007) found that social anxiety symptoms, and not loneliness, were associated with a preference for online interactions. If socially anxious people feel more comfortable in a non-live environment; this preference may cause them to utilize these forms of communication more often. Further, Davila and Beck (2001) found that high social anxiety symptoms was associated with less assertion, greater fear of rejection, and a greater dependency on others, even after controlling for depression. All of these traits also predicted greater interpersonal stress. If socially anxious individuals act less assertive and more dependent via SNS and instant messaging, this may cause others to be more likely to reject them. This paradoxically fulfills their fear of rejection and leads them to have and perceive more negative interactions via these two media.

A drawback to the Caplan research (2003, 2005, 2007) is it examined only the individual's preference for online communication and if that person thought that it was excessive, the study did not quantify the amount of time each person spent utilizing

online communication. One study (Feinstein et al., 2012) did quantify the amount of time each individual spends using online communication and has specifically investigated if greater social anxiety symptoms predict more frequent use of Facebook and instant messaging, and if socially anxious individuals experienced interactions that were more negative while using these forms of communication. They found that there was no significant association between social anxiety symptoms and frequency of use of Facebook and instant messaging and that social anxiety symptoms did not predict a greater negativity of interactions via these two forms of communication. These findings that social anxiety symptoms do not appear to be related to either online communication use or negative online interactions conflict with models proposed by Davis (2001) and Caplan (2003, 2005, 2007).

In summary, it has been found that depression symptoms and social anxiety symptoms do not predict any significant increase or decrease in use of online communications (Kraut et al., 1998; Davila et al., 2012; Feinstein et al., 2012). However, depression symptoms have consistently been found to predict the negativity of interactions via online communication (Davila et al., 2012, Feinstein et al., 2012). It could be that Coyne's excessive self-reassurance theory (1976), and or Nolen-Hoeksema's (1991; 2000) rumination theory mediate this relationship. On the other hand, there is some conflict over whether social anxiety symptoms predict more negative online communications with Davis (2001) and Caplan (2003, 2005, 2007) theorizing it does, but with a study by Feinstein et al. (2012) finding that social anxiety symptoms were not related to a significant prediction of negativity in interactions. While there is a body of research concerning depression symptoms and social anxiety symptoms and their

relationship with the quality and quantity of online interaction, no research, to my knowledge, has investigated how adult attachment style predicts the quality and quantity of online interactions.

Possible Effects of Attachment on Online Communication

Adult attachment theory (Hazan & Shaver, 1994; Simpson & Rholes 1998) is based on attachment theory as applied to infants and children (Ainsworth, Blehar, Waters, & Wall 1978; Bowlby, 1980, 1982), and attempts to explain how adults maintain and perceive relationships with significant others. Adult attachment can be conceptualized as variations on two distinct dimensions: attachment avoidance and attachment anxiety (Brennan, Clark, & Shaver, 1998). Individuals high on the dimension of attachment avoidance generally fear becoming too close to significant others and fear losing their independence at the expense of dependency on others. They are reluctant to show intimacy and often attempt to distance themselves from significant others to maintain their independence (Brennan et al., 1998). On the other hand, those high on the anxious attachment have a fear of being abandoned by their significant others because they feel they are unworthy of love and trust. They often attempt to control relationships and make sure their significant other is available for them and will not abandon them (Brennan et al., 1998). A study by Locke (2008) found in a college sample that participants higher on attachment anxiety or attachment avoidance had very different goals when interacting with an intimate other. Those with high attachment anxiety were less likely to appear warm, sympathetic, and understanding to their partner. Also, they were more likely to feel close or connected with their partner and to feel that their partner needed to be more connected to them. Further, anxious individuals were more likely to

try to be superior to their partner and attempt to not be controlled by their partner.

Avoidant individuals were also less likely to appear warm and sympathetic, but were more likely to try to avoid closeness with their partner and to avoid opening up to their partner.

A study by Saferstein, Neimeyer, and Hagans (2005) found that insecure individuals (those that had either high anxious attachment or high avoidant attachment) reported lower levels of companionship and security and higher levels of conflict with their same-sex and opposite-sex best friend when compared to secure individuals (those with low anxious and avoidant attachment). If these behaviors and feelings by avoidant and anxious individuals were to manifest through online interactions, then hypotheses regarding the quality and quantity of interactions via this medium can be made. First, anxious individuals should show a greater usage of online interaction methods in attempts to satisfy their need not to feel disconnected from intimate others. Second, anxious individuals should show a greater number of negative interactions as they are less likely to be warm and sympathetic to significant others and more likely to try to control others so they do not feel inferior to them. Avoidant individuals should show less use of online communication as their goal is to avoid becoming too close to intimate others. However when avoidant individuals do utilize methods of online communication, they may have more negative interactions as they are less likely to be warm or sympathetic to close others. This study hypothesizes that because attachment theory has specific predictions as to how individuals act with intimate others, avoidant attachment and anxious attachment will explain additional variance in the quality and quantity of online interactions above and beyond what depression symptoms and social anxiety symptoms explain. To my

knowledge these hypotheses have not been tested, and this study will be the first to examine attachment styles predictions concerning the quality and quantity of interactions via online interaction.

Differential Effects from Target of Communication

Few studies have examined if psychopathology manifests itself differently in an online medium based on the target of communication. Bessière et al. (2008) found that depression was reduced over time by talking online with both family and friends; however, the study did not differentiate between the unique effects of either family or friends alone. Feinstein et al. (2012) examined depression and social anxiety symptoms' effects on individual's perception of positive and negative online interactions with close friends, romantic partners, and people in general. They found that depression at time one predicted a higher perception of negative interactions with both close friends and romantic partners at time two, and also a lower perception of positive interactions with romantic partners at time two. This suggests that the association between depression and the quality of interactions may be different depending on the target of communication. Both social anxiety and general anxiety at time one did not predict the perception of an increase or decrease in the quality of online communication with close friends, romantic partners, and people in general. This suggests social anxiety and general anxiety have no effect on the perception of interactions across multiple target groups. Although this study provided some preliminary data of the differential effects of depression and anxiety symptoms on the perception of interactions with both close friends and romantic partners it did not investigate if there is a different association when the target of communications was family members. Although no study, to my knowledge, has specifically studied how

attachment style could predict differential perceptions of quality of interactions with close friends, romantic partners, and family members, attachment style and adult attachment style were initially developed to describe and explain the child-parent relationship and romantic relationships (Hazan & Shaver, 1994; Simpson & Roles 1998). Following this logic, the current study hypothesized that attachment style will more strongly predict the perception of negativity when interaction targets are romantic partners and family members instead of close friends.

Hypotheses and Research Questions

1. Social anxiety, anxious attachment, and avoidant attachment, but not depressive symptoms, will predict the frequency of online communication. As was theorized by Davis (2001) and Caplan (2003, 2005, 2007), social anxiety symptoms will be associated with more internet communication use and will predict an increase in frequency of online communication over time; however, it should be noted that Feinstein et al. (2012) failed to find these results. Finally, anxious attachment will also be associated with a higher frequency of internet communication use and will predict an increase in use over time; however, avoidant attachment will be associated with a lower frequency of use and will predict a decrease in use over time.
2. Depression symptoms, anxious attachment, and avoidant attachment will all predict a perception of negative communication with the three target groups (close friends, romantic partners, and family members) and will predict an increase in negativity over time with the three target groups. However, anxious attachment and avoidant attachment will more strongly predict the perception of

negative communication and will more strongly predict an increase of negativity over time when the targets of communication are romantic partners and family members.

3. The association between depressive symptoms and the perception of negative communication and the prediction of increased negativity over time with the target groups will be partially or fully mediated by rumination and or the trait of excessive reassurance seeking.
4. This study included measures of participant's perception of positivity with close friends, romantic partners, and family members, and Feinstein et al. (2012) did find that depression predicted a perception of fewer positive interactions with romantic partners, however the lack of theory regarding how depression symptoms, social anxiety symptoms, and attachment insecurity predict the perception of online positivity argued against any formal hypotheses. This study will analyze the associations, but it will not hypothesize what will be found, and will leave this as a research question.

This study measured both SNS use and online instant messaging. SNS communication pertains to any posting and reposting of statements in a non-one-on-one format such as those communications found in status updates and comment responses on Facebook and "tweets" on Twitter. Instant messaging refers to one-on-one, online message communication such as the instant message feature on Facebook, Google messenger, or AOL instant messenger.

CHAPTER II

METHOD

Procedure

This study used Cohen's (1988) *Power Primer* study to determine the amount of participants necessary to detect a reasonable effect size. From Cohen's suggestion, it was determined that with an alpha of .05 and a beta of .80, that 55 individuals would be needed to detect a medium effect size while using six predictors in a multiple regression analysis. Thus, 55 individuals was set as the lower limit of participants necessary to have sufficient power to detect a reasonably large effect size for this study.

With this in mind, One-hundred-thirty-five individuals taking psychology classes at Old Dominion University completed a survey concerning their behavior and interactions occurring online during the preceding month along with some of their general psychological characteristics in exchange for research credit. Five weeks later, these individuals were invited back to fill out the same survey as it related to their experiences during the previous month in exchange for more research credit. Sixty-five of the original 135 (48% response rate) returned to fill out the survey the second time.

Participants

Participants were required to be between 18 and 39 years of age in order to be included in the analysis. The average age of the final 135 participants was 22.16 ($SD = 4.36$) with the ages ranging from 18 to 38. Most of the participants (80%) were female with 53% of the full sample describing themselves as white, 35% as black or African-

American, 6% as Hispanic or Latino/Latina, 4% as Asian, 1% as Native-Alaskan or Native-American, and 1% as Native-Hawaiian or other Pacific Islander.

The average age of the group that responded to both measures was 22.78 ($SD = 4.75$). The group was, again, mostly female (83%) with 57% describing themselves as white, 34% describing themselves as black or African-American, 5% describing themselves as Asian, 2% describing themselves as Hispanic or Latino/Latina, 2 % as Native-Alaskan or Native-American, and 2% as Native-Hawaiian or other Pacific Islander. T-tests and chi squares were used to ascertain if there were any significant differences between demographics (gender, ethnicity, and age) and the variables of interest (the psychological variables, the online use variables, and the quality of use variables) for those that responded to the second survey compared to those who did not. Analysis revealed that there were no significant differences between demographics and the variables of interest between the two respondent groups.

Participants indicated if they used Facebook, Twitter, Tumblr, and instant messaging services during the past month. Of the 135 people who responded to the initial survey, 117 indicated that they had used Facebook in the last month, 61 indicated that they used Twitter in the last month, 23 indicated they used Tumblr in the last month, and 91 indicated that they had used instant message services in the last month. The participants indicated that they used and checked each of the three SNS media about every day, on average, and indicated that they used instant message services several times per week, on average. Participants indicated they had an average of 544 friends on Facebook, 302 followers on Twitter, and 96 followers on Tumblr. Of the 65 individuals who responded at time two, 57 indicated that they used Facebook during the last month,

32 indicated they used Twitter during the last month, nine said they utilized Tumblr during the last month, and 25 said that they used instant message services during the last month. The 65 individuals who filled out both time one and time two indicated, at both assessment points, that they had been using and checking all three SNS media every day, on average, and have been using instant messaging services several times per week, on average. These 65 individuals also indicated they had an average of 532 friends on Facebook at time one and 469 friends at time two. They indicated that they had an average of 272 followers on Twitter at time one and 331 at time two. Finally, they indicated they had an average of 105 Tumblr followers at time one and 133 followers at time two.

