MEASUREMENT AND MANIFESTATIONS OF REJECTION SENSITIVITY
AMONG EMERGING ADULTS IN A COMPUTER-MEDIATED CONTEXT

by

THERESA MURZYN

A dissertation submitted to the

Graduate School-Camden

Rutgers, The State University of New Jersey

In partial fulfillment of the requirements

For the degree of

Doctor of Philosophy

Graduate Program in Childhood Studies

Written under the direction of

Dr. Daniel Hart

And approved by

_____
Dr. Daniel Hart

_____
Dr. Daniel T. Cook

_____
Dr. Christopher S. Nave

Camden, New Jersey

January 2018

ABSTRACT OF THE DISSERTATION

Measurement and Manifestations of Rejection Sensitivity Among Emerging Adults in a
Computer-Mediated Context

by THERESA MURZYN

Dissertation Director:
Dr. Daniel Hart

The three studies in the present dissertation explore rejection sensitivity's (RS) effect on

how emerging adults interpret and respond to social cues in computer-mediated contexts.

Rejection sensitivity has been defined as a defensive personality disposition characterized

by a propensity to anxiously expect rejection and respond intensely to perceived

rejection. Yet, much remains to be understood about how RS is manifested in behavior,

especially in digital contexts where emerging adults spend much time communicating

with peers. Research also has yet to validate online formats of the *Rejection Sensitivity*

Questionnaire (RSQ) used to determine one's level of RS. In Study 1, I administered a

modified online version of the abbreviated RSQ to an undergraduate sample to analyze

the structure of the underlying RS construct. Results suggested RS to consist of two

distinct dimensions: rejection affect and rejection expectancy. Study 2 investigated RS'

effect on participants' responses to an ambiguous rejection cue following an instant

messaging conversation with an unknown peer. Participants were randomly assigned to

receive one of two explanations for why the chat must end. Those given the ambiguously

rejecting explanation were expected to respond more negatively than those given the

alternative explanation. Moreover, those with higher RS were expected to demonstrate comparatively more distress from the ambiguously rejecting explanation than others. However, rejection expectancy had only a general negative impact on mood, which indirectly impacted other post-experimental outcomes. Study 3 looked more closely at participants' communication patterns during the IM conversation before silence was administered to determine if either anxiety or anger associated with rejection expectations predicted use of selected communication features or word categories. Rejection anxiety was associated with contributing more responses to the conversation whereas rejection anger was not associated with any communication features. Despite RS' minimal observed impact, future studies are encouraged to look to communication patterns as a potential personality signature for RS that can be tested for relationships with mood, situational construal, and other psychological processes. Research is also encouraged to consider the effects of one's developmental stage and familiarity with online communication on RS manifestations in digital contexts.

Acknowledgements

To my dissertation committee members: Drs. Daniel Hart, Daniel Cook, and Christopher Nave, for consistently providing constructive feedback on my work.

Extra special thanks to Dr. Daniel Hart who has provided opportunities for my success since my first year in the Childhood Studies program. Thank you for supplying a blend of "tough love" and flexibility to inspire me to reach my goals.

To my hard-working research assistants: Adan Lazo, Vernae Moore, Tina Nguyen, Marissa Scribner, Marissa Sharp, and Casey Smollock, for giving so much of your time and energy to executing our lab sessions. I'm also grateful for your honest feedback throughout our data collection period.

To my family, for constant love and support near or far.

Additional thanks to: Richard Gonzalez, Ellen Malven, Laura Collins, Dr. Bill Whitlow, and Dr. David Salas-de la Cruz

Table of Contents

List of Tables

List of Figures

Study 1

Study 2

Introduction

This dissertation focuses on the personality disposition of rejection sensitivity (RS) among emerging adults in relation to text-based digital communication. Rejection sensitivity is characterized by anxiously expecting rejection from valued others, interpreting ambiguous behavior from others as intentional rejection, and responding strongly to perceived rejection (Downey & Feldman, 1996; Levy, Ayduk, & Downey, 2001). Individuals can exhibit different degrees of rejection sensitivity, whereby higher levels correspond to more heightened emotional and behavioral responses (Levy et al., 2001). Though related to other personality constructs including social anxiety, social avoidance, trait self-esteem, neuroticism, and introversion, rejection sensitivity uniquely predicts attributing hostile intent to others' behavior (Downey & Feldman, 1996). Over time, rejection sensitivity's tendency to promote heightened reactions to anticipated and perceived rejection may contribute to low self-esteem and self-efficacy (Ayduk, Downey & Kim, 2001), aggression (Downey, Feldman, & Ayduk, 2000; Downey, Lebolt et al., 1998), a decrease in peer-rated social competence (Marston, Hare, & Allen, 2010), relationship dissolution (Downey & Feldman, 1996), and depression (Ayduk, Mischel, & Downey, 2002; Liu et al., 2014).

Research should investigate the frequency of high rejection sensitivity levels among emerging adults. Emerging adulthood is a developmental period experienced in industrialized cultures roughly between the ages of 18 and 25 years (Arnett, 2000) though it may extend throughout the 20s (Arnett et al., 2014). It is marked by an extended period of exploration and instability as the emerging adult experiments with different romantic

partners, jobs, and worldviews (Arnett, 2000; 2007). Emerging adults are

developmentally focused on seeking social intimacy, exploring personal identities, and

exercising greater autonomy (Arnett, 2000). They may consequently feel anxiety if they

hit roadblocks in any of these areas (Arnett, 2007). Accordingly, emerging adults have

been identified as more sensitive than either adolescents or young adults to ambiguous

peer rejection in digital communication contexts (Pharo et al., 2011; Smith, Morgan, &

Monks, 2017). Rejection sensitivity may further impact emerging adults' reaction to

rejection and color their social behavior.

Computer-mediated communication (CMC) has become an increasingly valued

and preferred form of communication in US culture (Greenwood et al., 2016; Perrin,

2015; Smith, 2011), especially among emerging adults (Bailey et al., 2016; Coyne et al.,

2013; Flanagin, 2005; Harrison & Gilmore, 2012; Quan-Haase, 2008; Scott et al., 2017;

Skierkowski & Wood, 2012; Smith, 2011; Smith & Caruso, 2010; Subrahmanyam et al.,

2008). 97% of emerging adults who own cell phones use text messaging (Smith, 2011),

and 49% of emerging adults who own smartphones use instant messaging (IM) apps

(Duggan, 2015). 88% of emerging adults use Facebook (Greenwood et al., 2016), the

most popular social networking site (Duggan et al., 2014; Nielsen, 2012) where they may

likewise take advantage of IM features (Jenks, 2014; Lenhart, Ling, Campbell, & Purcell,

2010; Waechter, Subrahmanyam, et al., 2010). As emerging adults rely heavily on CMC

to develop and maintain their social relationships (Coyne et al., 2013; Ellison et al., 2010;

Manago et al., 2012; Pempek et al., 2009; Russett & Waldron, 2017; Subrahmanyam et

al., 2008; Tosun, 2012; Vaterlaus et al., 2016), RS may bear on their approach to

communicating with peers in digital contexts. Furthermore, as emerging adults likely

experience social rejection in the digital domains where they conduct most of their communication (Underwood & Ehrenreich, 2017), RS' effects on their interpretations of and reactions to perceived rejection are likewise manifested in these domains.

Researching RS in digital contexts can highlight the unique features of CMC that affect when and how RS may be activated. The absence of nonverbal cues in text-based CMC may provide individuals more control over their impression management (O'Sullivan, 2000; Schouten et al., 2007; Sheeks & Birchmeier, 2007; Stritzke, Nguyen, & Durkin, 2004), leading those with higher RS to face fewer circumstances when they feel negatively evaluated (Stritzke, Nguyen, & Durkin, 2004). Emerging adults with social anxiety, neuroticism, introversion, and low self-esteem have, in fact, shown preference for CMC over face-to face communication (Correa et al., 2010; Butt & Phillips, 2008; Ehrenberg et al., 2008; Ross et al., 2009) and demonstrated less anxiety in CMC (Rice & Markey, 2009). Yet, fewer nonverbal cues in text-based CMC can also increase the ambiguity of messages and silences (Rintel et al., 2003; Underwood & Ehrenreich, 2017) that higher RS individuals may construe as intentional rejection. Research should therefore investigate where reduced cues in CMC positively or negatively impact high RS individuals' digital interaction, especially when they are communicating with lesser known contacts.

The Featured Studies

The three studies featured in this dissertation concern RS' effect on both emerging adults' communication style in CMC and their response to rejection following CMC interaction. To appropriately address these topics, the first study aims to critically examine the

Rejection Sensitivity Questionnaire (*RSQ*)*,* the popular questionnaire used to measure college undergraduates' rejection sensitivity. Investigating the effect of RS on emerging adults' digital behavior hinges on the accurate measurement of this disposition. Once RS measurement is addressed, the studies analyze RS' influence on emerging adults' behavior vis-à-vis text-based digital communication.

The same sample of undergraduates are used for all featured studies, for each of the studies focuses on a different series of activities performed by the participants. Sample size varies across studies, however, because some participants did not complete all study activities.

The purpose of the first study is to examine the validity of rejection sensitivity's measurement from online administration of a modified version of the abbreviated *Rejection Sensitivity Questionnaire* (*RSQ-8*; Downey & Feldman, 1996; Feldman & Downey, 1994). The *RSQ* features a series of hypothetical vignettes chosen for an undergraduate population to represent scenarios in which they could potentially face rejection. Respondents rate on a set of corresponding scales their levels of anticipated anxiety and rejection expectancy in each scenario.

Final RS scores are traditionally calculated by averaging the products of corresponding anxiety and expectation scale scores. This scoring method corresponds to the *RSQ* authors' claim that RS is a single dispositional construct (Downey & Feldman, 1996). However, I take a critical look at rejection sensitivity's structure to detect if it may be represented by more than one underlying factor.

My initial visual examination of data from the *RSQ-8* revealed that the rejection expectation scale was skewed toward lower scores whereas the anxiety scale was

normally distributed. The *RSQ* authors did not publish information about the full-length measure's individual scales. Thus, the validity of their claims about rejection sensitivity's structure deserves re-examination. The results of this re-examination have implications for how RS is measured and analyzed in the subsequent studies.

The central purpose of the second study is to investigate how RS influences emerging adults' immediate reactions to ambiguous rejection following an experimental text-based CMC interaction with an unknown peer. As RS theorists have argued that individual differences in RS were best assessed in situations that could activate rejection threat (Downey et al., 2010; Romero-Canyas et al., 2009), the second study is a test of their theory in a computer-mediated context.

To test the moderating influence of rejection sensitivity, the second study exposes all participants to an unexpected period of silence at the end of their digital conversation. Then, participants are randomly exposed to one of two explanations for why they cannot continue communicating with their digital chat partner. Participants assigned to the experimental condition are told that the partner no longer wishes to chat. Participants assigned to the control condition are told that the partner's computer has experienced a technical problem. As emerging adults have demonstrated greater sensitivity to ambiguous digital rejection than either adolescents or young adults (Pharo et al., 2011; Smith, Morgan, & Monks, 2017), they are anticipated to demonstrate more negative emotional and behavioral reactions to the ambiguously rejecting explanation than the alternative explanation. Rejection sensitivity is anticipated to further affect emerging adults' interpretation of ambiguous social cues in the digital venue. Those with higher rejection sensitivity are therefore expected to more likely interpret the partner's

disinterest in chatting as intentional rejection and respond more extremely when assigned to receive this explanation.

The purpose of the third study is to investigate the impact of rejection sensitivity on emerging adults' communication style with an unknown peer in a text-based digital conversation. Existent studies have not explored the techniques that high RS individuals may use when communicating with others. Therefore, despite the vast popularity of CMC (Greenwood et al., 2016; Perrin, 2015; Smith, 2011), especially among emerging adults (Bailey et al., 2016; Coyne et al., 2013; Flanagin, 2005; Harrison & Gilmore, 2012; Quan-Haase, 2008; Scott et al., 2017; Skierkowski & Wood, 2012; Smith, 2011; Smith & Caruso, 2010; Subrahmanyam et al., 2008), knowledge of RS' effect on CMC communication styles has been lacking.

Individuals with high rejection sensitivity may be more highly motivated than others to avoid rejection in CMC. They may also take advantage of CMC features to express themselves in certain ways. The third study tests correlations between RS and select conversation features previously found to promote liking or prevent rejection. Transcript data is taken from the digital conversation in Study 2 before the unexpected silence was administered to find trends in participants' use of conversation features.

Study 1

Introduction

The *Rejection Sensitivity Questionnaire* (*RSQ*; Downey & Feldman, 1996; Feldman & Downey, 1994) is the first measure to diagnostically gauge one's rejection sensitivity (RS). However, work on the *RSQ* has left uncertain both the underlying structure of the RS construct and the reliability of the measure. The present study is aimed to investigate rejection sensitivity's structure by examining a modified online version of the abbreviated *RSQ* (*RSQ-8*).

Rejection Sensitivity

Rejection sensitivity (RS) has been defined as a disposition to anxiously expect rejection from significant others (Downey & Feldman, 1996; Feldman & Downey, 1994). This anxious anticipation of rejection inclines individuals with RS to demonstrate several defensive cognitive tendencies. Firstly, rejection expectancy leads RS individuals to remain hypervigilant for rejection cues in social scenarios where rejection from valued individuals or groups is possible (Levy, Ayduk, & Downey, 2001; Mellin, 2011). Next, because they are viscerally sensitive to cues of rejection threat (Levy et al., 2001; Romero-Canyas et al., 2010), RS individuals are inclined to interpret valued others' ambiguous social behavior as intentional rejection (Downey & Feldman, 1996; Downey, Lebolt, et al., 1998). Third, because RS individuals experience severe distress from rejection and seek to protect themselves from further exposure, they respond to perceived rejection with extreme emotional and behavioral reactions (Downey & Feldman, 1996).

Emotional reactions to perceived rejection can be anxious or angry depending on a variety of personal and contextual variables including age and history of rejection experiences (Downey et al., 1998; Levy et al., 2001; London, Downey, et al., 2007).

RS theorists drew from a series of established social-cognitive theories to explain the development of RS and its cognitive processes (Downey & Feldman, 1996). For example, RS theorists borrowed attachment theory's concept of internal working models (Bowlby, 1973), which are mental scripts of the behavior one expects to receive from valued relationship partners (Feldman & Downey, 1994). Like attachment theory, RS theory suggests that these mental scripts are formed from early life relationships. If one experiences parental rejection or chronic rejection from childhood peers, these experiences will purportedly create a mental script whereby further rejection from valued others is expected (Levy et al., 2001; London et al., 2007; Mellin, 2011; Romero-Canyas & Downey, 2005). RS theory further suggests, in line with the expectancy-value model (Bandura, 1986), that possessing concern about rejection elicits affect toward anticipated rejection (Ayduk & Gyurak, 2008; Downey & Feldman, 1996). The expectancy-value model thus explains the characteristic anxiety or anger that accompanies RS rejection expectancy.

RS observational research has found supporting evidence for the effect of parental and peer rejection on children's rejection sensitivity development. Children who reported having endured parental abuse or neglect were found to have higher RS (Downey, Bonica, & Rincon, 1999; Feldman & Downey, 1994). Moreover, children who attributed greater value to social relationships were more likely to develop rejection sensitivity, for they were more affected by peer rejection (Wang, Rubin, et al., 2012). High RS has, in

turn, predicted the development of maladaptive behaviors over time to cope with perceived rejection and interpersonal difficulties in peer and romantic relationships (Ayduk, Downey, & Kim, 2001; Downey & Feldman, 1996; Downey, Feldman, & Ayduk, 2000; Downey, Freitas, et al., 1998; Downey, Lebolt, et al., 1998).

RS theorists have additionally drawn from cognitive-affective processing system (*CAPS*, Mischel & Shoda, 1995) theory to explain rejection sensitivity's evolution and activation within the individual. According to CAPS theory, one possesses an interactive system of cognitive-affective units that affects one's 1) construal of past and present social experiences, 2) expectations, 3) goals, 4) emotions, and 5) repertoire of self-regulatory capabilities (Mischel & Shoda, 1995). The content of these units is informed by one's biology and social history. When activated, the patterned interaction of these units dictates which situational features one will find salient, how one will interpret these features, and how one will respond to situations with these features (Ayduk & Gyurak, 2008). Through the lens of the CAPS model, an RS individual's cognitive-affective units are informed by a history of rejection. When these units are activated by rejection threat, rejection expectations and rejection avoidance goals grow in prominence. RS individuals correspondingly become vigilant for rejection cues, interpret these cues as signs of intentional rejection, and respond strongly to perceived rejection.

The CAPS model helps illustrate how social-cognitive processes create a stable RS profile of cross-situational behavior variation to defend against rejection threat (Romero-Canyas et al., 2010). As a dynamic cognitive-affective disposition, RS is activated only in situations that signal rejection threat for an individual (Ayduk & Gyurak, 2008). The CAPS model thus provides the structure for a general pattern of

context-dependent RS cognitive-affective activity while accommodating individual differences in triggers that elicit rejection threat.

Development of the Rejection Sensitivity Questionnaire

Seeking to highlight the situation-based pattern of cognitive-affective activity shared by those who are rejection sensitive, Downey and Feldman (1996; Feldman & Downey, 1994) created a measure of hypothetical vignettes to operationalize individuals' general level of RS. They believed that individual differences in RS levels would be best assessed in situations that could potentially activate rejection threat (Romero-Canyas, Downey, et al., 2010; Romero-Canyas, Anderson, et al., 2009). Downey and Feldman (1996) initially focused on young adults as the target population for their measure, though current researchers would identify this population as emerging adults.

The researchers first ran a pilot study with undergraduates to devise a collection of scenarios where members of their age group could potentially face rejection. A subset of 30 scenarios were presented to a second set of undergraduates who were asked in open-ended interviews to detail how they would feel in these scenarios and what they expected to happen. Coding of the interviews revealed that responses differed along two dimensions: anxiety about scenario events and degree of expecting an accepting or rejecting response. A final set of 18 scenarios that had produced response variance along both these coded dimensions were selected for the *Rejection Sensitivity Questionnaire* (*RSQ*). The authors recruited a sample of 584 undergraduates to test the reliability and validity of the measure.

The final *RSQ* measure features various scenarios in which the participant must imagine requesting something from one of several significant others including a parent, friend, romantic partner, or potential partner. The scenarios were believed to potentially activate rejection expectations among RS individuals because they represent moments when an individual is dependent on and vulnerable to being turned down by someone close (Romero-Canyas, Downey, et al., 2010). Accompanying scales measure how one would cognitively and affectively assess these situations featuring potential rejection. Participants rate on two separate fixed-choice scales their anticipated anxiety and expectancy of getting a positive response in the scenarios. Low expectancy for a positive response is indicative of rejection expectancy.

Reflecting their adoption of the expectancy-value model, the *RSQ* authors argued that rejection sensitivity is the interaction of rejection expectancy and rejection anxiety (Downey & Feldman, 1996). According to their reasoning, one can expect rejection yet not be rejection sensitive if one lacks a negative emotional reaction to rejection. The authors therefore considered only those who demonstrate both rejection expectancy and rejection anxiety to have RS. They consequently prescribed that *RSQ* scores should be calculated by multiplying anxiety scale items by their matching expectation scale items and deriving the average product.

Additional versions of the *RSQ* were later created for child and adult populations. The *Children's Rejection Sensitivity Questionnaire* (*CRSQ*; Downey, Lebolt, et al., 1998) features an additional scale for children to rate how angry they would be about a target person's response in each scenario. Separate anxious RS and angry RS scores are

calculated for each child by averaging the product of their anxiety and expectation scale scores and anger and expectation scale scores, respectively.

Limitations of RSQ Validity Testing

Despite attributing importance to the interaction of RS dimensions, Downey and Feldman provided no correlation data between the anxiety and expectation scales for their validation of the original *RSQ* measure (Downey & Feldman, 1996). They merely reported that pilot responses "did not covary systematically" (1996, p. 1329) across the "largely separable" dimensions (Romero-Canyas, Downey, et al., 2010, p. 126). The authors also referenced their unpublished analysis to support their decision to measure RS by multiplying *RSQ* scale scores (Feldman & Downey, 1994). They claimed that, as a mediator of the effect of family violence on adult attachment behavior, the product of *RSQ* scale scores explained more variance than the sum of *RSQ* scale score means. However, they did not report the difference in variance across the two scoring methods. The *RSQ* authors' operationalization of rejection sensitivity thus hinges on a theorized interaction of its two dimensions whose empirical relationship has not been reported.

There were also limitations to Downey and Feldman's structural analysis of the *RSQ*. The authors had claimed that the *RSQ* can be reduced to a single factor. However, their conclusion was based on a factor analysis that employed composite vignette scores as units. Each composite vignette score was comprised of the product of anxiety and expectation scale items. By not analyzing individual scale items, Downey and Feldman failed to provide data on the structure of each individual *RSQ* scale.

No publication has investigated the *RSQ*'s psychometric properties since Downey and Feldman's (1996; Feldman & Downey, 1994) original validation of the measure. Most studies using the *RSQ* have relied on the original authors' validation results, including their proposed single-factor structure for the measure (Ayduk, Downey, et al., 1999; Ayduk, Gyurak, & Luerssen, 2008; Ayduk, Gyurak, & Luerssen, 2009; Berenson et al., 2009; Breines & Ayduk, 2015; Brookings et al., 2003; Chango et al., 2012; Dotan-Eliaz, Sommer, & Rubin, 2009; Downey et al., 2004; Fang et al., 2011; Gilbert et al., 2006; Gyurak & Ayduk, 2008; Kross et al., 2007; Liu, Kraines, et al., 2014; Marston, Hare, & Allen, 2010; Overall & Sibley, 2009; Romero-Canyas & Downey, 2013). These studies have consequently followed precedent and used Downey and Feldman's formula for calculating *RSQ* scores that supports a single-factor structure.

An eight-vignette short form of the *RSQ* (*RSQ-8*) has been suggested to also share the psychometric properties of the original *RSQ*. Downey's research website (https://socialrelationspsychcolumbia.wordpress.com/rs-personal/) features a single set of scale statistics to represent both the 18-vignette *RSQ and RSQ-8*. Instructions for scoring the *RSQ-8* are identical to those for the original *RSQ*. A few published studies have used the *RSQ-8* (Burklund, Eisenberger, & Lieberman, 2007; Zimmer-Gembeck & Nesdale, 2013), but little empirical work has explicitly examined the construct validity of the abbreviated measure.

Since development of the *RSQ*, several psychologists have made a case for retesting the construct validity of scales that have been modified or used in contexts that differ from when they were first evaluated (Flake et al., 2017; Van Bavel et al., 2016). In this vein of inquiry, Innamorati et al. (2014) tested the *Adult-RSQ* (*ARSQ;* Berenson et

al., 2009). The nine-vignette *ARSQ* is designed identically to the original *RSQ* but features a smaller set of vignettes that are most applicable to an adult population.

Innamorati et al. (2014) found that, despite some limited use of the *ARSQ*, there was little data on the measure's psychometric properties. For example, no published study had investigated the *ARSQ*'s factor structure. Researchers employing the *ARSQ* were assumed to have relied on Downey and Feldman's (1996) validation of the original *RSQ* to represent the modified measure. Scoring of the *ARSQ* had correspondingly followed the *RSQ* authors' formula.

To test the dimensionality of the *ARSQ*, Innamorati et al. compared several factor models including the single-factor model suggested by the *RSQ*'s original authors. Using individual scale items as units for their factor analysis, Innamorati et al. (2014) concluded that their data did not support a single-factor structure. Instead, they found the *ARSQ* to be best represented by a bifactor model, though their indices provided mixed results. This conclusion put into question the use of composite scores to investigate the *RSQ*'s structure.

Present Study

Like Innamorati et al.'s (2014) study, the present study is an effort to address both the sparsity and method of testing the construct validity of modified rejection sensitivity measures. To that end, the present study tests the dimensionality and internal reliability of an online modified *RSQ-8*. In doing so, the study becomes the first to test the psychometric properties of any version of the *RSQ-8*. It is also the first to test any online version of an *RSQ* measure.

The modified version of the *RSQ-8* to be assessed differs in several ways other than length from the original *RSQ* (henceforth called the *RSQ-18*). Firstly, the present *RSQ-8* version features an additional angry scale. Previous research that tested this modified version of the *RSQ-8* on emerging adults found behavioral responses to perceived rejection to vary by defensive emotion (i.e., anxiety, anger) (Zimmer-Gembeck & Nesdale, 2013). Adding the anger scale to the *RSQ-8* for the current study enables me to test if the measure's structure is altered by the presence of a second affect scale.

The present modified *RSQ-8* also differs from the original *RSQ* because it is administered online. Downey and Feldman (1996) had employed a pen-and-paper format for the *RSQ-18* that participants completed and returned via campus mail. As the *RSQ-8*'s target population of emerging adults most frequently uses digital channels to communicate with others (Bailey et al., 2016; Flanagin, 2005; Harrison & Gilmore, 2012; Quan-Haase, 2008; Skierkowski & Wood, 2012; Smith, 2011; Smith & Caruso, 2010; Subrahmanyam et al., 2008), the measure is rightfully re-examined in a digital format they use for social interaction.

The first goal of the present study is to test Downey and Feldman's (1996) factor analysis technique to find whether the original two-scale *RSQ-8*, like the *RSQ-18*, can be reduced to a single factor using composite vignette scores as units. The second goal is to examine the modified *RSQ-8*'s factor structure using its 24 individual scale items as units. The structural models to be tested for fit include the single-factor model suggested by Downey and Feldman and the bifactor model that received mixed results in Innamorati et al.'s (2014) *ARSQ* analysis. Additional models revealed through exploratory factor analysis will also be tested.

To further assess the *RSQ-8*'s internal reliability, I will run several inter-item correlations. I will then compare participants' scores on the *RSQ-8* to their self-reported Big Five traits levels to test the *RSQ-8*'s discriminant validity.

Methods

Participants and Recruitment Procedures

Study participants were recruited at Rutgers-Camden via campus flyers, class announcements, and a posting on the psychology department's experiment scheduling website. Efforts were taken to recruit a variety of academic majors from among the undergraduate student body. Eligibility criteria required participants to be between the ages of 18 and 25 and able to read and type in English.

625 undergraduate participants voluntarily completed online personality measures between September 2015 and December 2016 for cash or credit. A subset of participants ($n = 160$) completed the personality measures a second time between September and December 2016 as part of a follow-up questionnaire.

Among 316 participants who completed a gender question, 80 percent were female. Though sociodemographic data was not requested, the sample derives from the Rutgers-Camden student body, which is identified as having a fairly diverse ethnic and racial makeup.

Study Procedure

Individuals who expressed interest in participating completed the study's online questionnaire via the Qualtrics web-based survey service. The questionnaire featured an

electronic informed consent form, a modified version of the abbreviated *Rejection Sensitivity Questionnaire* (*RSQ-8*; Downey & Feldman, 1996) and the *Ten-Item Personality Inventory* (*TIPI*; Gosling, Rentfrow & Swann, 2003). Email addresses were also requested so that participants could receive compensation and be identified for scheduling a follow-up lab session. Lab session procedures were designed to investigate the effect of rejection sensitivity on participants' reactions to ambiguous rejection following an instant messaging (IM) conversation. These procedures are not discussed among this study's material.

Measures

The modified *RSQ-8* featuring eight hypothetical vignettes is an abbreviated version of the original *Rejection Sensitivity Questionnaire*. Each of the vignettes depicts a scenario featuring potential rejection in which one requests something from a parent, friend, romantic partner, or peer (e.g., *You approach a close friend to talk after doing or saying something that seriously upset him/her*). The vignettes, which derive from the full-length *Rejection Sensitivity Questionnaire*, were pilot tested to represent scenarios common to an undergraduate population. The associated response scales measure one's anticipated reaction to the scenarios.

The *Rejection Sensitivity Questionnaire* (RSQ; Downey & Feldman, 1996) was designed with anxiety and rejection expectation scales so that the averaged product of these scores would represent one's tendency to anxiously expect rejection. My modified version of the *RSQ-8* featured three 6-point Likert scales. The anxiety scale asked participants to rate how anxious they would be (1 = not at all; 6 = very much) about a

target person's response to their request in each featured scenario. The anger scale asked participants to rate how angry they would be about a target person's response in each scenario. This scale had been introduced in the children's version of the *RSQ* (*CRSQ*; Downey, Lebolt, et al., 1998) and later adopted by Zimmer-Gembeck and Nesdale (2013) to the *RSQ-8* for an undergraduate population. I added the scale to the *RSQ-8* to test if the measure's structure would be altered by the addition of a second affect scale. I also planned to test if anticipated rejection anxiety and anger would differentially predict a heightened response to ambiguous rejection in the follow-up lab procedure. The final expectation scale of the *RSQ-8* asked participants to rate the degree to which they would anticipate a target person responding favorably in each scenario. This scale was reverse scored to measure one's level of expecting rejection. As the *RSQ-8* was administered online, care was taken to prevent patterned responding. Thus, both the order of vignettes and scale items per vignette were randomized to encourage participants to carefully read each question's content.

In keeping with Bandura's (1986) expectancy-value model, rejection sensitivity scores are traditionally calculated by averaging the products of matching anxiety scale and reverse-scored expectation scale items. This scoring technique was applied to test the *RSQ-8* factor structure via composite vignette scores. Individual scale items were then used for the second phase of factor analysis. Descriptive statistics are therefore reported for composite scores and scores on each of the *RSQ-8*'s three individual scales (*see Table 1*).

The *Ten-Item Personality Inventory* (TIPI) is an abbreviated self-report measure for gauging one's levels of each of the Big Five factor traits: extraversion, agreeableness,

conscientiousness, emotional stability, and openness. The measure features ten pairs of adjectives, with two pairs of adjectives representing each of the Big Five factor traits. One adjective pair represents the polar opposite of the other adjective pair for each factor trait. Participants rate on a scale of 1 to 7 the degree to which each pair of adjectives characterizes themselves. Scores on one adjective pair per trait are reversed before being averaged with the related adjective pair to produce scores for each of the Big Five traits.

Designers of the *TIPI* (Gosling et al., 2003) warn that a personality measure comprised of only two items per scale will have lower inter-item correlations in exchange for being able to represent all aspects of a construct (i.e., maintain content validity) via fewer items. Considering this limitation on internal reliability, inter-item correlations for each of the Big Five factors were as follows: extraversion (.52, $p < .001$), agreeableness (.14. $p < .01$), conscientiousness (.39, $p < .001$), emotional stability (.45, $p < .001$), and openness (.14, $p < .001$).

Statistical Analysis

All statistical analyses were performed using R statistical software (Version 3.3.3; R Core Team, 2017). After calculating descriptive statistics for the *RSQ-8*, I investigated the measure's dimensionality in the manner advocated by Downey and Feldman (1996) to determine if my data would reproduce the single-factor structure they claimed to have identified. To do so, I first calculated composite *RSQ-8* scores by multiplying anxiety scale items for each vignette by their corresponding reverse-scored expectation scale items. I then submitted these items to a principal component factor analysis. Finally, I examined the resulting eigenvalues with parallel analysis and a scree plot.

Next, I investigated the *RSQ-8*'s dimensionality using individual scale items. I sought to determine through exploratory then confirmatory factor analysis if a single-factor or other multidimensional structure could be found in the *RSQ-8*. For example, I tested the bifactor model investigated by Innamorati et al. (2014). I further tested models that arose from exploratory factor analysis that identified factors among subsets of scale items. As the *RSQ-8* employs 6-point ordinal scale items, I, like Innamorati et al. (2014), used the Diagonally Weighted Least Squares (DWLS) estimator in my factor analysis.

To compare the strength of competing models, I used multiple indices that serve as measures of goodness-of-fit. As several researchers have argued, various fit indices provide complementary information and should not be selectively chosen to allow one to make a desired argument (Hooper et al., 2008; Kenny, 2015). For this reason, each of the following indices was calculated:

1) **Chi-square** (x^2): non-significance indicates good model fit. This test is sensitive to various factors including sample size and non-normality. Researchers therefore suggest calculating this statistic with other indices.

2) **Root Mean Square Error of Approximation** (RMSEA): favors models with fewer parameters. Presently, .07 is the upper limit of a model of acceptable fit, with .06 or less indicating a good fit (Hooper et al., 2008; Hu & Bentler, 1999).

3) **Comparative Fit Index** (CFI): According to Kenny (2015), CFI should only be computed if the RMSEA is lower than .158. The closer the CFI value comes to

approaching 1, the better the model fit. Some argue that CFI should be .93 or higher for an acceptable model (Moss, 2016), though others advocate that CFI should be greater than or equal to .95 to indicate a good fit (Hu & Bentler, 1999).

4) **Standardized Root Mean Square Residual** (SRMR): is an absolute measure of model fit, which means that obtaining a value of zero would represent a perfectly fitting model. Values lower than .08 are considered a good fit, though values lower than .05 are preferable (Hu & Bentler, 1999).

For models determined to adequately represent the current data, I reported inter-item statistics including Cronbach's alpha, mean inter-item correlations, item-total correlations, and various omega tests. Finally, to test discriminant validity, I ran correlations between *RSQ-8* factors derived from well-fitting models and the Big Five traits as measured by the TIPI.

Results

Descriptive Statistics

Table 1 features descriptive statistics for the current sample's scores on the *RSQ-8*. Individual scale and composite score statistics are provided to enable comparisons with previous analyses of the abbreviated and full-length *RSQ* measures.

The current sample's mean *RSQ-8* composite score ($M = 8.44$, $Mdn = 8.12$, $SD = 3.47$) was slightly lower than the mean observed by Downey and Feldman (1996) ($M = 9.66$, $Mdn = 9.55$, $SD = 3.03$) in their *RSQ-18* validation. However, it was slightly higher

than the composite mean of a more recent *RSQ-8* administration (*M* = 7.53, *SD* = 3.05)

(Burklund, Eisenberger & Lieberman, 2007). Though prior studies did not visualize

composite score distributions, the current sample's distribution was (right-skewed). I

therefore log transformed the composite scores before further analysis to offset the effect

of variable skewness.

