

NEUROTICISM AS A PREDICTOR OF RUMINATION AND
MALADAPTIVE BEHAVIORS: A PROSPECTIVE APPROACH

By

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Abstract: The Emotional Cascade Model suggests that rumination links emotional instability and engagement in maladaptive behaviors within Borderline Personality Disorder (BPD). Specifically, when individuals experience a negative event, they experience negative emotions and then engage in a ruminative process about the event. This rumination increases the intensity of negative feelings. This cycle continues until individuals use a maladaptive behavior to distract themselves from the rumination and negative feelings. The current study expanded this model by including neuroticism, an underlying personality trait that is highly related to BPD. Additionally, the current study provided the first longitudinal study of the Emotional Cascade Model. A large sample of undergraduate students (N = 1026) completed Time 1 and a subset of these participants completed two follow up surveys four and eight weeks later (N = 285 and 163, respectively). The current study prospectively examined the role of neuroticism, maladaptive behaviors, and rumination using a cross-lagged panel design with data collected at three time points. Neuroticism predicted rumination and maladaptive behaviors four weeks later for five different rumination measures. Additionally, rumination was tested as a latent variable. Neuroticism predicted maladaptive behaviors but not rumination in this new model. The results indicated that neuroticism is highly related to the variables within the Emotional Cascade Model and that it should be considered an important underlying personality trait within the development and maintenance of rumination, maladaptive behaviors, and BPD.

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CHAPTER I

INTRODUCTION

Personality traits are related to the development and maintenance of psychopathology (Bienvenu et al., 2004; Clark, Watson, & Mineka, 1994) and problems in daily functioning (Hopwood et al., 2009; Mullins-Sweatt & Widiger, 2010; Ozer & Benet-Martinez, 2006). The symptoms that arise from extreme and maladaptive traits may be classified as a personality disorder (Samuel & Widiger, 2008; Widiger & Trull, 2007). A key feature of the definition of personality disorder is that individuals have a rigid and inflexible style of interacting with their environment, such that they are unable to adapt and have difficulties across a number of areas in their lives (e.g., employment, interpersonal relationships; American Psychiatric Association [APA], 2013).

Borderline personality disorder (BPD) is one such personality disorder, characterized by instability across a variety of areas, including interpersonal relationships, self-image, and affect. Though the current diagnostic system for personality disorders is a categorical model, there is strong support for conceptualizing BPD from a dimensional perspective (Arntz et al., 2009; Edens, Marcus, & Ruiz, 2008; Rothschild, Cleland, Haslam, & Zimmerman, 2003; Trull, Widiger, & Guthrie, 1990). The

dimensional conceptualization of BPD may be more useful than a categorical one, as it enables the assessment of the maladaptive inflexible personality traits that underlie this construct. For example, Zimmerman, Chelminski, Young, Dalrymple, and Martinez (2012) have shown that, in an outpatient clinical group, individuals with one symptom of BPD had significantly more problems than individuals with zero BPD symptoms. These problems included having more current Diagnostic and Statistic Manual (DSM-IV; APA, 2000) Axis I disorders, being more likely to report suicidal ideation at the onset of treatment, having a history of suicide attempts and inpatient hospitalizations, and reporting more missed time from work due to a psychiatric illness. Given the significant increase in problems with just one symptom of BPD, it is important to investigate both clinical and subclinical levels of BPD. Utilizing a dimensional model of BPD would be helpful in this endeavor.

The mounting evidence for a dimensional model of personality disorders (including BPD) culminated in the proposal of a hybrid categorical-dimensional model for personality disorders, which is included in Section III “Emerging Measures and Models” of the new DSM-5 (APA, 2013). The dimensional component of this diagnostic method includes five domains of pathological personality traits: negative affectivity (vs. emotional stability), detachment (vs. extraversion), antagonism (vs. agreeableness), psychoticism (vs. lucidity), and disinhibition (vs. conscientiousness). These domains are further broken into 25 facets identifying specific maladaptive personality traits that cause distress and/or impairment. These domains and facets can be used to describe the maladaptive traits of a person regardless of whether the categorical criteria for a specific personality disorder are met.