Measures

Online communication measure

The time spent utilizing online communication and the quality of these interactions were measured by using a modified version of the Social Networking Survey (Davila et al., 2012). The survey measures how much time individuals utilize social networking, the perception of quality of these interactions, and the affect right after use of social networking. The original survey examined social networking site use (Facebook and Myspace), instant message use, and texting. This study is only examining online interactions, so questions concerning texting were omitted, also this survey replaced questions concerning Myspace with questions concerning Twitter and Tumblr. Finally, the original survey examined interactions across three interaction groups (close friends, romantic partners, and people in general), the survey in this study asked participants questions concerning their perception of interactions with family members in lieu of

people in general. Participants were asked to endorse the type of SNS they utilize, and then indicate how many friends/followers they had on each site. They were then instructed to indicate how many times they had interacted via that medium and how many times they had checked that medium in the past month on a six-point Likert scale (1 = *never* to 6 = *multiple times per day*). This meant there were six questions total to assess the frequency of SNS use. To measure IM use, respondents were asked how many times during the last month they had utilized IM on the same six-point Likert scale described above. The perceptions of the quality of interactions with each interaction group (close friends, romantic partners, and family members) were assessed by having respondents answer a series of questions about the perceived positivity and negativity of interactions via SNS and then IM. Five items were used to measure the perceived positivity of interactions via SNS and IM separately across the three interaction groups, with a sample question being, “Thinking about all of your interactions with close friends on Facebook, Twitter, and Tumblr during the past month, how often, on average, did your mood improve after these interactions?” Respondents were to answer on a 7-point Likert scale (0 = *never* to 6 = *all the time*). Analysis of time one data revealed the Cronbach alphas of the positivity measures via SNS for close friends, romantic partners, and family members to be .77, .81, and .88 respectively. No one endorsed communicating with their families via IM, so the alphas for positivity via IM for close friends and romantic partners were .82 and .94 respectively. Seven items were used to measure the perceived negativity of interactions via SNS and IM separately across the interactions groups, a sample question being “Thinking about all of your interactions with close friends on Facebook, Twitter, and Tumblr during the past month, how often, on average, did these individuals criticize

you?” Respondents were again to answer on a 7-point Likert scale. Cronbach alphas of the time one measures of negativity via SNS for close friends, romantic partners, and family members to be .79, .84, and .87 respectively. Alphas for negativity via IM for close friends and romantic partners were .89 and .94 respectively.

Analysis revealed that the perceived positivity with close friends via SNS and IM correlated significantly both at time one, $r(73) = .71, p < .001$, and at time two, $r(21) = .73, p < .001$. Further, a significant correlation was found between the perception of positivity with romantic partners via SNS and IM at time one, $r(12) = .91, p < .001$, and at time two, $r(8) = .95, p < .001$. It was decided that these variables would be combined for each target group for both time one and time two, meaning there would be a *positivity with close friends* variable at time one and time two and a *positivity with romantic partners* variable at time one and time two. Cronbach’s alphas for these two composites were .87 and .94 respectively at time one, and .93 and .76 respectively at time two. Cronbach’s alphas for positivity with family members via SNS at time one and time two were .88 and .89 respectively.

Analysis of the negativity ratings via SNS and IM with both close friends and romantic partners yielded similar findings. Negativity via SNS and IM with close friends correlated significantly at time one and time two, $r(73) = .53, p < .001$ and $r(21) = .848, p < .001$, respectively. Similarly, negativity via SNS and IM with romantic partners correlated at time one, $r(12) = .83, p < .001$. Thus these two variables for each target were combined into a *negativity with close friends* variable and a *negativity with romantic partners* variable. Cronbach’s alphas for these two composites were .89 and .88 respectively at time one, and .93 and .78 respectively at time two. Cronbach’s alphas for

negativity via SNS with family members at time one and time two were .87 and .68 respectively.

In summary eight composite measures were formed from the Social Networking Survey, two were internet use variables: *SNS use* and *IM use*. Three of the composites were positivity measures with the three target groups: *online positivity with close friends*, *online positivity with romantic partners*, and *positivity with family via SNS*. Finally, three of the composites were negativity measures with the three target groups: *online negativity with close friends*, *online negativity with romantic partners*, and *negativity with family via SNS*.

Depression symptoms measure

Depression symptoms were measured by utilizing the Center for Epidemiological Studies Depression Scale (CES-D); (Radloff, 1977). The scale includes 20 items that are used to assess depressive symptomology in the general population with an emphasis on depressed mood. Respondents indicate how certain statements were applicable to them during the past week using a four-point Likert scale (0 = *rarely or none of the time (less than one day)* to 3 = *most or all the time (5-7 days)*). Scores were computed by averaging each respondent's score for the 20 items, with higher scores being indicative of more depressive symptoms. The CES-D was found to have a Cronbach's alpha of .85 in the general population and .90 in an inpatient population. Further, the inpatient sample were found to have significantly higher CES-D scores compared to those in the general population (Radloff, 1977). The CES-D was found to be significantly, positively correlated to other depression self-report scales such as the Lubin, Bradburn Negative Affect, and Bradburn Balance scales, while being significantly, negatively correlated to

the Bradburn Positive Affect scale. Finally, the CES-D was significantly associated with interview ratings of depression (Radloff, 1977). These findings all demonstrate that the CES-D has satisfactory construct validity. The Cronbach's alphas for the CES-D for the full, current sample were .90 at time one, and .88 for the subsample that responded at both time one and time two.

Social anxiety symptoms measure

The Brief Fear of Negative Evaluation Scale (BFNE); (Leary, 1983) was used to evaluate social anxiety symptoms for respondents. The scale is composed of 12 items that attempt to ascertain how much respondents are concerned with being evaluated negatively by others. Respondents indicate how much each statement describes them on a five-point Likert scale (1 = *not at all characteristic of me* and 5 = *extremely characteristic of me*). Ratings are obtained by averaging respondent's answers. Higher scores indicating higher levels of social anxiety symptoms. Cronbach's alphas for the scale have been found to be .90 demonstrating internal consistency and a large test-retest correlation after four weeks ($r = .75$) was found (Leary, 1983). Further, the BFNE was significantly, positively correlated with the Social Avoidance and Distress (SAD) Anxiety Subscale ($r = .35$), Avoidance Subscale ($r = .19$), and Interaction Anxiousness subscale ($r = .32$) demonstrating satisfactory convergent validity (Leary, 1983). Also, some participants were asked to converse with other participants in the study for six minutes. In the post experiment questionnaire, two questions asked participants to assess concerns with being evaluated: a) During the conversation, how much did you think about how you were coming across to the other subject? b) How much would it bother you to learn that the other subject had evaluated you unfavorably after the conversation?

The correlations between questions a. and b. and the BFNE were both positive and significant ($r = .31$ and $r = .57$ respectively), further demonstrating satisfactory convergent validity (Leary, 1983). The Cronbach's alphas for the BFNE for the full sample were .85 at time one, and .86 for the sub-sample that responded at time one and time two.

Reassurance seeking measure

Excessive reassurance seeking was measured by using the 4-item Depressive Interpersonal Relationships Inventory – Reassurance Seeking Subscale. (DIRI-RS); (Joiner & Metalsky, 2001). The scale attempts to ascertain if respondents excessively and constantly seek reassurance from others. Respondents are asked to respond on a seven-point Likert scale how certain statements describe them (0 = *No, not at all* and 7 = *Yes, Very much*). An example question is “Do you frequently seek reassurance from the people you feel close to as to whether they *really care about you*?” Reassurance ratings are obtained by computing the mean of the four items for each individual, with higher means associated with more reassurance seeking. Factor analysis revealed that item loadings onto the reassurance seeking subscale averaged .81 demonstrating high cohesiveness and the scale had a coefficient alpha of .88 demonstrating high internal consistency (Joiner & Metalsky, 2001). In another study an individual was asked to come in with their roommate and take part “in a project that will help clinical psychology students hone their skill at psychological test interpretation.” The target was given a brief questionnaire and then given bogus feedback that their test indicated they had an “active” and “edgy” personality. The target and the roommate were then prompted to discuss the results of the test with each other for five minutes, and were videotaped. A panel of six

trained judges, blind to the questionnaire, made ratings of the targets based on a coding scheme for reassurance seeking behaviors to establish a reassurance-seeking index for each target. Judges also made ratings of subjective feelings about how much the target sought reassurance. These two ratings were correlated significantly to the DIRI-RS ($r = .39$ and $r = .43$ respectively) demonstrating convergent validity (Joiner & Metalsky, 2001). Further, individuals with higher baseline reassurance seeking were more likely to have depressed symptoms in the future demonstrating predictive validity (Joiner & Metalsky, 2001). The Cronbach's alphas for the DIRI-RS for the current, full sample were .85 at time one, and .82 for the subsample that responded at both time one and time two.

Rumination measure

Participant rumination was measured using the 10 item Ruminative Response Scale (RRS); (Treynor, Gonzalez, & Nolen-Hoeksema, 2003). This scale captures two factors of rumination: reflection and brooding that are combined together in a single scale. Reflection is defined as turning inward to attempt to cope with depressive symptoms and brooding being defined as comparing one's situation with some unachieved standard (Treynor et al., 2003). Respondents are given a statement to indicate on a four-point Likert scale how often they engage in that behavior (1 = *almost never* and 4 = *almost always*). An example question from the reflection scale being: "How often do you analyze recent events to try to understand why you are depressed." An example question from the brooding scale being: "How often do you think 'what am I doing to deserve this?'" Both scales demonstrated adequate reliability with the Cronbach alpha for the reflection and brooding scale being .72 and .75 respectively, and the test-retest

correlation being .60 and .62 respectively (Treyner et al., 2003). It was found that the reflection scale and the brooding scale were significantly related to depression on the Beck Depression Inventory (BDI) ($r = .12$ and $r = .44$ respectively) demonstrating concurrent validity. Further, reflection and brooding were also significantly correlated with depression at time two at the BDI ($r = .08$ and $r = .37$ respectively) demonstrating predictive validity of depression. The Cronbach's alphas for the RRS for the full sample was .85 at time one, and .81 for the subsample that responded at time one and time two.

Attachment measure

Attachment styles for the participants were assessed using the 12-item Experiences in Close Relationship Scale—Short Form (ECR-S; Wei, Russell, Mallinckrodt, & Vogel, 2007); adapted from the original ECR constructed by Brennan et al. (1998). The scores measure individual differences on two dimensions, anxious attachment and avoidant attachment. Sample questions assessing anxious attachment include, “I worry that romantic partners won't care about me as much as I care about them,” and “I need a lot of reassurance that I am loved by my partner.” Sample questions assessing avoidant attachment include, “I try to avoid getting too close to my partner,” and “I usually discuss my problems and concerns with my partner” (reversed scored). Participants complete their answers to questions by selecting a number on a 7-point scale (1 = *strongly disagree* and 7 = *strongly agree*). Individuals' two scores for anxious attachment and avoidant attachment are the means on each of the two scales. Higher scores on the anxious and avoidant attachment scales indicate higher anxious and avoidant attachment, respectively. It has been found that Cronbach alpha for the anxious attachment scale and avoidant attachment scale were .78 and .84 respectively,

demonstrating good internal consistency (Wei et al., 2007). Further, it was found that anxious attachment scale was significantly related to excessive reassurance seeking ($r = .41$), emotional reactivity ($r = .45$), and psychological distress ($r = .41$). The avoidant attachment scale was significantly associated with emotional cutoff ($r = .59$), fear of intimacy ($r = .74$), and also psychological distress ($r = .38$). These findings demonstrate good convergent validity (Wei et. al, 2007). The Cronbach's alphas for the ECR-S for the current, full sample were .78 for the anxious scale and .84 for the avoidant scale at time one, and for the subsample that responded at time one and time two, it was .79 for anxious and .86 for avoidant at time one.

CHAPTER III

RESULTS

Data were first analyzed for univariate and then multivariate outliers. The analysis revealed two extreme univariate outliers and these data points were subjected to a 90% winsorization to ensure they did not unduly impact any further analyses. After this procedure, reanalysis found no extreme univariate or multivariate outliers. The zero order correlations for the predictors at time one can be seen in Table 2.