Only one prior study provided individual scale means for the three-scale *RSQ-8*

(Zimmer-Gembeck and Nesdale, 2013). Though that study used 7-point scales (anxiety

M = 22.3, *SD* = 7.2; anger *M* = 21.7, *SD* = 6.9; expectancy *M* = 16.3, *SD* =5.8) as

compared to the present 6-point scales (anxiety *M* = 27.5, *SD* = 8.0 ; anger *M* = 23.8, *SD*

= 7.8, expectancy *M* = 19.4, *SD* = 6.1), score distributions across both samples were

similar. The anxiety and anger scale scores exhibited a normal distribution whereas the

expectation scale scores indicated a right-skewed distribution. This latter pattern suggests

that undergraduate participants in both samples tended to rate themselves as having low

expectations of rejection.

There was a non-significant correlation in the present data between the anxiety

and expectation scales (*r* = -.05, *p* = .152) and a moderate negative correlation between

the anger and expectation scales (*r* = -.23, *p* <.001). Downey and Feldman (1996) did not

report any statistics on the correlation between their *RSQ-18* scales. However, the present

results show some interesting similarities to Zimmer-Gembeck and Nesdale's (2013)

RSQ-8 scale correlations. While their anxiety and expectation scale scores had a small

correlation (*r* = .16, *p* <.01), the correlation between their anger and expectation scale

scores was non-significant (*r* = .06, *ns*).

The *RSQ-8* scales' test-retest reliability for the present sample ranged from $r =$ .53, $p < .001$ to $r = .57$, $p < .001$. These results were not easily comparable to Downey and Feldman's test of the *RSQ-18*'s temporal stability. Downey and Feldman investigated score reliability over 3 weeks and 4 months. However, time between the two *RSQ-8* administrations in the present study ranged from six months to one year. Moreover, neither previous study using the *RSQ-8* had investigated the abbreviated measure's test-retest reliability.

Goal 1: Factor Analysis and Model Testing Using RSQ-8 Composite Scores

Besnoy et al. (2016) recommend a minimum ratio of 20:1 between scale items and participants for exploratory factor and principal component analysis. Their criterion suggests that the sample size in this study (n=625) was adequate to employ these techniques. On the other hand, Bartlett's Test of Sphericity indicated that my survey data is not normally distributed $x^2 (28) = 94.77$, p $< .001$. Yet, as Downey and Feldman (1996) had not reported results on this test, I submitted my data to a principal component analysis as they had. The composite scores of rejection anxiety and rejection expectation for all *RSQ-8* vignettes served as analysis units.

To perform principal component analysis, I randomly divided the sample into two halves to derive the principal component structure from one half and test if it could be identified in the second half. I then centered and scaled the composite scores to standardize them for analysis. The top panel of *Table 2* features the loadings of each of the *RSQ-8* composite scores on the first factor. None of the first factor loadings exceeded .40. Downey and Feldman's data showed that first factor loadings from the *RSQ-18*'s

composite scores ranged between .33 and .67. However, it should be noted that some of the single factor loadings in Downey and Feldman's data were likewise in the .30 to .40 range, which are not indicative of strong factor loadings. Their analysis therefore suggests some potential multidimensionality in the *RSQ-18.*

Unlike Downey and Feldman's analysis, only two factors in the present principal component analysis yielded eigenvalues greater than 1 (see bottom panel of *Table 2*). The first factor accounted for 32% of the variance. Meanwhile, the scree tests and plot visualizing the factor structure of the present *RSQ-8* data strongly suggested a two-factor structure (see *Figure 1).*

This analysis therefore did not reproduce Downey and Feldman's discovery of a single general factor despite using the same composite scores as units for principal component analysis. In fact, by graphing the space of the principal component analysis (see *Figure 2*), I identified a cluster pattern among the vignettes that lent nuance to the structural interpretation of the *RSQ-8*. The results of this study suggest that vignettes depicting interactions with one's parents (i.e., vignettes 1, 3, 5) clustered together whereas vignettes depicting interactions with peers (i.e., vignettes 2, 4, 6, 7, 8) clustered together. I therefore tested with confirmatory factor analysis a model that categorized individual *RSQ-8* scale items by the interaction partners featured in their vignettes.

Goal 2: Factor Analysis and Model Testing Using RSQ-8's Individual Scale Items Scores
I submitted the 24 individual items of the modified *RSQ-8* to a variety of scree tests to determine the number of factors to retain for exploratory factor analysis. As seen in *Figure 3*, results from parallel analysis, the Kaiser rule, and the optimal coordinates index

indicate that six factors should be retained with only the acceleration factor suggesting retention of one factor. Nonetheless, I tested the single factor model using a weighted least squares estimator to compare these results against my analysis using composite scores. Single factor loadings ranged from .59 to -.21 whereas the amount of variance per item unexplained by the single-factor model ranged from .65 to .99. Moreover, a chi-square test revealed that the single-factor model did not well represent the data.

Next, I submitted the 24 individual items of the modified *RSQ-8* to a principal component analysis. Similar to the analysis using *RSQ-8* composite scores, I randomly divided the sample into two halves then centered and scaled the individual scale items for analysis. The first seven components from this analysis produced eigenvalues greater than 1. *Table 3* presents the eigenvalues and proportions of variance explained by the first four components.

I also ran scree tests that had been run when using the composite scores as principal component analysis items. There were mixed results from the set of indices (*see Figure 4*). The optimal coordinates index and parallel analysis indicate five components should be retained whereas the acceleration factor indicates that one component should be retained. Thus, analysis of the *RSQ-8* by its individual items revealed even more potential dimensions underlying the measure than had been previously assumed.

The dimensionality of the modified *RSQ-8* is further made visible by graphing the space of the principal component analysis using individual scale items (see *Figure 5*). A clear pattern reveals clustering of all anxiety and anger scale items separately from the clustering of all expectation scale items.

Upon viewing this clustering pattern, I looked more closely at the factor loadings from the second principal component analysis to see if any interpretable patterns could be detected. It seems that the first factor for the modified *RSQ-8* represents a latent variable shared by the anxiety and anger scale items, as seen in *Figure 5*. The second factor apparently represents the expectation scale. The third factor represents a variable shared by certain anger scale items. The fourth factor could potentially represent a variable shared by anxiety scale items relating to rejection from one's parents. Finally, the fifth factor could potentially represent a variable shared by anxiety scale items relating to rejection from close friends or romantic partners.

With the previously tested models and these interpretations of the modified *RSQ-8*'s structure in mind, I tested competing structural models using confirmatory factor analysis with a Diagonally Weighted Least Squares estimator (DWLSE). The DWLSE is suited to an ordinal measure. For each of the tested models, individual scale items served as the measurable or manifest variables for analysis. The specific models I tested include:

1) A single-factor model: Though Downey and Feldman (1996) claimed to have identified a single underlying factor in the *RSQ-18*, the model referenced here will test if that structure is well represented when the manifest variables are individual scale items rather than composite scores.

2) A bifactor model: This model features two factors. The first accounts for variance in an underlying variable that incorporates data from both the anxiety and anger scales. The latter accounts for variance in the rejection expectation scale.

3) A three-factor model: To my knowledge, this model has never been previously tested. It is informed by the factor loadings of the principal component analysis and graph depicting the factor space of the *RSQ-8*. Specifically, one of the factors accounts for variance in the rejection expectation scale. A second factor accounts for variance among anxiety and anger scale items pertaining to parental interactions. The third factor accounts for variance among anxiety and anger scale items pertaining to peer interactions.

Table 4 features the fit indices for the competing models. According to each of these indices, the single-factor model does not fit the data well. The bifactor model is an improvement on the single-factor model with values on the RMSEA and SRMSR criteria approaching standards of acceptability (RMSEA = .066; 90% CI: 0.062/0.071; SRMSR = .076). Of the three models, however, the three-factor model appears most promising with RMSEA and SRMSR values indicative of a good fit to the data (RMSEA = .063; 90% CI: 0.058/0.068; SRMSR = .070). Yet, the CFI value for the three-factor model remains just outside the currently accepted boundary of a well fitting model. These mixed results indicate that further improvements to the model may yet be possible. However, the lack of support for a single-factor structure reliably suggests that the multidimensionality of the *RSQ-8* should be acknowledged and further explored.

Internal Reliability and Discriminant Validity of Multi-factor Models

With the three-factor model demonstrating good fit to the data and the two-factor model

showing adequate fit, I ran several tests on the internal reliability of each of their factor

sets (see top panel of *Table 5*). The three-factor model showed advantages over the

bifactor model in some internal reliability indices including mean inter-item correlations

and the range of item-total correlations. However, Factor 1 of the bifactor model, which

explained variance in negative affect among both the anxiety and anger scales, exceeded

the reliability of all other factors in both models according to Cronbach's alpha ($\alpha = .84$)

and total omega ($\omega = .87$).

Meanwhile, both models' factors had moderately sized correlations with several

of the Big Five traits (see bottom panel of *Table 5*). Each model's factor representing

variance in rejection expectancy negatively correlated with extraversion ($r = -.18$, $p <$

$.001$) and emotional stability ($r = -.13$, $p < .01$). Each of the factors representing variance

in negative affect negatively correlated with openness ($r = -.15$, $p < .001$; $r = -.14$, $p <$

$.001$; $r = -.15$, $p < .001$). The largest negative correlations were found between emotional

stability and factors in each model representing variance in negative affect ($r = -.28$, $p <$

$.001$; $r = -.20$, $p < .001$; $r = -.30$, $p < .001$). Even after accounting for attenuation, these

correlations were not at risk of indicating redundancy between rejection sensitivity and

any of the Big Five traits.

Discussion

My goal in this study was to investigate the reliability and dimensionality of a modified

online *RSQ-8* featuring anxiety, anger, and expectation scales. I compared statistical

support for several structural models including the single-factor model described by

Downey and Feldman (1996) to represent the *RSQ-18* and a bifactor model that received

partial support from Innamorati et al.'s (2014) analysis of the *ARSQ*. An additional three-

factor model was tested that separated the *RSQ-8* into a rejection expectancy factor and

two emotion factors that accounted for individual differences in affective responses based

on the source of rejection: one's parents versus one's peers.

Downey and Feldman's single-factor model was not supported by any model fit

indicators. However, the bifactor model met several criteria for adequate model fit. Its

factors also achieved high inter-item reliability. The bifactor model's factors meanwhile

showed minor overlap with some Big Five traits. The first factor representing rejection

affect was negatively related to trait-based emotional stability and openness. Its second

factor representing rejection expectancy was negatively related to both trait-based

extraversion and emotional stability.

Meanwhile, the three-factor model surpassed the bifactor model on several model

fit indices. Its factors further demonstrated good inter-item reliability, though the bifactor

model's factors performed better on several reliability indicators. Finally, the factors of

the three-factor model had correlations with some Big Five traits that were similar to

those exhibited by the bifactor model. The three-factor model's rejection expectancy

factor was negatively related to both trait-based extraversion and emotional stability. Its

two rejection affect factors were negatively related to trait-based emotional stability and

openness.

Given the marginal differences in statistical support for the bifactor and three-

factor models, I suggest using the bifactor model to measure rejection sensitivity in future

studies. Its components are easier to conceptualize than the more nuanced components of

the three-factor model. For example, each of the bifactor components could be identified as rejection affect (RS-A) and rejection expectancy (RS-E), respectively. Using a singular, consolidated RS-A factor also has wider generalizability and applicability than using more nuanced factors that distinguish negative affect by category of rejecter.

Operationalizing RS as two separate, distinct dimensions does not preclude researchers from investigating the outcomes of having both high rejection anxiety and high rejection expectancy, which was theoretically important to the creators of the *RSQ*. Instead, my suggestion enables correlational and regression analysis to reveal the unique outcomes of having high RS-A, high RS-E, or both.

My conclusions on the factor structure of rejection sensitivity as measured by the modified *RSQ-8* are consistent with Innamorati et al.'s (2014) findings on the *ARSQ*'s factor structure. While several of their fit indices favored a two-factor model, omega statistics further revealed that *ARSQ* scale items loaded more strongly on separate dimensional factors than a general RS factor. Their analysis, like mine, thus suggests that rejection anxiety and rejection expectancy may bias RS individuals in different ways to rejection threat.

Researchers' reference to RS' "largely separable" dimensions also hints at the distinctness of each of the dimension's roles (Romero-Canyas, Downey, et al., 2010, p. 126). However, the *RSQ-18* authors provided no descriptive data about the measure's individual scales. Furthermore, they did not a test their single-factor model against a series of fit indices as Innamorati et al. (2014) and I have done. Nor did they report omega statistics, which would have provided a measure of the variance in RS scores that could be attributed to a general RS factor. Thus, Downey and Feldman's claim that the

RSQ can be reduced to a single, underlying factor remains contestable for having been derived from composite scores and unsupported by fit indices.

Limitations

The results of my effort to examine the structure of the *RSQ-8* should be taken with several limitations in mind. Firstly, there was a risk to validity in having administered the measure to undergraduate students online. An online format is consistent with emerging adults' digital communication trends. Yet, it may be a format that allows for distracted, inattentive responding. In fact, several submissions that featured the same scale score for all responses were removed before analysis. More subtle kinds of patterned responding may have been harder to detect.

Next, I was unable to test the effect of gender on responses to the *RSQ-8*. My concern for gaining enough participants to the study deterred me from turning away female participants so that an even distribution of male and female participants could be compared. Consequently, the ratio of female to male respondents was skewed. Downey and Feldman (1996) had not compared scores across gender in any of their samples. However, some participants in their all-female sample evinced more extreme rejection sensitivity scores than anyone in their mixed gender samples. Future RS studies should recruit enough participants to compare *RSQ* score patterns across gender.

Furthermore, while I used composite scores in principal component analysis to see if Downey and Feldman's technique might produce a single-factor structure in the *RSQ-8*, I was unable to make a direct comparison to the *RSQ* authors' work. It would have been more informative to have administered both the *RSQ-18* and *RSQ-8* to the

sample to compare each of the measure's factor analysis results to Downey and Feldman's analysis.

Finally, I cannot claim that I fully tested the construct validity of the *RSQ-8*, for I had administered but one other abbreviated measure to investigate the measure's discriminant validity. Administering additional measures that other RS researchers had used (e.g., Rosenberg's self-esteem scale, Social Avoidance and Distress Scale, Interpersonal Sensitivity Scale) would provide further support that RS, as represented by a modified *RSQ-8* measure, is differentiated from related dispositional constructs.

Conclusion

Rejection sensitivity (RS) is a disposition that promotes anxious expectations of rejection in situations that feature potential rejection from valued others. RS researchers had created the *Rejection Sensitivity Questionnaire* (*RSQ*) to operationalize this disposition among college undergraduates. From that point, the *RSQ* spawned modified versions that varied in length and target audience. Yet what remained consistent, based on the validation of the initial *RSQ*, is the belief that rejection sensitivity is a single-factor construct defined by the interaction of rejection anxiety and rejection expectations.

However, as the present structural analysis of a modified *RSQ-8* indicates, RS' rejection expectancy (RS-E) and rejection affect (RS-A) components may each uniquely bear on one's contextualized cognitive-affective patterns and therefore be best assessed as separate rejection sensitivity dimensions. Measuring the singular and joint effects of rejection sensitivity's two dimensions can potentially reveal the differing strength of influence each dimension has on emotional and behavioral outcomes.

It is worth noting, in closing, that neither the abbreviated *RSQ-8* nor the *RSQ-18* designed for college undergraduates features any scenarios pertaining to potential rejection in digital contexts. As emerging adults are the leading users of digital communication and highly depend on CMC to maintain their new and existent relationships (Bailey et al., 2016; Flanagin, 2005; Harrison & Gilmore, 2012; Quan-Haase, 2008; Skierkowski & Wood, 2012; Smith, 2011; Smith & Caruso, 2010; Subrahmanyam et al., 2008), it may be worthwhile to update the measure to reflect changes in the social environments where emerging adults may encounter rejection. As the present study took care to administer the *RSQ-8* in a digital format familiar to a computer-savvy population, so can the measure's content represent their tendency to interact in digital spaces. The heightened ambiguity of digital communication could offer unique insight into the way emerging adults interpret rejection in digital scenarios as compared to face-to-face scenarios.

Table 1: Descriptive Statistics for Abbreviated Rejection Sensitivity Questionnaire (*RSQ-8*)

	M	SD	Mdn	r
Composite (n=560)				
Anxious RS[1] (range 1-36)	8.44	3.47	8.12	
Cronbach's alpha: .66				
Test-retest temporal stability[2] (n=129)				.55***
Individual Scales				
Anxiety Scale (range 1-6) (n=571)	3.39	1.00	3.38	
Cronbach's alpha: .77				
Test-retest temporal stability (n=131)				.53***
Anger Scale (range 1-6) (n=570)	2.96	0.98	3.00	
Cronbach's alpha: .80				
Test-retest temporal stability (n=131)				.57***
Expectation Scale (range 1-6) (n=561)	2.42	0.77	2.38[†]	
Cronbach's alpha: .70				
Test-retest temporal stability (n=129)				.57***
Anxiety & Anger				.48***
Anxiety & Expectancy				-.05
Anger & Expectancy				-.23***

* $p < .05$, ** $p < .01$, *** $p < .001$
[1]Anxious RS is product of anxiety and rejection expectation scores averaged over eight vignettes.
[2]Time between first and second administration ranged between 6 months and 1 year.
[†]Distribution is non-normal.

Table 2: Loadings of RSQ-8 Vignettes on First Factor and Proportion of Variance Explained

Item	Factor Loading
1. You ask your parent(s) for help in deciding what programs to apply to.	.33
2. You approach a close friend to talk after doing or saying something that seriously upset him/her.	.35
3. After graduation, you can't find a job and ask your parent(s) if you can live at home for a while	.23
4. You call your boyfriend/girlfriend after a bitter argument and tell him/her you want to see him/her.	.38
5. You ask your parent(s) to come to an occasion important to you.	.37
6. You ask a friend to do you a big favor.	.36
7. You ask your boyfriend/girlfriend if he/she really loves you.	.37
8. You go to a party and notice someone on the other side of the room and then you ask them to dance.	.40

Factor (First Four)	Eigenvalues	Proportion of Variance
PC1	2.64	32.1%
PC2	1.50	16.3%
PC3	0.82	13.0%
PC4	0.77	10.2%

Fig. 1: Scree Plot and Tests from Composite RSQ–8 Scores
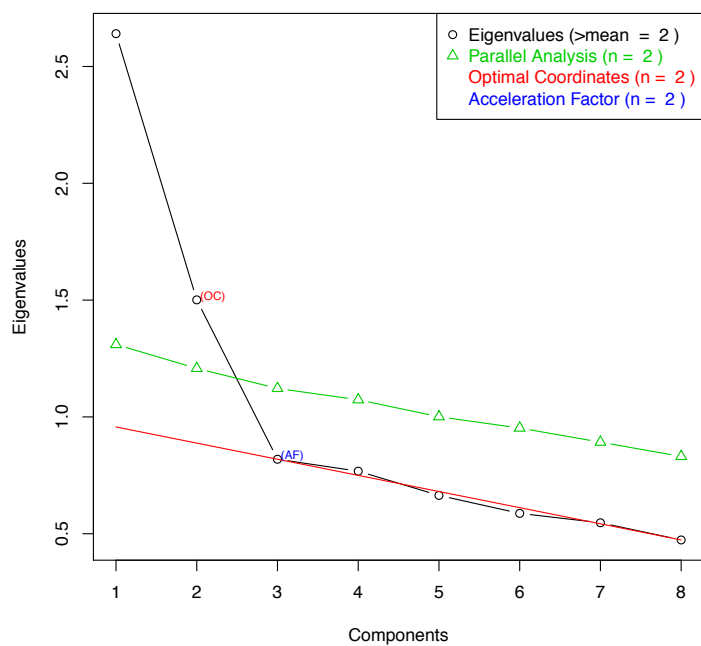
Fig. 2: Factor Space of RSQ–8 Composite Scores
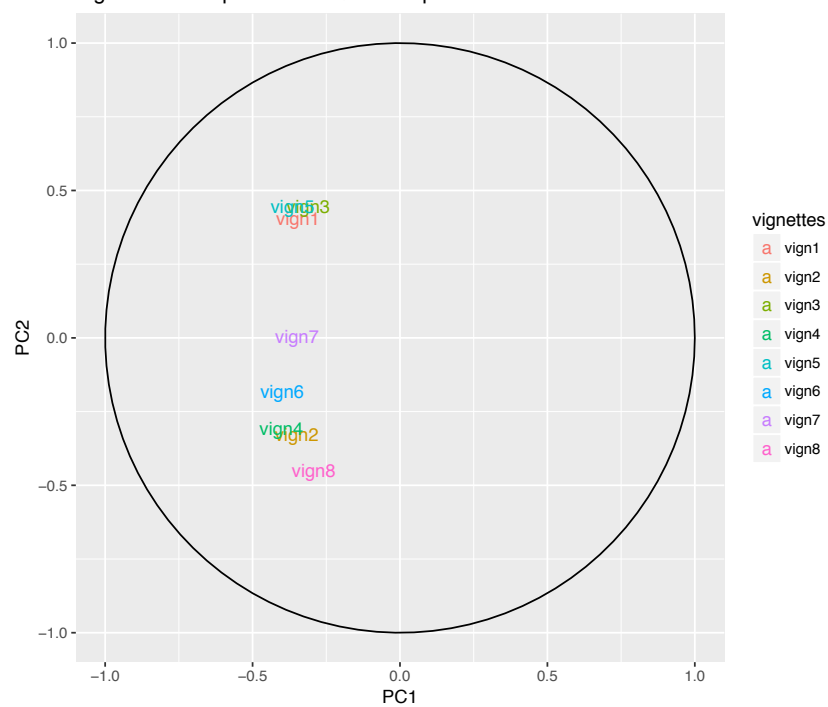
Fig. 3: Exploratory Scree Plot for RSQ–8 Items
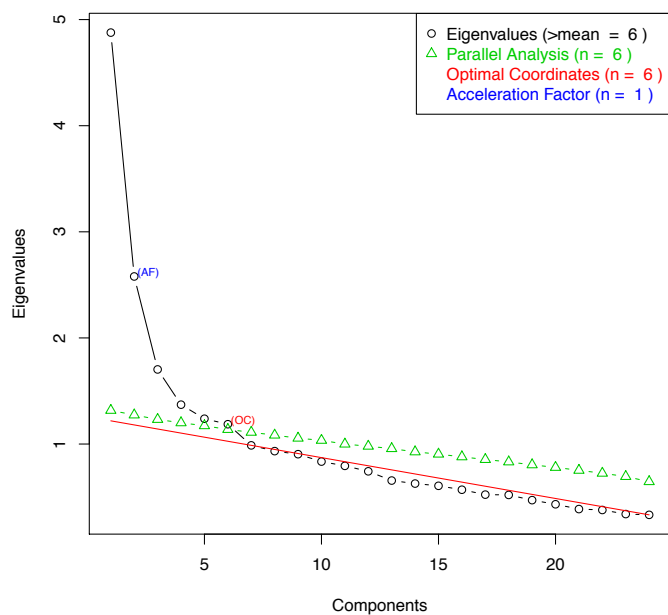
Table 3: Proportion of Variance Explained by Components on RSQ-8 Individual Scale Items

Factor (First Four)	Eigenvalues	*Proportion of Variance*
PC1	5.06	21.1%
PC2	2.40	10.0%
PC3	1.66	6.9%
PC4	1.40	5.9%

Fig. 4: Scree Plot and Tests from Individual RSQ−8 Items
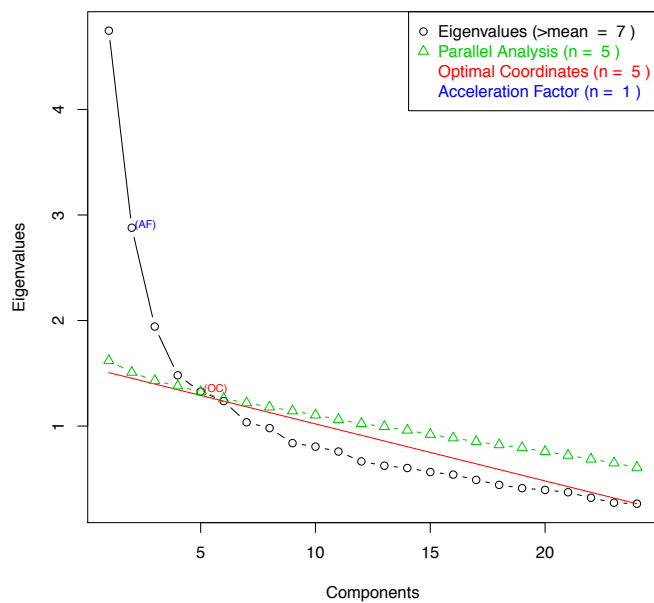
Fig. 5: Component Space of Individual RSQ−8 Items
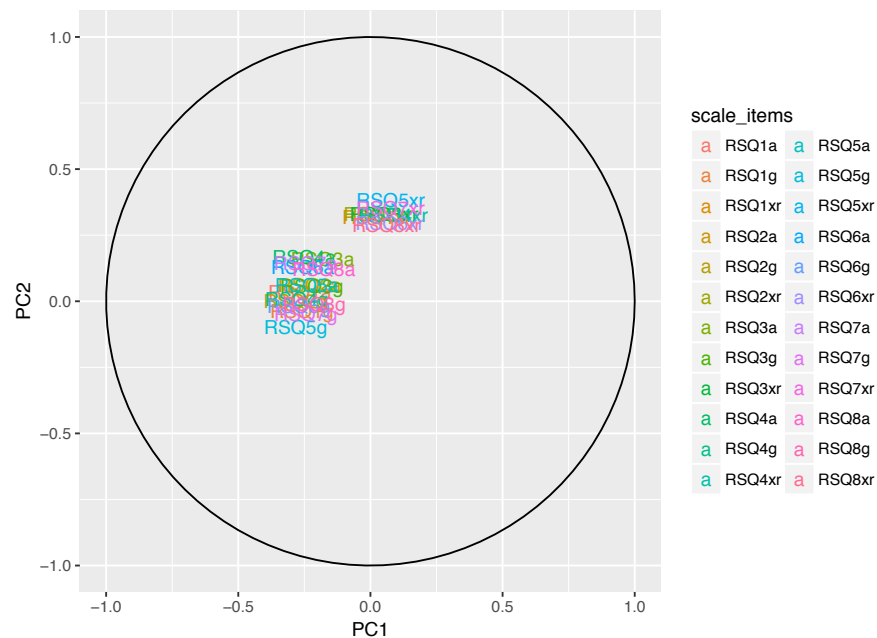
Table 4: Fit Indices of Competing Factor Models for RSQ-8[1]

	df	x^2	RMSEA	CFI	SRMSR
Single-factor model	252	1341.48***	.09	.79	.10
Bifactor model	253	876.10***	.07	.88	.08
Three-factor model	249	797.55***	.06	.89	.07

df: degrees of freedom; x^2: chi-square; RMSEA: Root Mean Square Error of Approximation (90% CI); CFI: Comparative Fit Index; SRMSR: Standardized Root Mean Square Residual
* $p < .05$, ** $p < .01$, *** $p < .001$
[1]All analyses were performed using the Diagonally Weighted Least Squares (DWLS) estimator

Table 5: Internal Reliability and Discriminant Validity Statistics for RSQ-8

	α	Mean Interitem	Item-Total Range	ωH	ωTotal
Bifactor Model					
Factor 1	.84	.25	.43 - .60	.57	.87
Factor 2	.70	.23	.53 - .62	.55	.75
Three-factor Model					
Factor 1[1]	.70	.23	.53 - .62	.55	.75
Factor 2[2]	.73	.31	.63 - .68	.52	.82
Factor 3[3]	.79	.27	.51 - .64	.49	.83

	Extraversion (r)	Emotional Stability (r)	Openness (r)
Bifactor Model			
Factor 1	.00	-.28***	-.15***
Factor 2	-.18***	-.13**	-.04
Three-factor Model			
Factor 1[1]	-.18***	-.13**	-.04
Factor 2[2]	.07	-.20***	-.14***
Factor 3[3]	-.01	-.30***	-.14***

α: Cronbach's alpha; Mean interitem: mean interitem correlation; Item-Total: item-total correlation; *ωH :* omega hierarchical; *ωTotal:* omega total
* $p < .05$, ** $p < .01$, *** $p < .001$
[1]Factor 1 in the three-factor model is comparable to Factor 2 in the bifactor model.
[2]Factor 2 in the three-factor model pertains to negative affect in relation to parental interactions.
[3]Factor 3 in the three-factor model pertains to negative affect in relation to peer interactions.

Study 2

Introduction

Social rejection hurts (Eisenberger, Lieberman, & Williams, 2003; Leary et al., 1998), for it thwarts our needs to belong and be valued (Buckley, Winkel, & Leary, 2004; Leary, 2001; Leary, 2015; Leary et al., 1995; Richman & Leary, 2009). However, some individuals find rejection particularly hurtful. Those who anxiously expect to be rejected by their close contacts are more emotionally and physiologically distressed by rejection (Romero-Canyas, Downey, et al., 2010). These individuals are said to have a personality disposition called rejection sensitivity (RS). They see intentional rejection in others' ambiguous unpleasant behavior and respond with more negative emotional and behavioral responses to perceived rejection episodes (Downey & Feldman, 1996; Romero-Canyas, Downey, et al., 2010).

As technology has advanced to enable communication and network-building through computer-mediated channels, the circumstances for experiencing social rejection have extended to digital contexts (Dempsey, Sulkowski, et al., 2009; Lenhart, Madden, & Hitlin, 2005). One may face various forms of victimization including cyberbullying and being excluded or ignored in digital spaces (Underwood & Ehrenreich, 2017; Vorderer & Schneider, 2016). As computer-mediated communication (CMC) is largely text-based with fewer non-verbal cues (Madell & Muncer, 2007; Walther, 1996), it may produce more ambiguous messages and interpretations for non-response (Rintel et al., 2003; Underwood & Ehrenreich, 2017) that RS individuals construe as intentional rejection.

In an increasingly digital world, rejection sensitivity may take its toll especially on individuals who use CMC the most. Emerging adults are the most frequent users of digital communication, especially text messaging and social networking sites (Coyne et al., 2013; Lenhart, Purcell, et al., 2010; Smith, 2011; Smith & Caruso, 2010). They send or receive an average of 109.5 (median of 50) text messages daily (Smith, 2011) while almost all (90%) log into social media daily (Perrin, 2015). Instant messaging (IM) is also regaining popularity with 49% of emerging adults who own smartphones reporting that they use instant messaging apps (Duggan, 2015). As emerging adults turn to digital communication as their most popular method for keeping in touch with friends and family (Bailey et al., 2016; Flanagin, 2005; Harrison & Gilmore, 2012; Quan-Haase, 2008; Skierkowski & Wood, 2012; Smith, 2011; Smith & Caruso, 2010; Subrahmanyam et al., 2008), they are likely to experience rejection in digital contexts (Subrahmanyam & Greenfield, 2008).

Emerging adults, as a group, have demonstrated greater sensitivity than either adolescents or young adults to ambiguous peer rejection in CMC (Pharo et al., 2011; Smith, Morgan & Monks, 2017). This sensitivity may stem from several factors. Firstly, emerging adults' developmental goals may make them especially vulnerable to peer rejection: establishing greater personal autonomy can lead them to venture on their own without social support; exploring their identities can leave their authentic selves open to rejection; and seeking intimacy through lasting relationships can allow rejection to threaten more important connections (Arnett, 2000; Barry et al., 2009; Nelson & Barry, 2005: Smith et al., 2017; Zimmer-Gembeck & Nesdale, 2013). Next, rejection in digital contexts may be more distressing to emerging adults, for they rely more greatly on CMC

than other age groups (Skierkowski & Wood, 2012; Smith et al., 2017) for pursuing their developmental goals (Coyne et al., 2013; Padilla-Walker et al., 2010) and maintaining social connections.

However, rejection sensitivity may moderate how emerging adults interpret and react to rejection in digital contexts. The present study is aimed to investigate whether rejection sensitivity's components – rejection affect and rejection expectancy – moderate emerging adults' mood, behavior intentions, and impressions of an instant messaging (IM) conversation after they experience ambiguous rejection.

Rejection

Humans have an inherent and evolutionary need to belong (Baumeister & Leary, 1995; Leary, 2015; Richman & Leary, 2009). To belong is to be highly valued, accepted, or included by individuals or groups (Baumeister & Leary, 1995).

To be rejected, on the other hand, is to be devalued, rebuffed, or shunned by individuals or groups (Leary, 2001; 2005; Leary et al., 2006). Because all forms of rejection thwart people's need to belong and be socially valued, they lead to negative emotions such as hurt, anxiety, sadness, and anger (Buckley et al., 2004; Leary, 2001; Leary, 2015; Leary et al., 1995; Richman & Leary, 2009). In conjunction with eliciting negative emotions, rejection may also lower one's state self-esteem (Leary et al., 1995; Richman & Leary, 2009).

According to sociometer theory, self-esteem is an internal gauge for one's level of being accepted or rejected by others (Leary, 2001; 2015; Leary et al., 1995). Desire to avoid rejection leads the self-esteem system to stay alert to signs of change in one's

social value. If perceived social value drops, negative affect is triggered to motivate the individual to take action to regain the esteem of others.