The maladaptive personality domains and facets used within the proposed model are “an extension of the Five Factor Model,” (APA, 2012, p. 7). Specifically, the traits within the proposed model measure the maladaptive ends of the general traits within the Five Factor Model (FFM; McCrae & Costa, 2003). The FFM is a general personality model that includes five domains: neuroticism (vs. emotional stability), extraversion (vs. introversion), openness to experience (vs. closedness to experience), agreeableness (vs. antagonism), and conscientiousness (vs. disinhibition). These domains are further broken into 30 facets (Costa & McCrae, 1995). The FFM is a well-validated and well-replicated general personality model (McCrae et al., 2005; Mullins-Sweatt & Widiger, 2006). A number of studies show that the five domains of the DSM-5 model align well with the FFM domains (De Fruyt et al., 2013; Gore & Widiger, 2013; Thomas et al., 2013; Watson, Statsik, Ro, & Clark, 2013) and that the 25 facets within the proposed model closely resemble the FFM facet structure (Griffin & Samuel, 2014).

Previous studies have used the FFM to conceptualize BPD from a dimensional trait perspective. These studies have identified 11 FFM facets that consistently underlie BPD using a variety of methodologies (Lynam & Widiger, 2001; Samuel & Widiger, 2004, 2008; Saulsman & Page, 2004; Widiger, 2005). BPD is described primarily by neuroticism and its six facets (i.e., high anxiousness, high angry hostility, high depressiveness, high self-consciousness, high impulsiveness, and high vulnerability). The other five FFM facets describing BPD include one facet of openness to experience (i.e., high fantasy), three facets of agreeableness (i.e., low trust, low straightforwardness, and low compliance), and one facet of conscientiousness (i.e., low deliberation).

While the FFM characterizes BPD primarily as a disorder of neuroticism, other models describe BPD with terms like affective or emotional lability, emotional vulnerability, and affective or emotional instability (Crowell, Beauchaine, & Linehan, 2009; Koenigsberg et al., 2002; Linehan, 1993; Millon & Davis, 1996; Sanislow, Grilo, & McGlashan, 2000; Stepp, et al., 2014; Westen, Muderrisoglu, Fowler, Shedler, & Koren, 1997). Recently, Carpenter and Trull (2013) posited that the variation in the language used to study BPD might be explained by researchers focusing on different components of the complex construct of emotion dysregulation. They define emotional dysregulation as a multi-faceted construct that includes four components: emotional sensitivity, heightened and labile negative affect, a lack of adaptive regulation strategies, and an excess of maladaptive regulation strategies. The emotional sensitivity leads to a negative bias in interpreting environmental stimuli, which increases negative affect. This negative affect interferes with the ability to develop healthy coping strategies. Instead, other behaviors are used to regulate affect. These behaviors (e.g., nonsuicidal self-injury) often cause immediate short-term relief of negative affect, but have long-term negative outcomes. Notably, individuals with BPD (and therefore high neuroticism) often report that they engage in these maladaptive regulation strategies (e.g., substance misuse, promiscuous sexual activities) in order to alleviate extreme negative affect (Linehan, 1993). Overall, it is the combination of these four factors of the emotion dysregulation model (Carpenter & Trull, 2013) that results in the presentation of BPD. Based on this definition, trait neuroticism is the personality trait that explains the first two components. Therefore, neuroticism plays a large role in the development of the maladaptive coping strategies.

This emotion dysregulation model is based on the biosocial theory of BPD, which explains the development of BPD as an interaction between one's propensity for high emotional sensitivity or vulnerability (i.e., neuroticism) and one's childhood experiences with emotional invalidation. Thus, individuals are born with high emotional sensitivity or vulnerability and this is reinforced through emotional invalidation in childhood (Arens, Grabe, Spitzer, & Barnow, 2011; Crowell, et al., 2009; Linehan, 1993). Because of this reinforcement, emotional vulnerability and instability become inflexible. Thus, in adulthood, specific symptoms manifest as BPD, including the engagement of impulsive maladaptive behaviors. For example, when these individuals experience a negative stimulus in the environment, they have an increase in negative emotion, which eventually becomes too intense to manage. When this happens, the more extreme and maladaptive regulation strategies are utilized to decrease the negative affect (e.g., harming oneself; Linehan, 1993).