Means and standard deviations for the predictor and criterion variables at time one and time two can be seen in Table 1. Analysis was first completed to obtain the correlations between the psychological variables and the quality and quantity of internet use variables at time one. These correlations can be seen in Table 3. Next analyses were completed to see if any of the psychological variables predicted increases or decreases in the use of internet communication over time or an increase or decrease in the perception of negativity and positivity with the three target groups. The partial correlations between the psychological variables and the time two quality and quantity variables, controlling for the corresponding time one quality and quantity variables, can be seen in Table 4. Analysis was next completed to see if any of depression symptom's predictions of negativity with the three target groups, or an increase in negativity over time with the three target groups, were fully or partially mediated by either excessive reassurance seeking and or rumination. Finally, multiple regression analyses were completed if more than one psychological variable had a significant correlation or partial correlation with the internet use or quality of use variable to ascertain the unique prediction from each

psychological variable. Only predictors that had significant correlations or partial correlations with criterion variables were included in the regression models. The multiple regression analyses can be seen in Tables 5 and 6.

Table 1
Means and Standard Deviations of Predictors, Use, and Quality of Use Variables at Time One and Time Two.

Psychological Predictors:	<i>N</i>	<i>M</i>	<i>SD</i>
Total Depression Symptoms	135	34.34	10.36
Social Anxiety Symptoms	135	2.72	0.73
Reassurance Seeking	135	2.29	1.33
Anxious Attachment	135	2.09	0.59
Avoidant Attachment	135	2.90	1.33
Time One Variables:	<i>N</i>	<i>M</i>	<i>SD</i>
SNS Use	135	4.28	3.02
IM Use	91	3.09	1.25
Online Negativity CF	128	1.60	0.62
Online Negativity RP	57	1.52	0.64
Negativity F via SNS	92	1.31	0.45
Online Positivity CF	128	4.57	0.96
Online Positivity RP	57	5.90	1.29
Positivity F via SNS	92	4.95	1.36
Time Two Variables:	<i>N</i>	<i>M</i>	<i>SD</i>
SNS Use	63	4.13	1.00
IM Use	25	3.56	1.29
Online Negativity CF	57	1.53	0.53
Online Negativity RP	16	1.48	0.75
Negativity F via SNS	31	1.17	0.27
Online Positivity CF	57	4.65	1.19
Online Positivity RP	16	5.32	1.22
Positivity F via SNS	31	4.83	1.50

Notes: CF = close friends, RP = romantic partner, and F = family.

Table 2 *Correlations between Time One Predictor Variables*

Variables	Depression Symptoms	Social Anxiety Symptoms	Reassurance Seeking	Rumination	Anxious Attachment	Avoidant Attachment
Depression	1.00	0.46***	0.49***	0.55***	0.27**	0.39***
Social Anxiety		1.00	0.47***	0.51***	0.22*	0.55***
Reassurance Seeking			1.00	0.46***	0.17*	0.48***
Rumination				1.00	0.22*	0.56***
Anxious Attachment					1.00	0.29**
Avoidant Attachment						1.00

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed). $df = 134$ for all.

SNS and IM Use

Social anxiety symptoms

Hypothesis one stated that social anxiety symptoms would be associated with a higher frequency of online communication use and would predict a greater use over time; however, this was not what was found in the data. Social anxiety symptoms were not associated with a significantly higher frequency of either SNS use or IM use at time one, and did not predict greater use of SNS or IM at time two when initial use at time one was controlled for.

Anxious attachment

Correlations at time one did partially support the hypothesis that anxious attachment would predict a higher frequency of use of internet communication at time one. The time one correlation between anxious attachment and SNS use was significant,

$r(133) = .20, p = .019$. Anxious attachment was not associated with a higher frequency of IM use at time one. On the other hand, there was no support from the data for the hypothesis that anxious anxiety would predict an increase in use of online communication over time, as the partial correlations between anxious attachment and SNS and IM use were not significant at time two.

Table 3
Zero Order Correlations between Psychological Variables and Time One Online Communication Variables

	<i>df</i>	Depression Symptoms	Social Anxiety Sympts.	Reassurance Seeking	Rumination	Anxious Attachment	Avoidant Attachment
SNS Use	133	0.02	0.15	0.16	0.15	0.20*	0.05
IM Use	89	0.19	0.11	0.15	0.17	0.11	0.13
Negativity CF	128	0.37***	0.11	0.31***	0.26**	0.13	0.14
Negativity RP	55	0.36**	0.14	0.28*	0.26	0.15	0.64***
Negativity SNS F	90	0.20	0.06	0.20	0.16	0.10	0.24*
Positivity CF	126	-0.10	0.20*	0.08	0.04	0.06	-0.02
Positivity RP	55	-0.31*	-0.20	-0.11	-0.05	-0.07	-0.49***
Positivity SNS F	90	-0.21*	-0.21*	0.06	-0.08	-0.14	-0.09

Notes: CF = close friends, RP = romantic partner, and F = family. * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

Avoidant attachment

Avoidant attachment was not significantly associated with IM use or SNS use at time one. This does not support the hypothesis that avoidant attachment would be associated with a lower reported usage of online communication. Avoidant attachment did significantly predict less use of IM at time two, $r(22) = -.41, p = .037$, which provides

some support to the hypothesis that this attachment style would predict less use of online communication over time, at least in regards to IM use. However, avoidant attachment was not significantly associated with the use of SNS at time two when controlling for initial use.

Depressive symptoms

The data did fully support the hypothesis that depression symptoms would be unrelated to online communication use. At time one, depression symptoms were not significantly associated with a higher or lower use of either SNS nor IM. Further, neither of the time two partial correlations between depression symptoms and SNS use and depression symptoms and IM use was significant.

Perception of Negativity via Online Communication

Depressive symptoms

The data indicated that the association between depression symptoms and the perception of negativity depended on the target of communication. Depression symptoms were associated with a perception of higher negativity with both close friends, $r(128) = .37, p < .001$, and romantic partners, $r(55) = .36, p = .005$, at time one. However, depression was not significantly associated with perception of negativity with family members at time one.

Similarly, the data revealed that depressive symptoms predicted the perception of negativity over time depending on the target of communication. It was found that depression symptoms did significantly predict an increase in the perception of negativity over time when the target was romantic partners, $r(54) = .36, p = .005$. This supports the hypothesis that depression symptoms would predict a perception of more negativity with

romantic partners over time. However, the hypothesis that this prediction would extend to both close friends and family members over time was not supported. Depression symptoms did not significantly predict a perception of more negativity with either friends or family members at time two.

Table 4
Partial Correlations between Psychological Variables and Time Two Online Communication Variables

	<i>df</i>	Depression Symptoms	Social Anxiety Sympts.	Reassurance Seeking	Rumination	Anxious Attachment	Avoidant Attachment
SNS Use	60	-0.13	-0.18	-0.21	-0.15	-0.18	-0.22
IM Use	22	-0.17	-0.19	-0.23	-0.03	-0.13	-0.43*
Negativity CF	54	0.33*	0.08	0.31*	0.12	0.18	0.17
Negativity RP	13	-0.06	-0.45	-0.15	0.25	-0.26	0.09
Negativity SNS F	28	0.11	-0.04	0.15	0.23	0.06	-0.05
Positivity CF	54	-0.40*	-0.09	-0.28*	-0.25	-0.23	-0.28*
Positivity RP	13	0.51	0.61*	0.57*	0.67*	0.77**	0.23
Positivity SNS F	28	-0.30	0.09	-0.04	-0.08	0.04	-0.25

Notes: CF = close friends, RP = romantic partner, and F = family. * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

Anxious attachment

It was hypothesized that anxious attachment would be associated with a perception of higher negativity with all three communication target groups at time one, and a perception of more negativity over time with all three target groups. None of the correlations or partial correlations at time one and time two between anxious attachment and negativity were significant. These data provide no support for the hypothesis, and

moreover, provide evidence that anxious attachment is unrelated to the perception of negativity with close friends, romantic partners, and family.

Avoidant attachment

It was hypothesized that avoidant attachment would be associated with a higher perception of negativity with all three target groups, and the data partially supported this. Avoidant attachment was significantly associated with a perception of higher negativity at time one when the targets of communication were romantic partners, $r(55) = .64, p < .001$, and family members, $r(90) = .36, p = .023$. However, there was no significant association between avoidant attachment and the perception of negativity when the targets were close friends.

It was further hypothesized that avoidant attachment would predict a perception of more negativity with all three target groups over time. The partial correlations did not support this hypothesis, as avoidant attachment did not significantly predict a perception of increased negativity with any of the three target groups.

Attachment styles association with negativity by target

I hypothesized that both anxious attachment and avoidant attachment would more strongly predict the perception of negativity when the targets of communication were romantic partners and family members instead of close friends, and the data did partially support this hypothesis. Using Steiger's Z-test it was revealed that avoidant attachment's association with the perception of negativity with romantic partners, $r(55) = .64, p < .001$, was significantly larger than its association with close friends, $r(128) = .14, p = .104$, at time one, $z = -4.23, p < .001$. However there was no significant difference between avoidant attachments prediction of negativity with family members, $r(90) = .36, p = .023$,

when compared to close friends. As previously mentioned, anxious attachment was not associated with the perception of negativity with any of the target groups for time one and time two. These data provide support for the hypothesis in regards to avoidant attachment more strongly predicting negativity when the targets are romantic partners instead of close friends.

Mediators of Depressive Symptoms's Relationship with the Perception of Negativity

Situations where depression symptoms and either (or both) excessive reassurance seeking and rumination exhibited significant correlations or partial correlations with the perception of negativity were examined for possible mediation effects. Three of these situations were found in the data: the first was with the perception of negativity with close friends at time one where depression symptoms, excessive reassurance seeking, and rumination all correlated significantly with the criterion variable, the second was the perception of negativity with romantic partners where depression symptoms and excessive reassurance seeking significantly correlated with the criterion variable, and the last was with the perception of negativity with close friends at time two where there were significant partial correlations with depression symptoms and excessive reassurance seeking predicting the criterion variable. The mediation models for each of these situations can be seen in Figure 1, Figure 2, and Figure 3 respectively

Mediation analysis of perception of negativity with close friends at time one

Analysis was conducted to investigate excessive reassurance seeking and rumination's possible mediation of the relationship between depression symptoms and the perception of negativity with close friends at time. The path model can be seen in Figure 1. Although, the total effect between depression symptoms and negativity with

close friends at time one is significant and depression significantly predicts both the possible mediators reassurance seeking and rumination, neither of the direct effects from the possible mediation variables are significant. Baron and Kenny (1984) indicate that when the direct effect from the possible mediating variable to the criterion variable is not significant, that indicates that there is not a mediating relationship. This indicates that both excessive rumination seeking and rumination are not mediators to depression symptoms' association with a perception of higher negativity with close friends at time one.