Several findings provide evidence of the self-esteem system at work in response to rejection. For example, rejection activates the dorsal anterior cingulate cortex (dACC) in the brain, which is associated with perceived distress and lowered feelings of self-worth (Eisenberger, Lieberman, & Williams, 2003). Rejection also primes people to pay attention to social cues in their environment that indicate how others evaluate them (DeWall, Maner, & Rouby, 2009; Pickett, Gardner, & Knowles, 2004; Richman & Leary, 2009). In fact, a single rejection episode can temporarily foster rejection expectations by threatening one's perceived social value (Sommer & Rubin 2005).

Behavioral Reactions to Rejection

Richman and Leary (2009) devised a theoretical framework to account for relational and contextual factors that would influence how a person behaviorally reacts to a rejecting event. Though they argued that belonging is the only need that is centrally affected by all forms of rejection, other needs may be conditionally thwarted during rejection episodes to influence one's behavioral response.

According to Richman & Leary's (2009) *multimotive model,* cognitive-affective responses to rejection trigger one of several categories of response behavior to address one's perceived loss of social value. Prioritizing among three simultaneous motives: seeking reacceptance, defending oneself against the hurt inflicted, and avoiding further rejection, will influence whether one acts antisocially, prosocially, or avoidantly after a rejection episode (Leary et al., 2006; Richman & Leary, 2009). Value attributed to the

relationship at stake and expectations of reconnection will also bear on response behavior (Richman & Leary, 2009).

Experimental studies have demonstrated that rejection targets may endorse or enact antisocial behavior toward rejecting strangers (Bourgeois & Leary, 2001; Buckley et al., 2004; Chen & Abedin, 2014; Chow, Tiedens, & Govan, 2008; Goodacre & Zadro, 2010; Leary et al., 1995; Twenge, Baumeister, et al., 2001; Warburton, Williams & Cairns, 2006; Wesselmann, Butler, Williams, & Pickett, 2010; Williams et al., 2002). Targets of rejection may retaliate against these perceived perpetrators or rate them more negatively. They may also aggress or behave less prosocially toward third parties (Sommer et al., 2001; Twenge et al., 2001; 2007). Some studies have found anger to accompany urges to aggress (Buckley et al., 2004), though this trend is not consistent (Blackhart, Knowles, & Baumeister, 2009).

Though there is no consensus on the reason why rejection may lead to aggressive behavior, some researchers suggest that aggression may be a downstream effect of threat to fundamental needs such as belonging and control (Leary et al., 2006; Warburton et al., 2003; Williams, 2001; Williams et al., 2002). Some emotion theorists believe, for example, that anger motivates a certain behavior pattern called an "action tendency" that is aimed to combatively re-establish control and remove hindrances to one's needs, including social belonging (Baumeister & Leary, 1995; Leary et al., 2006). Thus, anger may not only co-occur but be part of the mechanism by which rejection gives rise to aggression.

Rejection Sensitivity

Rejection sensitivity (RS) is a personality disposition characterized by chronic expectations of rejection accompanied by anxiety or anger (Downey & Feldman, 1996; Feldman & Downey, 1994; Levy et al., 2001). It is theorized to develop in response to early life rejection from parents, peers, or others with whom one seeks to form social bonds (Levy et al., 2001; Mellin, 2011). These early rejection experiences create mental scripts that lead RS individuals to expect rejection from one or several categories of relationships (Levy et al., 2001). RS individuals may further learn to associate certain situational cues with early rejection experiences so that future exposure to these cues triggers rejection expectations (Romero-Canyas, Downey, et al., 2010).

Avoiding rejection is a salient goal for RS individuals on account of their early rejection experiences (Downey & Feldman, 1996; Romero-Canyas, Anderson, et al., 2009; Romero-Canyas, Downey, et al., 2010). Therefore, a defensive motivation to avoid rejection, accompanied by an anxious inability to predict where it may occur, leads RS individuals to be hypervigilant for rejection cues where rejection from valued others is possible (Levy et al., 2001). This hypervigilance, which establishes a lower threshold for detecting rejection, inclines RS individuals to see intentional rejection in others' ambiguously unpleasant behavior (Downey & Feldman, 1996; Romero-Canyas, Downey, et al., 2010). Rejection sensitivity's defensive mechanisms therefore lead individuals to attribute hostile intent to perceived behaviors that others find benign (Ayduk et al., 1999; Downey & Feldman, 1996; Downey, Freitas, et al., 1998; Levy et al., 2001).

The effort to avoid social rejection also contributes to RS individuals' heightened perceived threat of rejection (Downey et al., 2004; Romero-Canyas, Downey, et al., 2010). According to RS theorists, heightened perceived rejection threat activates rejection

sensitivity's defensive system to swiftly detect and strongly respond to rejection to minimize its harm (Downey et al., 2004; Gyurak & Ayduk, 2008; Romero-Canyas, Anderson, et al., 2009). Individuals with high rejection sensitivity correspondingly demonstrate anxiety and anger in anticipation of rejection (Downey, Freitas, et al., 1998; London et al., 2007). They also exhibit more extreme emotional and behavioral reactions to perceived rejection episodes (Ayduk et al., 1999; Ayduk, Gyurak, & Luerssen, 2008; Downey et al., 2004; Downey & Feldman, 1996; Jacobs & Harper, 2013; Zimmer-Gembeck & Nesdale, 2013).

Although these defensive mechanisms are intended to protect the RS individual from social harm, heightened responses to anticipated and perceived rejection over time have been shown to promote relational insecurity in RS individuals and jeopardize their interpersonal relationships (Ayduk et al., 2000; Ayduk, Mischel, & Downey, 2002; Downey & Feldman, 1996; Downey, Feldman, & Ayduk, 2000; Downey, Freitas, et al., 1998; Downey, Lebolt, et al., 1998; Liu et al., 2013). These heightened responses also contribute to lowered self-worth and depression among RS individuals (Ayduk, Mischel, & Downey, 2002; Liu et al., 2014). Perhaps unsurprisingly, RS also correlates with social anxiety (Feldman & Downey, 1994).

Experimental research has revealed rejection sensitivity to increase the intensity of negative reactions to ambiguous rejection from strangers (Ayduk & Gyurak, 2008). High RS predicted greater levels of rejection moods (i.e., unaccepted, rejected, hurt, disliked, discouraged) following news that a fellow participant did not wish to communicate (Downey & Feldman, 1996, Ayduk et al., 1999). It has also predicted a readiness to respond more antisocially to ambiguous messages from strangers featuring

rejection (Ayduk et al., 1999; Ayduk, Gyurak, & Luerssen, 2008). For example, RS has

predicted greater retribution (Ayduk, Gyurak, & Luerssen, 2008; Zimmer-Gembeck &

Nesdale, 2013), more derogatory ratings of one's perceived rejecter (Ayduk et al., 1999),

and less willingness to demonstrate prosocial behavior after perceived rejection

(Cuadrado et al., 2015; Romero-Canyas & Downey, 2005). However, most experimental

studies of rejection sensitivity have not tested the moderating effect of RS on reactions to

ostracism.

Ostracism

Ostracism is a type of rejection that involves being excluded or ignored (Williams, 2001).

Since targets of ostracism receive no communication from those who exclude or ignore

them, they often do not know the reason for being ostracized (Williams, 2001). The

absence of nonverbal cues in many text-based digital communication forms increases the

ambiguity of ostracism in computer-mediated contexts (i.e., cyberostracism), for targets

may not know whether they are being intentionally ostracized (Williams, 2001; Williams

& Zadro, 2001).

Williams' *ostracism model* suggests that ostracism uniquely threatens four

distinct but related fundamental needs: belonging, self-esteem, meaningful existence, and

control (Williams, 2001; Williams & Zadro, 2004). Ostracism strongly threatens

belonging because the target experiences a full cut-off from social interaction rather than

mere exposure to disparaging words or behaviors. It threatens self-esteem by either

indicating that one deserves to be punished or has low social value. Next, ostracism

threatens the importance or meaningfulness of one's existence, for complete

disengagement can make one feel as if their existence doesn't matter. Finally, ostracism threatens perceived control, for complete behavioral disengagement leaves one with a perceived inability to influence how others view oneself.

Like other forms of rejection, ostracism also lowers mood and induces feelings of hurt, anxiety, and loneliness, especially if belonging and self-esteem needs have been threatened (Baumeister & Leary, 1995; Leary et al., 1995; Williams, 2001; Williams, Cheung & Choi, 2000). Individuals who are ignored by strangers with whom they are less familiar experience more hurt feelings and greater reduction in state self-esteem than experienced with familiar contacts (Snapp & Leary, 2001). The emotional effects of ostracism are so powerful that one's mood can be lowered even if one is aware of being ostracized for non-social reasons (Eisenberger, Lieberman, & Williams, 2003; Pickett, Gardner, & Knowles, 2004) or by a computer (Zadro, Williams, & Richardson, 2004).

Computer-Mediated Communication (CMC)

Computer-mediated communication (CMC) has increasingly become a valued and preferred form of communication in US culture (Coyne et al., 2013; Smith, 2011). CMC is any form of communication employing electronic devices to facilitate social interaction. However, its most popular forms, such as text and instant messaging and e-mail, are largely text-based.

Emerging adults are particularly avid users of CMC (Harrison & Gilmore, 2012; Johnson, 2007; Lenhart, Purcell, Smith, & Zickuhr, 2010; Skierkowski & Wood, 2012; Underwood et al., 2012; Van Cleemput, 2010; Waechter, Subrahmanyam, Reich, & Espinoza, 2010), for digital communication serves as their most popular method for

keeping in touch with friends and family (Bailey et al., 2016; Flanagin, 2005; Harrison & Gilmore, 2012; Quan-Haase, 2008; Skierkowski & Wood, 2012; Smith, 2011; Smith & Caruso, 2010; Subrahmanyam et al., 2008). Emerging adults spend the majority of their daily hours online (Padilla-Walker et al., 2010) communicating with others (Johnson, 2007). Many will often use more than one form of digital communication (Russett & Waldron, 2017). Text messaging and social networking site (SNS) use serve as emerging adults' favorite digital communication activities (Greenwood, Perrin, & Duggan, 2016; Harrison & Gilmore, 2012; Scott et al., 2017; Skierkowski & Wood, 2012; Smith, 2011). In fact, emerging adults are the most frequent users of both text messaging and social networking sites in the US population (Lenhart, Madden, et al., 2007; Lenhart, Purcell, et al., 2011; Smith, 2011; Smith & Caruso, 2010). Whereas 88% of emerging adults use Facebook (Greenwood et al., 2016), the most popular social networking site (Duggan et al., 2014; Nielsen, 2012), 97% of emerging adults who own cell phones use text messaging to exchange an average of 109.5 texts each day (Smith, 2011).

Instant messaging (IM) is an increasingly common communication channel among emerging adults (Curtis, 2014), with one study of college undergraduates reporting that more than one-third use IM daily or every other day (Johnson, 2007). Instant messaging can be subsumed under SNS' many features (Jenks, 2014; Lenhart, Ling, et al., 2010; Piwek & Joinson, 2016; Waechter, Subrahmanyam, et al., 2010). However, other standalone apps have also gained popularity. 49% of emerging adults who own smartphones use instant messaging apps (Duggan, 2015).

Researchers of emerging adults' computer-mediated communication have questioned why individuals in this developmental stage use digital communication tools

(Padilla-Walker et al., 2010). Some studies have found that emerging adults are attracted to the level of control they can apply within predominantly text-based digital communication to select their communication partners, edit their messages before delivery, and manage their personal impressions (Madell & Muncer, 2007; Russett & Waldron, 2017; Vaterlaus et al., 2015; Walther, 1996). According to use and gratification theory, emerging adults selectively choose various digital communication tools because of the unique functions they offer to fulfill their developmental goals (Coyne et al., 2013; Russett & Waldron, 2017; Tosun, 2012).

Emerging Adulthood

Emerging adulthood is a developmental period that ranges between roughly 18 and 25 years of age (Arnett, 2000), though may extend through the 20s (Arnett et al., 2014). It is characterized as a period of both exploration and instability, for individuals in this stage experiment with changes in their social and romantic relationships, work experiences, and worldviews to develop their identities (Arnett, 2000; Russett & Waldron, 2017). Alongside identity development, emerging adulthood is the period for establishing greater personal autonomy and seeking intimacy through lasting relationships (Arnett, 2000; Barry et al., 2009; Nelson & Barry, 2005: Smith et al., 2017).

Emerging adults report pursuing their developmental goals through various digital tools. For example, they assert autonomy by choosing which tools they wish to use and what they choose to present about themselves on social networking sites (SNS) (Russett & Waldron, 2017). They also engage in identity development by experimenting with what they post on SNS and what they choose to keep private (Coyne et al., 2013; Russett

& Waldron, 2017; Thomas et al., 2017). One study revealed that emerging adults spend a lot of time planning and editing their online posts and deleting others' posts that contradict the persona they wish to present (Russett & Waldron, 2017). Emerging adults further rely on SNS, text messaging, and instant messaging to serve their intimacy and connectivity needs. Though social networking sites such as Facebook may provide emerging adults with new contacts and a general networked audience, instant messaging and texting are favored for building and maintaining intimacy with contacts that are known offline (Coyne et al., 2013; Ellison et al., 2010; Pempek et al., 2009; Russett & Waldron, 2017).

However, emerging adults face ramifications when their social goals are thwarted. Peer rejection among emerging adults has been shown to promote depression, anxiety, decreases in peer-rated social competence, and erosion in relationship quality over time, especially among those with rejection sensitivity (Ayduk, Downey & Kim, 2001; Marston, Hare & Allen, 2010). Emerging adults have demonstrated vulnerabilities to rejection and ostracism in computer-mediated contexts (Abrams et al., 2011; Lockenhoff et al., 2013; Schneider et al., 2017; Smith & Williams, 2004; Vorderer & Schneider, 2016; Williams, Cheung, & Choi, 2000). They have shown greater sensitivity than either adolescents or young adults to being cyberostracized by strangers (Pharo et al., 2011; Smith et al., 2017). In particular, emerging adults experience a greater loss of belonging and self-esteem from cyberostracism than either adolescents or adults. They also evince different neural network activity to cyberostracism than either children or adolescents (Vijayakumar et al. 2017). These findings suggest that developmental goals, socializing

trends, and degree of brain maturation may all impact where emerging adults experience rejection and how they respond to its effects.

Dispositional factors such as rejection sensitivity may further influence emerging adults' responses to rejection in digital environments. Yet, no study to date has enabled emerging adults to engage with a stranger via CMC before receiving ambiguous rejection. It is therefore unclear how RS may affect emerging adults' reactions to ambiguous rejection following a digital conversation with their purported rejecter.

Current Study

The current study is intended to test whether rejection sensitivity moderates emerging adults' reactions to ambiguous peer rejection after engaging with a stranger in a computer-mediated context. While previous experimental studies have investigated the effect of RS on emerging adults' reactions to peer rejection (Ayduk et al., 1999; Ayduk, Gyurak & Luerssen, 2008; Buckley et al., 2004; Downey & Feldman, 1996), they have not given participants the opportunity to engage with an alleged peer in a computer-mediated context before receiving rejection. The current study design is unique in that participants take part in a one-on-one instant messaging (IM) conversation with an alleged peer before being given the "silent treatment" by their IM partner. Participants are then randomly assigned to receive one of two explanations for being unable to continue the IM conversation. One explanation is that the IM partner does not want to continue the chat. This explanation serves as an ambiguous rejection cue and closely resembles the rejection cue used in previous RS research (Downey & Feldman, 1996). The other explanation is that the IM partner is experiencing technical problems with their computer.

The study's first research goal is to compare the effects of the randomly assigned explanations on participants' mood, needs satisfaction, ratings of the conversation, and willingness to participate in another IM conversation as a prosocial courtesy to the researcher. Participants in the experimental condition who are told that their IM partner does not want to continue communicating are anticipated to experience greater threats to their mood and four fundamental needs: belonging, self-esteem, meaningful existence, and control. Consistent with an observed link between needs threat and aggression following ostracism (Warburton, Williams, & Cairns, 2006), lower needs satisfaction in the experimental condition is expected to contribute to lower ratings of the conversation and less willingness to volunteer for another IM conversation.

The second research goal is to investigate the effects of rejection sensitivity on participants' study responses. Based on the researcher's re-assessment of rejection sensitivity's factor structure, the independent effects of rejection sensitivity's two components – rejection affect (RS-A) and rejection expectancy (RS-E) will be assessed. Theoretical assumptions dictate that RS' anxious rejection expectancy and hypervigilance for rejection will predict a greater tendency to perceive intentional rejection in the ambiguous explanation for discontinuing the IM conversation (Downey & Feldman, 1996; Zimmer-Gembeck et al., 2013). Higher rejection affect (RS-A) and rejection expectancy (RS-E) are therefore anticipated to independently moderate condition effects. As rejection expectations have been significantly correlated with more negative reactions to ambiguous rejection (Zimmer-Gembeck & Nesdale, 2013), RS-E will be tested as a moderator of receiving the ambiguously rejecting explanation to predict more negative

mood, greater needs threats, lower ratings of the conversation, and greater likelihood to aggress.

Finally, to differentiate the effect of RS components from several global personality characteristics, the independent effects of agreeableness and emotional stability are also assessed. Each of these traits has been previously tested for its effect on reactions to rejection (Ayduk, Gyurak & Luerssen, 2008; McDonald & Donnellan, 2012). Findings from previous rejection research dictate that agreeableness predicts more positive mood, higher needs satisfaction, and lower likelihood to aggress. Neuroticism (the polar opposite trait of emotional stability) has not exhibited any effect on likelihood to aggress (Ayduk, Gyurak & Luerssen, 2008). Yet, because neuroticism is correlated and conceptually related to rejection sensitivity (Downey & Feldman, 1996), it will be tested for its effect on negative mood and likelihood to aggress.

Hypotheses

Research Goal 1

Participants who receive an ambiguously rejecting explanation for having to discontinue the IM conversation will report lower satisfaction of fundamental needs than those receiving a technical explanation.

H1: Participants in the experimental condition will report lower levels of satisfaction for belonging, self-esteem, meaningful existence, and control needs than participants in the control condition.

Participants who receive the ambiguously rejecting explanation will report more negative mood than those receiving a technical explanation.

H2: Participants in the experimental condition will report higher levels of negative mood and lower levels of positive mood than participants in the control condition.

Participants who receive the ambiguously rejecting explanation will report lower ratings of the IM partner than those receiving the technical explanation. These lower ratings represent a derogatory gesture toward the IM partner. Participants who interpret intentional rejection from the ambiguous explanation are therefore suspected to retaliate, especially when there is no likelihood of reconnecting with their IM partner.

H3: Participants in the experimental condition will report lower ratings of the IM partner than participants in the control condition.

Receiving the ambiguously rejecting explanation will also predict both lower IM conversation ratings and less willingness to participate in another IM conversation to help the researcher.

H4: Participants in the experimental condition will report lower ratings of the IM conversation than participants in the control condition.

H5: Participants in the experimental condition will rate themselves as less willing to enact prosocial behavior than participants in the control condition.

Finally, lower control satisfaction ratings are anticipated to mediate the effect of receiving the ambiguously rejecting explanation on IM partner ratings. Threat to personal

control brought on by rejection has been shown to increase likelihood to aggress. Therefore, lower control satisfaction ratings after receiving the ambiguously rejecting explanation are expected to predict more derogatory ratings of the IM partner.

H6: Control satisfaction ratings will mediate the effect of experimental condition on conversation partner ratings so that lower ratings of control satisfaction among those in the experimental condition will predict lower ratings of the IM conversation partner.

Research Goal 2

Each of rejection sensitivity's components are predicted to affect pre- and post-experimental ratings in different ways. For example, rejection expectancy (RS-E) is predicted to lower baseline mood across the full sample, for anticipating rejection increases negative affect among those who are rejection sensitive.

H7: Higher ratings of rejection expectancy will predict higher levels of negative mood and lower levels of positive mood at the baseline measurement.

Rejection expectancy (RS-E) is anticipated to moderate the effect of condition assignment on needs threat. Therefore, those with high RS-E who receive the ambiguously rejecting explanation are expected to show greater needs threat than those with low RS-E. Those in the control condition, regardless of RS-E level, are expected to be assuaged by the technical explanation.

H8: Rejection expectancy (RS-E) will moderate the effect of condition on participants' level of needs satisfaction. Higher RS-E will predict lower levels of needs satisfaction in

belonging, self-esteem, meaningful existence, and control in the experimental condition

than low RS-E.

As rejection expectations increase the perceived threat of rejection, rejection expectancy (RS-E) among those who receive the ambiguously rejecting explanation will predict more negative mood than low RS-E.

H9: Rejection expectancy (RS-E) will moderate the effect of condition on mood so that greater RS-E will predict higher levels of negative mood and lower levels of positive mood in the experimental condition.

As rejection expectations also increase the likelihood of aggressing toward alleged rejecters, higher rejection expectancy (RS-E) among those who receive an ambiguously rejecting explanation is expected to predict lower IM partner ratings than lower rejection expectancy (RS-E). Higher RS-E will also predict lower ratings of the IM conversation among those who receive an ambiguously rejecting explanation.

H10: Rejection expectancy (RS-E) will moderate the condition effect on conversation ratings. Those in the experimental condition with higher RS-E will give lower ratings of the IM conversation and IM conversation partner compared to those with lower RS-E in the experimental condition.

Finally, higher levels of rejection affect (RS-A) are predicted to foster less willingness to volunteer for another IM chat among those who receive an ambiguously rejecting explanation.

H11: Rejection affect (RS-A) will moderate the condition effect on willingness to volunteer in another IM conversation. Those in the experimental condition with higher RS-A are predicted to report lower willingness to volunteer compared to those with lower RS-A.

Methods

Recruitment Procedures

Study participants were recruited from among the undergraduate student body at Rutgers-Camden via campus flyers, class announcements, and a posting on the psychology department's experiment scheduling website. Eligibility criteria required participants to be between the ages of 18 and 25 and able to read and type in English. While these criteria allow for a range in English and typing proficiency among the sample, all participants were expected to show enough proficiency to be able to understand university lectures and send e-mails to professors.

A sample of 206 undergraduate participants (66 males, 140 females) voluntarily completed the present study's preliminary online questionnaire and lab-based procedures between September 2015 and May 2016[1]. Three of the preliminary questionnaire submissions were later found to feature suspect patterned responding. These entries were excluded from analysis of RS effects, leaving a total of 203 entries for this phase of analysis. Participants were compensated for their efforts with either research participation credit or $10 cash. Though sociodemographic data was not requested, the Rutgers-Camden student body from which the present sample was drawn features a fair amount of ethnic and racial diversity.

Preliminary Online Procedure

Individuals who expressed interest in participating were sent a randomly generated URL to complete the preliminary online questionnaire. This questionnaire featured an electronic informed consent form, a modified version of the abbreviated *Rejection Sensitivity Questionnaire* (*RSQ-8*, Downey & Feldman, 1996) and the *Ten-Item Personality Inventory* (*TIPI*, Gosling, Rentfrow & Swann, 2003). Email addresses were also requested so that participants could be identified for scheduling a follow-up lab session and receiving compensation.

Each participant became eligible to sign up for a 30-minute lab session upon successfully completing the preliminary online questionnaire. However, participants were required to complete the online questionnaire at least one day in advance of their scheduled lab session to minimize the influence of their questionnaire responses on subsequent lab behavior.

Lab Procedure

Participants were notified in the informed consent and upon arrival to the lab that they would participate in a study designed to investigate young adults' textual conversation styles. They were instructed to engage in two short conversations with an unknown fellow student via an instant messaging (IM) chat client. The first IM conversation would serve as an opportunity for the conversation partners to introduce themselves to each other whereas the second IM conversation was intended as a discussion of a social topic

chosen by the researcher. In actuality, each participant was paired with the researcher for a single, one-on-one IM conversation.

To maintain the ruse that the participant would communicate with another student participant, the undergraduate research assistant who greeted the participant explained that the other student had already arrived for the session. As the research assistant led the participant near the researcher's hidden workstation on route to the study room, the researcher loudly vocalized study instructions as if talking to the alleged student.

When the participant reached the designated study room, they were instructed to place all personal items including cell phones on an out-of-reach table for the duration of the session. Considering the tendency of emerging adult IM users to multitask while engaging with chat partners[2], I restricted participants from engaging in other activities while in the study lab. I reasoned that this decision would have several noteworthy effects on my analysis. For example, participants were more likely to respond promptly to IM messages and expect more immediate responses from their chat partner. They were more likely to also notice the experimental silent treatment if not allowed to distract themselves with other activities.

All participants performed lab session tasks on the same desktop PC. The first task they were instructed to complete was the *Positive and Negative Affect Scale* (*PANAS;* Watson, Clark, & Tellegen, 1988) to provide a baseline measure of their mood.

Participants were next instructed to carry out the IM conversation using the Pidgin online chat client (Version 2.12.0). Each participant was told that a coin toss had determined who would start the conversation and that the other student was selected to send the first message. I therefore started every IM conversation by typing "hi".

To minimize variability between conversations, I donned the same student identity for each IM conversation. This means that I responded to similar questions with consistent answers. I further posed the same introductory questions to each participant and maintained a neutral tone in my responses. I did not reveal my name or gender unless asked. (See the Appendix for my IM conversation script.)

I meanwhile ran a stopwatch to keep track of the passage of time. At precisely six minutes into the conversation, I stopped sending responses to the participant. A period of one minute and 30 seconds then transpired in which the participant received silence. At the end of the timed silent treatment, a research assistant entered the study room to provide the participant one of two randomly assigned explanations for why the IM chat would not continue. Participants in the control condition were told that the other student's computer was experiencing a technical problem. Those in the experimental condition were told that the other student wished to discontinue engaging in the chat. The latter of the two explanations served as an example of ambiguous rejection, for participants were not informed why the other student wished to no longer converse.

Participants were then invited to proceed with session activities by completing a battery of electronically administered questionnaires. These measures included a second administration of the *Positive and Negative Affect Scale* (*PANAS*; Watson, Clark, & Tellegen, 1988), the reflective and reflexive versions of the *Fundamental Needs Scales* (Williams et al., 2000), and a conversation assessment measure designed by the researcher.

Measures

The following measures were featured in the preliminary online questionnaire: the abbreviated *Rejection Sensitivity Questionnaire* (*RSQ-8*) and *Ten-Item Personality Inventory* (*TIPI*).

The *RSQ-8* (Downey & Feldman, 1996) is an abbreviated eight-vignette version of the original 18-vignette *Rejection Sensitivity Questionnaire*. Each of the vignettes depicts a scenario featuring potential rejection in which one requests something from a parent, friend, romantic partner, or peer (e.g., *You approach a close friend to talk after doing or saying something that seriously upset him/her*). The vignettes were pilot tested to represent scenarios common to an undergraduate population. The associated response scales measure one's reaction to the scenarios.

The *Rejection Sensitivity Questionnaire* (*RSQ*; Downey & Feldman, 1996) was designed with anxiety and rejection expectation scales so that the product of these scores would represent one's tendency to anxiously expect rejection. My modified version of the *RSQ-8* featured three 6-point Likert scales. The anxiety scale asked participants to rate how anxious they would be (1 = not at all; 6 = very much) about a target person's response to their request in each featured scenario. The anger scale asked participants to rate how angry they would be about a target person's response in each scenario. This scale had been crafted for the children's version of the *RSQ* (*CRSQ*; Downey, Lebolt, et al., 1998) and later adopted by Zimmer-Gembeck and Nesdale (2013) for an undergraduate population. I added the scale to the RSQ-8 to investigate if either dispositional anxiety or anger toward potential rejection would predict a heightened response to the current study's experimental silent treatment and explanation. The final

expectation scale asked participants to rate the degree to which they would anticipate a target person responding favorably in each scenario. This scale was reverse scored to measure one's level of expecting rejection.

Although the authors of the *RSQ* claim that the full 18-vignette measure loads on a single factor[3], the construct analysis of the modified *RSQ-8* in Chapter 1 revealed that the measure is not supported by a single factor model. The *RSQ-8* is better represented by a bifactor model that keeps distinct a rejection affect (RS-A) component, comprising anxiety and anger, and a rejection expectancy (RS-E) component. No study has yet tested whether these components uniquely predict outcomes to rejection manipulations, though Zimmer-Gembeck and Nesdale (2013) have tested the effect of the *RSQ-8*'s individual scales on anticipated behavioral outcomes.

In keeping with the *RSQ-8*'s bifactor structure, scores from the anxiety and anger scales were collectively averaged across vignettes to derive one's characteristic level of rejection affect (RS-A). Expectation scale scores were separately averaged across vignettes to derive one's characteristic level of rejection expectancy (RS-E). Cronbach's alpha as a measure of internal reliability for rejection affect and rejection expectancy were .84 and .70, respectively. The correlation between the components was $r = -.26, p < .01$ (see *Table 3*).[4]

The *Ten-Item Personality Inventory* (*TIPI*; Gosling, Rentfrow & Swann, 2003) is an abbreviated self-report measure for gauging one's levels of each of the Big Five factor traits: extraversion, agreeableness, conscientiousness, emotional stability, and openness. The measure features ten pairs of adjectives, with two pairs of adjectives representing each of the Big Five factor traits. One adjective pair represents the polar opposite of the

other adjective pair for each factor trait. Participants rate on a scale from 1 to 7 (1 = disagree strongly; 7 = agree strongly) the degree to which each pair of adjectives characterizes themselves. Scores on one adjective pair per trait are reversed before being averaged with the related adjective pair to produce scores for each of the Big Five traits.

Designers of the *TIPI* (Gosling et al., 2003) warn that a personality measure comprised of only two items per scale will have lower inter-item correlations in exchange for being able to maintain content validity (i.e., represent all aspects of a construct) via fewer items. Considering this limitation on internal reliability, inter-item correlations for each of the Big Five factors were as follows: extraversion (.56, $p < .001$), agreeableness (.14, $p = .055$), conscientiousness (.42, $p < .001$), emotional stability (.49, $p < .001$), and openness (.20, $p < .01$). Correlations between scale item pairs are also featured in *Table 3* and are comparable to the inter-item correlations found by Gosling et al.'s (2003) validity test of the *TIPI*. The only correlation between scale items that falls far below those found by Gosling et al. (2003) pertains to the agreeableness factor. Considering that the agreeableness scale items were stated as "critical, quarrelsome" and "sympathetic, warm", participants may have identified themselves as having tendencies toward either sets of characteristics in different circumstances. Results relating to agreeableness should therefore be taken with this limitation in mind.

The *Positive and Negative Affect Scale* (*PANAS*; Watson, Clark, & Tellegen, 1988) asks participants to rate on a five-point scale (1= very slightly or not at all; 5 = extremely) their degree of experiencing various positive and negative moods during a specified time. The measure traditionally consists of 20 individual emotion adjectives – ten of which serve as markers of positive mood and ten of which serve as markers of

negative mood. Scores across positive mood adjectives are averaged to derive one's positive affect (PA) score whereas scores across negative mood adjectives are averaged to derive one's negative affect (NA) score. I administered a modified version of the PANAS in which two adjectives – "peaceful" and "rejected" – were respectively added to the PA and NA scales to enable explicit measurement of rejected feelings. It is worth noting that no word representing "rejected" or "hurt" is featured in the expanded form of the *PANAS* (*PANAS-X*; Watson & Clark, 1994).

The *PANAS* was administered at the start of the lab session to provide a baseline measure of mood. Participants were administered the *PANAS* again following their receipt of the randomly assigned explanation for needing to discontinue the IM conversation. Instructions at each administration requested participants to rate their degree of experiencing the set of moods "right now". The *PANAS*, when administered with instructions pertaining to mood during a short time interval, has been shown to reflect inter-individual mood fluctuations in response to changing circumstances (Watson, Clark, & Tellegen, 1988). Cronbach's alpha for the baseline administration was .85 for the PA and NA scales, respectively. Cronbach's alpha for the post-experiment administration was .90 for the PA scale and .82 for the NA scale. Correlations between the PA and NA scales were insignificant for both the baseline and post-experiment administrations in keeping with validity tests by the measure's authors.

A conversation assessment measure designed by the researcher contained nine questions that asked participants to rate on a seven-point scale (1 = not at all; 7 = very much) the degree to which they positively responded to elements of the instant messaging conversation (e.g., "How much did you like your conversation partner?"). Three

questions were added that asked participants about their degree of comprehending their conversation partner. These questions were intended to deter participants from guessing the intention of the study. After removing the latter questions for statistical analysis, the remaining three items achieved an alpha reliability of .73.

The *Fundamental Needs Scales* (Williams et al., 2000) measure one's state level of satisfaction in four needs that have been shown empirically to be threatened during episodes of perceived ostracism: belonging, self-esteem, meaningful existence, and control. Participants rate on a seven-point scale (1 = not at all; 7 = extremely) how much they agree with statements representing these needs being met (e.g., "I feel good about myself"). Each need scale features five items, some of which are reverse coded. Appropriate items are reverse scored before values across each five-item scale are averaged to derive one's satisfaction levels on each of the needs.

I administered two versions of the *Fundamental Needs Scales* at different temporal distances from delivery of the randomly assigned explanation. The first administration, delivered after the post-experimental *PANAS* administration, asked participants to retrospectively rate how they felt during the instant messaging conversation. The second administration, delivered at the end of the series of post-experimental measures, asked participants to rate how they were feeling "right now".

Alpha reliabilities for the first administration of the *Fundamental Needs Scales* were .78 for belonging, .78 for self-esteem, .74 for meaningful existence, and .48 for control. Second administration alpha reliabilities were .81 for belonging, .84 for self-esteem, .75 for meaningful existence, and .44 for control. Considering that correlations among control scale items were small or insignificant, it is possible that participants

overlooked the wording of scale items that were designed to be reverse scored. For example, an item worded "I felt the other person decided everything" had a notable left skew (skew = -1.48, kirtosis = 1.73), indicating that most participants highly rated themselves as deciding everything during the IM chat. Since this interpretation seems suspect, results for the control scale should be interpreted with caution.