As previously mentioned, the maladaptive strategies are used to help alleviate the intense negative affect experienced (Linehan, 1993). These dysregulated behaviors are impulsive, maladaptive, difficult to control, and may result in harm. When these behaviors are engaged in chronically (as is often the case in BPD), they may also cause impairment and distress (Selby & Joiner, 2009). Specifically, BPD is related to a number of dysregulated behaviors, including nonsuicidal self-injury (NSSI; Brown, Comtois, & Linehan, 2002), binge eating and purging (Cassin & von Ranson, 2005), substance misuse (Bornovalova, Lejuez, Daughters, Rosenthal, & Lynch, 2005), shoplifting (Selby et al., 2010), reckless driving (Sansone, Lam, & Wiederman, 2010), impulsive spending (Selby et al., 2010), starting arguments (Russell, Moskowitz, Zuroff, Sookman, & Paris,

2007), physical aggression (e.g., throwing things, hitting another person; Critchfield, Levy, Clarkin, & Kernber, 2008), and excessive reassurance seeking (Selby, Anestis, & Joiner, 2008).

While the evidence suggests these regulation strategies are used to manage an individual's emotions (Linehan, 1993), it does not explain *how* experiencing these emotions directly leads to engaging in maladaptive behaviors. The Emotional Cascade Model of BPD suggests that this occurs due to rumination (Selby & Joiner, 2009), or the tendency to repetitively think about the causes, situational factors, and consequences of one's negative emotional experience (Nolen-Hoeksema, 1991). Though rumination has been linked to other psychopathology (i.e., depression and anxiety; Just & Alloy, 1997; Muris, Roelofs, Rassin, Franken, & Mayer; 2005; Segerstrom, Tsao, Alden, & Craske, 2000), it has been found to relate more strongly to BPD than other disorders (Abela, Payne, & Moussaly, 2003; Selby, Anestis, Bender, & Joiner, 2009; Smith, Grandin, Alloy, & Abramson, 2006). The Emotional Cascade Model (Selby & Joiner, 2009) suggests that when individuals with BPD experience negative affect, they engage in a ruminative process that increases negative affect. Specifically, this elevated negative affect leads to more rumination, which further increases the negative emotions being experienced. This cycle continues until these individuals engage in dysregulated behaviors to alleviate this high negative affect and distract themselves from the rumination and negative affect.

Selby and colleagues have evaluated aspects of the Emotional Cascade Model. Specifically, Selby et al. (2008) assessed the relationship between rumination and certain dysregulated behaviors (i.e., alcohol use, reassurance seeking, and binge-eating) cross-

sectionally and temporally, finding that elevated rumination predicted high levels of dysregulated behaviors. Subsequently, Selby et al. (2009) had participants complete a series of self-report questionnaires, a structured clinical interview, and an in-lab rumination task. Utilizing structural equation modeling, rumination fully mediated the relationship between BPD symptoms and dysregulated behavior. Additionally, the in-lab rumination task was used to compare the change in negative affect in individuals who met criteria for BPD versus those who did not. The results indicated that when instructed to think about a negative event, the BPD group experienced greater emotional reactivity and intensity of negative affect than the non-BPD group. These results provided evidence for the link between BPD and rumination specifically, though the study did not incorporate behavioral dysregulation. More recently, Selby and Joiner (2013) recruited individuals who self-reported that they engaged in four or more dysregulated behaviors that were difficult to control (e.g., NSSI, drug use, impulsive shopping) to provide information on their emotions, thoughts, and behaviors in the moment over a two-week period. The results indicated that elevated rumination, negative emotion, and BPD symptoms prospectively predicted an increase in dysregulated behavior two to three hours later. Furthermore, the results indicated that both rumination and negative emotion had to be elevated for the dysregulated behaviors to occur.