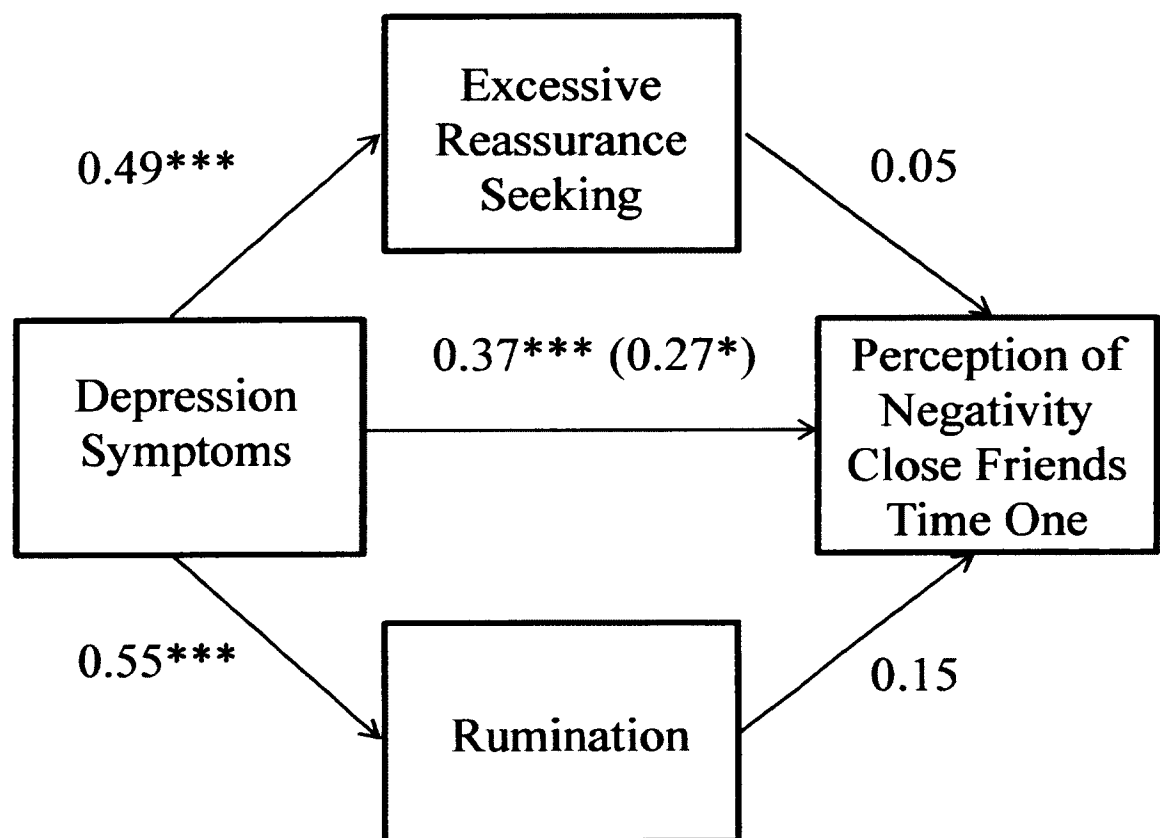


Figure 1
Mediation Model of Depression's Association with Perception of Negativity with Close Friends at Time One through Rumination and Reassurance Seeking.
 * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

Mediation analysis of perception of negativity with romantic partners at time two

Next analysis was conducted to investigate excessive reassurance seeking's possible mediation of the relationship between depression symptoms and the perception of negativity with romantic partners at time one. This path model can be seen in Figure 2. The path from the mediator to the criterion variable is not significant, indicating that excessive reassurance seeking does not mediate depression symptoms' association with a perception of higher negativity with romantic partners at time one.

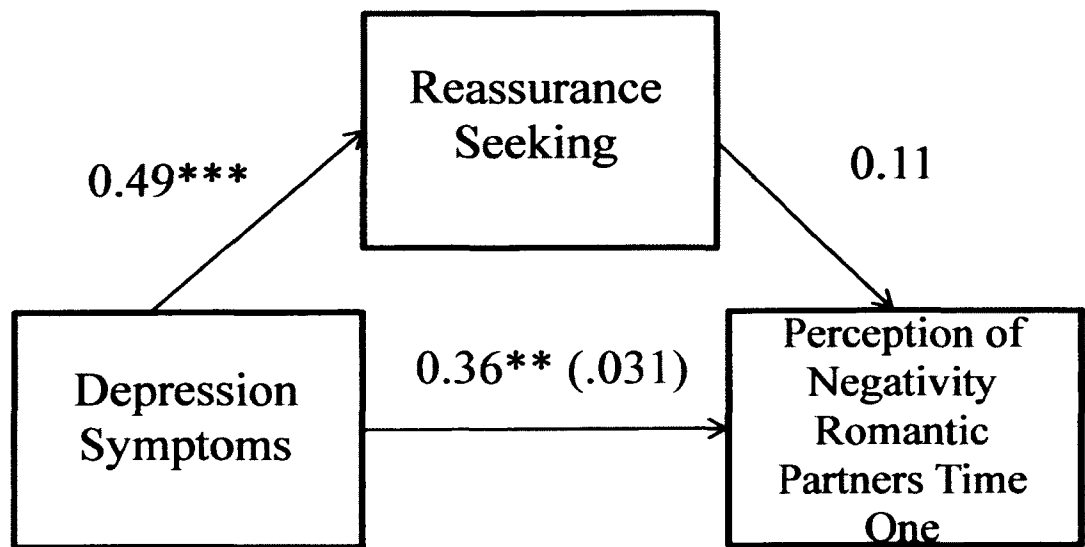


Figure 2

Mediation Model of Depression's Association with Perception of Negativity with Romantic Partners at Time One Through Reassurance Seeking.

* $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

Mediation analysis of perception of negativity with close friends at time two

Finally, analysis was conducted to ascertain if excessive reassurance seeking mediated the relationship between depression symptoms and the perception of negativity

with close friends at time two, controlling for negativity with close friends at time one. This path model can be seen in Figure 3. Again, the path from excessive reassurance seeking to the criterion variable was not significant. This provides evidence that excessive reassurance seeking does not mediate depression symptoms' prediction of a perception of more negativity with close friends over time.

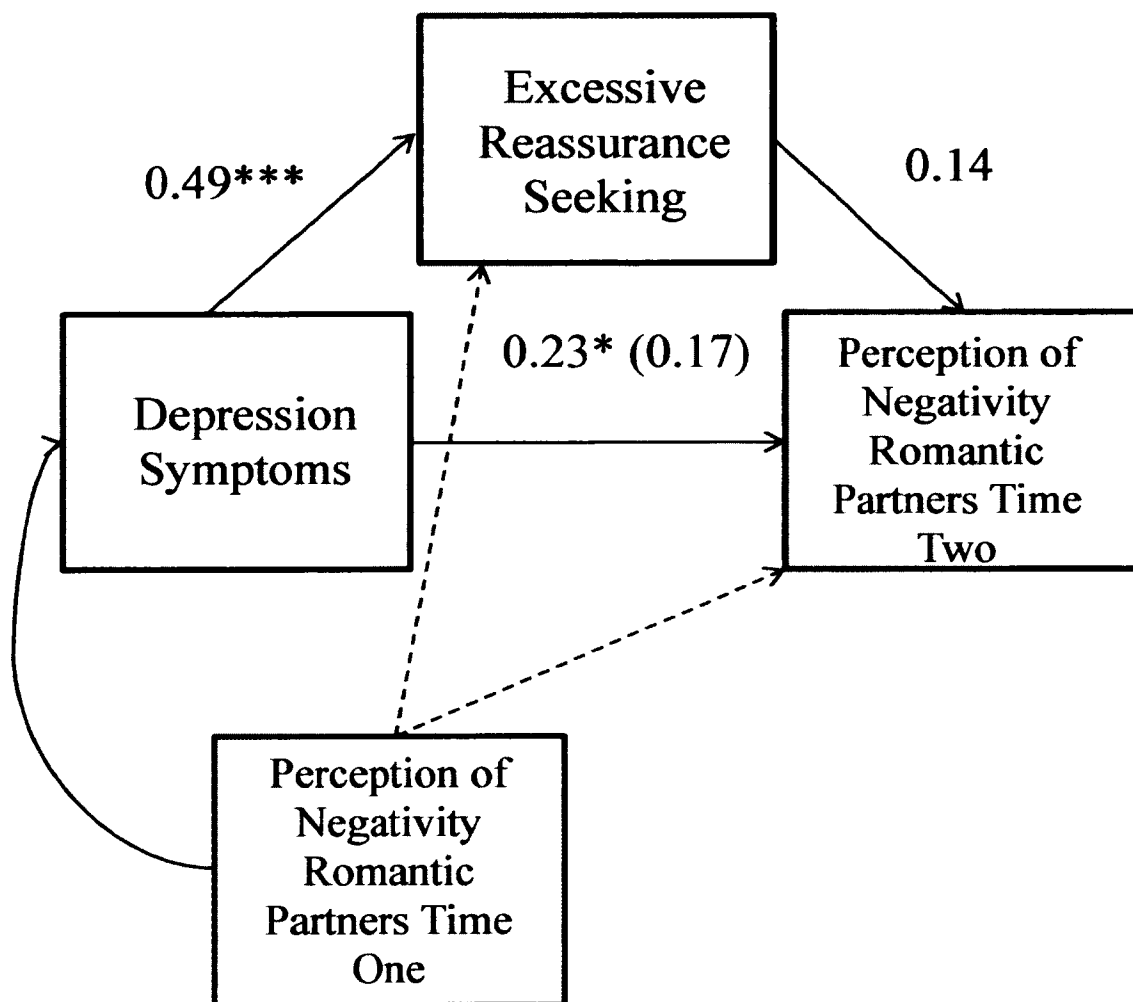


Figure 3
Mediation Model of Depression's Association with Perception of Negativity with Romantic Partners at Time Two Through Reassurance Seeking Controlling for Perception of Negativity with Romantic Partners Time One
 * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

Perception of Positivity via Online Communication

Depressive symptoms

Data indicated that depression symptoms were significantly associated with a perception of lower positivity with romantic partners, $r(57) = -.31, p = .021$, and family members via SNS, $r(90) = -.21, p = .046$, at time one. Depression symptoms were not significantly associated with a perception of positivity when the target group was close friends at time one. However, over time, depression symptoms were only significantly correlated with a perception of lower positivity with close friends, $r(54) = -.40, p = .002$. These data indicate differential associations based on the target and based on the time frame. When the target of communication is either romantic partners or family members, depression symptoms seem to be associated with a perception of lower positivity; however, when looking across time, depression symptoms predicted less positivity only when the target of communication is close friends.

Social anxiety symptoms

Social anxiety symptoms were not associated with a perception of positivity with either romantic partners or family members at time one, but interestingly, it was significantly associated with a perception of higher positivity with close friends, $r(126) = .20, p = .025$. Further, social anxiety symptoms did significantly predict a perception of an increase in positivity with romantic partners over time, $r(13) = .61, p = .017$; however, this finding should be taken with caution due to the small sample size of the analysis, which could possibly lead to biased effect sizes. These data provide some evidence that, depending on the target of communication, those that have higher social anxiety symptoms may actually derive some positive experiences from online communication.

Anxious attachment

Anxious attachment was found to significantly predict a perception of increased positivity over time when the target group was romantic partners, $r(13) = .77, p < .001$. Again, this finding should be taken with caution because of the low sample size of this analysis, which could have led to biased, extreme effect sizes. None of the other correlations or partial correlations at time one or time two between anxious attachment and the perception of positivity were significant. This provides some evidence that those with anxious attachment may perceive more positive interactions over time with their romantic partners.

Avoidant attachment

At time one, avoidant attachment was only significantly associated with a perception of lower positivity when the target of communication was romantic partners, $r(55) = -.49, p < .001$. However, at time two avoidant attachment significantly predicted predicted less positivity at time two when the target group was close friends, $r(54) = -.28, p = .034$. This provides evidence that avoidant attachment's prediction of the perception of positivity depends on both the target group and the time frame.

Multiple Regression Analyses

Multiple regression analyses were conducted if more than one of the psychological variables showed a significant correlation or partial correlation with any of the quality or quantity of use variables at time one or two time. These analyses would help identify the unique predictions of each psychological variable on the criterion variable. Tolerance and VIF statistics were all below 10 and .1 respectively, which

indicated that multicollinearity. All multiple regression statistics for time two analyses are presented after the corresponding time one quality variable was controlled.

Negativity with close friends time one

Depression symptoms, reassurance seeking, and rumination were all correlated with the perception of negativity with close friends at time one, so a multiple regression model using these three psychological variables was conducted to ascertain each variable's unique prediction. The model was significant, $R^2 = .16$, $F(3, 124) = 7.76$, $p < .001$, with only depression symptoms ($\beta = .27$, $p = .011$) being a significant unique predictor of the perception of negativity with close friends. This provides evidence that only depression symptoms are uniquely predicting a perception of higher negativity with close friends at time one, as the effects of both excessive reassurance seeking and rumination disappear when entered into the model.

Table 5.