Debriefing

At the conclusion of the lab session, I identified myself as the participants' true conversation partner and explained the purpose of the study. Participants were asked if they felt comfortable with this information. They were given the option to remove their data from the study or seek counseling assistance if needed. No participant requested either of these services. However, I followed up with two participants who showed visible signs of concern during the debriefing. These follow-ups revealed no lasting distress among the participants.

Manipulation Check

A modification of two manipulation checks used in previous ostracism research (Smith & Williams, 2004; Williams et al., 2002; Zadro, Boland, & Richardson, 2006) was included in the first administration of the *Fundamental Needs Scales* to test if participants in the experimental condition correctly interpreted the explanation they received as featuring more potential ambiguous rejection. As the questions were significantly correlated (r = .58, p < .001), a composite manipulation score was created by averaging participants' ratings across the two seven-point scale items.

I ran an ANCOVA on the composite manipulation score with experimental condition as the independent variable and both rejection affect (RS-A) and rejection expectancy (RS-E) as covariates. Rejection expectancy (skew = 1.12, kirtosis = 1.63) was log transformed to improve normality of the residual distribution. Participants in the experimental condition attributed more rejection to the experimental condition explanation than those in the control condition attributed to their assigned explanation. Group means, standard deviations, and *F*-test results are featured in the top row of *Table 2*.

Statistical Analysis

Experimental condition served as the main effect predictor variable and was dummy-coded for regression analysis (0 = Control, 1 = Experimental). Rejection affect (RS-A) and rejection expectancy (RS-E) were kept as continuous variables and tested as individual moderators of experimental condition. As stated above, rejection expectancy was log transformed for bivariate analysis. Together, these predictor variables were analyzed for their effect on various dependent variables including positive and negative mood, fundamental needs (belonging, self-esteem, meaningful existence and control), ratings of experimental conversation elements, and likelihood to engage in another IM conversation. All continuous variables were standardized for regression analysis.

Some response variables were found to produce residual distributions that varied sharply from normality. These variables – baseline negative mood (skew = 1.59, kirtosis = 2.98) and post-experimental negative mood (skew = 2.18, kirtosis = 6.56) – were log transformed for further analysis.

Baseline mood and needs satisfaction levels of belonging and self-esteem were controlled in various regression models where applicable. Baseline mood levels were controlled to prevent misattributing all changes in post-experimental mood to the experimental manipulation. Belonging and self-esteem satisfaction levels were occasionally controlled in bivariate analysis in keeping with Williams et al.'s (2000) findings that post-experimental mood is affected by experimental ostracism by way of threats to these needs. Controlling these variables enabled me to test the effect of condition on post-experimental mood.

Results

Research Goal 1

Prior to bivariate analysis, baseline mood was assessed across the whole sample. Neither baseline positive mood ($t(204)$=-0.60, $p = 0.725$) nor baseline negative mood ($t(204)$=-0.19, $p = 0.573$) significantly differed across the experimental and control conditions.

I next analyze the effect of receiving one of the two randomly assigned explanations for why the IM chat had to end. The effects on post-experimental variables such as mood and needs threat were analyzed through one-way ANCOVAs. These analyses enabled me to test the effect of experimental condition (0=Control, 1= Experimental) on the selected dependent variables while controlling for continuous covariates. Correlations between covariates were found to be either non-significant or too small to defy independence assumptions for the ANCOVA procedure. Furthermore, Levene's test results showed that most dependent variables had homogeneity of variance across condition. The few exceptions were post-experimental negative mood,

retrospective meaningful existence ratings, and belonging and meaningful existence ratings at the end of the study session. However, since condition groups were identical in size (n = 103 for each), *F* statistics were expected to remain robust despite these assumption violations by several variables. Means and standard deviations for all post-experimental variables can be reviewed across condition in *Table 2* along with *F*-test results for condition effects.

Consistent with my hypotheses, there was a significant difference across condition assignment for post-experimental positive mood and post-experimental negative mood when controlling for rejection affect (RS-A), rejection expectancy (RS-E), and the related baseline mood. When these variables were run through separate multiple regressions on post-experimental positive and negative mood, condition assignment was a significant predictor of post-experimental positive mood, $\hat{\beta}$ = -0.28, $t(198)$ = -3.51, $p <$ .001, and post-experimental negative mood, $\hat{\beta}$ = 0.56, $t(198)$ = 5.87, $p <$ .001.

I next analyzed whether condition assignment had affected retrospective ratings of needs satisfaction during the experimental conversation. As expected, there was a significant difference across condition for retrospective ratings of belonging, self-esteem, and meaningful existence when controlling for RS-A, RS-E, and baseline mood. When these variables were run through separate multiple regressions on retrospective needs satisfaction, condition was a significant predictor of belonging, $\hat{\beta}$ = -0.85, $t(197)$ = -6.84, $p <$ .001, self-esteem, $\hat{\beta}$ = -0.37, $t(197)$ = -2.86, $p <$ .01, and meaningful existence, $\hat{\beta}$ = -0.72, $t(197)$ = -5.59, $p <$ .001. Rejection affect (RS-A) also had a negative main effect on retrospective ratings of meaningful existence, $\hat{\beta}$ = -0.14, $t(197)$ = -2.16, $p <$ .05 and

approached significance as a predictor for retrospective ratings of self-esteem, $\hat{\beta}$ = -0.12, $t(197)$ = -1.84, p = .067.

Significant differences were also found across condition assignment for current levels of belonging, self-esteem, and meaningful existence satisfaction reported at the end of the study session. Regression analyses revealed condition to be a significant predictor of present belonging, $\hat{\beta}$ = -0.87, $t(197)$ = -6.99, p < .001, self-esteem, $\hat{\beta}$ = -0.51, $t(195)$ = -4.17, p < .001, and meaningful existence ratings, $\hat{\beta}$ = -0.60, $t(196)$ = -4.77, p < .001, when RS-A, RS-E, and baseline mood were controlled. Rejection affect (RS-A) also had a negative main effect on present belonging, $\hat{\beta}$ = -0.13, $t(197)$ = -2.05, p < .05 and self-esteem ratings, $\hat{\beta}$ = -0.13, $t(195)$ = -1.98, p < .05. There was no significant difference across condition in either retrospective or current satisfaction ratings for control.

Next, I analyzed whether condition assignment influenced ratings of the experimental conversation and willingness to participate in another IM conversation. Consistent with my hypotheses, there were significant differences across condition for ratings of the conversation partner and conversation. In separate multiple regressions, condition was a significant predictor of conversation ratings, $\hat{\beta}$ = -0.32, $t(196)$ = -2.26, p < .05 and partner ratings, $\hat{\beta}$ = -0.63, $t(197)$ = -4.64, p < .001 when controlling for RS-A, RS-E, and baseline mood. However, no significant differences were found across condition for willingness to engage in another IM conversation.

Though I had hypothesized that control satisfaction ratings would mediate the effect of experimental condition on ratings of the IM partner, my regression results revealed that condition assignment was not a significant predictor of control ratings. However, previous research has suggested that aggression may be influenced by a threat

to belonging needs as well (Leary et al., 2006; Warburton et al., 2003; Williams, 2001; Williams et al., 2002). I therefore ran a monte carlo technique (Selig and Preacher, 2008) with 10,000 resamplings to estimate the indirect effect of condition assignment and retrospective belonging satisfaction on ratings of the IM chat partner. *Figure 1* illustrates the sampling distribution and 95% confidence intervals of the combined indirect effect. Support for an indirect effect of condition assignment and threat to belonging on partner ratings can be deduced.

In all, most of my hypotheses for Research Goal 1 were supported. These results enabled me to next assess whether rejection sensitivity components moderated the effects of receiving one or the other randomly assigned explanations.

Research Goal 2

Before assessing the moderating effects of rejection affect (RS-A) and rejection expectancy (RS-E) on post-experimental responses, means and standard deviations were calculated. Neither RS-A nor RS-E differed significantly across experimental condition, RS-A: $t(201)=0.64$, $p =0.263$; RS-E: $t(200)=1.42$, $p = 0.079$. *Table 3* outlines the descriptive statistics for RS-A and RS-E across the full sample.

Baseline moods were first regressed on RS-A and RS-E to determine if either of the two rejection sensitivity components affected these scores. RS-A was a significant predictor of baseline negative mood, $\hat{\beta} = 0.15$, $t(200) = 2.13$, $p < .05$ whereas RS-E was a significant predictor of baseline positive mood, $\hat{\beta} = -0.18$, $t(199) = -2.63$, $p < .01$.

Agreeableness and emotional stability were then added as covariates to the multiple regressions for baseline positive mood and negative mood, respectively. While

agreeableness was not a significant predictor of baseline positive mood, emotional stability was a significant predictor of baseline negative mood, $\hat{\beta} = -0.27$, $t(199) = -3.81$, $p < .001$. When emotional stability was added to the regression equation for baseline negative mood, RS-A was no longer a significant predictor, $\hat{\beta} = 0.07$, $t(199) = 0.93$, $p = .354$ (see *Table 4*).

Considering the effect of dispositional variables on baseline moods, pre-experimental positive and negative mood were controlled in multiple regressions for their respective post-experimental mood rating. Moreover, as rejection affect had an unpredicted effect on baseline negative mood rather than rejection expectancy, hypothesis 9 was updated. Rejection affect was thus predicted to moderate post-experimental negative mood instead of rejection expectancy.

Next, retrospective levels of the four fundamental needs (belonging, self-esteem, meaningful existence, and control) were each regressed on the interaction of RS-E and condition. Baseline positive and negative moods and agreeableness were included in each model as covariates. There was no multicollinearity threat by including both mood variables, for they were not significantly correlated ($r = -0.08$, $p = .282$); nor was baseline positive ($r = 0.03$, $p = .709$) or baseline negative ($r = -0.06$, $p = .433$) mood significantly correlated with agreeableness.

Table 5 presents multiple regression output for retrospective levels of each of the four fundamental needs. The interaction of RS-E and condition failed to be a significant predictor for retrospective belonging, self-esteem, and meaningful existence. Thus, my hypotheses on fundamental needs were unsupported. However, condition assignment, $\hat{\beta} = -0.84$, $t(196) = -6.74$, $p < .001$, was a significant predictor of retrospective belonging

satisfaction. Condition, $\hat{\beta}$ = -0.35, $t(196)$ = -2.70 , p < .01, and baseline positive mood, $\hat{\beta}$ = 0.36, $t(196)$ = 5.48 , p < .001, were significant predictors of retrospective self-esteem satisfaction. Both condition, $\hat{\beta}$ = -0.69, $t(196)$ = -5.34 , p < .001, and baseline positive mood, $\hat{\beta}$ = 0.16, $t(196)$ = 2.32 , p < .05, significantly predicted retrospective meaningful existence as well. Finally, baseline positive mood, $\hat{\beta}$ = 0.26, $t(196)$ = 3.84 , p < .001, and agreeableness, $\hat{\beta}$ = 0.16, $t(196)$ = 2.40 , p < .05, significantly predicted retrospective control while the interaction of rejection expectancy and condition assignment approached significance, $\hat{\beta}$ = 0.23, $t(196)$ = 1.75 , p = .082.

To investigate the moderating effect of rejection affect (RS-A) on post-experimental negative mood, post-experimental negative mood was regressed on the interaction of RS-A and condition, with rejection expectancy (RS-E), baseline negative mood, retrospective belonging, and emotional stability serving as covariates. Ambiguous rejection's threat to belonging was theorized to contribute most greatly to post-experimental negative mood. Thus, retrospective belonging was controlled in this analysis.

As seen in the right-hand columns of *Table 4*, the interaction between RS-A and condition was not a significant predictor of post-experimental negative mood. My hypothesis that RS-A would moderate condition effects on post-experimental negative mood was therefore unsupported. However, experimental condition, $\hat{\beta}$ = 0.34, $t(195)$ = 3.35, p < .001, pre-experimental negative mood, $\hat{\beta}$ = 0.66, $t(195)$ = 14.00, p < .001, and retrospective belonging, $\hat{\beta}$ = -0.27, $t(195)$ = -5.30, p < .001, were significant predictors of post-experimental negative mood. Rejection affect (RS-A) approached significance, $\hat{\beta}$ = 0.12, $t(195)$ = 1.75, p = .082.

Post-experimental positive mood was regressed on the interaction of rejection expectancy (RS-E) and condition, with rejection affect (RS-A), pre-experiment positive mood, retrospective self-esteem, and agreeableness serving as covariates. In this case, retrospective self-esteem was controlled, for self-esteem satisfaction was theorized to contribute most greatly to post-experiment positive mood.

The interaction between RS-E and experimental condition was not a significant predictor of post-experimental positive mood. My hypothesis that RS-E would moderate condition effects on post-experimental positive mood was therefore unsupported. However, experimental condition, $\hat{\beta} = -0.24$, $t(195) = -2.99$, $p < .01$, pre-experimental positive mood, $\hat{\beta} = .79$, $t(195) = 17.83$, $p < .001$ and retrospective self-esteem, $\hat{\beta} = 0.09$, $t(195) = 2.05$, $p < .05$, significantly predicted post-experimental positive mood.

Finally, several multiple regressions were run on participants' assessment of the experimental conversation. Ratings of the conversation and conversation partner were each regressed on the interaction of RS-E and condition with baseline positive and negative moods, retrospective belonging satisfaction, and emotional stability serving as covariates in each of these equations. Willingness to participate in another instant messaging chat was regressed on the interaction of RS-A and condition with baseline positive and negative moods, retrospective belonging satisfaction, and agreeableness as covariates.

Table 6 presents the output for multiple regressions on conversation elements. The interaction between condition and RS-E did not reach significance for predicting ratings of either liking the conversation or the conversation partner. Nor did the interaction between condition and RS-A reach significance for predicting one's

willingness to participate in another IM conversation. The data therefore did not support

my hypotheses that RS-E and RS-A would moderate condition effects on ratings of the

IM conversation and likelihood to enact a prosocial behavior. However, belonging, $\hat{\beta} =$

.59, $t(194) = 8.70$, $p < .001$, and baseline positive mood, $\hat{\beta} = .19$, $t(194) = 3.13$, $p < .01$,

significantly predicted liking the IM conversation. Belonging, $\hat{\beta} = .69$, $t(194) = 11.54$, p

$< .001$, likewise predicted liking the partner. Finally, baseline positive mood, $\hat{\beta} = .59$,

$t(194) = 8.70$, $p < .001$, predicted willingness to participate in another IM chat while

retrospective belonging, $\hat{\beta} = .12$, $t(195) = 1.92$, $p = .057$, and agreeableness, $\hat{\beta} = .13$,

$t(195) = 1.95$, $p = .052$, approached significance in predicting this prosocial behavior.

Plotting Simple Intercepts and Simple Slopes

Despite having found no significant interaction effects between condition assignment and

either of the rejection sensitivity components on post-experimental responses, I plotted

interactions between experimental condition and RS components with simple slope

analysis using conditional values of rejection affect and rejection expectancy. I employed

this procedure to find trends in the data that may have lacked power to be detected

through regression (Preacher, Curran & Bauer, 2004).

RS component scores were mean centered for analysis. Scores falling at one

standard deviation below the mean or lower were deemed the low RS condition, scores

falling at one standard deviation above the mean or higher were deemed the high RS

condition, and scores falling between these boundaries were deemed the medium RS

condition. The effect of condition assignment on various responses was tested across

these different values of RS components to identify if they exerted a patterned conditional effect.

Figures 2 through 7 depict the combined impact of experimental condition (Control = 0, Experimental = 1) and conditional values of either RS component on select response variables. According to Figures 2 and 3, while participants' mean post-experimental positive mood ratings were more similar across RS levels in the control condition, participants with high RS-A and RS-E in the experimental condition reported somewhat lower mean positive mood after the IM conversation than their low RS-A and RS-E counterparts in the same condition.

Meanwhile, Figures 4 and 5 suggest that participants with any level of RS-A or RS-E reported higher mean levels of post-experimental negative mood in the experimental condition than their counterparts in the control condition. Mean post-experimental negative mood ratings across RS component levels in the experimental condition were relatively similar. These interaction plots therefore indicate that an ambiguously rejecting event may be distressing enough to evoke comparable negative affect in participants of all RS levels.

Figure 6 reveals that those with high rejection expectancy (RS-E) showed the greatest difference in ratings of their IM conversation partner across condition. Whereas high RS-E participants in the control condition had given slightly higher ratings of their partner than their low RS-E counterparts, they gave lower ratings than low RS-E participants in the experimental condition. The pattern was similar for willingness to volunteer for another IM conversation (see Fig. 7). Whereas high RS-E participants in the control condition reported a slightly higher willingness to volunteer than their low RS-E

counterparts, they reported lower willingness to volunteer than both low RS-E counterparts in the experimental condition and high RS-E counterparts in the control condition. Meanwhile, low RS-E participants in the experimental condition showed somewhat greater willingness to volunteer compared to their low RS-E counterparts in the control condition.

Together, these plots illustrate that higher RS component levels may foster slightly more negative emotional and behavioral reactions to rejection manipulations. Yet, larger samples with a greater number of participants who score highly on RS components may be needed to see robust effects of these dispositional variables.

Mediation Analysis

One of the most intriguing findings of the current study was that rejection expectancy (RS-E) had a significant negative influence on baseline positive mood which, in turn, predicted post-experimental positive mood, retrospective levels of needs satisfaction (self-esteem, meaningful existence, control), conversation ratings, and likelihood to volunteer for another chat. Mediation analysis was therefore run to test whether RS-E influenced these latter ratings by way of influencing baseline positive mood.

As Baron and Kenny's (1986) popular causal steps approach to mediation has been criticized for having low power and relying on hypothesis tests rather than quantitative estimates of indirect effects (Hayes, 2009), I used a monte carlo technique provided by Selig and Preacher (2008). This technique applies bootstrapping to create a simulated sampling distribution of the product of the estimated effects of rejection

expectancy and baseline positive mood on various response ratings. 10,000 resamplings were run for each simulation.

Figures 8 through *13* depict the resulting sampling distributions and 95% confidence intervals for each of the response ratings tested. As each of these graphs and confidence intervals illustrate, there is support for rejection expectancy's negative indirect effect on various ratings via baseline positive mood. That is, by negatively affecting baseline positive mood, rejection expectancy had indirect negative effects on post-experimental positive mood, retrospective levels of needs satisfaction, conversation ratings, and likelihood to volunteer for another chat. However, these findings are taken loosely as many unmeasured variables may have contributed to the observed relationships.

Discussion

The present study was conducted with the understanding that emerging adults experience negative events like peer rejection in computer-mediated contexts. I therefore examined the reactions of an emerging adult sample to negative events related to communicating with an alleged peer via instant messaging (IM). After receiving an episode of "the silent treatment" from their conversation partner, participants were randomly assigned to hear one of two reasons for having to discontinue the conversation. The study's first research goal was to determine if receiving an ambiguously rejecting explanation would produce more negative responses than receiving a technical explanation. The second research goal was to discover whether rejection sensitivity would moderate emerging adults' responses to the ambiguously rejecting explanation.

As suspected, the ambiguously rejecting explanation significantly predicted more negative responses than a technical explanation. Participants informed that their IM partner wished to no longer participate in the chat reported lower mood, lower levels of needs satisfaction, and lower ratings of the conversation and conversation partner than participants who had been told that a technical problem on the partner's computer precluded the continuation of the conversation. Participants given the ambiguously rejecting explanation also showed less willingness to volunteer for another IM conversation, indicating less willingness to display prosocial behavior. Moreover, the effect on retrospective belonging satisfaction from having been told the IM partner did not wish to continue chatting indirectly influenced participants' ratings of the IM conversation partner.

Participants were not asked to report their attributions for the silent episode during the IM conversation. However, it is possible that participants in the control condition retrospectively interpreted the silence they received as caused by the same technical glitch that allegedly forced their partner to discontinue the conversation. On the other hand, ambiguity in the partner's alleged disinterest in continuing the chat could have led participants in the experimental condition to attribute the reason to either the partner's personal issues or their dislike of the participant. Without the assurance of a definitive explanation, participants in the experimental condition may have sensed a threat to their relational value and responded accordingly.

Emerging adults with higher levels of rejection sensitivity's components were further anticipated to respond more negatively to the ambiguously rejecting explanation. Yet, the present data did not show either rejection affect or rejection expectancy to

significantly moderate post-experimental mood, needs satisfaction, conversation ratings, or willingness to participate in another IM chat. Plots generated from simple slopes analysis suggest that the RS components may have slightly moderated responses. Yet, the differences in response scores they generated may have been too small to be represented in regression analysis.

However, dispositional characteristics were shown to influence participants' mood before the experiment began. Regardless of condition assignment, participants with high rejection expectancy felt less positive at the beginning of the study while participants with high emotional stability felt less negative at the beginning of the study. Although RS theory suggests that rejection expectations foster negative emotions such as anxiety and anger (Downey, Freitas, et al., 1998; London et al., 2007), a review of the lab-based rejection literature has found that experimental rejection targets largely experience a loss of positive feelings rather than a vast increase in negative feelings (Blackhart et al., 2009). Thus, the present finding on rejection expectancy may still represent the characteristic downtick in mood associated with rejection expectations.

Positive mood at the beginning of the study meanwhile predicted positive mood after the experiment and retrospective ratings of self-esteem, meaningful existence, and control satisfaction during the IM conversation. It likewise predicted higher ratings of the IM conversation and willingness to participate in another chat. Higher retrospective belonging satisfaction during the IM conversation meanwhile predicted less negative mood after the experiment and higher ratings of the conversation and conversation partner.

Considering that rejection expectancy (RS-E) had predicted baseline positive mood, which had in turn predicted various post-experimental responses, mediation analysis was pursued. Results from a well supported bootstrapping technique provided evidence of rejection expectancy's indirect effect on these latter responses. By negatively affecting baseline positive mood, RS-E had indirectly impacted retrospective ratings on various fundamental needs, conversation ratings, and willingness to participate in another chat. Therefore, rather than intensifying negative responses to an ambiguously rejecting explanation, rejection expectancy generally lowered various post-experimental ratings across condition assignment by negatively affecting baseline positive mood. These results are similar to those found by Buckley et al., (2004) where rejection sensitivity demonstrated a consistent negative effect on mood across experimental condition.

Failure to find support for RS moderation effects was surprising, considering that the present study resembled previous RS research designs. In one of the earliest RS studies (Downey and Feldman, 1996), undergraduates who had engaged in a friendly exchange with a confederate were randomly assigned a reason that the conversation would discontinue. Participants in the experimental condition were told that the other participant wished to discontinue participating in the experiment whereas participants in the control condition were informed that time constraints prevented the continuation of the experiment. Downey and Feldman's (1996) study found a significant interaction effect between condition status and rejection sensitivity on change in rejection mood. There were no significant interaction effects on any other mood changes. Given that the sample size of Downey and Feldman's (1996) study was only 47 undergraduate students,

it is unlikely that the present study would have been at greater risk of lacking power to find a significant interaction effect.

The present study also bore resemblance to Ayduk et al.'s (1999) study in which 121 female undergraduates were experimentally exposed to ambiguous rejection from a male confederate. Each participant in Ayduk et al.'s (1999) study had purportedly shared a biosketch of herself with another student in preparation for a short online conversation with him. Participants assigned to the control condition were then told that the online conversation could not be conducted due to technical problems. Participants in the experimental condition were told that the other student had left on account of not wanting to continue with the experiment. A significant interaction was found between rejection sensitivity and condition status on ratings of the male student. Ratings by high RS participants in the experimental condition were lower than ratings by low RS participants in the experimental condition and high RS participants in the control condition. It is worth noting, however, that Ayduk et al. (1999) had dichotomized RS scores to analyze results via 2 x 2 ANCOVAs. They also provided no effect size for the strength of rejection sensitivity's influence on ratings.

Although the current research was unable to produce similar results as these previous RS studies, it featured improvements to their analytical techniques. Firstly, the present study's continuous measurement of rejection sensitivity components is superior to dichotomized scoring for regression analysis. Care was also taken to control for variables in regression analysis that may have falsely been attributed to RS' effect on outcomes. Lastly, the present study investigated rejection sensitivity's influence on many more cognitive-affective responses than the previous studies, thereby testing the robustness of

RS effects. With these considerations in mind, it is possible that previous evidence of RS moderation may only be observed in certain circumstances. RS moderation may not have enough strength to be seen in a wider array of scenarios. Ostracism studies, for example, have been unable to identify any dispositional variables that moderate ostracism's effects (Williams & Zadro, 2001,2005; Williams, Cheung & Choi, 2000; Zadro, Williams, & Richardson, 2004).

Limitations

Apart from the legitimate possibility that RS moderation may not be widely observable in different scenarios, some features of the current study design may nonetheless have contributed to the failure to find RS moderation effects. Firstly, several response variables were measured using short-range scales that may not have provided enough response variation to reveal the influence of dispositional variables. For example, the response scales measuring needs satisfaction ranged from 1 to 7. Though each need scale featured five questions, scores across scale items were averaged so that final scores remained within the 7-point range. It is possible that the calculation of needs satisfaction scores may not have allowed for enough nuance to be visible between participants' responses.

A similar problem plagued the conversation assessment that I created for the present study. The conversation assessment could have featured both reverse scored and redundant questions to both increase the reliability of the measure and introduce greater variability among scores. Instead, I used single questions in the interest of keeping the measure short to reduce participant fatigue. This approach is often not advised due to the

inability to measure alpha reliability or control for biased response styles (Paulhus & Vazire, 2007). Ratings of the conversation and conversation partner should therefore be interpreted as interval variables since they do not represent the average of multi-item scale scores.

Results from the present study were further subject to my behavior variability across interactions during the IM conversation. Although I endeavored to maintain a neutral tone in my text messages and asked each participant the same pre-determined questions, participants' unique message content required that I respond appropriately to the topics they raised. These events increased random error in the results.

Next, the current rejection sensitivity component scores should be interpreted with caution for several reasons. On one hand, I used an abbreviated form of the *RSQ* that featured eight vignettes instead of the full set of 18 vignettes. Though the *RSQ* creator's website (https://socialrelationspsychcolumbia.wordpress.com/rs-personal/) implies that the abbreviated *RSQ* has the same internal reliability as the full version, no publication has tested the validity of the abbreviated measure. Nor has any study validated an online form of the *RSQ* such as what I administered. On the other hand, the present study uniquely analyzed the separate effects of RS' affect and expectancy components. The majority of RS research has employed the scoring technique advised by Downey and Feldman (1996) in which anxiety scale items are multiplied by their corresponding reverse scored expectation scale items then averaged over all vignettes. However, a negative correlation between the anxiety and expectancy RS components in the present data ($r = -.27, p < .001$) indicated that the original scoring method would have hidden inconsistencies across scales. Though my decision to separately analyze the RS

components was intended as an improvement, there is no benchmark against which to compare the present results.

Finally, although the present study emphasized the importance of studying emerging adults' reactions to ambiguous rejection in a digital context, research would need to be carried out on members of another developmental stage to determine if cognitive development and age-based social trends affect responses. Meanwhile, it is imperative to consider that the current findings cannot be generalized to all emerging adults in the US. As emerging adulthood is a period characterized by much heterogeneity (Arnett, 2000), the responses of college undergraduates who participated in the current study may not represent the reactions of many others who do not attend college during this life stage. Community-based research on rejection sensitivity in digital contexts is encouraged to address this outstanding issue.

Conclusion

The present study demonstrated that emerging adults show sensitivity to ambiguous rejection in computer-mediated contexts when interacting with strangers. Further insights were revealed by having independently analyzed rejection sensitivity's components, rejection affect and rejection expectancy. Rejection expectancy, for example, had a general negative impact on emerging adults' mood and assessment of the computer-mediated interaction rather than intensifying their negative reactions to ambiguous rejection. These results suggest that rejection expectancy may more broadly influence emerging adults' thoughts and feelings in social situations. Yet, more research should investigate this notion.

Further research into emerging adults' responses to rejection in CMC will need to consider not only their age-based developmental goals and communication trends but the lifespan trajectory of their exposure to CMC. Whereas previous generations may have only been exposed to CMC during adolescence, the present cohort of emerging adults and those to come have potentially had access to mobile digital communication since childhood. Thus, their extended exposure to CMC may have implications on how they interpret and respond to ambiguously rejecting cues in digital venues. Length and frequency of exposure to CMC may further interact with RS to predict differences in interpretation and response.

According to theory, RS inclines people to interpret ambiguous behavior as intentional rejection. Investigating the effect of rejection sensitivity's components on situation construal could therefore shed light on effects that may be hard to detect in visible behavior or mood ratings. Research could also focus on the degree to which RS promotes rejection expectations in different social situations. Rejection expectations may vary by the nature of social situations and the social threat that is potentially posed. Furthermore, situation construal and rejection expectations may vary by age or personality characteristics. Future research on RS should therefore compare effects across different groups and situational features.

These suggested avenues for investigation may not only demystify the effects of an RS disposition. They may consolidate and advance studies on RS, rejection, and ostracism that have remained disparate despite efforts to outline their relatedness (Leary, 2001). By connecting these topics, research on those who are most sensitive to rejection can shed light on the impact these social threats have on us all.

Notes

1. The percentage of men versus women in the study (32%, 68%) is comparable to samples who completed the online Cyberball experiments in Williams, Cheung, & Choi's (2000) study.

2. Several participants had been caught accessing their cell phones during lab activities while participating in the study pilot.

3. The RSQ authors had used the product of anxiety and expectation scale scores for principal components factor analysis rather than individual scale items (Downey & Feldman, 1996).

4. Using the product of anxiety and expectation scale scores, the RSQ authors reported alpha reliabilities of .81 and .83 for the full measure (Downey & Feldman, 1996; Feldman & Downey, 1994). They did not report correlations between individual scales. However, Zimmer-Gembeck and Nesdale (2013) reported that their administration of the expectation scale had minimal correlations with the anxiety ($r = .16$, $p < .01$) and anger ($r = .06$, ns) scales.

Table 1: Inter-item Correlations Per Trait in *Ten-Item Personality Inventory* (TIPI)

	1	2	3	4	5	6	7	8	9	10[1]
Extraversion	--									
M = 8.5, *Med* = 9.0										
(*SD* = 2.98)	.56***	--								
Agreeableness			--							
M = 9.61, *Med* = 10.00										
(*SD* = 2.20)			.14	--						
Conscientiousness					--					
M = 11.31, *Med* = 12.00										
(*SD* = 2.29)					.42***	--				
Emotional Stability							--			
M = 9.04, *Med* = 9.00										
(*SD* = 2.91)							.49***	--		
Openness									--	
M = 10.97, *Med* = 11.00										
(*SD* = 2.08)									.20**	--

n = 203, * *p* < .05, ** *p* < .01, *** *p* < .001
[1]1-2: Extraversion scale items; 3-4: Agreeableness scale items; 5-6: Conscientiousness scale items; 7-8: Emotional Stability scale items; 9-10: Openness scale items

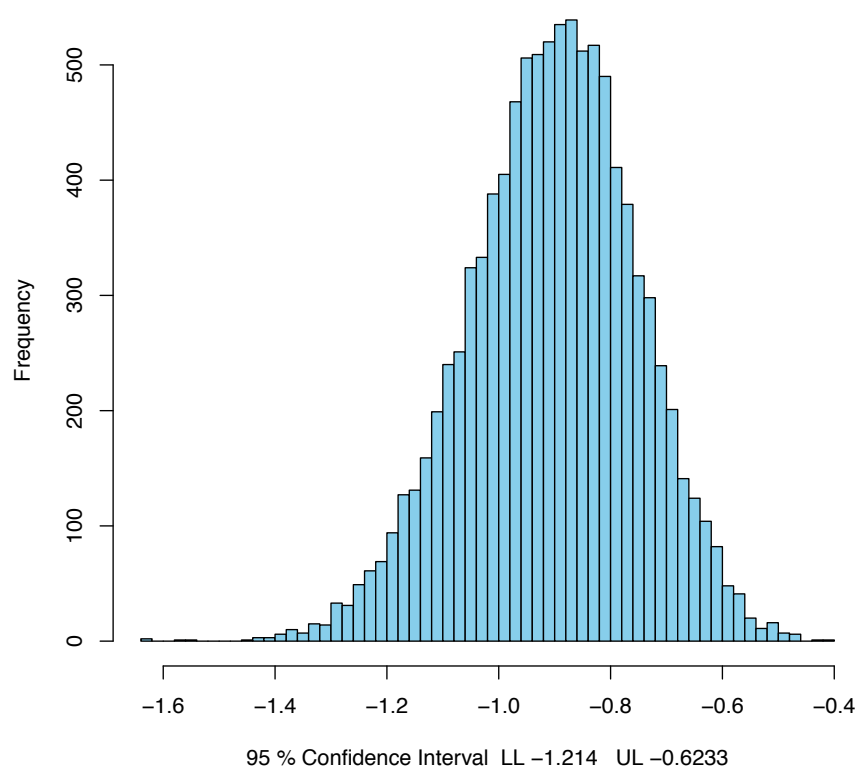**Fig. 1 Indirect Effect of Condition via Belonging on Partner Ratings**

95 % Confidence Interval LL −1.214   UL −0.6233

Table 2: Descriptive Statistics[1] & ANCOVAs for Post-Experiment Variables by Condition[2]

	Control		Experimental		
	M (SD)	*Mdn*	*M (SD)*	*Mdn*	*F-test (Sig)*
Manipulation Check	1.43 (0.93)	1.00	2.51 (1.56)	2.00	$F(3,198)=34.697$***
Mood					
Positive Mood	33.38 (8.92)	33.00	31.34 (10.25)	31.00	$F(4,198)=6.560$*
Negative Mood[a]	13.85 (4.44)	13.00	16.60 (5.50)	15.00	$F(4,198)=35.671$***
Fundamental Needs					
Time 1					
Belonging[a]	5.36 (1.04)	5.40	4.23 (1.19)	4.20	$F(5,197)=50.410$***
Self-Esteem	4.87 (1.05)	4.80	4.51 (1.07)	4.40	$F(5,197)=6.184$*
Meaningful Existence	5.39 (0.78)	5.40	4.68 (1.06)	4.80	$F(5,197)=29.128$***
Control	4.30 (0.99)	4.20	4.12 (0.94)	4.00	$F(5,197)=1.300$
Time 2					
Belonging[a]	5.71 (0.94)	5.80	4.64 (1.21)	4.80	$F(5,197)=52.044$***
Self-Esteem	5.12 (1.09)	5.20	4.60 (1.13)	4.50	$F(5,195)=14.159$***
Meaningful Existence	5.82 (0.73)	5.80	5.23 (1.10)	5.40	$F(6,195)=21.301$***
Control	4.52 (0.87)	4.40	4.32 (0.87)	4.40	$F(6,196)=2.423$
Conversation Assessment					
Liked Partner	4.45 (1.41)	4.00	3.50 (1.47)	4.00	$F(5,197)=21.826$***
Liked Conversation	4.47 (1.65)	4.50	3.93 (1.66)	4.00	$F(5,196)=5.032$*
Prosocial Intention	4.77 (1.81)	5.00	4.61 (1.87)	5.00	$F(5,197)=0.178$

n = 206, * $p < .05$, ** $p < .01$, *** $p < .001$
[1]Higher means indicate higher self-rated mood, fulfillment of needs, rating of conversation, or prosocial intention.
[2]ANCOVAs controlled for rejection affect (RS-A), rejection expectancy (RS-E)(log transformed) and baseline mood (negative affect log transformed)
[a]Log transformed for ANCOVA

Table 3: Descriptive Statistics and Correlations Between Rejection Sensitivity Components[1] and Big Five

	1	2	3	4	5	6	7
1. **Rejection Affect** (RS-A)[2] M = 6.39, Med = 6.38, SD = 1.69 α = .84	--						
2. **Rejection Expectancy** (RS-E) M = 2.44, Med = 2.38, SD = 0.79 α = .70	-.26***	--					
3. **Extraversion** M = 8.5, Med = 9.0, SD = 2.98	-.02	-.09	--				
4. **Agreeableness** M = 9.61, Med = 10.00, SD = 2.20	.04	-.04	-.09	--			
5. **Conscientiousness** M = 11.31, Med = 12.00, SD = 2.29	-.17*	.01	.00	.10	--		
6. **Emotional Stability** M = 9.04, Med = 9.00, SD = 2.91	-.26***	-.13	.08	.10	.14*	--	
7. **Openness** M = 10.97, Med = 11.00, SD = 2.08	-.11	.09	.43***	.05	.05	.13	--

n = 203, * p < .05, ** p < .01, *** p < .001
[1]I previously reported the statistics of a wider sample of participants who completed the modified 8-vignette Rejection Sensitivity Questionnaire (RSQ-8). Here, I report the statistics of a subset of participants who completed this measure and lab-based procedures.
[2]RS-A scores are derived by averaging scores across the anxiety and anger scales of the modified RSQ-8.