One issue with the Emotional Cascade Model is that it does not take into consideration underlying personality traits that may increase the proneness to engage in rumination and maladaptive behaviors. Specifically, individuals with BPD have high levels of neuroticism, which may lead to the development and maintenance of rumination and behavioral dysregulation. Though asking about intensity of emotions in the moment

is important, assessing for neuroticism from a general personality standpoint may provide additional information to develop a more complete model that describes how these emotional cascades develop. This is in line with other research, which has found that neuroticism is directly linked to depressive rumination (Cox, Enns, Walker, Kjernisted, & Pidlubny, 2001; Lam, Smith, Checkley, Rijdsdijk, & Sham, 2003; Roberts, Gilboa, & Gotlib, 1998) and dysregulated behaviors (Cassin & van Ranson, 2005; Cooper, Agocha, & Sheldon, 2000). The current study aimed to extend the Emotion Cascade Model by examining the role of neuroticism within the model. Specifically, the current study investigated if neuroticism can predict rumination and maladaptive behaviors over time. Selby and Joiner (2009) noted that there are likely other personality or cognitive factors that interplay with rumination that could increase or decrease the experience of emotional cascades. We propose that neuroticism is one such factor that may explain the relationships between affect in the moment, rumination, and engagement in maladaptive behaviors. Additionally, this is the first study to test the Emotional Cascade Model longitudinally across a two-month period.

Current Study

The current study investigated if neuroticism predicts rumination and maladaptive behaviors longitudinally over a two-month period. This model was compared to the original Emotional Cascade Model (i.e., rumination predicting maladaptive behaviors). The goal of this study is to extend the Emotional Cascade Model to be a more comprehensive model for explaining rumination and maladaptive behaviors within the context of BPD.

Hypothesis 1

As described above, neuroticism is a personality trait often associated with psychopathology, rumination, and maladaptive behaviors. Therefore, it is hypothesized that neuroticism would positively correlate to rumination and maladaptive behaviors. Furthermore, it was hypothesized that neuroticism would predict rumination and maladaptive behaviors over time. Specifically, a model of the original Emotional Cascade Model was tested first (see Figure 1). This model had rumination at Time 1 (T1) predicting dysregulated behaviors at one month (Time 2) and two months later (Time 3). Rumination at Time 2 (T2) also predicted dysregulated behaviors at Time 3 (T3). Figure 1 only shows the predicted significant pathways, however the model tested included all stability pathways (e.g., rumination at T1 to rumination at T2 and T3) and other cross-lag pathways (e.g., maladaptive behaviors predicting rumination). Last, the model trimming approach (see analytics strategy below) was used to find the most parsimonious model to assess whether rumination significantly predicted maladaptive behaviors over time.

Next, the hypothesized model that includes neuroticism was tested. Specifically, we hypothesized that neuroticism at T1 would predict rumination and dysregulated behaviors at T2 and T3. Similarly, it was predicted that neuroticism at T2 would predict rumination and dysregulated behaviors at T3. The model with just the cross-lag predictions is shown in Figure 2. The overall model tested, however, included stability pathways (e.g., neuroticism at T1 to neuroticism at T2 and T3) and the other cross-lag pathways (e.g., rumination at T1 predicting maladaptive behaviors at T2 and T3). Then the model trimming approach (see analytics strategy below) was used in order to find the most parsimonious and best fitting model. It was predicted that the final model would be one in which neuroticism significantly predicted both rumination and maladaptive

behaviors at T2 and T3. Additionally, it was predicted that the hypothesized model that includes neuroticism would provide a better fit to the data when compared to the original Emotional Cascade Model because it extends the alternative model by including a predispositional risk factor (i.e., neuroticism) that leads to rumination and maladaptive behaviors.