Multiple Regression Analyses for Negativity at Time One and Two

Predictors:	Criterion: Negativity with Close Friends Time One				
	β	t	R^2	F	N
Depression Symptoms	0.27*	2.59			
Reassurance Seeking	0.15	1.57			
Rumination	0.05	0.49			
			0.16***	7.76	128

Table 5. (Continued)
Multiple Regression Analyses for Negativity at Time One and Two

	Negativity with Romantic Partners Time One				
	β	t	R^2	F	N
Depression Symptoms	0.18	1.43			
Reassurance Seeking	0.01	0.08			
Avoidant Attachment		5.35			
	0.58***				
			0.44***	14.03	57
	Negativity with Close Friends Time Two Controlling Negativity at Time One				
	β	t	R^2 Change	F Change	N
Depression Symptoms	0.17	1.65			
Reassurance Seeking	0.14	1.40			
			0.07*	4.23	57

* $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

Negativity with romantic partner time one

A regression model was conducted with depression symptoms, reassurance seeking, and avoidant attachment. This model was significant, $R^2 = .44$, $F(3, 53) = 14.02$, $p < .001$, with avoidant attachment ($\beta = .58$, $p < .001$) as the only significant predictor. This indicates that only avoidant attachment uniquely predicted a perception of higher negativity with romantic partners at time one, as neither reassurance seeking or depression symptoms reached significance in the model.

Negativity with close friends time two

Multiple regression analyses were conducted using depression symptoms and reassurance seeking as predictors of the perception of negativity with close friends at time two, while controlling for the perception of negativity with close friends at time one. After time one negativity was controlled for, the regression model was significant, $R^2_{change} = .07$, $F_{change}(2, 53) = 4.23$, $p = .02$, however neither depression symptoms nor reassurance seeking uniquely predicted negativity with close friends. This indicates that both depression symptoms and reassurance seeking predicted enough shared variance of negativity with close friends to render them non-significant in the model.

Positivity with romantic partner time one

Both depression symptoms and avoidant attachment were used as predictors in a regression model with the perception of positivity with romantic partners at time one as the criterion variable. The model was significant, $R^2 = .27$, $F(2, 54) = 9.86$, $p < .001$, with only avoidant attachment uniquely predicting positivity with romantic partners, ($\beta = -.44$, $p = .001$). This provides evidence that avoidant attachment uniquely predicts a perception of lower positivity with romantic partners at time one. Depression symptoms failed to uniquely predict positivity in the model.

Positivity with family members via SNS time one

Depression symptoms and social anxiety symptoms were used in a regression model as predictors of the perception of positivity with family members via SNS at time one. The regression model failed to reach significance, $R^2 = .06$, $F(2, 89) = 2.79$, $p = .067$, neither depression symptoms nor social anxiety symptoms were unique predictors in the model.

Positivity with close friends at time two

A regression model was conducted with depression symptoms, reassurance seeking, and avoidant attachment predicting the perception of positivity with close friends at time two, while controlling for the perception of positivity at time one. The model was significant, $R^2_{change} = .13$, $F_{change}(3, 52) = 4.99$, $p = .004$, with only depression being a significant unique predictor, ($\beta = -.25$, $p = .029$). Depression symptoms uniquely predicted a perception of less positivity with close friends at time two, while neither reassurance seeking nor avoidant attachment reached significance.

Positivity with romantic partners at time two

Social anxiety symptoms, excessive reassurance seeking, rumination, and anxious attachment were all used as predictors of the perception of positivity with romantic partners at time two in a regression model, while controlling for positivity with romantic partners at time one. After controlling for positivity at time one, the model was significant, $R^2_{change} = .28$, $F_{change}(4, 10) = 4.23$, $p = .029$, however none of the psychological variables in the model were significant unique predictors. This is largely due to the very small sample size used in the analysis, and the large number of predictors.

Table 6
Multiple Regression Analyses for Positivity at Time One and Time Two

Criterion: Positivity with Romantic Partner Time					
Predictors:	One				
	β	t	R^2	F	N
Depression Symptoms	-0.17	-1.39			
Avoidant	-0.44	-3.49			
Attachment					
			0.27***	9.86	57
Positivity with Family via SNS Time One					
	β	t	R^2	F	N
Depression Symptoms	-0.14	-1.17			
Social Anxiety Sympts.	-0.14	-1.21			
			0.06	2.79	92
Positivity with Close Friends Time Two Controlling for Positivity at Time One					
	β	t	R^2 Change	F Change	N
Depression Symptoms	-0.25*	-2.24			
Reassurance Seeking	-0.09	-0.80			
Avoidant Attachment	-0.18	-1.86			
			0.13**	4.99	57

* $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed)

Table 6 (Continued)
Multiple Regression Analyses for Positivity at Time One and Time Two

Predictors:	Criterion: Positivity with Romantic Partner Time Two Controlling for Positivity at Time One				
	β	t	R^2 Change	F Change	N
Social Anxiety Sympts.	-0.05	-.19			
Reassurance Seeking	0.16	.88			
Rumination	0.05	.16			
Anxious Attachment	0.54	1.76			
			0.28*	4.23	15

* $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed)

CHAPTER IV

SUMMARY AND DISCUSSION

A short-term, longitudinal study was completed to reexamine depression symptoms and social anxiety symptoms' impact on the reported use of online communication and the perception of the quality of interactions via online communication with different target groups. The study attempted to extend the literature by investigating if depression symptoms' association with a perception of greater negativity over time was mediated by the traits of excessive reassurance seeking or rumination. Further, I sought to ascertain if attachment style would also be a predictor of online communication use and the perception of negativity via online communication, and if attachment style was more predictive of negativity when the targets of communication were romantic partners and family members than when the targets were close friends.

Depressive Symptoms

Based on previous research by Feinstein et al. (2012), it was predicted that depression symptoms would be unrelated to the use of online communication, and data did support this. Depression symptoms were found to be both uncorrelated with the frequency of IM use and SNS use at time one, and to be uncorrelated with a change in use of both these media at time two. This is similar to what was found by Feinstein et al. (2012), as depression symptoms did not predict any change in use of online communication and texting over time in their study. Although these are only two studies,

they give corroborating evidence that depression symptoms are unrelated to frequency of online communication either statically or over time.

Depression symptoms were related to the perception of negativity with close friends and romantic partners. This meant that those with depression symptoms were more likely to report being insulted, being ignored, and arguing with the target of communication. It was hypothesized that depression symptoms would be significantly associated with a perception of higher negativity with all of the target groups, and predict more negativity over time with all of the target groups. Both of these hypotheses were partially supported as analyses revealed that depression symptoms were significantly associated with a perception of higher negativity via online communication with close friends and romantic partners at time one, and there was a trend of depression symptoms being associated with a perception of higher negativity with family members via SNS at time one. Depression symptoms also predicted a perception of more negativity at time two with close friends. Multiple regression analyses that included depression symptoms with other significant predictors of negativity found that depression was uniquely associated with a perception of higher negativity at time one with close friends. Feinstein et al. (2012) similarly found that depression symptoms predicted more negative interactions over time with close friends, but also with romantic partners.

Although this study did not hypothesize how depression symptoms would be related to positivity, the data indicated that depression symptoms were largely associated with less positivity. This indicates that those with depression symptoms felt they were not complimented or supported as much via online communication. At time one, depressive symptoms were significantly associated with a perception of less positivity with both

close friends and family, and at time two depression symptoms significantly predicted less positivity with close friends. Multiple regression analyses that included depression symptoms with any other significant predictor of positivity found that depression symptoms uniquely predicted a perception of less positivity with friends over time. Feinstein et al. (2012), however, found that depression symptoms predicted less positivity with romantic partners over time, which was not found in our results. Although there are differences between this study's results and Feinstein et al.'s (2012) results, both revealed a pattern that those with higher symptoms of depression perceived their online interactions as higher in negativity and lower in positivity.

All of these findings indicate that depressive symptoms do not predict the quantity of use of online communication, but instead predicts the perceived quality of interactions. Feinstein et al. (2012) suggested that this is because those with depression engage in more problematic social networking interactions and experience more negative affect following these interactions. They cited interpersonal stress theory of depression (Hammen, 2006), which states that depressed individuals interact with their environment in ways that cause more stress and thus lead to a maintenance of their depressive symptoms. This theory could explain why those with depression symptoms report higher levels of negativity and lower levels of positivity via online communication.

None of the previous studies, sought to examine what specific component of depression was leading to a perception of higher negativity via online media. It was hypothesized that either excessive reassurance seeking (Coyne, 1976) or rumination (Nolen-Hoeksema 1991, 2000) would fully or partially mediate the relationship between depression symptoms and the perception of negativity with the different target groups.

However, none of the analyses revealed that these two traits fully or partially mediated the relationship. This indicates that, while mediating variables may still exist between depression symptoms and perception of negativity, excessive reassurance seeking and rumination do not appear to be good candidates.

Social Anxiety Symptoms

Based on previous research by Caplan (2003, 2005, 2007), it was hypothesized that social anxiety symptoms would be associated with a higher frequency of use of online communication and more use of online communication over time, but the results did not support this finding. This replicates Feinstein et al.'s (2012) findings that social anxiety symptoms was not related to a change in social networking use over time, but presents evidence against a series of studies by Caplan (2003, 2005, 2007) that laid out a possible theoretical model suggesting social anxiety symptoms might be associated with a preference for online communication and compulsive internet use. A possible reason for the discrepancy between the findings from this study and Feinstein et al.'s study (2012) compared to Caplan's model (2003, 2005, 2007) is the way frequency of online communication was measured. This study and Feinstein et al.'s (2012) study measured how much a person remembered utilizing different media over a specified period of time, whereas Caplan (2003, 2005, 2007) measured compulsive internet use. Defined as how much a person felt unable to control or stop using online medium, and the feelings of guilt associated with this inability to stop (Caplan, 2003). Taken together, these studies suggest that people who are socially anxious may not utilize online communication more, but they feel like they are using online communication too much and are guilty about not being able to curtail their use. Perhaps those who are socially anxious are ashamed that

they favor online interaction over face-to-face interaction, and they are struggling to increase live interactions in lieu of online interactions. This would explain why they report being more distressed concerning the amount of time they spend communicating online, but yet do not utilize online communication to a greater degree. Further studies are needed to support this distinction between the actual frequency of online interaction, and how a person feels about the amount they interact online.

Social anxiety symptoms did not predict a perception of higher negativity with the target groups, or a perception of increased negativity over time. This is very similar to what was found by Feinstein et al. (2012) who found that social anxiety symptoms were not related to a change in the perception of negativity over time. Social anxiety symptoms did significantly predict perceptions of positivity at time one and time two, but it depended on the target of communication. Social anxiety symptoms were associated with a perception of lower positivity with family members via SNS at time one, but interestingly, social anxiety symptoms were associated with a perception of significantly higher positivity with close friends at time one and a perception of significantly more positivity at time two with romantic partners. The first finding concerning lower positivity with family members may be more logical, as those who are socially anxious may find talking to their family more stressful, especially if family members are inquiring about their lives in college. However, it is less logical that social anxiety symptoms would predict an increase in positivity. Past research by Caplan (2003, 2005, 2007) has indicated that individuals with social anxiety tend to prefer online communication instead of face-to-face communication. He suggested that this is because those with social anxiety symptoms and lower social skills may feel more comfortable in non-live

environments. Thus, it may follow that because those who are socially anxious feel more comfortable and able to communicate in an online environment, they may derive more pleasure from it and perceive the communications as more positive. This assertion should be taken with caution as the effect sizes for these relationships were small, and the partial correlation between social anxiety symptoms and positivity with romantic partners at time two was based on a very small sample. However, further study should be done to investigate if individuals with social anxiety do view online communication more

attachment may also use SNS more because they feel the need to monitor and control their significant other in order to allay their fear of possible abandonment. Further research is needed to provide a more specific explanation as to why those with avoidant attachment utilize SNS to a greater degree.