Table 4: Regressing Mood[1] on Condition, Rejection Sensitivity Components, Fundamental Needs, and Big Five Traits

	Baseline Mood		Post-Experiment Mood	
	Positive	Negative[2]	Positive[3]	Negative[4]
	$\hat{\beta}$(SE)	$\hat{\beta}$(SE)	$\hat{\beta}$(*SE*)	$\hat{\beta}$(*SE*)
Condition	--	--	-0.24**(.08)	0.34***(.10)
RS-A	-0.06(.07)	0.07(.07)	-0.05(.04)	0.12(.07)
RS-E	-0.18**(.07)	0.04(.07)	0.02(.06)	0.03(.05)
Condition x RS-A	--	--	--	-0.07(.09)
Condition x RS-E	--	--	-0.02(.08)	--
Baseline Mood	--	--	0.79***(.04)	0.66***(.05)
Belonging	--	--	--	-0.27***(.05)
Self-Esteem	--	--	0.09*(.04)	--
Agreeableness	0.03(.07)	--	0.04(.04)	--
Emotional Stability	--	-0.27***(.07)	--	0.07(.05)

n = 203, * $p < .05$, ** $p < .01$, *** $p < .001$
RS-A = Rejection affect (anxiety and anger); RS-E = Rejection expectancy
Condition: 0 = Control, 1 = Experimental
[1]Positive and negative mood scores were derived from the Positive and Negative Affect Scale (PANAS).
[2]Rejection affect (RS-A) was a significant predictor of baseline negative mood, $\hat{\beta} = 0.15$, $t(200) = 2.13$, $p < .05$, before agreeableness was added to regression.
[3]$R^2 = .676$, $F(7, 195) = 61.33$, $p < .001$
[4]$R^2 = .560$, $F(7, 195) = 42.45$, $p < .001$

Table 5: Regressing Retrospective Needs on Condition, Rejection Expectancy, Mood, and Agreeableness

	Condition	RS-E	Pos Mood 1	Neg Mood 1	Agreeable	C x RS-E
Belonging[1]	-0.84***(0.12)	0.15(.09)	-0.01(.06)	-0.08(.08)	0.06(.15)	-0.14(.13)
Self-Esteem[2]	-0.35**(0.13)	0.02(.09)	0.36***(.07)	-0.13*(.06)	0.01(.06)	-0.07(.55)
M. Existence[3]	-0.69***(0.13)	0.09(.09)	0.16*(.07)	-0.05(.06)	0.01(.06)	-0.15(-1.14)
Control[4]	-0.15(0.13)	-0.05(.09)	0.26***(.07)	-0.08(.07)	0.16*(.07)	0.23(1.75)

n = 203, * $p < .05$, ** $p < .01$, *** $p < .001$; Standardized beta estimates and standard errors are provided for each predictor variable except for experimental condition, which is a factor.
Condition: 0 = Control, 1 = Experimental
RS-A: Rejection affect (anxiety and anger); RS-E: Rejection expectancy; Pos Mood 1: Pre-experimental positive mood; Neg Mood 1: Pre-experiment negative mood; Agreeable: agreeableness; C x RS-E: Condition x Rejection expectancy; M. Existence: Meaningful existence.
[1]$R^2 = .193$, $F(6, 196) = 9.03$, $p < .001$; [2]$R^2 = .159$, $F(6, 196) = 7.38$, $p < .001$
[3]$R^2 = .139$, $F(6, 196) = 6.43$, $p < .001$; [4]$R^2 = .092$, $F(6, 196) = 4.43$, $p < .001$

Table 6: Regressing Conversation Ratings on Condition, Rejection Sensitivity Components, Needs, and Big Five

	Condition	RS-E	C x RS-E	Pos Mood 1	Neg Mood 1	Belonging	Emot. Stability
Liked chat[1]	0.18(.13)	0.03(.08)	-0.01(.12)	0.19**(.06)	0.05(.06)	0.59***(.07)	0.05(.06)
Liked partner[2]	-0.04(.12)	0.03(.07)	-0.09(.11)	0.04(.05)	0.08(.05)	0.69***(.06)	0.02(.06)

	Condition	RS-A	C x RS-A	Pos Mood 1	Neg Mood 1	Belonging	Agreeableness
Another chat[3]	0.06(.15)	-0.02(.10)	0.02(.14)	0.27***(.07)	0.02(.07)	0.12(.06)	0.13(.07)

n = 203, * $p < .05$, ** $p < .01$, *** $p < .001$; Standardized beta estimates and standard errors are provided for each predictor variable except for experimental condition, which is a factor.
RS-A: Rejection affect (anxiety and anger); RS-E: Rejection expectancy; C x RS-E: Condition x Rejection expectancy; C x RS-A: Condition x Rejection affect; Pos Mood 1: Pre-experimental positive mood; Neg Mood 1: Pre-experiment negative mood; belonging: level of retrospective belonging satisfaction; Emot. Stability: emotional stability trait
[1]$R^2 = .312$, $F(7, 194) = 14$, $p < .001$; [2]$R^2 = .457$, $F(7, 195) = 25.26$, $p < .001$;
[3]$R^2 = .077$, $F(7, 195) = 3.40$, $p < .01$

Fig. 2 Differences in Post−Experiment Positive Affect Across Condition and RS−A Level
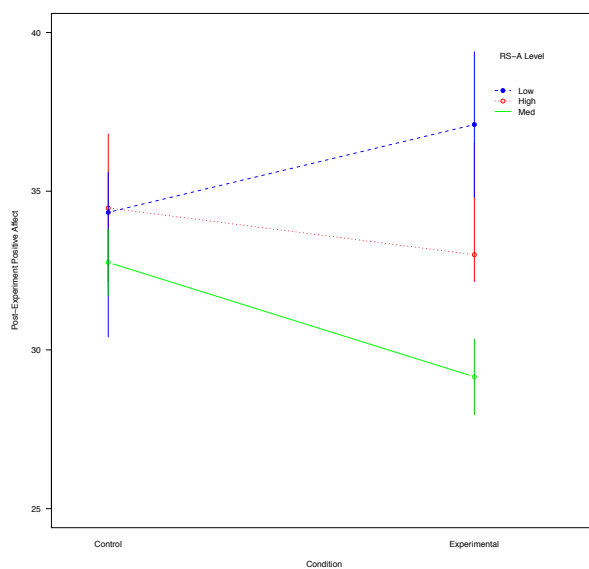

Fig. 3 Differences in Post−Experiment Positive Affect Across Condition and RS−E Level
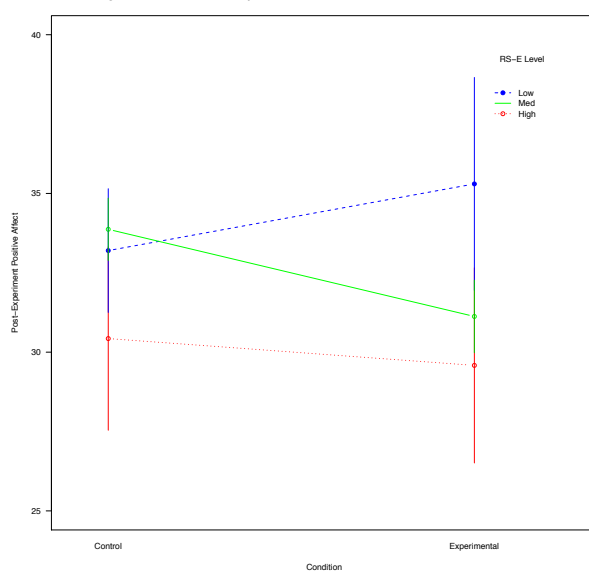
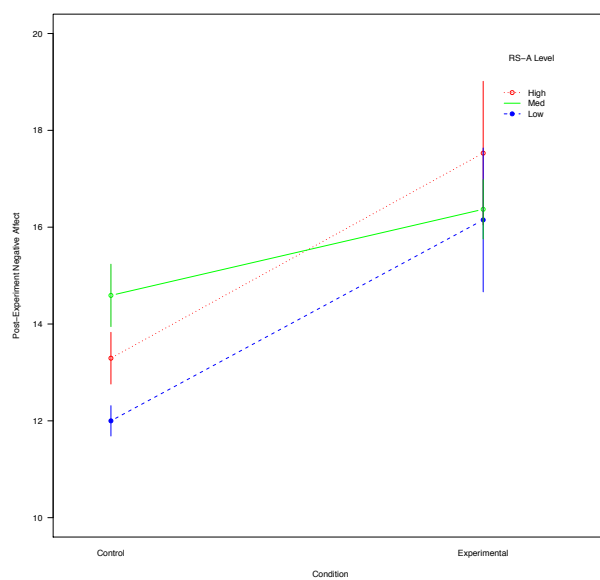Fig. 4 Differences in Post–Experiment Negative Affect Across Condition and RS–A Level

Fig. 5 Differences in Post–Experiment Negative Affect Across Condition and RS–E Level
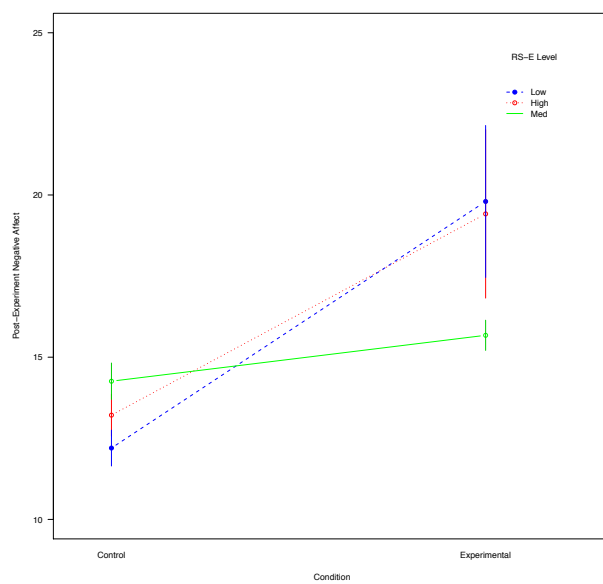
Fig. 6 Differences in Liking Partner Across Condition and RS–E Level
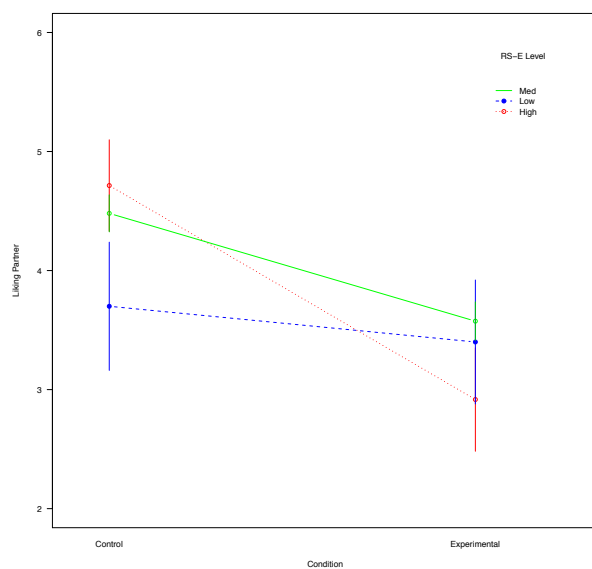
Fig. 7 Differences in Willingness for Another Chat Across Condition and RS–E Level
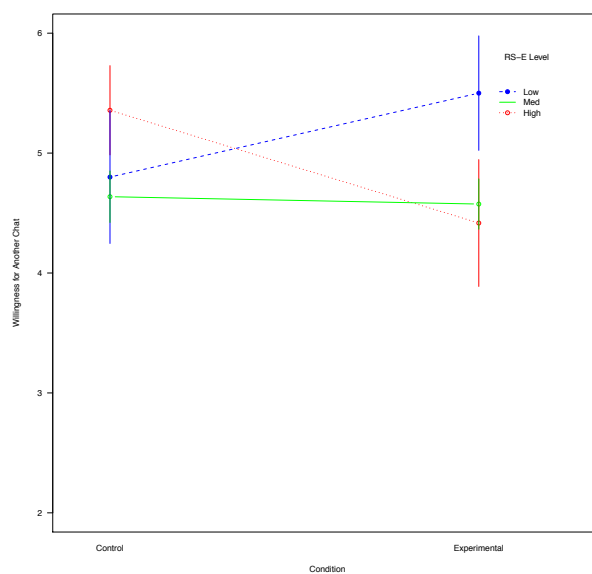
Fig. 8 RS−E Indirect Effect on Post−Experiment Mood

95 % Confidence Interval LL −7.118   UL −0.8771
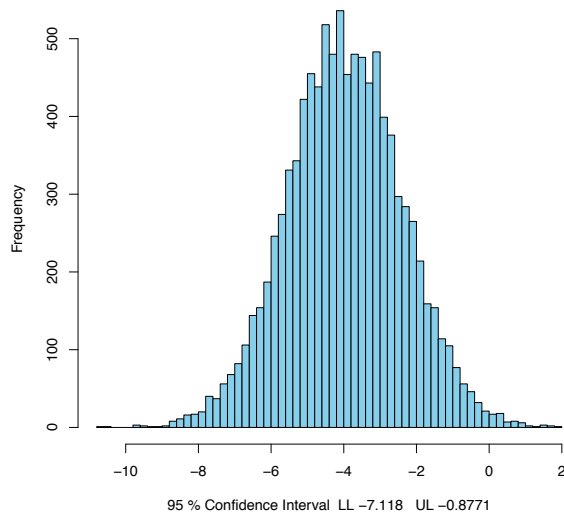
Fig. 9 RS−E Indirect Effect on Self−Esteem

95 % Confidence Interval LL −0.3526   UL −0.04598
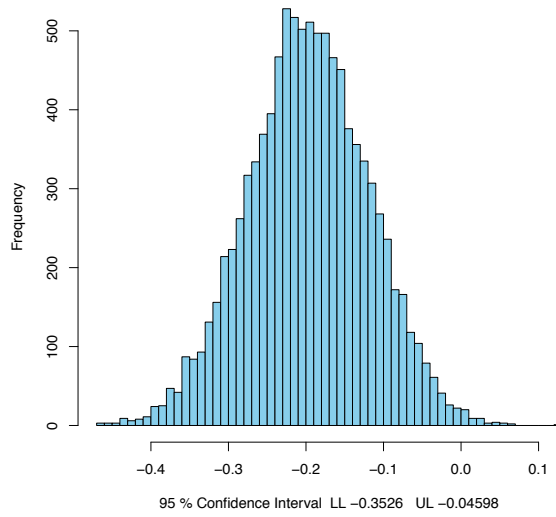
Fig. 10 RS–E Indirect Effect on Meaningful Existence

95 % Confidence Interval LL −0.1398   UL −0.01804
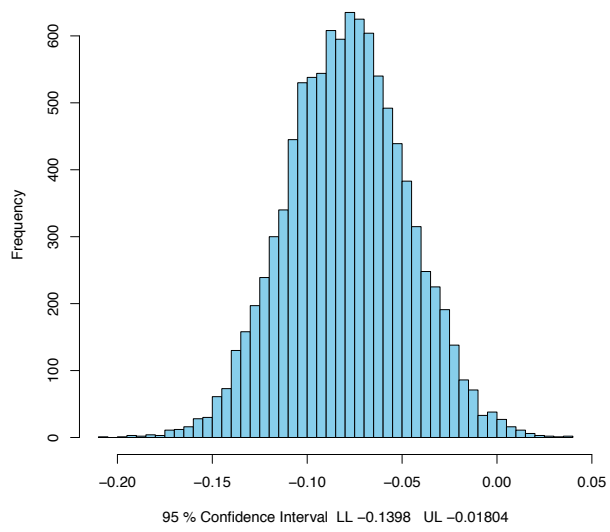
Fig. 11 RS–E Indirect Effect on Control

95 % Confidence Interval LL −0.2266   UL −0.02619
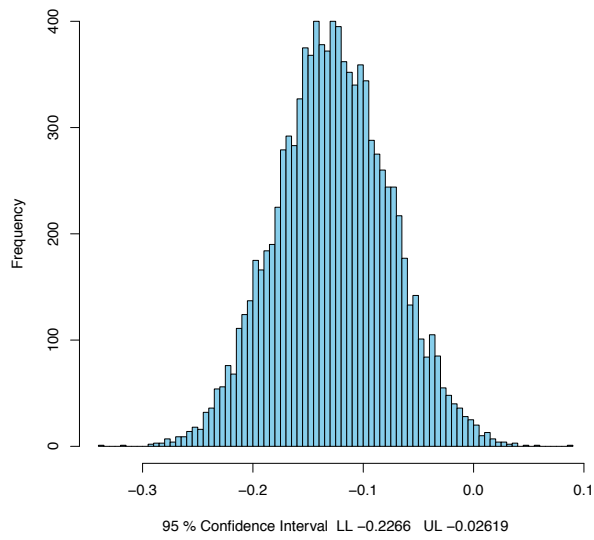
Fig. 12 RS–E Indirect Effect on Liking Chat

95 % Confidence Interval LL −0.2928   UL −0.03684
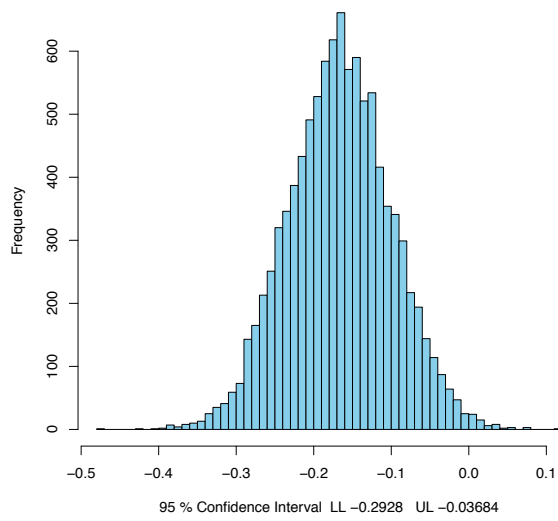
Fig. 13 RS–E Indirect Effect on Having Another Chat

95 % Confidence Interval LL −0.4464   UL −0.05025
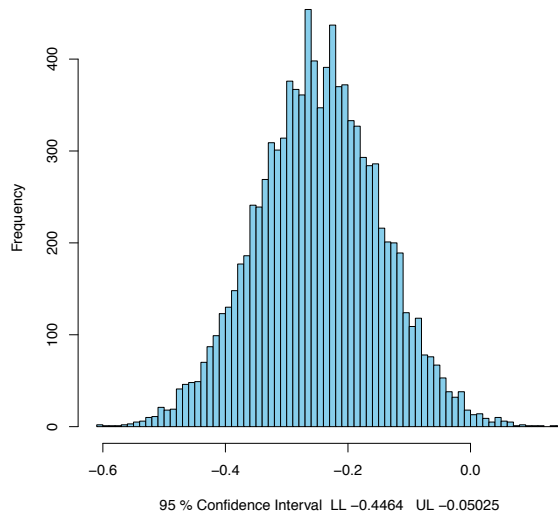
Study 3

Introduction

Rejection sensitivity (RS) is characterized by anxiously expecting rejection from valued contacts, construing ambiguous behavior of valued contacts as intentional rejection, and responding with heightened emotion to presumed rejection (Downey & Feldman, 1996). It is a personality disposition theorized to develop in response to early life rejection from parents, peers, or others with whom one seeks to form social bonds (Levy Ayduk, & Downey, 2001; Mellin, 2011). Though rejection expectations and affective concern about being rejected (i.e., anxiety, anger) are "largely separable" components of RS (Romero-Canyas, Downey, et al., 2010, p. 126), they are both integral to the construct (Feldman & Downey, 1994; Levy et al., 2001).

Unlike personality characteristics that are considered "global dispositions" (Levy et al., 2001, p. 252), RS is activated in circumstances where one can potentially receive rejection from someone important to them (e.g., friend, romantic partner, group) (Ayduk & Gyurak 2008). Yet, because rejection from valued persons is both feared and often unforeseen, individuals with high RS become hypervigilant for any clues of rejection in their relationships (Downey & Feldman, 1996; Levy et al., 2001). This hypervigilance may regularly occupy their thought processes and lead to frequent defensive behaviors to prevent or avoid rejection. Depending on personal factors and the emotion triggered, these behaviors may be hostile, withdrawing, or ingratiating (Romero-Canyas & Downey, 2005). For example, those who experience anxiety may be more inclined to make efforts to secure acceptance whereas those who experience anger may be more

inclined to shun opportunities for getting hurt (Downey & Feldman, 1996; Sandstrom, 2003; Zimmer-Gembeck & Nesdale, 2013). Meanwhile, when rejection threat has not been triggered, high RS individuals will tend to hedge their bets against potential rejection by being accommodating (Ayduk & Gyurak, 2008; Ayduk et al., 2003).

Although the RS construct has been theorized to pertain to rejection from valued individuals, RS correlates and overlaps somewhat with social anxiety (*Social Avoidance and Distress Scale: r* = .49, *p* < .0001; *Sociotropy-Autonomy Scale – Disapproval subscale: r* = .41, *p* < .001), which is characterized by a fear of negative evaluations from strangers (Feldman & Downey, 1994)[1]. Thus, individuals who anticipate and fear rejection from intimate figures in their lives may also feel anxiety from strangers rejecting or negatively evaluating them.

Experimental research has demonstrated that rejection from strangers is salient among those with RS. For example, RS positively predicts greater hostility in response to ambiguous rejection from an unknown confederate (Ayduk et al., 1999; Ayduk, Gyurak, and Luerssen, 2008). Yet, apart from reactions to experimentally manipulated rejection scenarios, RS' influence on social engagement with strangers has remained unexplored. Studies have not explicitly investigated how RS colors individuals' engagement with strangers via computer-mediated channels. Would individuals with RS reveal hypervigilance for rejection cues by demonstrating hostile, withdrawing, or ingratiating behaviors in these mediums?

Since computer-mediated communication (CMC) is very popular among emerging adults (Bailey et al., 2016; Coyne et al., 2013; Flanagin, 2005; Harrison & Gilmore, 2012; Quan-Haase, 2008; Scott et al., 2017; Skierkowski & Wood, 2012; Smith,

2011; Smith & Caruso, 2010; Subrahmanyam et al., 2008), investigating RS effects on their CMC engagement may be a broadly informative area of research. Studies have already demonstrated that social anxiety, neuroticism, introversion, and low self-esteem predict a preference among emerging adults for CMC over face-to-face communication (Correa et al., 2010; Ehrenberg et al., 2008; Rice & Markey, 2009; Ross et al., 2009). As RS is correlated in varying degrees with each of these constructs (Downey & Feldman, 1996), emerging adults with RS may likewise prefer and use the unique features of CMC to socially interact with lesser known contacts.

Computer-Mediated Communication (CMC)

Computer-mediated communication (CMC) is any form of communication in which a digital device is used to interact with another individual. The most popular forms of CMC among emerging adults are text-based, including instant messaging (IM) and mobile text messaging (Bailey et al., 2016; Flanagin, 2005; Ling & Baron, 2007; Quan-Haase, 2008; Skierkowski & Wood, 2012; Smith, 2011). Emerging adults are, in fact, the most prolific users of text-based CMC (Coyne et al., 2013; Smith, 2011; Smith & Caruso, 2010). They have been reported to send or receive an average of 109.5 (median of 50) text messages daily (Smith, 2011). While IM rapidly gained popularity among college undergraduates in the early 21st century (Grinter & Palen, 2002; Lenhart, Rainie, & Lewis, 2001), mobile IM has emerged as a popular variation, with 49% of emerging adults who own smartphones report using instant messaging apps (Duggan, 2015).

Emerging adults use both IM and mobile texting predominantly for communicating with others they know (Baron, 2004; Grinter & Palen, 2002; Piwek &

Joinson, 2016; Subrahmanyam & Greenfield, 2008). In fact, CMC aids in their developmental goals of intimacy seeking and identity development (Arnett, 2000) by fostering bonding and self-disclosure with peers (Coyne et al., 2013; Flanagin, 2005; Fogel, 2011; Manago, Taylor, & Greenfield, 2012; Pettigrew, 2009; Russett & Waldron, 2017).

Meanwhile, multitasking is very common among emerging adult IM users and mobile texters (Baron, 2008; de Siqueira & Herring, 2009; Flanagin 2005). Research conducted in 2004-2005 found 98% of American college students studied often engaged in at least one other activity while having an IM conversation though many engaged in multiple activities. Those who pursued simultaneous IM conversations interacted with an average of 2.67 IM partners (Baron, 2008).

Increased control over social interactions has been mentioned as a reason why emerging adults enjoy using text-based CMC over face-to-face communication (Madell & Muncer, 2007). For example, the medium's variable synchronicity enables users to respond to each other quickly as if chatting live or more slowly as the opportunity arises (Baron, 2004). This variability also provides users an opportunity to choose their words carefully before responding. Meanwhile, the absence of nonverbal cues that are present during face-to-face communication allows users to control their self-presentation solely through language features without having to tend to visual cues (Madell & Muncer, 2007). CMC's unique characteristics may explain why IM users have been found to probe more deeply and self-disclose more intimately with IM partners than face-to-face interlocutors (Tidwell & Walther, 2002).

Those who fear negative evaluation (i.e., socially anxious, shy) are particularly

cognizant and appreciative of the control that CMC allows them to have over their impression management (Schouten, Valkenburg, & Peter, 2007; Stritzke, Nguyen, & Durkin, 2004). According to the hyperpersonal perspective (Walther, 1996), characteristics that differentiate CMC from face-to-face communication, such as fewer visual cues, afford users protection from scrutiny and freedom to let them selectively edit what they present about themselves. Those who fear negative evaluations have consequently expressed an ability to represent their "real" selves via CMC (Amichai-Hamburger, Wainapel, & Fox, 2002; McKenna, Green & Gleason, 2002; Sheeks & Birchmeier, 2007) and demonstrated greater self-disclosure when the controllability of CMC was salient to them (Schouten et al. 2007). In return, greater self-reported social anxiety has been associated with less perceived anxiety and greater satisfaction by IM conversation partners (High & Caplan, 2009), indicating that either devices available in IM or efforts made during IM conversations by the socially anxious helped improve their perceived social competence.

As rejection sensitivity overlaps with social anxiety, RS individuals are likewise expected to take advantage of IM devices to manipulate their self-presentation. According to RS theory, they are further suspected to behave in ways to prevent experiencing rejection. For example, they may either enact behaviors in IM to increase their likeability or withdraw during IM conversations to guard themselves against rejection. Research has shown that the emotion associated with rejection expectations influences an RS individual's response to perceived rejection (Zimmer-Gembeck & Nesdale, 2013). Participants with rejection anxiety were therefore predicted to try improving their likeability to prevent rejection whereas participants with rejection anger

were predicted to demonstrate withdrawal to avoid rejection. Yet, identifying behaviors that constitute each of these strategies is prerequisite to testing these hypotheses.

Previous research did not specify behaviors that led socially anxious participants to receive favorable ratings in CMC (High & Caplan, 2009). However, a small set of studies has begun to investigate CMC techniques that promote liking of one's conversation partner (McKenna et al., 2002; Nguyen & Fussell, 2016; Tidwell & Walther, 2002; Walther, Loh, and Granka, 2005). Conversation quality, especially the level of intimacy achieved via CMC, has been found to influence partner liking (McKenna et al., 2002). More specifically, knowing more about one's partner and having the opportunity to share details about oneself predicted partner liking (McKenna et al., 2002). Nguyen and Fussell (2016) found that a greater use of assent words and definite articles (e.g., *the*, *this*, *that*) conveyed one's active involvement and positively affected partner's enjoyment of the conversation. Tidwell and Walther (2002) found that both asking questions and disclosing details about oneself in CMC were seen by participants as promoting conversational effectiveness for helping to form impressions of one's partner. Both interactive approaches were thus interpreted as ways to foster intimacy within CMC. In fact, research has shown that people tend to like those who self-disclose (Collins & Miller, 1994; Kashian et al., 2017). Walther, Loh, and Granka's (2005) study identified expressions of positive affection, joy, personal information, and encouragement as predictive of higher perceived ratings of immediacy and affection in CMC. Finally, Holtgraves' (2011) study of language in undergraduates' text messages found that personal pronoun use was associated with greater liking and closeness toward one's conversation partner.

Current Study

The present study's aim is to test whether rejection anxiety and rejection anger differentially prompt emerging adults to use specific conversation features in an IM chat with an unknown partner. Rejection anxiety is predicted to prompt the use of features that increase likability: greater word use (representing more self-disclosure); more questions; more definite articles; more personal pronouns, and more assent and positive emotion words. Rejection anger is predicted to prompt less conversation engagement to reduce rejection: fewer words and use of all word categories.

Variable Selection and Terminology

Per the focus of the present study, rejection anxiety and rejection anger are the primary predictor variables of interest. Rejection expectancy is not included in the analysis. Big Five traits serve as additional predictor variables for comparison. As both neuroticism and introversion have correlated significantly with rejection sensitivity (Brookings, Zembar, & Hochstetler, 2003; Downey & Feldman, 1996), conversation features are tested for correlations with both RS and these factor traits.

I borrowed standardized terminology for several dependent variables from the work of linguistic researchers who have investigated both the language and discourse structure of IM (Baron 2004; Baron 2010; Ling & Baron, 2007). For example, a singular IM response sent by hitting the return key or the onscreen send button is called a *transmission unit*. A user's consecutive series of transmission units representing their full extent of taking the floor in a conversation is called a *sequence*. The length and amount

of transmission units and sequences are various measures of participants' contributions to an IM conversation.

Though I originally tallied participants' use of one-word transmission units and sequences, I also calculated the percentage of participants' total responses that were one-word transmission units or parts of a sequence. These percentages are less affected by factors that contribute to differences in participants' total transmission units (e.g., typing speed), for they represent the proportion of a given amount of transmission units featuring specified conversation elements.

The dependent variables representing participants' discursive behaviors in IM include: total number of transmission units per IM conversation, average length of transmission units, percentage of one-word transmission units to total transmissions, percentage of sequences to total transmissions, and number of questions asked. An additional set of dependent variables representing word categories associated with intimacy and affection are also investigated: definite articles, personal pronouns, assent, and positive emotion.

Hypotheses

As self-disclosure was identified by several researchers as an indicator of intimacy and affection and a predictor of liking, I anticipate that rejection anxiety will be associated with sharing more about oneself. One's average length of transmission units will therefore be longer to accommodate the detail that one shares about oneself per response.

H1a: Rejection anxiety will predict greater average transmission unit length.

I further hypothesized that rejection anxiety will be positively associated with asking questions to one's IM conversation partner. As questions are a way to make a conversation partner feel valued, I anticipate that those who anxiously anticipate rejection will make this effort. Greater probing may be later pursued to explore what kinds of questions are asked.