It was hypothesized that anxious attachment would be associated with a perception of higher negativity with all three targets of communications and with more negativity over time, but the data did not support this. Saferstein et al. (2005) did find that participants with insecure attachment (anxious attachment and avoidant attachment) were more likely to report higher levels of conflict with their same-sex and opposite-sex best friend. This would possibly indicate that those with anxious attachment would have a perception of more negativity when communicating online, but this was not the case. Saferstein and colleagues (2005) assessed for conflict that occurred in general, but it may be that conflict does not specifically occur as much for those with anxious attachment in an online venue. This would explain why the data in this study did not find an association between anxious attachment and negativity. Another explanation could be that those anxious attachment are getting their need to be closer with their intimate others satiated through online communication, which is why they view these interactions as not negative. Further research is needed to investigate if those with anxious attachment report different amounts of conflict depending on the mode of communication, and or if those with anxious attachment do use online communication as a tool to get closer with intimate others.

Anxious attachment was found to be strongly related to a perception of more positivity over time with romantic partners. If anxiously attached individuals fear being

abandoned and seek to communicate with their partners in order to be closer with them (Locke, 2006), their partners may respond to this and comfort them over time. Thus, the anxious individual's goal of being closer to their partner is being fulfilled, which would lead to a perception of more positivity over time. Again it should be mentioned that this association was produced from a small sample size, so it should be considered with caution. Taken together, these findings present evidence that online communication may not be venue where those with anxious attachment have negative experiences; indeed it could be that online communication is a way for those who are anxiously attached to cultivate closer relationships with their significant others resulting in more positive experiences (improvements in mood and self-confidence). It could also be possible that those with anxious attachment derive more pleasure from positive interactions than others. Further research is needed to understand if anxious individuals are cultivating closer relationships through online venues, or if they view compliments and support from others online as simply more positive than others.

Avoidant Attachment

It was predicted that avoidant attachment would be associated with a lower frequency of online communication and less use of online communication over time, and the data provided some support for this. Avoidant attachment significantly predicted less use of IM at time two. Brennan et. al (1998) asserted that those with anxious attachment are afraid of becoming too close with their significant others, and seek to maintain their independence and distance. This could possibly explain why those with avoidant attachment utilized IM less over time: they were attempting to distance themselves from others to maintain their independence. It is also interesting that avoidant attachment

significantly predicted less IM use over time, but failed to predict any change with SNS use over time. This may be because communication via IM is in a more instantaneous and personal form, whereas communication via SNS is more likely to occur intermittently over longer periods of time and is directed at multiple people. Those with avoidant attachment may have felt their independence was more threatened by IM communication than SNS communication because of IM's more personal nature. This may explain the differential results between avoidant attachments prediction of SNS use compared to IM use.

It was hypothesized that avoidant attachment would be associated with a perception of higher negativity and more negativity over time with all three of the target groups. Results partially supported this hypothesis, as avoidant attachment was associated with a perception of higher negativity with both romantic partners and family members via SNS at time one. Multiple regression analyses that included avoidant attachment with other significant predictors of negativity found that this attachment style uniquely predicted a perception of higher negativity with close friends at time one. Looking at the positivity data, avoidant attachment also predicted a perception of significantly less positivity with romantic partners and family members at time one, and a perception of significantly less positivity with close friends over time.

These data are generally consistent with past research concerning those with avoidant attachment and their interactions with others. As mentioned previously, Saferstein et al. (2005) found that those who were insecurely attached were more likely to have conflict with their intimate others, which would explain why avoidantly attached individuals would view some of their interactions as higher in negativity and lower in

positivity. Those with avoidant attachment are preoccupied with maintaining their independence, and making sure there is a certain amount of emotional distance between themselves and their significant others (Brennan et al., 1998). It could be that avoidantly attached individuals view online communications from others as an encroachment on their independence or needed emotional distance, and perceive these interactions as more negative and less positive. It could also be possible that the avoidantly attached individual ignores or even rejects these advances, which could lead to future conflict via online communication. Future research is needed to understand how those with avoidant attachment interact and perceive interactions via online communication.

Differential Associations by Target

Attachment and the target of communication

It was hypothesized that both anxious attachment and avoidant attachment would more strongly associate with a perception of higher negativity and a perception of more negativity over time when the targets of communication were romantic partners and family members rather than close friends. This was originally hypothesized because adult attachment theory was conceived to describe interactions with romantic partners (Hazan & Shaver, 1994; Simpson & Roles 1998), and was extrapolated from child attachment which described interactions between children and family members (Ainsworth, Behar, Waters, & Wall 1978; Bowlby, 1973, 1980, 1982). Thus, it should follow that the attachment style would more accurately describe negative interactions with romantic partners and family members compared to friends. Analysis supported the hypothesis that avoidant attachment would be more strongly associated with the perception of negativity with romantic partners than with the perception of negativity with close friends at time

one. However, avoidant attachment was not more strongly associated with the perception of negativity with family members than with negativity with close friends. This result could possibly be explained by the original logic: adult attachment theory was designed to describe interactions between individuals and their romantic partners, so it should better describe perceptions of negative interactions when the target is a romantic partner than when it is a close friend. Anxious attachment was not associated with a perception of negativity with any of the targets, but it was more strongly associated with an increase in positivity over time with romantic partners than close friends. Although no hypothesis was made concerning the differential effects between the attachment style and perception of positivity, this does provide evidence that the attachment styles both better describe the perception of the quality of interactions when the targets are romantic partners.

General trends

Although it was only hypothesized that attachment style would differentially predict perception of negativity based on the target of communication (which was described above), there were some other general trends in the data regarding the target of communication. Most of the significant and large effects in the data were confined to the psychological variables predictions of negativity and positivity with close friends and romantic partners. Most of the variables were not significantly associated with the perception of positivity and negativity when the targets of communication were family members, and when they were significant, it was with weak effect sizes. This may indicate that depression symptoms, social anxiety symptoms, and attachment style do not seem to play a strong role in perceptions of negativity or positivity when talking to family members via SNS. Indeed, the fact that no one endorsed communicating with their family

members via IM may indicate that individuals do not use online media as much to communicate with their family members.

One possible explanation for the weak associations between the psychological variables and quality variables when family members were the target group is that young adults do not confide in their family. Research has demonstrated that young adults are more likely to confide in their peers instead of their parents (Fehr, 1996). This may mean that highly emotional topics were more likely to be discussed via SNS and IM with close friends and romantic partners than with family members. As a result, these emotional topics may have produced the stronger associations between the psychological variables and perceptions of positivity and negativity when the targets were close friends and romantic partners. Past research has also found that young adults are more likely to disclose to their mothers than their fathers (Hays, McKusick, Pollack, Hillard, Hoff, & Coates, 1993; Mathews, Derlega, & Morrow, 2006). The choice of the category “family members” in this study may have been too broad; as it appears that there may be differences in young adult rates of disclosure to different family members. Further research is needed to clarify how college age individuals interact with their family via SNS and IM, and if their perceptions of communication are different depending on the target family members.

Summary

This study found that only attachment style was associated with frequency of SNS and IM use, with anxious attachment correlated with higher use of SNS at time one and avoidant attachment predicting less IM use at time two. Depression symptoms and avoidant attachment were generally associated with perceptions of higher negativity and

lower positivity with the target groups. Interestingly, social anxiety symptoms were associated with perceptions of higher positivity when communicating with some of the target groups, and anxious attachment was mostly found to not be related to positivity or negativity with any of the target groups. Rumination and excessive reassurance seeking did not mediate the relationship between depression symptoms and negativity with any of the target groups. Finally avoidant attachment was more strongly associated with the perception of negativity when the targets of communication were romantic partners instead of close friends at time one.

Implications for Future Research

This study replicated past findings (Feinstein et al., 2012) that depression symptoms are associated with a perception of higher negativity and lower positivity when communicating with some target groups online. It may be that those with elevated levels of depressive symptoms experience more negative interactions online, or that these individuals just perceive interactions as more negative. Future research should focus on the actual interactions via SNS and IM, and not just the perceptions of the interactions, to clarify whether those with depression symptoms are experiencing more negative interactions or just perceive interactions as more negative. This study found that excessive reassurance seeking and rumination were not good candidates for mediation of the association between depression and negativity. Thus, future research is needed to investigate what components of depression mediate its relationship with negativity.

Social anxiety symptoms, on the other hand, were associated with perceptions of positivity when communicating with some of the target groups. This result seems to be counterintuitive, and past literature has failed to find this association. Indeed, the results

should be taken with caution as it was partly based on a very small sample size.

However, it could be that those with social anxiety derive more pleasure from online communication, which would explain why Caplan (2003, 2005, 2008) found that socially anxious individuals preferred online communication to live communication. This could indicate that those with elevated levels of social anxiety use online communication to cultivate positive relationships with others which lead to more positive experiences. It could also be that those with social anxiety symptoms just perceive online communication as more supportive and positive. Further research is needed to clarify if those with social anxiety symptoms do use online communication to actively foster positive relationships which causes them to produce more positive communications, or if they play a more passive role and simply just perceive online interactions as less stressful and more positive.

Anxious attachment was generally not associated with any perceptions of negativity or positivity with online communication. This may indicate that those who have anxious attachment may not perceive their communications with others as overly negative or positive. However, it was found that anxious attachment was associated with more SNS use. This makes sense as those with anxious attachment seek to monitor and control their partner, and they may use SNS to complete this goal. On the other hand, avoidant attachment was generally associated with perceptions of more negativity and less positivity with some targets via online communication. This is understandable, as those with avoidant attachment are hyper-independent and often distance themselves from others when they perceive that those others are trying to get closer to them. This would explain why those with avoidant attachment reported less IM use over time, as

they were reducing their use in order to avoid communications with others. It could be that those with avoidant attachment perceive attempts to communicate with them online as infringing on their independence and thus cause them to perceive these attempts as more negative and less positive. It may also be that those with avoidant attachment rebuff or ignore others that attempt to communicate with them, which could cause further antagonistic exchanges online which exacerbate the perceptions negativity. Future research should focus on discovering if those with avoidant attachment indeed view communications as more negative because they feel their independence is being threatened, and if those with this attachment style react in such ways that could lead to further aversive interactions.

Limitations

There were several limitations to this study. First, this study relied on self-report data and thus did not analyze the actual communications the individual had with the target groups via SNS and IM. While the individual's perception of the negativity and positivity of online communication is important to study, it leaves the possibility that there are perceptual biases in the judgment of past communications. Future studies should collect data on both perceptions of communication and the actual communications that occurred. This would help to understand possible differences between the actual negative and positive content of communications and how perceived the communication.

Second, the sample in this study was young adults (18-39) who had relatively low symptomologies of depression, social anxiety, and attachment insecurity. Thus, these findings should not be generalized outside this age range and to others with more severe levels of psychopathology and attachment insecurity. Future research is needed

understand how those in different age groups and with more severe levels of psychopathology and attachment insecurity utilize and perceive the utilization of online communication.

Third, this study used multiple correlations without alpha corrections leaving the possibility that there is an elevated risk of type one errors in the analysis. While this is less of a problem with the associations and predictions of the perception of negativity and online communication use, as these were theory driven, the results concerning the perception of positivity should be taken with caution because they were not theory driven.

Finally, this study had a high level of attrition, thus the time two data should be taken with caution. Although analysis did reveal there were no statistically significant differences in the variables of interest between those that only completed the time one measure and those that completed both parts, the high attrition level may have biased the subsample sample in ways that were unmeasured which could have affected the results. Further, the attrition meant that many of the time two analyses were conducted with less than the 55 participants necessary to achieve adequate power. This may mean that some of the analyses failed to reach significance because of the small sample size.

Despite the limitations, this study did replicate some past findings concerning how depression symptoms and social anxiety symptoms are associated with quantity and quality of online communication use. Further it expanded the research literature on how attachment insecurity is related to online communication, and provided some evidence against rumination and reassurance seeking as mediators of depression symptom's association with online negativity. This study also suggests future paths of research to

understand why those with depression symptoms and avoidant attachment a more likely to perceive online interactions as more negative and less positive, and why those with social anxiety symptoms are more likely to perceive online interactions as positive.