H2a: Rejection anxiety will predict a greater number of asked questions.

I next suspected that ongoing efforts to both ask questions and self-disclose throughout the conversation will lead those with rejection anxiety to contribute a greater number of transmission units to the IM conversation.

H3a: Rejection anxiety will predict greater number of transmission units.

Research on the discursive properties of text-based CMC has revealed people to use sequences to send consecutive sentences or sentence fragments (Baron, 2010). Given my hypothesis that rejection anxiety will be associated with sending more questions, I suspect that transmitting sequences of two or more transmission units will be positively associated with rejection anxiety if sequences are a means of sending a question immediately after a previous response statement. Yet, as number of sequences is contingent on total number of transmission units, I focus on the percentage of sequences among total transmission units.

H4a: Rejection anxiety will predict a higher percentage of sequences among transmission units.

On the contrary, I suspect that rejection anxiety will be negatively associated with using one-word transmission units, for these extremely short replies are not believed to foster a sense of involvement and affection in a conversation partner. Instead, these responses may be interpreted as curt and disinterested. This variable as likewise represented as a percentage, for number of one-word transmission units would be influenced by total number of transmission units.

H5a: Rejection anxiety will predict a lower percentage of one-word transmission units.

As certain word categories foster a greater sense of user involvement and affinity for one's conversation partner, I anticipate that rejection anxiety will predict greater use of these devices as means to promote liking from their conversation partner. For example, definite articles may signal reference to topics and ideas previously mentioned in the conversation whereas assent words signal one's agreement with or acknowledgement of a partner's statements (Nguyen and Fussell, 2016). Both of these word categories would indicate that one is paying attention to the conversation and striving to make the conversation partner feel validated and liked (Walther, Loh, & Granka, 2005). Meanwhile, words conveying positive emotion may express either joy or positive affection toward one's conversation partner, both of which convey liking of the conversation partner (Walther, Loh, & Granka, 2005). Finally, while use of plural personal pronouns (e.g., *we*) has been associated with greater perceived closeness (Holtgraves, 2011), low frequency of singular first-person pronouns has been interpreted as demonstrating greater involvement in IM conversations (Nguyen & Fussell, 2014). I therefore limit my final hypothesis to proposing that rejection anxiety will be associated

with greater use of second-person pronouns (i.e., *you*) to indicate that the participant is interested in focusing on their conversation partner.

H6a-9a: Rejection anxiety will predict greater use of definite articles, second-person pronouns, assent words, and positive emotion words

Assuming that anger about anticipated rejection activates a tendency to withdraw efforts to be friendly or likeable, I expect RS anger to demonstrate withdrawal during the IM conversation. It will therefore have the opposite direction of association with each of the variables correlating with RS anxiety. For example, RS anger is anticipated to have negative associations with average number of words per transmission unit (H1b), number of questions (H2b), number of transmission units (H3b), and percentage of sequences (H4b). On the other hand, a positive association is expected between RS anger and percentage of sending one-word transmission units (H5b), for these abbreviated responses may represent efforts to self-disclose less and reduce opportunities for rejection. Meanwhile, rejection anger is hypothesized to predict fewer uses of definite articles (H6b), second-person pronouns (H7b), assent words (H8a), and positive emotion words (H9a), for I suspect that those with rejection anger will make fewer efforts to convey intimacy or affinity toward their conversation partner.

Methods

Recruitment Procedures

To recruit a wide variety of academic majors from among the Rutgers-Camden undergraduate student body, the present study was advertised via campus flyers, class

announcements, and a posting on the psychology department's experiment scheduling website[2]. Participation criteria required subjects to be between the ages of 18 and 25 and able to read and type in English. As participants were culled from the Rutgers-Camden student body, it is assumed that their English proficiency was good enough to enable them to understand university lectures.

A sample of 298 undergraduate participants (68% female) completed a preliminary online questionnaire and lab-based procedures between September 2015 and May 2016. Participants who were part of either the pilot or the final study were included in this sample, for changes made to the final version of the study did not affect the IM conversation procedure. Participants were compensated for their effort with either research participation credit or $10 cash. Though sociodemographic data was not requested, the Rutgers-Camden student body from which the present sample was drawn features a fair amount of ethnic and racial diversity.

Preliminary Online Procedure

Individuals who expressed interest in participating were sent a randomly generated URL to complete the preliminary online questionnaire. This questionnaire featured an electronic informed consent form, a modified version of the abbreviated *Rejection Sensitivity Questionnaire* (*RSQ-8*, Downey & Feldman, 1996) and the *Ten-Item Personality Inventory* (*TIPI*, Gosling, Rentfrow & Swann, 2003). Email addresses were also requested so that participants could be identified for receiving compensation and scheduling a follow-up lab session.

Each participant became eligible to sign up for a 30-minute lab session upon successfully completing the preliminary online questionnaire. However, participants were required to complete the online questionnaire at least one day in advance of their scheduled lab session to reduce the influence of online responses on subsequent lab behavior.

Lab Procedure

The current study was part of an investigation into RS' effect on emerging adults' reactions to ambiguous rejection following an instant messaging (IM) conversation. This manipulation involved additionally administering silence at the end of the IM conversation. I focus here on RS effects on participants' textual behavior during the IM conversation prior to the silence. As participants were not informed in advance that they would receive a silent treatment during the experimental IM conversation, their textual behavior leading up to the silence serves as an example of their conversation behavior in an IM chat with an unknown peer.

Participants were notified in the informed consent document and upon arrival to the lab that they would engage in two short IM conversations with an unknown fellow student via an online chat client. The first IM conversation would serve as an opportunity for the conversation partners to introduce themselves to each other whereas the second IM conversation was intended as a discussion of a social topic chosen by the researcher. In actuality, each participant was paired with the researcher for a single, one-on-one IM conversation.

To maintain the ruse that the participant would be communicating with another student participant, an undergraduate research assistant informed the participant upon greeting them that the other student had already arrived for the session. Then, as the assistant led the participant past the researcher's hidden workstation on route to the study room, the researcher pretended to talk to the other student by vocalized instructions from her hidden computer station.

When participants reached the designated study room, they were told to keep all personal items including cell phones on a far table out of reach during session activities. Considering emerging adult IM users' tendency to multitask while engaging with chat partners, I anticipated that the restriction placed on participants from engaging in other activities during the experiment would have several noteworthy effects on my analysis[3]. Firstly, participants were more likely to engage in the IM chat as a synchronous form of communication and thereby expect more immediate responses from the chat partner if not allowed to engage in alternate activities. Secondly, participants were more likely to notice the experimental silent treatment if not allowed to distract themselves with other activities. However, the current study design features should be taken into account when interpreting results, for the findings may not generalize to emerging adults' IM use in all contexts.

All participants performed lab session tasks on the same desktop PC. The first task they were instructed to complete was the *Positive and Negative Affect Scale (PANAS)* to provide a baseline measure of their mood. IM conversations were then carried out using the Pidgin online chat client (Version 2.12.0).

The IM conversation proceeded freely for 6 minutes. To minimize variability between conversations, I posed the same introductory questions to each participant and maintained a neutral tone in my responses. I further assumed the same identity in each IM conversation. This means that I gave consistent answers to questions posed to me regarding my major, my year in college, and what classes I was taking, which were common issues raised by participants. I did not voluntarily reveal my gender or my name unless asked. (See the Appendix for my IM conversation script.)

Only a handful of participants asked me for my name, and even fewer requested information on my gender instead of my name. Participants were therefore left to freely assume my gender during the conversation.

At precisely six minutes into the conversation, I stopped sending responses to the participant. A research assistant then provided the participant one of two randomly assigned explanations for the silence. Participants in the control condition were told that the silence occurred on account of a technical problem on the other student's computer. Those in the experimental condition were told that the other student wished to discontinue engaging in the chat.

Participants were then invited to complete the remaining session activities consisting of a battery of electronically administered questionnaires. These measures included a second administration of the *Positive and Negative Affect Scale* (*PANAS*; Watson, Clark, & Tellegen, 1988), the reflective and reflexive versions of the *Fundamental Needs Scales* (Williams, Cheung, & Choi, 2000), and a conversation assessment measure designed by the researcher.

Measures

The following measures were featured in the preliminary online questionnaire: the

Rejection Sensitivity Questionnaire (*RSQ-8*) and *Ten-Item Personality Inventory* (*TIPI*).

The abbreviated *Rejection Sensitivity Questionnaire* (*RSQ-8*; Downey &

Feldman, 1996) features eight hypothetical vignettes. These vignettes depict scenarios in

which one requests something from a parent, friend, romantic partner, or peer (e.g., *You*

approach a close friend to talk after doing or saying something that seriously upset

him/her). The vignettes are intended to represent scenarios with potential rejection that

are common to an undergraduate population. The associated response scales measure

one's reaction to the rejection scenarios.

My modified version of the *RSQ-8* featured three 6-point Likert scale items for

each vignette. The anxiety scale asked participants to rate how anxious they would be (1

= not at all; 6 = very much) about a target person's response to their request in each

featured scenario. The anger scale asked participants to rate how angry they would be

about a target person's response in each scenario. This scale had been crafted for the

children's version of the *RSQ* (*CRSQ*; Downey, Lebolt, et al., 1998) and later adopted by

Zimmer-Gembeck and Nesdale (2013) for an undergraduate population. I added the scale

to the *RSQ-8* for the present analysis to investigate whether those who anticipate rejection

with anger would demonstrate unique discursive features in the IM conversation. The

final expectation scale asked participants to rate the degree to which they would

anticipate a target person responding favorably in each scenario. This item was reverse

scored to measure one's level of expecting rejection.

Both the order of *RSQ-8* vignettes and scale items per vignette were randomized to reduce the likelihood of patterned responding. Participants' scores on each of the three scales were calculated independently across vignettes so that average scores on rejection anxiety and rejection anger could be investigated as separate correlates of IM language behavior. Rejection expectancy was not anticipated to correlate with unique conversation features and was thus not included in analysis.

Cronbach's alpha for each of the scales were .78, .80, and .68, respectively. The original authors of the *RSQ* estimated alphas of .81 and .83 in their validations of the measure (Downey & Feldman, 1996; Feldman & Downey, 1994). However, they had used as analysis items the product of anxiety and expectation scale scores. Unfortunately, they did not reveal the correlations between their *RSQ* scales before multiplying their scores. The present expectation scale's correlations with the anxiety and anger scales were negative or non-existent (see *Table 1*). While these results could not be compared to Downey and Feldman's (1996) work, they did not match the direction of association between anxiety and expectation scales from an analysis of the *RSQ-8* (Zimmer-Gembeck & Nesdale, 2013). This discrepancy provided further reason to drop the expectation scale scores from analysis.

The *Ten-Item Personality Inventory* (*TIPI*; Gosling, Rentfrow & Swann, 2003) is an abbreviated self-report measure for gauging one's levels of each of the Big Five factor traits: extraversion, agreeableness, conscientiousness, emotional stability, and openness. The measure features ten pairs of adjectives, with two pairs of adjectives representing each of the Big Five factor traits. One adjective pair represents the polar opposite of the other adjective pair for each factor trait. Participants rate on a scale from 1 to 7 (1 =

disagree strongly; 7 = agree strongly) the degree to which each pair of adjectives characterizes themselves. Scores on one adjective pair per trait are reversed before being averaged with the related adjective pair to produce scores for each of the Big Five traits.

Designers of the *TIPI* (Gosling et al., 2003) warn that a personality measure comprised of only two items per scale will have lower inter-item correlations in exchange for an effort to represent all aspects of a construct via fewer items (i.e., maintain content validity). Considering this limitation on internal consistency, inter-item correlations for each of the Big Five factors were as follows: extraversion (.51, $p < .001$), agreeableness (.16, $p < .01$), conscientiousness (.41, $p < .001$), emotional stability (.49, $p < .001$), and openness (.22, $p < .001$). These correlations are also featured in *Table 1* and are comparable to the inter-item correlations found by Gosling et al. (2003) when testing the validity of the *TIPI*. The only correlation between scale items that falls far below those found by Gosling et al. (2003) pertains to the agreeableness factor. Results relating to agreeableness should therefore be taken with this limitation in mind.

The following measures were administered during the lab session: the *Positive and Negative Affect Scale* (*PANAS*), a conversation assessment, and two variations of the *Fundamental Needs Scales*.

The *Positive and Negative Affect Scale* (*PANAS*; Watson, Clark, & Tellegen, 1988) asks participants to rate on a five-point scale (1= very slightly or not at all; 5 = extremely) their degree of experiencing various positive and negative moods during a specified time. The measure traditionally consists of 20 individual emotion adjectives – ten of which serve as markers of positive mood and ten of which serve as markers of negative mood. Scores across positive mood adjectives are averaged to derive one's

positive affect (PA) score whereas scores across negative mood adjectives are averaged to derive one's negative affect (NA) score. I administered a modified version of the *PANAS* in which two adjectives – "peaceful" and "rejected" – were included among the PA and NA adjective sets, respectively.

The *PANAS* was administered at the start of the lab session to provide a baseline measure of mood. Participants were given a second administration of the *PANAS* following their receipt of the randomly assigned explanation for needing to discontinue the IM conversation. Instructions at each administration requested participants to rate their degree of experiencing the set of moods "right now". Two administrations enabled measurement of change in participants' mood.

The conversation assessment measure designed by the researcher contained nine questions that asked participants to rate on a seven-point scale (1 = not at all; 7 = very much) the degree to which they positively responded to elements of the instant messaging conversation (e.g., "How much did you like your conversation partner?"). Several questions were included that asked participants about their degree of comprehending their conversation partner. These additional questions were intended to deter participants from guessing the intention of the study.

The *Fundamental Needs Scales* (Williams et al., 2000) measure one's state level of satisfaction in four needs (i.e., belonging, self-esteem, meaningful existence, control) that were theorized to be threatened by episodes of perceived ostracism. Participants rate on a seven-point scale (1 = not at all; 7 = extremely) how much they agree with statements representing these needs being met (e.g., "I feel good about myself"). Each need is represented by five statements, some of which are reverse coded. Appropriate

items are reverse scored before values across each five-item scale are averaged to derive one's satisfaction levels on each of the needs. An additional set of two questions served as manipulation checks to test if participants in the experimental condition correctly interpreted the explanation they received as featuring more potential ambiguous rejection.

Two versions of the *Fundamental Needs Scales* were administered at different temporal distances from the randomly assigned explanation for discontinuing the IM conversation. The first administration asked participants to retrospectively rate how they felt during the IM conversation. The second administration, delivered after the experiment assessment measure, asked participants to rate how they were feeling "right now". Two administrations enabled measurement of change in participants' needs satisfaction over time.

Debriefing

At the conclusion of the lab session, the researcher notified participants of the true identity of their conversation partner and purpose of the study. A few participants revealed that they had assumed they were speaking with a male, for I had not been as emotionally expressive in my language as they would have expected from a female chat partner. For example, several female participants mentioned expecting exclamation points from a fellow female, while another female participant expressed having expected that a female chat partner would show more signs of agreement or common ground.

All participants were asked if they felt comfortable with the true identity of their chat partner and the study's purpose. They were given the option to remove their data from the study or seek counseling assistance if needed. No participant requested either of

these services. However, I followed up with two participants who showed visible signs of concern during the debriefing. These follow-ups revealed no lasting distress.

Data Preparation

Immediately following each lab session, electronic transcripts of participants' IM conversations were automatically saved in a designated folder by the Pidgin online chat client. The data from these files needed to be cleaned and transformed in various ways before their content could be statistically analyzed. I first used the date and timestamp data embedded in the transcript file name to manually associate each transcript file with the participant's randomly assigned ID number. Then, using visual basic code via Microsoft Excel 2011 on a Macbook Pro laptop (OS 10.12), I created a formula that tallied the number of times that a participant sent two or more consecutive messages (i.e., a sequence). My spreadsheet featured tallies for participants' total number of sequences, number of sequences with two transmission units, and number of sequences with more than two transmission units.

I next employed Microsoft Excel 2011 and Apple terminal formulas to remove both my transmission units and all time stamps from the content of each transcript file. The resulting copies of the chat transcripts featured only the participant's words with each line of text representing a transmission unit.

Perusal of individual IM transcripts revealed that many participants had not consistently used punctuation to demarcate the end of statements or questions. Previous studies of IM discursive behavior have shown young adults to add final punctuation to transmission units only 35% of the time and punctuation for earlier sentences within

transmission units 78% of the time (Ling & Baron, 2007). However, these same studies observed IM users adding a question mark to every one of their interrogative statements whereas a subset of the present sample did not. Notwithstanding contextual factors that may influence the use of punctuation, I created duplicate copies of IM transcripts in which question marks were added to transmission units so that question tallies could be accurately assessed.

All modified chat transcripts were then imported into the *Linguistic Inquiry and Word Count* (LIWC 2007; Pennebaker & Francis, 1999) software to calculate tallies per transcript on different word categories including articles, pronouns, positive emotion, and assent words. The modified transcripts, sequence tally spreadsheet, and LIWC word tallies spreadsheet were collectively imported into R statistical software (3.3.3 GUI 1.69; R Core Team, 2017) for univariate and bivariate analysis.

Results

Descriptive Statistics

In my previous report of the sample's rejection sensitivity descriptive statistics, I had collectively averaged each participant's scores on the *RSQ* anxiety and anger scales. Here, I investigated the unique effects of rejection anxiety and rejection anger on IM textual behavior. Distinct statistics for each of the modified *RSQ-8* scales are therefore featured in *Table 1* along with statistics for the Big Five. As mentioned earlier, the *RSQ-8* expectation scale did not correlate as expected with either the anxiety or anger scales. Nor was it anticipated to uniquely predict use of selected discursive features. It was therefore removed from further analysis.

TIPI statistics revealed that the agreeableness scale's inter-item correlation was relatively small compared to inter-item correlations of other *TIPI* scales or the *TIPI*'s inter-item correlations reported by Gosling et al. (2003). Considering that the low correlation was found between "critical, quarrelsome" and "sympathetic, warm" when the former was reverse scored, it is possible that participants identified themselves as having tendencies toward both sets of characteristics when they responded to these items.

Before analyzing relationships between each of the dispositional variables and the selected conversation features, sample-wide statistics are presented. These results provide a snapshot of potential trends in conversation style among emerging adults who are engaging via IM with an unknown peer.

Statistics for the number of transmission units that participants sent per IM conversation are depicted in *Figure 1*. Most participants provided an average of roughly 13 transmission units during the six-minute IM conversation. However, tallies varied widely with the fewest number of transmission units being 6 and largest number of transmissions units being 34. Previous research on the number of transmission units sent per IM conversation are not easily comparable to the present study as the length of those conversations differed from the length of the present experimental IM chat. However, previous findings have similarly indicated a large variance in number of transmission units and length of naturally occurring IM conversations (Baron, 2010).

Figure 2 depicts the number of times that participants communicated in sequences, namely by delivering two consecutive transmission units or more. A total of 636 sequences, each made up of two or more transmission units, constituted 16% of total responses by the sample. Sample statistics reveal the relative infrequency of participants

sending more than two consecutive transmission units. Meanwhile, the greatest number of sequences used by a participant during a conversation was 13 whereas the mean number of sequences was roughly 2.

Of greater importance to the present analysis was the percentage of participants' transmission units that served as part of a sequence. *Figure 3* portrays the distribution of percentages that sequences contribute to each participant's total transmission units. On average, sequences made up 14% of participants' total transmission units though sequences consisting of more than two transmission units contributed merely 2% of transmission units. Some participants devoted none of their transmission units to sequences whereas the greatest percentage that sequences contributed to a participants' transmission units was 42%.

Figure 4 reveals that while participants used an average of 8 words per transmission unit, single- and double-word transmission units were the most common transmission unit lengths among the sample. Previous research has shown the average transmission unit length to be 5 words and the percentage of single-word transmissions per conversation to be 21.8%, indicating that very short responses may be common in IM (Baron, 2004; Ling & Baron, 2007).

Single-word transmissions made up 13.6% of the entire corpus of the sample's responses. Further, as seen in *Figure* 5, the average percentage of a participant's transmission units that consisted of one word was 13%, though percentages ranged from 0% to 50%. Despite the brevity of many transmission units, however, participants asked an average of 5 to 6 questions (*SD* = 2.15) to their chat partner during the six-minute IM conversation (see *Figure 6*).

Figure 7 depicts in a series of histograms the distribution of participants' use of each of the word categories of interest: definite articles, "you" pronoun, assent words, and positive emotion words. Though each of the categories reveals a range of usage among the sample, participants' transcripts featured an average of 4 definite articles, approximately 6 references to "you", approximately 3 examples of assent with their conversation partner, and approximately 7 expressions of positive emotion within a six-minute time frame.

Bivariate Statistics

Only one of the hypothesized associations between rejection anxiety and IM conversation features was supported by the present data, namely the number of transmission units one contributed to the IM conversation ($r = .18, p < .01$). To test whether this correlation might indicate greater self-disclosure, I also analyzed the correlation between rejection anxiety and use of the pronoun "I". The resulting correlation was insignificant ($r = -.08, p = .148$). *Table 2* further reveals that while none of the textual features had associations with rejection anger, a few of the behaviors were moderately associated with one or more of the Big Five factor traits. Agreeableness correlated with both asking questions to the conversation partner ($r = .15, p < .05$) and addressing them more frequently with the "you" pronoun ($r = .23, p < .001$). Conscientiousness likewise showed a moderate association with asking questions ($r = .19, p < .01$). Lastly, with regard to personality characteristics, openness had moderate associations with both one's total number of transmission units ($r = .12, p < .05$) and the percentage of sequences ($r = .16, p < .01$) one contributed during the IM conversation.

Though not the focus of the present study, several associations between IM behaviors were significant and warrant mention. As expected, number of transmission units was positively associated with percentages of both sequences ($r = .54$, $p < .001$) and one-word transmission units ($r = .12$, $p < .05$). While the frequency counts of sequences and one-word transmission units were transformed to reduce the confounding effect of total transmission units, a relationship remained. Somewhat unexpectedly, however, total number of transmission units was also associated with both questions ($r = .54$, $p < .001$) and number of assent words used ($r = .15$, $p < .05$). Furthermore, percentage of sequences was associated with both one-word transmission units ($r = .18$, $p < .001$) and questions ($r = .21$, $p < .001$). Finally, assent words were positively associated with one-word transmissions ($r = .24$, $p < .05$), positive emotion words ($r = .28$, $p < .01$), and using the "you" pronoun ($r = .18$, $p < .05$) but negatively associated with definite articles ($r = -.17$, $p < .05$).

To further investigate the effects of personality on textual feature use, I submitted those personality variables that had correlated with textual features to multiple regression. Firstly, neither rejection anxiety nor openness predicted total transmission units when controlling for the other personality variable. Results did not change when I added a quadratic relationship between rejection anxiety and total transmission units to the equation. However, agreeableness ($b = .094$, $t = 2.074$, $p < .05$), conscientiousness ($b = .193$, $t = 4.197$, $p < .001$), and total number of transmission units ($b = .258$, $t = 11.003$, $p < .001$) each significantly contributed to predicting a greater number of questions (adjusted-$R^2 = .369$, $F(4, 283) = 43.00$, $p < .001$). Lastly, agreeableness ($b = .189$, $t = 2.970$, $p < .01$), asking questions ($b = .589$, $t = 7.275$, $p < .001$), and using definite

articles ($b = -.240$, $t = -3.686$, $p < .001$), each significantly contributed to predicting a greater use of the "you" pronoun (adjusted-$R^2 = .270$, $F(3, 230) = 29.75$, $p < .001$).

Discussion

Contrary to my expectations, rejection anxiety failed to have significant associations with any but one of the textual conversation features of interest to the present study. While rejection anxiety positively related to the number of transmission units one contributed to the IM conversation – a variable that I suspected might represent an effort to pad the conversation with messages of self-disclosure – rejection anxiety was not associated with using the "I" pronoun. Thus, mystery surrounds the reason why rejection anxiety was associated with more (though not necessarily longer) responses in the IM conversation.

It bears remembering that both previous empirical IM studies and the current study have shown single-word transmissions to be very common in the CMC medium (Baron, 2010). Thus, rejection anxiety's failure to correlate either positively or negatively with one's percentage of using one-word transmission units may be due to the high percentage of one-word transmission units throughout the sample. Notwithstanding this sample trend, I had anticipated that those with higher RS would defy convention in favor of sending more substantive sentences to foster engagement with their conversation partner.

As rejection anxiety and rejection anger showed a moderate negative correlation in the present sample, I had anticipated that behaviors associated with rejection anger would reflect the opposite behavioral trends of rejection anxiety. However, no textual features analyzed in the present study were significantly associated with rejection anger.

In keeping with RS theory, it is possible that the present study's IM conversation scenario did not activate angry affective concern for potential rejection. Behaviors associated with angry anticipation of rejection may have consequently remained dormant.

Agreeableness, on the other hand, was found to reliably predict both asking questions to the conversation partner and addressing them more frequently with the "you" pronoun. While I had anticipated that rejection anxiety would also be associated with these textual features, their association with agreeableness lends support to previous research claiming that both asking questions and frequently addressing or referencing the conversation partner are efforts to foster intimacy and affection. Conscientiousness likewise showed a moderate association with asking questions. Thus, questioning one's IM partner may be further understood by those apt to follow rules of conversation etiquette as the proper thing to do in a "getting to know you" conversation.

Finally, openness showed small but significant associations with one's total number of transmission units and the percentage of sequences one contributed during the IM conversation. Since openness indicates comfort with exposure to new things and people, whereas rejection anxiety indicates apprehension about rejection from people, it is noteworthy that both personality variables were associated with contributing more responses during the IM conversation. Nonetheless, openness but not rejection anxiety was associated with sending a greater proportion of responses in chunks via sequences. Coding of conversation content may be warranted to investigate whether a higher proportion of sequence use was an effort to foster intimacy or affection within the IM conversation.

In the end, engaging with an unknown peer via IM may not strongly trigger concern about impending rejection, which would explain why RS affective components failed to correlate with many of the selected textual conversation features. Individuals with rejection anxiety and rejection anger may have thus blended in with the rest of the sample because the CMC medium minimizes concerns for social judgment that are salient in face-to-face conversations (McKenna & Bargh, 2000; Rice & Markey, 2009). Alternatively, RS may indeed modify IM users' conversation style to prevent or avoid rejection, but in ways that were not predicted by research on social anxiety and thus not investigated in the present study.

Limitations

The most noteworthy feature of the current study design to consider when interpreting the results is that all participants engaged in an experimental IM conversation with the researcher who served as a confederate. On one hand, this design was an asset, as it minimized the number of variables participants could use to infer the level of social threat their conversation partner posed. Yet, the same design, rather than a naturalistic study of college undergraduates' instant messaging, brought individuals into a scenario that they might not have chosen on their own. Would the individuals studied have selected to communicate with strangers via IM? As mentioned earlier, emerging adults use both IM and mobile texting predominantly for communicating with others they know (Baron, 2004; Grinter & Palen, 2002; Piwek & Joinson, 2016; Subrahmanyam & Greenfield, 2008). Their textual conversation style in the present study may therefore reflect the perceived foreignness of engaging with an unknown peer via IM.

One must note that the experimental nature of the IM conversation further encouraged me to keep the conversation flowing with each participant. On various occasions, there'd be a lull in the conversation, so I asked the participant a question to break the silence. Had this been a natural conversation, it is uncertain whether participants would have eventually initiated a new topic or remained silent and waited for their conversation partner to talk. Future research spanning multiple conversations may be needed to trace individual cross-conversation differences in addressing conversation lulls.

One must also keep in mind that findings from the present study pertain to the IM behavior of emerging adults in an undergraduate program. Thus, one must be careful not to generalize the findings beyond the IM medium nor to a wider age population who may either be less inclined to use CMC or, on the other hand, more accustomed to communicating with strangers via CMC. Results are also subject to the CMC language trends of the era during which the present study was conducted. As trends in CMC use change, new data may be needed to see how RS affects the communication styles demonstrated therein.

Finally, the present findings hinge on the validity of RS scores generated through an online administration of the *RSQ-8*. While the full-length *RSQ* has been validated by the measure's original authors (Downey & Feldman, 1996), my own factor analysis of the abbreviated *RSQ-8* in Study 1 failed to find a single underlying construct that represents the measure as a whole. Correlations between *RSQ-8* scales in the present study were negative or non-significant. Separating the RS scales for the present analysis was an effort to bypass this problem and identify how each affective component uniquely

contributed to using textual conversation features. However, future research may consider adding informant ratings of a target's RS to test whether RS ratings by a third party may differentially predict one's IM conversation style.

Conclusions

RS' influence on emerging adults' social behavior with strangers remains to be further investigated and understood. Although the RS construct highlights the importance of rejection from valued others, experimental research has demonstrated that RS is associated with greater distress in response to a stranger's ambiguously rejecting behavior. Examination of rejection sensitive individuals in various social venues can shed light on how frequently they remain hypervigilant for rejection cues from unknown others.

As CMC is a popular means of engagement for emerging adults where they are exposed to both existent and new contacts, it is a rich venue for RS behavioral research. Investigating text-based CMC in particular can help researchers identify how RS concerns about rejection may be triggered in the absence of visual stimuli and how emerging adults manifest this concern in their textual behavior.

The present study was a first attempt at identifying relationships between RS and conversation features that emerging adults might use during an IM conversation with a stranger. Hypotheses were informed by the modes of behavior associated with the two emotional variations of rejection sensitivity (i.e., anxious, angry) (Zimmer-Gembeck & Nesdale, 2013). For example, anxious RS has been theorized to lead someone to either withdraw or perform ingratiating behaviors to prevent further rejection. Angry RS has

been theorized to lead someone to withdraw or respond hostilely to a perceived affront to prevent further rejection. Emotional variations of rejection sensitivity were then compared to a small set of textual conversation features that have been found to promote liking of one's conversation partner. I anticipated that those with anxious RS would demonstrate these behaviors whereas those with angry RS would not.

Though many of the stated hypotheses were not supported, the present study has initiated an effort to understand RS' effect on emerging adults' textual behavior in CMC. Perhaps a different set of quantitative variables or qualitative coding of CMC transcripts may be needed to identify characteristic conversation features associated with RS. On the other hand, perhaps CMC's design features mitigate rejection fear from strangers and enable RS individuals to socially engage without noticeable efforts to reduce rejection threat. In either case, researching RS' effect on emerging adults' CMC behavior must be informed by trends in emerging adults' CMC use. The relative frequency with which they interact with strangers in digital spaces will have implications on their textual responses before the effects of RS are considered.

Notes

1. RS also correlates with the factor trait of neuroticism (r = .41, p < .0001; Ayduk, Gyurak, and Luerssen, 2008; r = .36, p < .01; Brookings, Zembar, & Hochstetler, 2003; r = .36, p < .001; Downey & Feldman, 1996)

2. Study flyers were also posted at Camden County College, University of Pennsylvania, and coffeeshops in various suburban towns of Camden county. However, these efforts attracted only two participants to the study from beyond Rutgers-Camden.

3. Several participants had been caught accessing their cell phones during lab activities while participating in the study pilot.

Table 1: Descriptive Statistics and Correlations for Rejection Sensitivity Scales[1] and Big Five

	1	2	3
1. Rejection Anxiety (α = .78) *M* = 3.41, *Med* = 3.50, *SD* = 1.04	--		
2. Rejection Anger (α = .80) *M* = 2.91, *Med* = 2.88, *SD* = 0.98	-.48***	--	
3. Rejection Expectation (α = .68) *M* = 2.48, *Med* = 2.38, *SD* = 0.83	.07	-.24***	--

	1	2	3	4	5	6	7	8	9	10[2]
Extraversion *M* = 8.45, *Med* = 8.50 (*SD* = 2.94)	-- .51***	--								
Agreeableness *M* = 9.71, *Med* = 10.00 (*SD* = 2.23)			-- .16**	--						
Conscientiousness11.42 *M* = 11.42, *Med* = 12.00 (*SD* = 2.20)					-- .41***	--				
Emotional Stability *M* = 9.04, *Med* = 9.00 (*SD* = 2.93)							-- .49***	--		
Openness *M* = 10.90, *Med* = 11.00 (*SD* = 2.13)									-- .22***	--

n = 287 (Missing data due to suspect responding on *RSQ-8*.)

* *p* < .05, ** *p* < .01, *** *p* < .001

[1]I previously reported the statistics of a wider sample of participants who completed the modified 8-vignette Rejection Sensitivity Questionnaire (RSQ-8). Here, I report the statistics of a subset of participants who completed this measure and lab-based procedures. Statistics are provided for individual scales only.