REFERENCES

- Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Baron, R. M., & Kenny D. A. (1984). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.
- Bessière, K., Kiesler, S., Kraut, R., & Boneva, B. S. (2008). Effects of internet use and social resources on changes in depression. *Information, Communication, and Society*, 11, 47-70. doi: 10.1080/13691180701858851
- Bowlby, J. (1980). *Attachment and loss: Vol. 3, Loss: Sadness and depression*. New York: Basic Books.
- Bowlby, J. (1982). *Attachment and loss: Vol. 1, Attachment* (2nd ed.). New York: Basic Books (Original work published 1969)
- Caplan, S. E. (2003). Preference for online social interaction: A theory of problematic internet use and psychological well-being. *Communication Research*, 30, 625-648. doi:10.1177/0093650203257842
- Caplan, S. E. (2005). A social skill account of problematic internet use. *Journal of Communication*, 55, 721-736.
- Caplan, S. E. (2007). Relations among loneliness, social anxiety, and problematic internet use. *Cyberpsychology and Behavior*, 10, 234-242. doi: 10.1089/cpb.2006.9963

- Conye, J.C. (1976). Depression and response of others. *Journal of Abnormal Psychology*, 85, 186-193.
- Cohen, J. (1992). A power primer. *Quantitative Methods in Psychology*, 112, 155-159.
- Davila, J., & Beck, J. G. (2002). Is social anxiety associated with impairment in close relationships? A preliminary investigation. *Behavior Therapy*, 33, 427-446.
- Davila, J., Hershenberg, R., Feinstein, B. A., Gorman, K., Bhatia, V., & Starr, L. R. (2012). Frequency and quality of social networking among young adults: associations with depressive symptoms, rumination, and corumination. *Psychology of Popular Media Culture*, 1, 72-86. doi: 10.1037/a0027512
- Davis, R. A. (2001). A cognitive-behavioral model of pathological internet use. *Computers in Human Behavior*, 17, 187-195.
- Fehr, B. (1996). *Friendship processes*. Thousand Oaks, CA: Sage.
- Feinstein, B. A., Bhatia, V., Hershenberg, R., & Davila, J. (2012). Another venue for problematic interpersonal behavior: The effects of depressive and anxious symptoms on social networking experiences. *Journal of Social and Clinical Psychology*, 31, 356-382.
- Gootlib, I. H., & Joorman, J. (2010). Cognition and depression: Current status and future directions. *Annual Review of Clinical Psychology*, 6, 285-312. doi: 10.1146/annurev.clinpsy.121208.131305
- Hays, R. B., McKusick, L., Pollack, L., Hilliard, R., Hoff, C., Coates, T. J. (1993). Disclosing HIV seropositivity of significant others. *AIDS*, 7, 425-431.
- Hazan, C., & Shaver, P. R. (1994). Attachment as an organizational framework for research on close relationships. *Psychological Inquiry*, 5, 1-22.

- Joiner, T. E., & Metalsky, G. I. (2001). Excessive reassurance seeking: Delineating a risk factor involved in the development of depressive symptoms. *Psychological Science, 12*, 371-378.
- Koster, E. H. W., De Lissnyder, E., Derakshan, N., & De Raedt, R. Understanding depressive rumination from a cognitive science perspective: The impaired disengagement hypothesis. *Clinical Psychology Review, 31*, 138-145. doi: 10.1016/j.cpr.2010.08.005
- Kraut, R., Patterson, M., Landmark, V., Kiesler, S., Mukopadhyay, T., & Scherlis W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist, 53*, 1017-1031.
- Leary, M. R. (1983). A brief version of the fear of negative evaluation scale. *Personality and Social Psychology Bulletin, 9*, 371-375.
- Locke, K. D. (2008). Attachment styles and interpersonal approach and avoidance goals i everyday couple interactions. *Personal Relationships, 15*, 359-374.
- Matthews, A., Derlega, V. J., & Morrow, J. (2006) What is highly personal information and how is it related to self-disclosure decision-making? The Perspective of college students. *Communication Research Reports, 23*, 85-92.
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology, 100*, 569-582.
- Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology, 109*, 504-511. doi: 10.1037//0021-843X.1093.504
- Pingdom. (2010, April 23). Amazing facts and figures about instant messaging

- (infographic). Pingdom. Retrieved from: <http://royal.pingdom.com/2010/04/23/amazing-facts-and-figures-about-instant-messaging-infographic/>
- Parr, B. (2012, September 30). You spend 8 hours per month on Facebook (stats). Mashable. Retrived from: <http://mashable.com/2011/09/30/wasting-time-on-facebook/>
- Rodebaugh, T. L., Woods, C. M., Thissen, D. M., Heimberg, R. G., Chambless, D. L., & Rapee, R. M. (2004). More information from fewer questions: The factor structure and item properties of the original and Brief Fear of Negative Evaluation Scale. *Psychological Assessment*, 16, 169-181. doi: 10.1037/1040-3590.16.2.169
- Saferstein, J. A., Neimeyer, G. J., & Hagans, C. L. (2005). Attachment as a predictor of friendship qualities in college youth. *Social Behavior and Personality*, 33, 767-776.
- Selfhout, M. H. W., Branje, S. J. T., Delsing, M., ter Bogt, T. F. M., & Meeus, W. H. J. (2009). Different types of internet use, depression, and social anxiety: The role of perceived friendship quality. *Journal of Adolescence*, 32, 819-833. doi: 10.1016/j.adolescence.2008.10.011
- The Associated Press. (2012, October 23). Number of active Facebook users over the years. Yahoo! Finance. Retrieved from <http://finance.yahoo.com/news/number-active-user-facebook-over-years-214600186--finance.html>
- Treynor, W., Gonzalez, & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research*, 27, 247-259.
- van den Eijnden, R. J. J. M., Meerkerk, G. J., Vermulst, A. A., Spikjerman, R., & Engels, C. M. E. (2008). Online communication, compulsive internet use, and

psychological well-being among adolescents: A longitudinal study.

Developmental Psychology, 44, 655-665. doi: 10.1037/0012-1649.44.3.655

Wei, M., Russell, D. W., Mallinckrodt, B., & Vogel, D. L. (2007). The Experience in Close Relationship Scale (ECR)—Short Form: Reliability, validity, and factor structure. *Journal of Personality Assessment*, 88, 187-204. doi: 10.1080/00223890701268041

APPENDIX A
THE SOCIAL NETWORKING SURVEY

1. Approximately how many "friends" do you have on Facebook currently?
2. Thinking about the last month, estimate how many times you have gone on Facebook to post a status, post on a friend's wall, or comment on a friend's status or picture. (*Never, Only a Few Times, Around Once a Week, Multiple Times a Week, Daily, Multiple Times a Day*)
3. Thinking about the last month, estimate how many times you have checked your Facebook. (*Never, Only a Few Times, Around Once a Week, Multiple Times a Week, Daily, Multiple Times a Day*)
4. Approximately how many "followers" do you have on twitter?
5. Thinking about the last month, estimate how many times you have tweeted. (*Never, Only a Few Times, Around Once a Week, Multiple Times a Week, Daily, Multiple Times a Day*)
6. Thinking about the month, estimate how many times you have checked your Twitter account. (*Never, Only a Few Times, Around Once a Week, Multiple Times a Week, Daily, Multiple Times a Day*)
7. Approximately how many "followers" do you have on Tumblr?
8. Thinking about the last month, estimate how many times you have gone on Tumblr and interacted with others through text. (*Never, Only a Few Times, Around Once a Week, Multiple Times a Week, Daily, Multiple Times a Day*)

9. Thinking about the last month, estimate how many times you have checked your Tumblr account. (*Never, Only a Few Times, Around Once a Week, Multiple Times a Week, Daily, Multiple Times a Day*)
10. Estimate, on average, how many times in the past month you have gone on an instant message services to interact with others. (*Never, Only a Few Times, Around Once a Week, Multiple Times a Week, Daily, Multiple Times a Day*)
11. Thinking about all of your interactions with close friends on Facebook, Twitter, and Tumblr during the past month, how positive, on average, were your interactions? (*Not at All, Minimally, Slightly, Neutral, Moderately, Very, Extremely*)
12. Thinking about all of your interactions with close friends on Facebook, Twitter, and Tumblr during the past month, how often, on average, did your mood improve after these interactions? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
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14. Thinking about all of your interactions with close friends on Facebook, Twitter, and Tumblr during the past month, how often, on average, did these interactions

improve your self-confidence? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)

15. Thinking about all of your interactions with close friends on Facebook, Twitter, and Tumblr during the past month, how often, on average, were these individuals supportive? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
16. Thinking about all of your interactions with close friends on Facebook, Twitter, and Tumblr during the past month, how negative, on average, were your interactions? (*Not at All, Minimally, Slightly, Neutral, Moderately, Very, Extremely*)
17. Thinking about all of your interactions with close friends on Facebook, Twitter, and Tumblr during the past month, how often, on average, did you feel depressed after these interactions? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
18. Thinking about all of your interactions with close friends on Facebook, Twitter, and Tumblr during the past month, how often, on average, did you feel anxious after these interactions? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time,*

Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)

19. Thinking about all of your interactions with close friends on Facebook, Twitter, and Tumblr during the past month, how often, on average, did these individuals criticize you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)*)
20. Thinking about all of your interactions with close friends on Facebook, Twitter, and Tumblr during the past month, how often, on average, did these individuals insult you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)*)
21. Thinking about all of your interactions with close friends on Facebook, Twitter, and Tumblr during the past month, how often, on average, did you argue with these individuals? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)*)
22. Thinking about all of your interactions with close friends on Facebook, Twitter, and Tumblr during the past month, how often, on average, did these individuals purposely ignore you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)*)

23. Thinking about all of your interactions with close friends on instant messaging services during the past month, how positive, on average, were your interactions? (*Not at All, Minimally, Slightly, Neutral, Moderately, Very, Extremely*)
24. Thinking about all of your interactions with close friends on instant messaging services during the past month, how often, on average, did your mood improve after these interactions? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
25. Thinking about all of your interactions with close friends on instant messaging services during the past month, how often, on average, did these individuals compliment you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
26. Thinking about all of your interactions with close friends on instant messaging services during the past month, how often, on average, did these interactions improve your self-confidence? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
27. Thinking about all of your interactions with close friends on instant messaging services during the past month, how often, on average, were these individuals supportive? (*Never, Rarely—Around 10% of the Time, Occasionally—Around*

30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)

28. Thinking about all of your interactions with close friends on instant messaging services during the past month, how negative, on average, were your interactions? *(Not at All, Minimally, Slightly, Neutral, Moderately, Very, Extremely)*

29. Thinking about all of your interactions with close friends on instant messaging services during the past month, how often, on average, did you feel depressed after these interactions? *(Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)*

30. Thinking about all of your interactions with close friends on instant messaging services during the past month, how often, on average, did you feel anxious after these interactions? *(Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)*

31. Thinking about all of your interactions with close friends on instant messaging services during the past month, how often, on average, did these individuals criticize you? *(Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)*

32. Thinking about all of your interactions with close friends instant messaging services during the past month, how often, on average, did these individuals insult

you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)

33. Thinking about all of your interactions with close friends on instant messaging services during the past month, how often, on average, did you argue with these individuals? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
34. Thinking about all of your interactions with close friends on instant messaging services during the past month, how often, on average, did these individuals purposely ignore you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
35. Thinking about all of your interactions with your romantic partner on Facebook, Twitter, and Tumblr during the past month, how positive, on average, were your interactions? (*Not at All, Minimally, Slightly, Neutral, Moderately, Very, Extremely*)
36. Thinking about all of your interactions with your romantic partner on Facebook, Twitter, and Tumblr during the past month, how often, on average, did your mood improve after these interactions? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)