[2]1-2: Extraversion scale items; 3-4: Agreeableness scale items; 5-6: Conscientiousness scale items; 7-8: Emotional Stability scale items; 9-10: Openness scale items
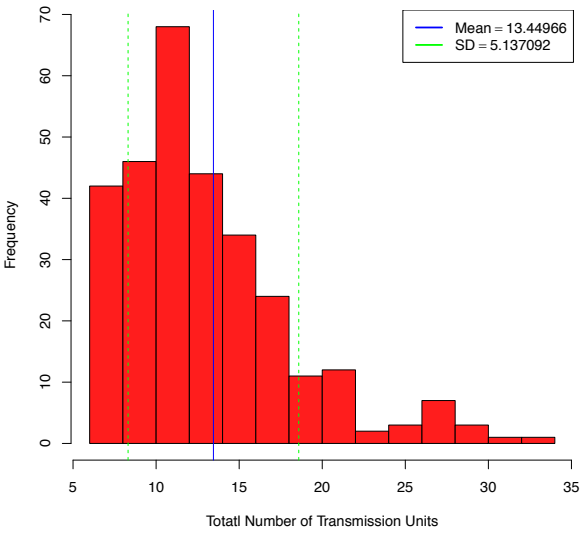
Fig. 1 Total Number of Transmission Units (n=298)
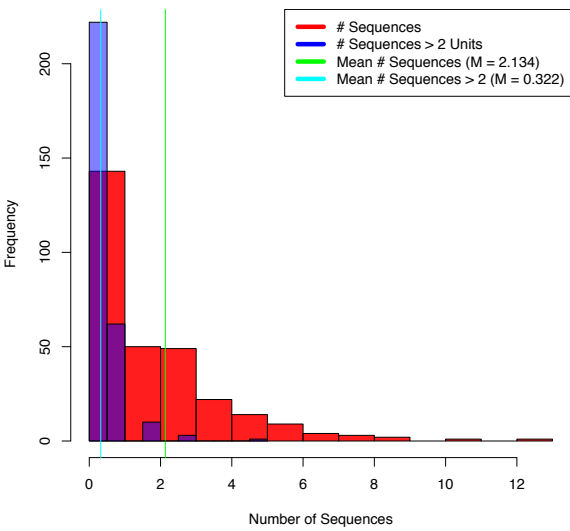

Fig. 2 Sequence Tallies (n=298)

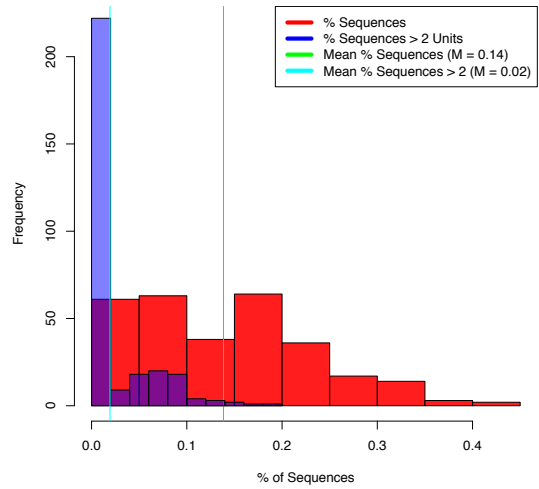**Fig. 3 Percentage of Sequences to Total Transmissions (n=298)**
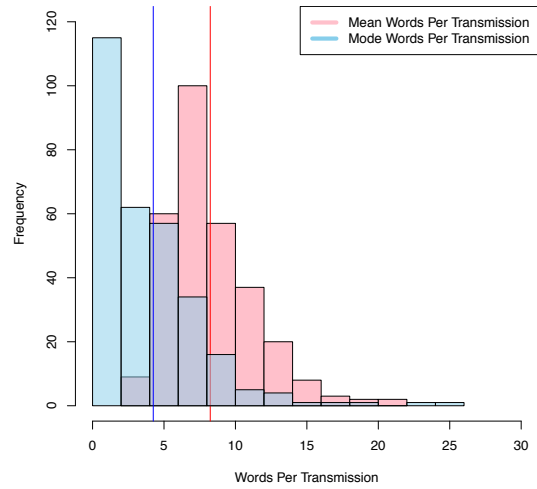

Fig. 4 Word Mean & Mode Per Transmission (n=298)

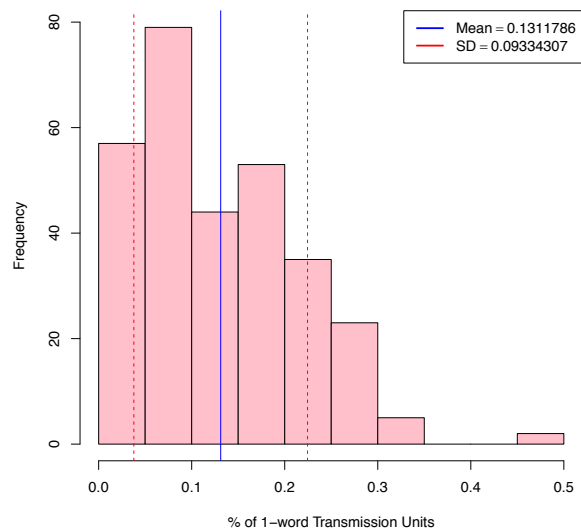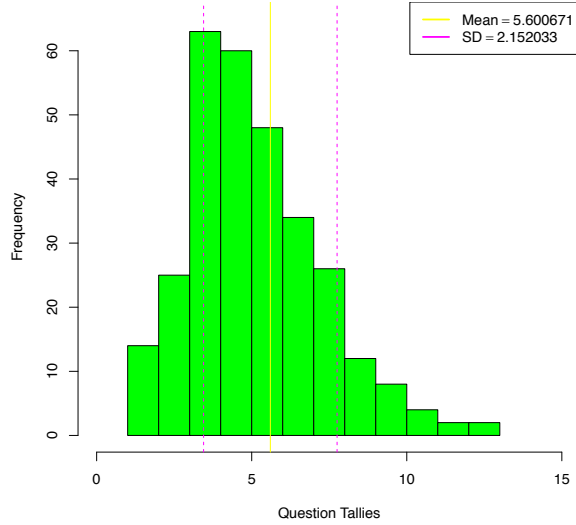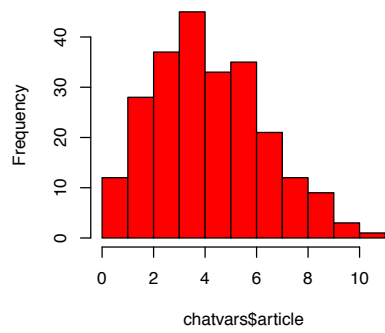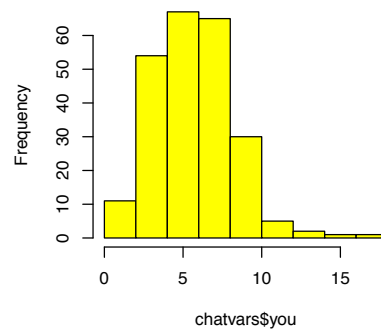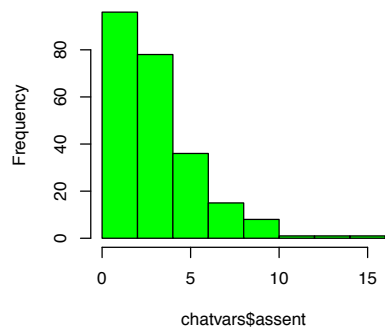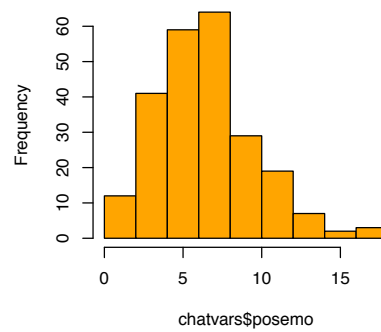**Fig. 5 Percentage of One–Word Transmission Units (n=298)**

Fig. 6 Question Tallies (n=298)

Fig. 7 Histogram of Definite Articles

Histogram of You Pronoun

Histogram of Assent Words

Histogram of Positive Emotion Words

Table 2: Correlations Between RS Components, Big Five, and IM Conversation Features

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. RS Anxiety	--															
2. RS Anger	**.46**	--														
3. Extraversion	**-.14**	.03	--													
4. Agreeableness	.07	-.01	**-.17**	--												
5. Conscientiousness	**-.18**	-.01	.05	.02	--											
6. Emotional Stability	**-.22**	**-.21**	.09	.09	**.12**	--										
7. Openness	-.08	-.09	**.39**	.01	.05	**.15**	--									
8. # of Responses	**.18**	.02	.04	.07	.02	.00	**.12**	--								
9. Mean Transmission Length	.04	.00	-.03	-.11	.06	.03	.05	.05	--							
10. % Sequences	.10	-.10	.08	.02	-.06	.01	**.16**	**.54**	.00	--						
11. % 1-word transmissions	.07	-.02	.03	.04	-.05	.01	.08	**.12**	**.13**	**.18**	--					
12. Questions	.05	.03	.00	**.15**	**.19**	-.02	.01	**.54**	-.03	**.21**	-.11	--				
13. Definite articles	-.02	-.04	-.04	.04	.02	.09	-.04	-.06	-.05	-.06	-.07	-.06	--			
14. You pronoun	.01	-.02	-.11	**.23**	.06	.02	-.03	.02	.00	.00	.04	**.48**	**-.20**	--		
15. Assent	-.01	.05	.08	.05	.06	-.02	.12	**.15**	.10	.03	**.24**	.09	**-.17**	**.18**	--	
16. Positive Emotion	.02	.02	.00	.05	.00	-.10	.01	.05	.11	.10	.02	.10	-.10	.04	**.28**	--

Bold represents significance of at least $p < .05$.

Conclusion

The present dissertation was designed to explore how rejection sensitivity may impact emerging adults' cognitive interpretations, emotional reactions, and behaviors in a computer-mediated context. To achieve this end, the featured studies analyzed RS' effect on a) responses to an online questionnaire featuring hypothetical rejection, b) communication techniques used in an instant messaging (IM) conversation with an unknown peer, and c) emotional and behavioral responses to ambiguous rejection following their IM conversation. There was comparable interest in identifying how RS manifests in response to anticipated versus perceived rejection.

Each of the featured studies offered several contributions to the rejection and rejection sensitivity literatures. The first study offered a new form of administering the *RSQ* as well as a new way of conceptualizing the rejection sensitivity construct. The second study modified how rejection may be experimentally manipulated and how one can measure its effects. The third study expanded RS research to explore its dispositional effect on textual behavior in CMC. Together, the studies added new features to the measurement and analysis of rejection sensitivity behavior.

Study 1

The first study revealed, contrary to custom in RS research, that the construct of rejection sensitivity may be best represented by two separate components: rejection affect (RS-A) and rejection expectancy (RS-E). Data from my online administration of the abbreviated *Rejection Sensitivity Questionnaire* (*RSQ-8*) failed to coalesce into a single underlying

factor like Downey and Feldman (1996) claimed to have observed from their pen-and-paper administration of the full-length *RSQ*. This result impacted the way I analyzed rejection sensitivity in the following studies. However, it may also have implications for RS measurement going forward. Zimmer-Gembeck and Nesdale (2013) who likewise administered the *RSQ-8* to emerging adults had analyzed the independent effect of each *RSQ-8* scale on likelihood to withdraw or aggress. Though they did not perform a factor analysis to explore the measure's structure, similar patterns between our descriptive statistics suggest that they too did not see strong relationships between the scales to warrant measuring RS as a single score.

Notwithstanding support for RS' bifactor structure, I remain curious about score distribution on the *RSQ-8*'s rejection expectation scale. The right-skewed distribution shows that undergraduate participants tended to rate themselves as having low expectations of rejection. While it is possible that only a small handful of individuals anticipated harboring rejection expectations across situations with valued contacts, it is also possible that participants may have wished to not admit to a researcher or acknowledge to themselves that they are prone to expecting rejection (Paulhus & Vazire, 2007). Furthermore, considering that expectation items on the *RSQ* are traditionally scaled so that higher ratings indicate higher expectation of a positive response, participants may have been influenced to respond with a more positive rating. The online format of the questionnaire may have additionally contributed to biased rating, though there is no way to be sure without a comparative validation of an online *RSQ* format against a paper format.

Study 2

The second study in the present dissertation was, in one sense, traditional for having investigated RS' moderating effect on emerging adults' responses to ambiguous rejection; yet, it incorporated several new elements. Firstly, it enabled participants to engage with a purported unknown peer via IM prior to receiving an ambiguous rejection prompt by random assignment. In fact, participants experienced a short episode of cyberostracism in the form of a silent treatment from their conversation partner prior to receiving an explanation for why they could not continue the IM conversation. For participants told that their IM partner no longer wished to chat, receiving an ambiguous silence beforehand was anticipated to intensify negative reactions, especially among those with higher RS.

Unlike prior RS research, the dissertation's second study additionally measured the effect of experimental ambiguous rejection on four fundamental needs: belonging, self-esteem, meaningful existence, and control. Threat to these needs had been found in ostracism research to predict aggression. They were therefore measured as outcomes of perceived rejection threat that could be moderated by one's levels of rejection affect and rejection expectancy.

Despite the study's novel design features, RS components failed to moderate participants' responses to the randomly assigned explanation for having to discontinue the IM chat. That is, participants with higher levels of rejection affect and rejection expectancy who were told that their IM partner did not wish to continue the IM chat did not respond any more negatively to this news than their lower RS counterparts. Instead, all participants who had been randomly assigned to hear that their IM partner no longer

wished to chat experienced lower mood and greater threat to their fundamental needs, regardless of RS levels. They gave lower ratings to the conversation and conversation partner and were less willing to volunteer for another chat as a service to the researcher.

However, the study further revealed that rejection expectancy reliably predicted less positive mood at the beginning of the lab-based study session. It consequently affected positive mood after the IM conversation as well as several fundamental needs and ratings by way of effecting initial positive mood, regardless of the explanation one was experimentally assigned to receive. These findings suggest that the expectation of rejection associated with RS may have a general negative effect on one's mood in social situations. This influence may negatively bear indirectly on one's interpretations and intentions in social situations.

In spite of this last interesting finding, I am cautious against over-interpreting its implications. It is possible, for example, that the relationship between emerging adults' rejection expectancy and lower positive mood at the start of the study session can be attributed to a general negative perspective. This negative perspective may have contributed to one's higher ratings of expecting rejection on the *RSQ-8* in Study 1 and lower ratings of positive mood at the start of Study 2. This negative perspective could have indirectly affected one's ratings later in the study session as well. Study results on emotional stability lend support to this interpretation. For example, when emotional stability was tested as a predictor of baseline negative mood with rejection affect and rejection expectancy, rejection affect's influence on mood became non-significant. A similar outcome befell rejection expectancy when emotional stability, $\hat{\beta} = .20$, $t(199) = 2.81$, $p < .01$, was added as a predictor of baseline positive mood, though emotional

stability did not remove all influence of RS-E. Downey and Feldman (1996) had tested whether RS may be a facet of neuroticism (the polar opposite of emotional stability), which represents a global disposition to feel negative emotion. They had found RS to uniquely predict attributing hurtful intent to others. However, I propose that a more nuanced series of measures may be needed to differentiate the effect of rejection affect, rejection expectancy, and other dispositional variables on one's cognitive and affective responses in social situations, especially those featuring ambiguous rejection.

Finally, as I stated earlier, further investigation of emerging adults' responses to ambiguous rejection in digital contexts will need to account for both the frequency and length of time with which they have been exposed to CMC. Emerging adults' relative comfort with digital tools and cultural trends in CMC will bear on how they interpret and respond to ambiguous rejection cues. Their relative experience with digital communication may then interact with developmental goals and dispositional tendencies to inform their behavior in these scenarios.

Study 3

The third study in this dissertation investigated how RS may be manifested through emerging adults' textual behavior in an IM conversation with an unknown peer. Transcripts from participants' IM conversations were statistically analyzed to calculate various conversation features such as number of responses, average message length, and number of questions. These elements were tested for correlations with each of the *RSQ-8*'s two affect scales. The study also took advantage of the *Linguistic Inquiry and Word Count 2007* (LIWC 2007; Pennebaker & Francis, 1999) software, which calculates word

tallies per document or digital source that fall into various categories in its extended library. Several word categories such as articles, pronouns, positive emotion, and assent words were tested in this study for their correlations with RS.

Prior to the development of LIWC, a few studies had investigated the impact of personality dispositions on emerging adults' reactions to (Kingsbury & Coplan, 2013; Rice & Markey, 2009) and behavior in certain digital venues (Butt & Phillips, 2008; Campbell & Neer, 2001; Mark & Gonzach, 2014; Underwood, Kerlin, & Farrington-Flint, 2011). Yet, each of these studies used self-report measures to investigate relationships between personality and CMC behaviors. Among them, only Campbell and Neer (2001) investigated the CMC-based communication style of individuals with certain dispositions.

However, with the availability of greater computer power and analytical software, studies have recently begun to explore how language reliably reflects enduring behavioral tendencies and personality dispositions (Boyd & Pennebaker, 2017; Tausczik & Pennebaker, 2010). As part of this endeavor, Study 3 analyzed the language participants used in the experimental IM conversation as a reflection of their dispositional tendencies. It is the only study known to date to statistically analyze participants' IM transcripts to investigate conversation elements that may be correlated with rejection sensitivity.

In spite of the innovative approach taken in Study 3 to explore linguistic markers of high RS in CMC, only the number of responses (i.e., transmission units) one contributed during the IM conversation was associated with rejection affect. By comparison, agreeableness and conscientiousness predicted asking more questions while agreeableness also predicted addressing or referring to the IM conversation partner with

the "you" pronoun. Failure to find reliable relationships between rejection affect and the use of certain conversation features was interpreted as resulting from either focusing on the wrong conversation features or falsely assuming that rejection sensitivity would have a noticeable effect on emerging adults' digital interaction with an unknown peer.

However, assessing Study 3's results in light of results from Studies 1 and 2 raises the question of which personality indicator serves as the best predictor of individuals' psychological processes and behaviors. Based on the limitations referenced for each of the featured studies, doubt about the *RSQ-8*'s ability to accurately measure participants' RS dispositional tendencies undermines efforts to use this measure to predict participants' behavior in social contexts. Researchers have outlined the vulnerability of self-report measures to various forms of patterned responding that compromise the validity of results (Paulhus & Vazire, 2007). The time may be ripe to move away from the self-report personality measure as the criterion against which other personality markers are compared.

Some surprising results from Study 3 indicate that individual differences in language and other conversation features may be a wealthy source of personality data. For example, contributing more transmission units to the IM conversation was associated with asking more questions and using more assent words. Meanwhile, a greater tendency to respond with multiple consecutive messages (i.e., sequences) was associated with asking more questions and using one-word responses. Finally, using more assent words was associated with one-word responses, positive emotion words, and using the "you" pronoun to address or refer to the conversation partner.

Prior research has shown language patterns to remain stable over time and differ reliably across individuals (Boyd & Pennebaker, 2017; Pennebaker & King, 1999). Language patterns have also provided different insight (Fast & Funder, 2008) or performed better than self-report measures at predicting behavior (Boyd et al., 2015). Perhaps research on RS may start from an analysis of language or communication features to find cross-situational patterns or correlations with mood or situation construal. These communication patterns can represent behavioral signatures that distinguish between individuals with varying degrees of RS. Analysis of communication patterns can also be used to investigate how individuals with high RS communication signatures help construct their situations through their communication choices. These studies can address the processes by which anxiously anticipating and hostilely responding to perceived rejection bring about the rejection that RS individuals fear (Downey, Freitas et al., 1998; Romero-Canyas & Downey, 2005).

Closing Remarks

As the social interaction trends of emerging adults have become increasingly digital, investigating RS' effects on how they interpret and respond to cues in digital contexts is timely and informative. The three featured studies in this dissertation therefore endeavored to focus rejection sensitivity research on the unique responses of emerging adults in a computer-mediated context. In reviewing the results of the three studies, rejection sensitivity's distinct components, as measured by the *RSQ-8*, predicted only a few responses to emerging adults' IM conversation with an unknown peer. However, potential new avenues for RS research may be pursued by changing how rejection

sensitivity is measured. For example, emerging adults' language patterns across digital situations may provide behavioral signatures that can be tested for correlations with measures that tap cognitive-affective processes like mood and situational construal.

The present set of studies also took care to view results as distinct to the experience of emerging adults in a digital age. RS research has ambiguously generalized findings from emerging adults to either adolescents or adults rather than view findings as indicative of the developmental and sociocultural experiences of a unique life stage (Ayduk, Gyurak, & Luerssen, 2008, 2009; Berenson et al., 2009; Butler, Doherty, & Potter, 2007; Fang et al., 2011; Harper, Dickson, & Welsh, 2006; Liu et al., 2014; Lok, Bond, & Tse, 2009; Marston, Hare, & Allen, 2010; Romero-Canyas & Downey, 2013; Silvers et al., 2012; Sinclair, Ladny, & Lyndon, 2011). Future RS research should account for the synergistic effect of emerging adults' unique developmental goals, communication trends, longitudinal exposure to CMC, and rejection sensitivity on their interpretation and response to ambiguous behavior in digital contexts.

APPENDIX

Instant Messenger (IM) Chat Script

R: "hi"

R: "how are you doin?" / "nothing much. how are you doin"

R: "great, thanks"

R: "do you go to rutgers/"

R: "nice. yeah me too"

R: "what year are you in?" / "nice. i'm a junior"

R: "what are you majoring in?"/ "I'm majoring in psych. hbu?"

R: "do you know what you wanna do when you graduate?"

R: "that's cool"

R: "I'm not sure yet"/ "maybe grad school"

R: "nice. i hear ya"

R: "what do you do for fun?"

R: "ok"

R: "I hang out with friends in Philly sometimes"

R: "do you live on campus?"/ "no I commute"

R: "ok see ya"

R = researcher; / = alternate response or typo for "?"

References

Abrams, D., Weick, M., Thomas, D., Colbe, H., & Franklin, K. M. (2011). On-line ostracism affects children differently from adolescents and adults. *British Journal of Developmental Psychology*, *29*(1), 110-123.

Amichai-Hamburger, Y., Wainapel, G., & Fox, S. (2002). "On the internet no one knows i'm an introvert": Extroversion, neuroticism, and internet interaction. *Cyberpsychology & Behavior*, *5*(2), 125-128. doi:10.1089/109493102753770507

Arnett, J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*(5), 469-480.

Arnett, J. J. (2007). Emerging adulthood: What is it, and what is it good for?. *Child Development Perspectives*, *1*(2), 68-73. doi:10.1111/j.1750-8606.2007.00016.x

Arnett, J. J., Žukauskienė, R., & Sugimura, K. (2014). Series: The new life stage of emerging adulthood at ages 18–29 years: implications for mental health. *The Lancet Psychiatry*, *1*569-576. doi:10.1016/S2215-0366(14)00080-7

Ayduk, O. & Gyurak, A. (2008). Applying the cognitive-affective processing systems approach to conceptualizing rejection sensitivity. *Social and Personality Psychology Compass*, *2*(5), 2016-2033.

Ayduk, O., Downey, G., & Kim, M. (2001). Rejection sensitivity and depressive symptoms in women. *Personality and Social Psychology Bulletin*, *27*(1), 868–877.

Ayduk, O., Downey, G., Testa, A., Yen, Y., & Shoda, Y. (1999). Does rejection elicit hostility in rejection sensitive women? Social Cognition, *17*(2), 245–271.

Ayduk, O., Gyurak, A., & Luerssen, A. (2008). Individual differences in the rejection-aggression link in the hot sauce paradigm: The case of rejection sensitivity. *Journal of Experimental Social Psychology*, *44*(3), 775-782.

Ayduk, O., Gyurak, A., & Luerssen, A. (2009). Rejection sensitivity moderates the impact of rejection on self-concept clarity. *Personality and Social Psychology Bulletin*, *35*(11), 1467-1478.

Ayduk, O., May, D., Downey, G., & Higgins, E. T. (2003). Tactical differences in coping with rejection sensitivity: The role of prevention pride. *Personality and Social Psychology Bulletin*, *29*(4), 435-448. doi:10.1177/0146167202250911

Ayduk, O., Mendoza-Denton, R., Mischel, W., Downey, G., Peake, P. K., & Rodriguez, M. (2000). Regulating the interpersonal self: strategic self-regulation for coping with rejection sensitivity. *Journal of Personality and Social Psychology*, *79*(5), 776-792.

Ayduk, O., Mischel, W., & Downey, G. (2002). Attentional mechanisms linking rejection

to hostile reactivity: The role of "hot" vs. "cool" focus. *Psychological Science*, *13*, 443-448.

Bailey, S. K., Schroeder, B. L., Whitmer, D. E., & Sims, V. K. (2016). Perceptions of mobile instant messaging apps Are comparable to texting for young adults in the united states. *Proceedings of The Human Factors and Ergonomics Society Annual Meeting*, *60*(1), 1235.

Bandura, A. (1986). *Social Foundations of Thought and Action*. Englewoods Cliffs, NJ: Prentice-Hall.

Baron, N. S. (2004). See you online: Gender issues in college student use of instant messaging. *Journal of Language & Social Psychology*, *23*(4), 397-423. doi:10.1177/0261927X04269585

Baron, N. S. (2008). Adjusting the volume: Technology and multitasking in discourse control. In J. E. Katz (Ed.), *Handbook of Mobile Communication Studies* (pp. 177-193). Cambridge and London: MIT Press.

Baron, N. S. (2010). Discourse structures in instant messaging: The case of utterance breaks. *Language@Internet*, *7*, 1-32.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173-1182. doi:10.1037/0022-3514.51.6.1173

Barry, C. M., Madsen, S. D., Nelson, L. J., Carroll, J. S., & Badger, S. (2009). Friendship and romantic relationship qualities in emerging adulthood: Differential associations with identity development and achieved adulthood criteria. *Journal of Adult Development*, *16*(4), 209-222. doi:10.1007/s10804-009-9067-x

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3), 497-529.

Berenson, K. R., Gyurak, A., Ayduk, Ö., Downey, G., Garner, M. J., Mogg, K., & ... Pine, D. S. (2009). Rejection sensitivity and disruption of attention by social threat cues. *Journal of Research in Personality, 43,*1064-1072. doi:10.1016/j.jrp.2009.07.007

Besnoy, K. D., Dantzler, J., Besnoy, L. R., & Byrne, C. (2016). Using exploratory and confirmatory factor analysis to measure construct validity of the traits, aptitudes, and behaviors scale (TABS). *Journal for The Education of The Gifted*, *39*(1), 3-22.

Blackhart, G. C., Knowles, M. L., & Baumeister, R. F. (2009). Rejection elicits emotional reactions but neither causes immediate distress nor lowers self-esteem: A meta-analytic review of 192 studies on social exclusion. *Personality and Social*

Psychology Review, *13*(4), 269-309.

Bourgeois, K. S., & Leary, M. R. (2001). Coping with rejection: Derogating those who choose us last. *Motivation and Emotion*, *25*, 101–111.

Bowlby, J. (1973). Attachment and loss. *Vol. 2. Separation*. (pp. 3–371). New York: Basic Books.

Boyd, R. L., & Pennebaker, J. W. (2017). Language-based personality: a new approach to personality in a digital world. *Current Opinion in Behavioral Sciences*, *18*63-68. doi:10.1016/j.cobeha.2017.07.017

Boyd, R. L., Wilson, S. R., Pennebaker, J. W., Kosinski, M., Stillwell, D. J., & Mihalcea, R. (2015). Values in words: Using language to evaluate and understand personal values. *Proceedings of the 9th International Conference on Web and Social Media, ICWSM 2015*, 31-40.

Breines, J. G., & Ayduk, O. (2015). Rejection sensitivity and vulnerability to self-directed hostile cognitions following rejection. *Journal of Personality*, *83*(1), 1-13. doi:10.1111/jopy.12077

Brookings, J. B., Zembar, M. J., & Hochstetler, G. M. (2003). An interpersonal circumplex/five-factor analysis of the rejection sensitivity questionnaire. *Personality and Individual Differences*, *34*(1), 449-461. doi:10.1016/S0191-8869(02)00065-X

Buckley, K. E., Winkel, R. E., & Leary, M. R. (2004). Reactions to acceptance and rejection: Effects of level and sequence of relational evaluation. *Journal of Experimental Social Psychology*, *40*, 14-28.

Burklund, L. J., Eisenberger, N. I., & Lieberman, M. D. (2007). The face of rejection: Rejection sensitivity moderates dorsal anterior cingulate activity to disapproving facial expressions. *Social Neuroscience*, *2*(3-4), 238-253. doi:10.1080/17470910701391711

Butler, J. C., Doherty, M. S., & Potter, R. M. (2007). Social antecedents and consequences of interpersonal rejection sensitivity. *Personality and Individual Differences*, *43,*1376-1385. doi:10.1016/j.paid.2007.04.006

Butt, S., & Phillips, J. G. (2008). Personality and self-reported mobile phone use. *Computers in Human Behavior*, *24*(Part Special Issue: Cognition and Exploratory Learning in Digital Age), 346-360. doi:10.1016/j.chb.2007.01.019

Campbell, S. W., & Neer, M. R. (2001). The relationship of communication apprehension and interaction involvement to perceptions of computer-mediated communication. *Communication Research Reports*, *18*(4), 391-398.

Chango, J. M., McElhaney, K. B., Allen, J. P., Schad, M. M., & Marston, E. (2012).

Relational stressors and depressive symptoms in late adolescence: Rejection sensitivity as a vulnerability. *Journal of Abnormal Child Psychology*, *40*(3), 369-379.

Chen, G. M., & Abedin, Z. (2014). Exploring differences in how men and women respond to threats to positive face on social media. *Computers in Human Behavior*, *38*118-126. doi:10.1016/j.chb.2014.05.029

Chow, R. M., & Tiedens, L. Z., & Govan, C. L. (2008). Excluded emotions: The role of anger in antisocial responses to ostracism. *Journal of Experimental Social Psychology*, *44*(3), 896-903.

Collins, N. L., & Miller, L. C. (1994). Self-disclosure and liking: A meta-analytic review. *Psychological Bulletin*, *116*(3), 457.

Correa, T., Hinsley, A. W., & de Zúñiga, H. G. (2010). Who interacts on the web?: The intersection of users' personality and social media use. *Computers in Human Behavior*, *26*247-253. doi:10.1016/j.chb.2009.09.003

Coyne, S., Padilla-Walker, L., & Howard, E. (2013). Emerging in a digital world: A decade review of media use, effects, and gratifications in emerging adulthood. *Emerging Adulthood*, *1*(2), 125-137. doi:10.1177/2167696813479782

Cuadrado, E., Tabernero, C., & Steinel, W. (2015). Motivational determinants of prosocial behavior: What do included, hopeful excluded, and hopeless excluded individuals need to behave prosocially?. *Motivation & Emotion*, *39*(3), 344-358. doi:10.1007/s11031-014-9460-z

Curtis, S. (2014). Instant messaging overtakes texting in the UK (13 Jan 2014). The Telegraph Online. Retrieved from http://www.telegraph.co.uk/technology/news/10568395/ Instant-messaging-overtakes-texting-in-the-UK.html.

Dempsey, A. G., Sulkowski, M. L., Nichols, R., & Storch, E. A. (2009). Differences between peer victimization in cyber and physical settings and associated psychosocial adjustment in early adolescence. *Psychology in The Schools*, *46*(10), 962-972.

DeWall, C. N., Maner, J. K., & Rouby, D. A. (2009). Social exclusion and early-stage interpersonal perception: Selective attention to signs of acceptance. *Journal of Personality & Social Psychology*, *96*(4), 729-741.

De Siqueira, A., & Herring, S. (2009). Temporal patterns in student-advisor instant messaging exchanges: Individual variation and accommodation. *Proceedings of the 42nd Annual Hawaii International Conference on System Sciences, HICSS*, doi:10.1109/HICSS.2009.420

Dotan-Eliaz, O., Sommer, K. L., & Rubin, Y. S. (2009). Multilingual groups: Effects of linguistic ostracism on felt rejection and anger, coworker attraction, perceived team

potency, and creative performance. *Basic & Applied Social Psychology*, *31*(4), 363-375.

Doumen, S., Smits, I., Luyckx, K., Duriez, B., Vanhalst, J., Verschueren, K., & Goossens, L. (2012). Identity and perceived peer relationship quality in emerging adulthood: The mediating role of attachment-related emotions. *Journal of Adolescence*, *35*(The Intersection of Identity Development Processes and Peer Relationship Experiences), 1417-1425. doi:10.1016/j.adolescence.2012.01.003

Downey, G. (n.d.) Social relations lab. Retrieved from https://socialrelationspsychcolumbia.wordpress.com/rs-personal/

Downey, G., & Feldman, S. I. (1996). Implications of rejection sensitivity for intimate relationships. *Journal of Personality and Social Psychology*, *70*(6), 1327-1343.

Downey, G., Bonica, C., & Rincon, C. (1999). Rejection sensitivity and adolescent romantic relationships. In W. Furman, B. Brown, & C. Feiring (Eds.) *The development of romantic relationships in adolescence* (pp. 148-174). New York: Cambridge University Press.

Downey, G., Feldman, S., & Ayduk, O. (2000). Rejection sensitivity and male violence in romantic relationships. *Personal Relationships*, *7*, 45–61.

Downey, G., Freitas, A. L., Michaelis, B., & Khouri, H. (1998). The self-fulfilling prophecy in close relationships: Rejection sensitivity and rejection by romantic partners. *Journal of Personality and Social Psychology*, *75*, 545–560.

Downey, G., Lebolt, A., Rincón, C., & Freitas, A. L. (1998). Rejection sensitivity and children's interpersonal difficulties. *Child Development*, *69*(4), 1074-1091.

Downey, G., Mougios, V., Ayduk, O., London, B. E., & Shoda, Y. (2004). Rejection sensitivity and the defensive motivational system: Insights from the startle response to rejection cues. *Psychological Science*, *15*, 668–673.

Duggan, M. (2015). Mobile messaging and social media 2015. Pew Research Center. Retrieved from http://www.pewinternet.org/2015/08/19/mobile-messaging-and-social-media-2015/

Duggan, M., Ellison, N. B., Lampe, C., Lenhart, A., & Madden, M. (2014). Social media update 2014. Pew Research Center. Retrieved from http://www.pewinternet.org/2015/01/09/social-media-update-2014/

Ehrenberg, A., Juckes, S., White, K. M., & Walsh, S. P. (2008). Personality and self-esteem as predictors of young people's technology use. *Cyberpsychology & Behavior*, *11*(6), 739-741. doi:10.1089/cpb.2008.0030

Eisenberger, N. I., Lieberman, M. D., & Williams, K. D. (2003). Does rejection hurt? An fMRI study of social exclusion. *Science*, (5643), 290-292.

Ellison, N. B., Steinfield, C., & Lampe, C. (2010). Connection strategies: Social capital implications of facebook-enabled communication practices. *New Media & Society*, *13*(6), 873-892.

Fang, A., Asnaani, A., Gutner, C., Cook, C., Wilhelm, S., & Hofmann, S. G. (2011). Rejection sensitivity mediates the relationship between social anxiety and body dysmorphic concerns. *Journal of Anxiety Disorders*, *25,*946-949. doi:10.1016/j.janxdis.2011.06.001

Fast, L., & Funder, D. (2008). Personality as manifest in word use: Correlations with self-report, acquaintance report, and behavior. *Journal of Personality and Social Psychology*, *94*(2), 334-346. doi:10.1037/0022-3514.94.2.334

Feldman, S., & Downey, G. (1994). Rejection sensitivity as a mediator of the impact of childhood exposure to family violence on adult attachment behavior. *Development & Psychopathology*, *6*(1), 231-247.

Flake, J. K., Pek, J., & Hehman, E. (2017). Construct validation in social and personality research: Current practice and recommendations. *Social Psychological and Personality Science*, *8*(4), 370.

Flanagin, A. (2005). IM online: Instant messaging use among college students. *Communication Research Reports*, *22*(3), 175-187. doi:10.1080/00036810500206966

Fogel, J. (2011). Instant messaging communication: Self-disclosure, intimacy, and disinhibition. *Journal of Communications Research*, *2*(1), 13-19.

Gilbert, P., Irons, C., Olsen, K., Gilbert, J., & McEwan, K. (2006). Interpersonal sensitivities: Their links to mood, anger and gender. *Psychology & Psychotherapy: Theory, Research & Practice*, *79*(1), 37-51. doi:10.1348/147608305X43856

Goodacre, R., & Zadro, L. (2010). O-Cam: A new paradigm for investigating the effects of ostracism. *Behavior Research Methods*, *42*(3), 768-774. doi:10.3758/BRM.42.3.768

Gosling, S. D., Rentfrow, P. J., & Swann, J. B. (2003). A very brief measure of the big-five personality domains. *Journal of Research in Personality*, *37*, 504-528.

Greenwood, S., Perrin, A., & Duggan, M. (November 11, 2016). Social media update 2016. Pew Research Center. Retrieved from http://www.pewinternet.org/2016/11/11/social-media-update-2016/

Grinter, R. E., & Palen, L. (2002). Instant messaging in teen life. *Proceedings of the 2002 ACM Conference: Computer Supported Cooperative Work*, *1,* 21-30.

doi:10.1145/587078.587082

Gyurak, A., & Ayduk, O. (2008). Resting respiratory sinus arrhythmia buffers against rejection sensitivity via emotion control. *Emotion*, *8*(4), 458-467.

Harper, M. S., Dickson, J. W., & Welsh, D. P. (2006). Self-silencing and rejection sensitivity in adolescent romantic relationships. *Journal of Youth and Adolescence*, *35*(3), 435-443.

Harrison, M. A., & Gilmore, A. L. (2012). U txt when? College students' social contexts of text messaging. *The Social Science Journal*, *49*(Special Issue: National and state politics: A current assessment), 513-518.

Hayes, A. F. (2009). Beyond baron and kenny: Statistical mediation analysis in the new Millennium. *Communication Monographs*, *76*(4), 408-420. doi:10.1080/03637750903310360

High, A. C., & Caplan, S. E. (2009). Social anxiety and computer-mediated communication during initial interactions: Implications for the hyperpersonal perspective. *Computers in Human Behavior, 25*(Including the Special Issue: State of the Art Research into Cognitive Load Theory), 475-482. doi:10.1016/j.chb.2008.10.011

Holtgraves, T. (2011). Text messaging, personality, and the social context. *Journal of Research in Personality*, *45*92-99. doi:10.1016/j.jrp.2010.11.015

Hooper, D., Coughlan, J., & Mullen, M. R. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, *6*(1), 53-59.

Hu, L, & Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*(1), 1-55. doi:10.1080/10705519909540118

Innamorati, M., Balsamo, M., Fairfield, B., Fabbricatore, M., Tamburello, A., & Saggino, A. (2014). Construct validity and reliability of the adult rejection sensitivity questionnaire: A comparison of three factor models. *Depression Research and Treatment, Vol 2014 (2014)*, doi:10.1155/2014/972424

Jacobs, N., & Harper, B. (2013). The effects of rejection sensitivity on reactive and proactive aggression. *Aggressive Behavior*, *39*(1), 3-12.

Jenks, C.J. (2014). *Social interaction in second language chat rooms*. Edinburgh: Edinburgh University Press.

Johnson, G. M. (2007). College student internet use: Convenience and amusement. *Canadian Journal of Learning and Technology*, *33*(1).

Kaiser Family Foundation (January 20, 2010). Generation m2: Media in the lives of 8- to 18-year-olds. Retrieved from https://www.kff.org/other/report/generation-m2-media-in-the-lives-of-8-to-18-year-olds/

Kashian, N., Jang, J., Shin, S. Y., Dai, Y., & Walther, J. B. (2017). Self-disclosure and liking in computer-mediated communication. *Computers in Human Behavior*, 71275-283. doi:10.1016/j.chb.2017.01.041

Kenny, D. A. (2015). Measuring model fit. Retrieved from http://davidakenny.net/cm/fit.htm

Kingsbury, M., & Coplan, R. J. (2016). RU mad @ me? Social anxiety and interpretation of ambiguous text messages. *Computers in Human Behavior*, *54*368-379. doi:10.1016/j.chb.2015.08.032

Kross, E., Egner, T., Ochsner, K., Hirsch, J., & Downey, G. (2007). Neural dynamics of rejection sensitivity. *Journal of Cognitive Neuroscience*, *19*(6), 945-956.

Leary, M. R. (2001). Toward a conceptualization of interpersonal rejection. In M. R. Leary (Ed.), *Interpersonal rejection* (pp. 3–20). New York: Oxford University Press.

Leary, M. R. (2005). Varieties of interpersonal rejection. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying.* New York: Psychology Press.

Leary, M. R. (2015). Emotional responses to interpersonal rejection. *Dialogues in Clinical Neuroscience*, *17*(4), 435-441.

Leary, M. R., Springer, C., Negel, L., Ansell, E., & Evans, K. (1998). The causes, phenomenology, and consequences of hurt feelings. *Journal of Personality and Social Psychology*, *74*(5), 1225-1237.

Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, *68*(3), 518-530.

Leary, M. R., Twenge, J. M., & Quinlivan, E. (2006). Interpersonal rejection as a determinant of anger and aggression. *Personality & Social Psychology Review*, *10*(2), 111-132.

Lenhart, A., Ling, R., Campbell, S., & Purcell, K. (April 20, 2010) Teens and mobile phones. Pew Internet & American Life Project, Retrieved from http://www.pewinternet.org/2010/04/20/teens-and-mobile-phones/.

Lenhart, A., Madden, M., & Hitlin, P. (2005). Teens and technology: Youth are leading

the transition to a fully wired and mobile nation. Washington, D.C: Pew Internet & American Life Project.

Lenhart, A. Madden, M., Smith, A., & Macgill, A. (Dec. 19, 2007), Teens and social media. Pew Internet & American Life Project, Retrieved from http://www.pewinternet.org/2007/12/19/teens-and-social-media/.

Lenhart, A., Purcell, K., Smith, A., & Zickurh, K. (2010). Social media and mobile internet use among teens and young adults. Pew Research Center. Retrieved from http://www.pewinternet.org/2010/02/03/social-media-and-young-adults/

Lenhart, A., Rainie, L., Lewis, O. (2001). Teenage life online: The rise of the instant-message generation and the Internet's impact on friendships and family relationships. Pew Internet & American Life Project, Retrieved from http://www.pewinternet.org/files/old-media/Files/Reports/2001/PIP_Teens_Report.pdf.pdf

Levy, S. R., Ayduk, O., & Downey, G. (2001). The role of rejection sensitivity in people's relationships with significant others and valued social groups. In M. R. Leary (Ed.), *Interpersonal rejection* (pp. 251–289). New York: Oxford University Press.

Ling, R., & Baron, N. S. (2007). Text messaging and IM linguistic comparison of american college data. *Journal of Language & Social Psychology*, *26*(3), 291-298. doi:10.1177/0261927X06303480

Liu, R. T., Kraines, M. A., Massing-Schaffer, M., & Alloy, L. B. (2014). Rejection sensitivity and depression: Mediation by stress generation. *Psychiatry: Interpersonal & Biological Processes*, *77*(1), 86-97.

Löckenhoff, C. E., Cook, M. A., Anderson, J. F., & Zayas, V. (2013). Age differences in responses to progressive social exclusion: The role of cognition and socioemotional functioning. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences*, *68*(1), 13-22.

Lok, M. H., Bond, A. J., & Tse, W. S. (2009). Contrasting effects of a hot and a cool system in anger regulation on cooperative behaviours. *International Journal of Psychology*, *44*(5), 333-341. doi:10.1080/00207590802236241

London, B., Downey, G., Bonica, C., & Paltin, I. (2007). Social causes and consequences of rejection sensitivity. *Journal of Research on Adolescence (Wiley-Blackwell)*, *17*(3), 481-506.

Madell, D. E., & Muncer, S. J. (2007). Control over social interactions: An important reason for young people's use of the internet and mobile phones for communication?. *Cyberpsychology & Behavior*, *10*(1), 137-140. doi:10.1089/cpb.2006.9980

Manago, A., Taylor, T., & Greenfield, P. (2012). Me and my 400 friends: The anatomy of college students' facebook networks, their communication patterns, and well-being. *Developmental Psychology*, *48*(2), 369-380. doi:10.1037/a0026338

Mark, G., & Ganzach, Y. (2014). Personality and internet usage: A large-scale representative study of young adults. *Computers in Human Behavior*, *36*274-281. doi:10.1016/j.chb.2014.03.060

Marston, E. G., Hare, A., & Allen, J. P. (2010). Rejection sensitivity in late adolescence: Social and emotional sequelae. *Journal of Research on Adolescence (Wiley-Blackwell)*, *20*(4), 959-982.

McDonald, M. M., & Donnellan, M. B. (2012). Is ostracism a strong situation? The influence of personality in reactions to rejection. *Journal of Research in Personality*, *46*(5), 614-618.

McKenna, K. Y. A., & Bargh, J. A. (2000). Plan 9 from cyberspace: The implications of the internet for personality and social psychology. *Personality & Social Psychology Review (Lawrence Erlbaum Associates)*, *4*(1), 57-75.

McKenna, K. Y. A., Green, A. S., & Gleason, M. J. (2002). Relationship formation on the internet: What's the big attraction?. *Journal of Social Issues*, *58*(1), 9.

Mellin, E. A. (2012). Relational victimization and rejection sensitivity: The long-term impact of social hurt. *Adultspan Journal*, *11*(1), 2-15.

Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review*, *102*(2), 246-268.

Moss, S. (2016) Fit indices for structural equation modeling. Retrieved from http://www.sicotests.com/psyarticle.asp?id=277

Nelson, L. J., & Barry, C. M. (2005). Distinguishing features of emerging adulthood the role of self-classification as an adult. *Journal of Adolescent Research*, *20*(2), 242-262. doi:10.1177/0743558404273074

Nguyen, D. T., & Fussell, S. R. (2014). Lexical cues of interaction involvement in dyadic instant messaging conversations. *Discourse Processes: A Multidisciplinary Journal*, *51*(5-6), 468-493.

Nguyen, D. T, & Fussell, S. R. (2016). Effects of conversational involvement cues on understanding and emotions in instant messaging conversations. *Journal of Language and Social Psychology*, *35*(1), 28-55. doi:10.1177/0261927X15571538

Nielsen (2012). *Social media report 2012: Social media comes of age*. Retrieved from http://www.nielsen.com/us/en/newswire/2012/social-media-report-2012-social-media-comes-of-age.html

O'Sullivan, P. (2000). What you don't know won't hurt me: Impression management functions of communication channels in relationships. *Human Communication Research*, *26*(3), 403-431.

Overall, N. & Sibley, C. (2009). When rejection sensitivity matters: Regulating dependence within daily interactions with family and friends. *Personality and Social Psychology Bulletin*, *35*(8), 1057-1070.

Padilla-Walker, L. M., Nelson, L. J., Carroll, J. S., & Jensen, A. C. (2010). More than a just a game: Video game and internet use during emerging adulthood. *Journal of Youth and Adolescence*, *39*(2), 103-113.

Patulny, R., & Seaman, C. (2017). 'I'll just text you': Is face-to-face social contact declining in a mediated world?. *Journal of Sociology*, *53*(2), 285-302. doi:10.1177/1440783316674358

Paulhus, D. L., & Vazire, S. (2007). The self-report method. In R. W. Robins, R. C. Fraley, & R. F. Krueger (Eds.) *Handbook of Research Methods in Personality Psychology* (224-239) New York: The Guilford Press

Pempek, T. A., Yermolayeva, Y. A., & Calvert, S. L. (2009). College students' social networking experiences on Facebook. *Journal of Applied Developmental Psychology*, *30*227-238. doi:10.1016/j.appdev.2008.12.010

Pennebaker, J. W. & Francis, M. E. (1999). Linguistic Inquiry and Word Count (LIWC): A Computer-based text analysis program.

Pennebaker, J. W., & King, L. A. (1999). Linguistic styles: Language use as an individual difference. *Journal of Personality & Social Psychology*, *77*(6), 1296-1312.

Perrin, A. (2015). Social media usage: 2005-2015. Pew Research Center. Retrieved from http://www.pewinternet.org/2015/10/08/social-networking-usage-2005-2015/

Pettigrew, J. (2009). Text messaging and connectedness within close interpersonal relationships. *Marriage and Family Review*, *45*(7-8), 697-716. doi:10.1080/01494920903224269

Pharo, H., Gross, J., Richardson, R., & Hayne, H. (2011). Age-related changes in the effect of ostracism. *Social Influence*, *6*(1), 22.

Pickett, C. L., Gardner, W. L., & Knowles, M. (2004). Getting a cue: The need to belong and enhanced sensitivity to social cues. *Personality and Social Psychology Bulletin, 30*, 1095-1107.

Pidgin chat client. [Computer software] Retrieved from https://pidgin.im/.

Piwek, L., & Joinson, A. (2016). Full length article: "What do they snapchat about?" Patterns of use in time-limited instant messaging service. *Computers in Human Behavior*, *54*358-367. doi:10.1016/j.chb.2015.08.026

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2004) Simple intercepts, simple slopes, and regions of significance in MLR 2-way interactions. Retrieved from http://www.quantpsy.org/interact/mlr2.htm

Quan-Haase, A. (2008). Instant messaging on campus: Use and integration in university students' everyday communication. *Information Society*, *24*(2), 105-115. doi:10.1080/01972240701883955

R Core Team (2017). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL [Computer software] http://www.R-project.org/.

Rice, L., & Markey, P. M. (2009). The role of extraversion and neuroticism in influencing anxiety following computer-mediated interactions. *Personality and Individual Differences*, *4, 6*35-39. doi:10.1016/j.paid.2008.08.022

Richman, L. S., & Leary, M. R. (2009). Reactions to discrimination, stigmatization, ostracism, and other forms of interpersonal rejection: A multimotive model. *Psychological Review*, *116*(2), 365-383.

Rintel, E. S. & Pittam, J. (1997). Strangers in a strange land: Interaction management on internet relay chat. *Human Communication Research*, *23*(4), 507-534.

Rintel, E. S., Pittam, J., & Mulholland, J. (2003). Time will tell: Ambiguous non-responses on internet relay chat. *The Electronic Journal of Communication, 13*(1)*.

Romero-Canyas, R., & Downey, G. (2005). Rejection sensitivity as a predictor of affective and behavioral responses to interpersonal stress: A defensive motivational system. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusions, rejection, and bullying* (pp. 131–154). New York: Psychology Press.

Romero-Canyas, R., & Downey, G. (2013). What I see when I think it's about me: People low in rejection-sensitivity downplay cues of rejection in self-relevant interpersonal situations. *Emotion*, *13*(1), 104-117. doi:10.1037/a0029786

Romero-Canyas, R., Anderson, V. T., Reddy, K. S., & Downey, G. (2009). Rejection

sensitivity. In M. R. Leary & R. H. Hoyel (Eds.), *Handbook of individual differences in social behavior* (pp. 466–479). New York: Guilford Press.

Romero-Canyas, R., Downey, G., Berenson, K., Ayduk, O., & Kang, N. J. (2010). Rejection sensitivity and the rejection–hostility link in romantic relationships. *Journal of Personality*, *78*(1), 119-148. doi:10.1111/j.1467-6494.2009.00611.x

Ross, C., Orr, E. S., Sisic, M., Arseneault, J. M., Simmering, M. G., & Orr, R. R. (2009). Personality and motivations associated with facebook use. *Computers in Human Behavior*, *25*(Including the Special Issue: State of the Art Research into Cognitive Load Theory), 578-586. doi:10.1016/j.chb.2008.12.024

Russett, J., & Waldron, L. (2017). It's not real until it's on facebook: A qualitative analysis of social media and digital communication among emerging adults in college. *Social Sciences (2076-0760)*, *6*(3), 1. doi:10.3390/socsci6030074

Sandstrom, M. J., Cillessen, A. H. N., & Eisenhower, A. (2003). Children's appraisal of peer rejection experiences: Impact on social and emotional adjustment. *Social Development*, *12*(4), 530-550. doi:10.1111/1467-9507.00247

Schneider, F. M., Zwillich, B., Bindl, M. J., Hopp, F. R., Reich, S., & Vorderer, P. (2017). Social media ostracism: The effects of being excluded online. *Computers in Human Behavior*, *73*385-393. doi:10.1016/j.chb.2017.03.052

Schouten, A. P., Valkenburg, P. M., & Peter, J. (2007). Precursors and underlying processes of adolescents' online self-disclosure: Developing and testing an "internet-attribute-perception" model. *Media Psychology*, *10*(2), 292-315. doi:10.1080/15213260701375686

Scott, C. F., Bay-Cheng, L. Y., Prince, M. A., Nochajski, T. H., & Collins, R. L. (2017). Time spent online: Latent profile analyses of emerging adults' social media use. *Computers in Human Behavior*, *75*311-319. doi:10.1016/j.chb.2017.05.026

Selig, J. P., & Preacher, K. J. (2008, June). Monte carlo method for assessing mediation: An interactive tool for creating confidence intervals for indirect effects [Computer software]. Retrieved from http://quantpsy.org/.

Sheeks, M. S., & Birchmeier, Z. P. (2007). Shyness, sociability, and the use of computer-mediated communication in relationship development. *Cyberpsychology & Behavior*, *10*(1), 64-70. doi:10.1089/cpb.2006.9991

Silvers, J. A., Remy, K. A., Ochsner, K. N., McRae, K., Gabrieli, J. E., & Gross, J. J. (2012). Age-related differences in emotional reactivity, regulation, and rejection sensitivity in adolescence. *Emotion*, *12*(6), 1235-1247.

Sinclair, H. C., Ladny, R. T., & Lyndon, A. E. (2011). Adding insult to injury: effects of interpersonal rejection types, rejection sensitivity, and self-regulation on obsessive

relational intrusion. *Aggressive Behavior*, *37*(6), 503-520. doi:10.1002/ab.20412

Skierkowski, D. D., & Wood, R. M. (2012). To text or not to text? the importance of text messaging among college-aged youth. *Computers in Human Behavior*, *28*(2), 744-756.

Smith, A. (Sept. 19, 2011) Americans and text messaging. Pew Internet & American Life Project, Retrieved from http://www.pewinternet.org/2011/09/19/americans-and-text-messaging/.

Smith, S. D. & Caruso, J. B. (2010) The ECAR study of undergraduate students and information technology, 2010. Educause: Center for Applied Research.

Smith, A. & Williams, K. D. (2004). R u there? Ostracism by cell phone text messages. *Group Dynamics*, *8*(4), 291-301.

Smith, R., Morgan, J., & Monks, C. (2017). Students' perceptions of the effect of social media ostracism on wellbeing. *Computers in Human Behavior*, *68*276-285. doi:10.1016/j.chb.2016.11.041

Snapp, C. M., & Leary, M. R. (2001). Hurt feelings among new acquaintances: Moderating effects of interpersonal familiarity. *Journal of Social and Personal Relationships*, *18*(3), 315-326.

Sommer, K. L., & Rubin, Y. S. (2005). Role of social expectancies in cognitive and behavioral responses to social rejection. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying*. New York: Psychology Press.

Sommer, K. L., Williams, K. D., Ciarocco, N. J., & Baumeister, R. F. (2001). When silence speaks louder than words: Explorations into the intrapsychic and interpersonal consequences of social ostracism. *Basic & Applied Social Psychology*, *23*(4), 225-243.

Spencer, S. M., & Patrick, J. H. (2009). Social support and personal mastery as protective resources during emerging adulthood. *Journal of Adult Development*, *16*(4), 191-198. doi:10.1007/s10804-009-9064-0

Stritzke, W. K., Nguyen, A., & Durkin, K. (2004). Shyness and computer-mediated communication: A self-presentational theory perspective. *Media Psychology*, *6*(1), 1-22.

Subrahmanyam, K., & Greenfield, P. (2008). Online communication and adolescent relationships. *Future of Children*, *18*(1), 119-146.

Subrahmanyam, K., Reich, S. M., Waechter, N., & Espinoza, G. (2008). Online and offline social networks: Use of social networking sites by emerging adults. *Journal of Applied Developmental Psychology*, *29*(Social Networking on the Internet

Developmental Implications), 420-433. doi:10.1016/j.appdev.2008.07.003

Tausczik, Y. R., & Pennebaker, J. W. (2010). The Psychological Meaning of Words: LIWC and Computerized Text Analysis Methods. *Journal of Language and Social Psychology*, *29*(1), 24-54.

Thomas, L., Briggs, P., Hart, A., & Kerrigan, F. (2017). Understanding social media and identity work in young people transitioning to university. *Computers in Human Behavior*, *76*541-553. doi:10.1016/j.chb.2017.08.021

Tidwell, L. C., & Walther, J. B. (2002). Computer-mediated communication effects on disclosure, impressions, and interpersonal evaluations. *Human Communication Research*, *28*(3), 317.

Tosun, L. P. (2012). Motives for Facebook use and expressing "true self" on the Internet. *Computers in Human Behavior*, *28*1510-1517. doi:10.1016/j.chb.2012.03.018

Twenge, J. M., Baumeister, R. F., Tice, D. M., & Stucke, T. S. (2001). If you can't join them, beat them: Effects of social exclusion on aggressive behavior. *Journal of Personality and Social Psychology*, *81*(6), 1058-1069.

Twenge, J. M., Zhang, L., Catanese, K. R., Dolan-Pascoe, B., Lyche, L. R., & Baumeister, R. F. (2007). Replenishing connectedness: Reminders of social activity reduce aggression after social exclusion. *British Journal of Social Psychology, 46*, 205-224.

Underwood, M. K., & Ehrenreich, S. E. (2017). The power and the pain of adolescents' digital communication: Cyber victimization and the perils of lurking. *American Psychologist*, *72*(2), 144-158. doi:10.1037/a0040429

Underwood, J. D., Kerlin, L., & Farrington-Flint, L. (2011). The lies we tell and what they say about us: Using behavioural characteristics to explain Facebook activity. *Computers in Human Behavior*, *27*(2009 Fifth International Conference on Intelligent Computing), 1621-1626. doi:10.1016/j.chb.2011.01.012

Underwood, M., Rosen, L., More, D., Ehrenreich, S., & Gentsch, J. (2012). The blackberry project: Capturing the content of adolescents' text messaging. *Developmental Psychology*, *48*(2), 295-302.

Van Bavel, J., Mende-Siedlecki, P., Brady, W., & Reinero, D. (2016). Contextual sensitivity in scientific reproducibility. *Proceedings of The National Academy of Sciences of The United States of America*, *113*(23), 6454-6459. doi:10.1073/pnas.1521897113

Van Cleemput, K. (2010). "I'll see you on IM, text, or call you": A social network approach of adolescents' use of communication media. *Bulletin of Science, Technology*

& Society, *30*(2), 75-85.

Vaterlaus, J. M., Jones, R. M., Patten, E. V., & Cook, J. L. (2015). An exploratory study of time spent with interactive technology and body mass among young adults. *Computers in Human Behavior*, *52*(1),107-114. doi:10.1016/j.chb.2015.05.035

Venables, W. N. & Ripley, B. D. (2002) Modern applied statistics with S. fourth edition. Springer, New York. ISBN 0-387-95457-0

Vijayakumar, N., Cheng, T. W., Pfeifer, J. H. (2017) Neural correlates of social exclusion across ages: A coordinate-based meta-analysis of functional MRI studies. *NeuroImage*, *153*(1), 359-368.

Vorderer, P, & Schneider, F. M. (2016). Social media and ostracism. In K. D. Williams & S. A. Nida (Eds.), *Ostracism, exclusion, and rejection* (pp. 240–257). New York, NY: Psychology Press.

Waechter, N., Subrahmanyam, K., Reich, S., & Espinoza, G. (2010). Teenagers connecting online: From chat rooms to social networking sites. In D. Riha & A. Maj (Eds.), *Emerging Practices in Cyberculture and Social Networking*. (pp. 151-178), Amsterdam/New York: Rodopi.

Walther, J. B. (1996). Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research*, *23*(1), 3-43.

Walther, J. B (2011). Theories of computer-mediated communication and interpersonal relations. The Handbook of Interpersonal Communication. 443-479.

Walther, J. B, Loh, T, & Granka, L. (2005). Let me count the ways: The interchange of verbal and nonverbal cues in computer-mediated and face-to-face affinity. *Journal of Language and Social Psychology*, *24*(1), 36-65.

Wang, J., Rubin, K. H., McDonald, K. L., & Laursen, B. (2012). Peer rejection as a social antecedent to rejection sensitivity in youth: The role of relational valuation. *Personality and Individual Differences*, *53*(7), 939-942.

Warburton, W. A., Williams, K. D., & Cairns, D. R. (2006). When ostracism leads to aggression: The moderating effects of control deprivation. *Journal of Experimental Social Psychology, 42*, 213-220.

Watson, D., & Clark, L. A. (1994). *The PANAS-X: Manual for the positive and negative affect schedule-expanded form.* Ames: The University of Iowa. Retrieved from http://www.midss.org/content/panas-x-manual-positive-and-negative-affect-schedule.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality*

and Social Psychology, *54*(6), 1063-1070.

Wesselmann, E. D., Butler, F. A., Williams, K. D., & Pickett, C. L. (2010). Adding injury to insult: unexpected rejection leads to more aggressive responses. *Aggressive Behavior*, *36*(4), 232-237.

Williams, K. D. (2001). Ostracism. New York: The Guilford Press.

Williams, K. D., & Zadro, L. (2001). Ostracism: On being ignored, excluded and rejected. In M. R. Leary (Ed.), *Interpersonal rejection* (pp. 21-53). New York: Oxford University Press.

Williams, K. D., & Zadro, L. (2005). Ostracism: The indiscriminate early detection system. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying*. New York: Psychology Press.

Williams, K., Cheung, C., & Choi, W. (2000). Cyberostracism: Effects of being ignored over the internet. *Journal of Personality and Social Psychology*, *79*(5), 748-762.

Williams, K., Govan, C., Croker, V., Tynan, D., Cruickshank, M., & Lam, A. (2002). Investigations into differences between social- and cyberostracism. *Group Dynamics*, *6*(1), 65-77.

Zadro, L., Boland, C., & Richardson, R. (2006). How long does it last? The persistence of the effects of ostracism in the socially anxious. *Journal of Experimental Social Psychology*, *42*692-697. doi:10.1016/j.jesp.2005.10.007

Zadro, L., Williams, K. D., & Richardson, R. (2004). How low can you go? Ostracism by a computer is sufficient to lower self-reported levels of belonging, control, self-esteem, and meaningful existence. *Journal of Experimental Social Psychology*, *40*560-567. doi:10.1016/j.jesp.2003.11.006

Zimmer-Gembeck, M. J., & Nesdale, D. (2013). Anxious and angry rejection sensitivity, social withdrawal, and retribution in high and low ambiguous situations. *Journal of Personality*, *81*(1), 29-38.

Theresa Murzyn

Rutgers University - Camden
405-407 Cooper Street
Camden, NJ 08102
tmurzyn@rutgers.edu

EDUCATION

B.S., *Summa cum laude*, Boston University, Film Production (History minor), 1995-1999
Graduate coursework, University of Maryland, Anthropology, 2008
Ph.D. candidate, Rutgers University, Childhood Studies, 2010-present

PUBLISHED MANUSCRIPTS

Murzyn, T. (2016) All of me: The embodied nature of self and its implications for mental disorders. *PsycCritiques, 61*(38). doi:10.1037/a0040498

Nave, C. S., Edmonds, G. W., Hampson, S. E., **Murzyn, T.**, & Sauerberger, K. S. (2015). From elementary school to midlife: Childhood personality predicts behavior during cognitive testing over four decades later. [Special issue] *Journal of Research in Personality.*

Matsuba, M. K., **Murzyn, T.**, & Hart, D. A. (2014). Moral identity development and community. In M. Killen & J. Smetana (Eds.) *Handbook of moral development* (2nd ed., pp. 520-537). New York: Psychology Press.

Hart, D. A., Archibald, L., Todhunter-Reid, A., & **Murzyn, T.** (2013) How to bounce back: Building resiliency through inspiration, science, and strategy. *PsycCritiques*, *58*(5).

Hart, D. A., **Murzyn, T.**, & Archibald, L. (2013). Informative and inspirational contributions of exemplar studies. *New Directions for Child & Adolescent Development*, *2013*(142), 75-84.

Hart, D. A., **Murzyn, T.**, & Woods, M. (2011). Moving beyond the nature-nurture polemic: The interactive influence of genetic and environmental variables on child development. *PsycCritiques, 56*(35).

Matsuba, M. K., **Murzyn, T.**, & Hart, D. A. (2011). A model of moral identity: Applications for education. *Advances in Child Development and Behavior*, *40*, 181-207.

MANUSCRIPTS IN PREPARATION

Murzyn, T. (2016) Ego control and ego resiliency theory (ARCH). In C. Nave & B. Carducci (Eds.) *Wiley Encyclopedia of Personality Psychology Volume 1: Models & Theories.* Hoboken: Wiley-Blackwell.

CONFERENCE PRESENTATIONS & POSTERS

Murzyn, T. & Hart. D. (2017, January) *The cyber silent treatment: Exploring the effects of ambiguous ostracism via a dyadic online chat.* Poster presented at eighteenth annual meeting of Society for Personality and Social Psychology, San Antonio, TX.

Murzyn, T. (April 25, 2016) *Investigating the moderating effect of personality on emerging adults' online social behavior.* Poster presented at Rutgers' Celebration of Graduate Research and Creative Activities, Rutgers University, Camden, NJ

Henry, A., Malven, E., **Murzyn, T.**, & Todhunter-Reid, A. (April 23, 2016) Interdisciplinarity Panel. Childhood Studies Graduate Student Conference, Rutgers University, Camden, NJ

Murzyn, T., Hart, D. A., & Eisenberg, N. (2016, January) *Predictive relations between children's rejection sensitivity, negative emotionality, and problem behavior in a four-wave longitudinal study.* Poster presented at seventeenth annual meeting of Society for Personality and Social Psychology, San Diego, CA.

Murzyn, T. and Goel, N. (April 29, 2014) Uses and Challenges of Voice Thread. Rutgers University – Camden Faculty eLearning Conference. Rutgers University, Camden, NJ

Murzyn, T., Hart, D. A., & London, B. (2014, January) *Validating rejection sensitivity against other personality constructs and identifying childhood correlates of its angry and anxious types.* Poster presented at fifteenth annual meeting of Society for Personality and Social Psychology, Austin, TX.

Nave, C. S., Hampson, S. E., Brown, N. A., **Murzyn, T**., et al. (2013) *Personality processes: Directly observed behavior in the relationship between personality and health.* Symposium, American Psychological Association, Friday, August 2.

Murzyn, T., Nave, C., Sauerberger, K., Hampson, S. E., & Goldberg, L. R. (2013, June) *Exploring the relationship between childhood personality, behavior, and cognitive performance.* Poster presented at third biennial conference of Association for Research in Personality, Charlotte, NC.

Murzyn, T., Nave, C., Sauerberger, K., Hampson, S. E., & Goldberg, L. R. (2013, January) *How well does your childhood teacher know you?: Predicting adult test-taking behavior from teacher ratings 40 years earlier.* Poster presented at fourteenth annual meeting of Society for Personality and Social Psychology, New Orleans, LA.

Murzyn, T. (2011, February) *Knuffle Bunny Too: A Case of Humor in Film-Speak.* Paper presented at fifth annual Children's Literature Symposium, Sarasota, FL.

TEACHING EXPERIENCE
Rutgers University, Camden
>
> Personality Psychology – Fall 2016 (Scheduled for Spring 2018)
> Introduction to Psychology – Summer 2014 - Fall 2017
> Human Development – Fall 2015 - Summer 2017
> Understanding Childhood Through Statistics – Fall 2014 - Summer 2016
> Childhood Studies Special Topics: Child Growth and Development – Fall 2013

WORK EXPERIENCE
Rutgers University, Camden, NJ
Part-time lecturer
2013 - Present

Sellery Associates, Inc., Washington, DC
Associate
2008 – 2010

Faith and Organizations Project, University of Maryland, Department of Anthropology, College Park, MD
Researcher, Media Specialist
2008 – 2009

Environment and Energy Study Institute (EESI), Washington, DC
Communications Coordinator
2005 – 2006

Freelance Editor, Washington, DC
Clients: Discovery Networks, National Geographic, TrueTV
2004 – 2009

Avid Technology, Tewkesbury, MA
Technical Support Specialist, Certified Avid Trainer
2000 – 2003