37. Thinking about all of your interactions with your romantic partner on Facebook, Twitter, and Tumblr during the past month, how often, on average, did these individuals compliment you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
38. Thinking about all of your interactions with your romantic partner on Facebook, Twitter, and Tumblr during the past month, how often, on average, did these interactions improve your self-confidence? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
39. Thinking about all of your interactions with your romantic partner on Facebook, Twitter, and Tumblr during the past month, how often, on average, were these individuals supportive? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
40. Thinking about all of your interactions with your romantic partner on Facebook, Twitter, and Tumblr during the past month, how negative, on average, were your interactions? (*Not at All, Minimally, Slightly, Neutral, Moderately, Very, Extremely*)
41. Thinking about all of your interactions with your romantic partner on Facebook, Twitter, and Tumblr during the past month, how often, on average, did you feel

depressed after these interactions? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)

42. Thinking about all of your interactions with your romantic partner on Facebook, Twitter, and Tumblr during the past month, how often, on average, did you feel anxious after these interactions? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)

43. Thinking about all of your interactions with your romantic partner on Facebook, Twitter, and Tumblr during the past month, how often, on average, did these individuals criticize you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)

44. Thinking about all of your interactions with your romantic partner on Facebook, Twitter, and Tumblr during the past month, how often, on average, did these individuals insult you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)

45. Thinking about all of your interactions with your romantic partner on Facebook, Twitter, and Tumblr during the past month, how often, on average, did you argue

with these individuals? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)

46. Thinking about all of your interactions with your romantic partner on Facebook, Twitter, and Tumblr during the past month, how often, on average, did these individuals purposely ignore you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
47. Thinking about all of your interactions with your romantic partner on instant messaging services during the past month, how positive, on average, were your interactions? (*Not at All, Minimally, Slightly, Neutral, Moderately, Very, Extremely*)
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49. Thinking about all of your interactions with your romantic partner on instant messaging services during the past month, how often, on average, did these individuals compliment you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time,*

Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)

50. Thinking about all of your interactions with your romantic partner on instant messaging services during the past month, how often, on average, did these interactions improve your self-confidence? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)*)
51. Thinking about all of your interactions with your romantic partner on instant messaging services during the past month, how often, on average, were these individuals supportive? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)*)
52. Thinking about all of your interactions with your romantic partner on instant messaging services during the past month, how negative, on average, were your interactions? (*Not at All, Minimally, Slightly, Neutral, Moderately, Very, Extremely)*)
53. Thinking about all of your interactions with your romantic partner on instant messaging services during the past month, how often, on average, did you feel depressed after these interactions? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)*)

54. Thinking about all of your interactions with your romantic partner on instant messaging services during the past month, how often, on average, did you feel anxious after these interactions? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
55. Thinking about all of your interactions with your romantic partner on instant messaging services during the past month, how often, on average, did these individuals criticize you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
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57. Thinking about all of your interactions with your romantic partner on instant messaging services during the past month, how often, on average, did you argue with these individuals? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)

58. Thinking about all of your interactions with your romantic partner on instant messaging services during the past month, how often, on average, did these individuals purposely ignore you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
59. Thinking about all of your interactions with your family members on Facebook, Twitter, and Tumblr during the past month, how positive, on average, were your interactions? (*Not at All, Minimally, Slightly, Neutral, Moderately, Very, Extremely*)
60. Thinking about all of your interactions with your family members on Facebook, Twitter, and Tumblr during the past month, how often, on average, did your mood improve after these interactions? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
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62. Thinking about all of your interactions with your family members on Facebook, Twitter, and Tumblr during the past month, how often, on average, did these interactions improve your self-confidence? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
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64. Thinking about all of your interactions with your family members on Facebook, Twitter, and Tumblr during the past month, how negative, on average, were your interactions? (*Not at All, Minimally, Slightly, Neutral, Moderately, Very, Extremely*)
65. Thinking about all of your interactions with your family members on Facebook, Twitter, and Tumblr during the past month, how often, on average, did you feel depressed after these interactions? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
66. Thinking about all of your interactions with your family members on Facebook, Twitter, and Tumblr during the past month, how often, on average, did you feel

anxious after these interactions? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)

67. Thinking about all of your interactions with your family members on Facebook, Twitter, and Tumblr during the past month, how often, on average, did these individuals criticize you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)

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70. Thinking about all of your interactions with your family members on Facebook, Twitter, and Tumblr during the past month, how often, on average, did these individuals purposely ignore you? (*Never, Rarely—Around 10% of the Time,*

Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)

71. Thinking about all of your interactions with your family members on instant messaging services during the past month, how positive, on average, were your interactions? (*Not at All, Minimally, Slightly, Neutral, Moderately, Very, Extremely*)
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74. Thinking about all of your interactions with your family members on instant messaging services during the past month, how often, on average, did these interactions improve your self-confidence? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the*

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75. Thinking about all of your interactions with your family members on instant messaging services during the past month, how often, on average, were these individuals supportive? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)*)
76. Thinking about all of your interactions with your family members on instant messaging services during the past month, how negative, on average, were your interactions? (*Not at All, Minimally, Slightly, Neutral, Moderately, Very, Extremely)*)
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78. Thinking about all of your interactions with your family members on instant messaging services during the past month, how often, on average, did you feel anxious after these interactions? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time)*)

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80. Thinking about all of your interactions with your family members on instant messaging services during the past month, how often, on average, did these individuals insult you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
81. Thinking about all of your interactions with your family members on instant messaging services during the past month, how often, on average, did you argue with these individuals? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)
82. Thinking about all of your interactions with your family members on instant messaging services during the past month, how often, on average, did these individuals purposely ignore you? (*Never, Rarely—Around 10% of the Time, Occasionally—Around 30% of the Time, Sometimes—Around Half the Time, Frequently—Around 70% of the Time, Usually—Around 90% of the Time, All the Time*)

APPENDIX B
THE CENTER FOR EPIDEMIOLOGICAL STUDIES DEPRESSION
SCALE

For the next 20 questions please refer to these instructions: Below is a list of the ways you might have felt or behaved. Please indicate how often you have felt this way during the past week. (*Rarely or None of the Time—Less Than One Day, Some or a Little of the Time—One to Two Days, Occasionally or a Moderate Amount of Time—Three to Four Days, Most or All of the Time- Five to Seven Days*)

1. I was bothered by things that usually don't bother me.
2. I did not feel like eating; my appetite was poor.
3. I felt that I could not shake off the blues even with help from my family or friends.
4. I felt I was just as good as other people. (R)
5. I had trouble keeping my mind on what I was doing.
6. I felt depressed.
7. I felt like everything I did was an effort.
8. I felt hopeful about the future. (R)
9. I felt my life had been a failure.
10. I felt fearful.
11. My sleep was restless.
12. I was happy. (R)
13. I talked less than usual.

- 14. I felt lonely.
- 15. People were unfriendly
- 16. I enjoyed life. (R)
- 17. I had crying spells
- 18. I felt sad.
- 19. I felt that people dislike me.
- 20. I could not get “going.”

APPENDIX C

THE BRIEF FEAR OF NEGATIVE EVALUATION SCALE

For the next twelve questions, read each of the statements carefully and indicate how characteristic it is of you. (*Not at All Characteristic of Me, Slightly Characteristic of Me, Moderately Characteristic of Me, Very Characteristic of Me, Extremely Characteristic of Me*)

1. I worry about what other people will think of me even when I know it doesn't make any difference.
2. I am unconcerned even when I know people are forming an unfavorable impression of me. (R)
3. I am frequently afraid of other people noticing my shortcomings.
4. I rarely worry about what kind of impression I am making on someone.
5. I am afraid that others will not approve of me.
6. I am afraid that people will find fault with me.
7. Other people's opinions of me do not bother me. (R)
8. When I am talking to someone, I worry about what they may be thinking of me.
9. I am usually worried about what kind of impression I make.
10. If I know someone is judging me, it has little effect on me. (R)
11. Sometimes I think I am too concerned with what other people think of me.
12. I often worry that I will say or do the wrong things.

APPENDIX D

DEPRESSIVE INTERPERSONAL RELATIONSHIPS INVENTORY—

REASSURANCE SEEKING SUBSCALE

For the next four questions, indicate how the following statements describe you.

*(Not at All Like Me, Rarely Like Me, Occasionally Like Me, Sometimes Like Me,
Frequently Like Me, Usually Like Me, Like Me All the Time)*

1. Do you find yourself often asking the people you feel close to how they *truly* feel about you?
2. Do you frequently seek reassurance from the people you feel close to as to whether they *really* care about you?
3. Do the people you feel close to sometimes become irritated with you for seeking reassurance from them about whether they *really* care about you?
4. Do the people you feel close to sometimes get "fed up" with you for seeking reassurance from them about whether they *really* care about you?

APPENDIX E

RUMINATIVE RESPONSE SCALE

Please read each of the ten items below and indicate whether you almost never, sometimes, often, or almost always think or do each one when you feel down, sad, or depressed. Please indicate what you *generally* do, not what you think you should do.

(Never, Sometimes, Often, Almost Always)

1. Think "What am I doing to deserve this?"
2. Analyze recent events to try to understand why you are depressed.
3. Think "Why do I always react this way?"
4. Go away by yourself and think about why you feel this way.
5. Write down what you are thinking about and analyze it.
6. Think about a recent situation, wishing it had gone better.
7. Think "Why do I have problems other people don't have?"
8. Think "Why can't I handle things better?"
9. Analyze your personality to try to understand why you are depressed.
10. Go someplace alone to think about your feelings.

APPENDIX F
EXPERIENCES IN CLOSE RELATIONSHIPS SCALE—SHORT
FORM

For the next twelve questions, indicate how much you agree or disagree with how the following statements describe your relationship with romantic partners or close others. (*Strongly Disagree, Disagree, Slightly Disagree, Neutral or Mixed, Slightly Agree, Agree, Strongly Agree*)

Avoidant Scale

1. I want to get close to my partner, but I keep pulling back.
2. I am nervous when partners get too close to me.
3. I try to avoid getting too close to my partner.
4. I usually discuss my problems and concerns with my partner. (R)
5. It helps to turn to my romantic partner in times of need. (R)
6. I turn to my partner for many things, including comfort and reassurance. (R)

Anxious Scale

1. I worry that romantic partners won't care about me as much as I care about them.
2. My desire to be very close sometimes scares people away.
3. I need a lot of reassurance that I am loved by my partner.
4. I do not often worry about being abandoned. (R)
5. I find that my partner(s) don't want to get as close as I would like.
6. I get frustrated if romantic partners are not available when I need them.

VITA

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Education:

Masters of Science, Experimental Psychology August 2013
 Old Dominion University, Norfolk, VA

Bachelors of Science, Psychology May 2006
 Specialization in Cognitive Science
 Michigan State University, East Lansing, MI

Research Experience:

Masters Research (Dr. Barbara Winstead) September 2011 to Present
 Old Dominion University, Norfolk, VA

- Thesis: investigating how depression, social anxiety, and attachment predict quality and quantity of online communication.
- Analyzed data concerning coping mechanisms for stalking and unwanted pursuit in a sexual minority sample.

Clinical Research Assistant (Dr. Susan J. Frank) September 2009 to May 2011
 Family Counseling and Psychiatry, Okemos, MI

- Scored various questionnaires concerning psychopathology and functional impairment.
- Began a profile analysis of individuals who had taken Functional Impairment Scale (FISCA).
- Organized data of ADHD rating scales to investigate sensitivity of Test of Variables of Attention (TOVA) and Conner's Continuous Performance Task (CPT).

Group Lab Research Assistant (Dr. Norbert L. Kerr) August 2008 to August 2010
 Michigan State University, East Lansing, MI

- Coded data for a jury deliberation experiment.
- Cleaned data concerning social facilitation's effect on sustaining plank exercises.
- Collected dissertations to ascertain if social scientists alter their hypotheses before publishing.