CHAPTER II

Methodology

Participants

All participants were undergraduate students recruited using the SONA system. Within the pool of potential participants, the study oversampled for individuals who endorsed 5 or more symptoms on the McLean Screening Instrument for BPD (MSI-BPD; Zanarini et al., 2003). The MSI was included on the SONA pre-screener, which is completed by all potential participants. This oversampling procedure was used to ensure that the current study had ample participants who were elevated on BPD symptoms and therefore, who likely have difficulty regulating emotions and are more likely to engage in maladaptive behaviors. Overall, 1,220 participants completed the study at T1. Of those, 1,026 participants completed the study in a valid manner. Validity of responses was determined via a conservative three-step process. First, the infrequency and virtue scales of the Elemental Psychopathy Assessment (EPA; Lynam et al., 2011) were examined;

participants who scored a 3 or greater on the infrequency scale or a 2 or greater on the virtue scale were deemed invalid and eliminated ($n = 151$; Lynam et al., 2011). Second, participants who completed less than 20% of the survey were eliminated ($n = 39$). Finally, participants were asked directly at the end of the survey if their data should not be included; those who said yes were eliminated ($n = 4$). These 194 participants were dropped from subsequent analyses.

The valid participants at T1 had a mean age of 19.86 ($SD = 2.90$), with 71.4% ($n = 733$) identifying themselves as female, 27.9% ($n = 286$) as male, and .7% ($n = 7$) who preferred not to answer. The sample included 81.9% ($n = 840$) Caucasian, 8.4% ($n = 86$) Native American/Alaskan Native, 7.0% ($n = 72$) Black/African American, 6.2% ($n = 64$) Hispanic, 5.3% ($n = 54$) Asian/Pacific Islander, and 1.9% ($n = 20$) who preferred not to respond (participants were able to identify with multiple ethnicities). Within the overall sample, 5.8% ($n = 59$) indicated that they were currently seeking psychological treatment (12 preferred not to answer) and 8.3% ($n = 85$) reported that they were currently taking medication for a psychological disorder (1 preferred not to respond).

Of these participants, 285 (27.78%) completed the survey at T2 (Mean = 36.41 days after T1). The T2 participants had a mean age of 20.27 ($SD = 3.88$), with 80.7% ($n = 230$) identifying themselves as female, 18.2% ($n = 52$) as male, and 1.1% ($n = 3$) who preferred not to answer. In regards to ethnicity, the sample included 82.3% ($n = 233$) Caucasian, 10.7% ($n = 30$) Native American/Alaskan Native, 4.3% ($n = 12$) Black/African American, 5.4% ($n = 15$) Hispanic, 5.4% ($n = 15$) Asian/Pacific Islander, and 1.4% ($n = 4$) who preferred not to respond. Within the T2 participants, 6.7% ($n = 19$) indicated that they were currently seeking psychological treatment (6 preferred not to

answer) and 9.8% ($n = 28$) reported that they were currently taking medication for a psychological disorder.

All 1,026 participants were contacted approximately eight weeks after completing T1 to complete the T3 survey (regardless of whether they completed T2). Overall, 163 (15.88%) completed the T3 survey (Mean = 31.63 and 66.81 days since T2 and T1, respectively). The T3 participants had a mean age of 20.63 ($SD = 4.44$), with 79.8% ($n=130$) identifying as female, 19.0% ($n = 31$) as male, and 1.2% ($n = 2$) who preferred not to answer. The ethnicity within this sample included 85.5% ($n = 136$) Caucasian, 11.7% ($n = 17$) Native American/Alaskan Native, 9.9% ($n = 14$) Black/African American, 4.3% ($n = 6$), Hispanic, and 8.5% ($n = 12$) Asian/Pacific Islander, with no participants choosing to not respond to the question. Within this sample, 4.3% ($n = 7$) indicated that they were currently seeking psychological treatment (2 preferred not to answer) and 7.4 % ($n = 12$) reported that they were currently taking medication for a psychological disorder.

Overall, 125 individuals completed all three portions of the study. These participants had a mean age of 20.46 ($SD = 4.12$), with 83.2% ($n=104$) identifying as female, 16.0% ($n = 20$) as male, and .8% ($n = 1$) who preferred not to answer. The ethnicity within this sample included 82.4% ($n = 103$) Caucasian, 9.8% ($n = 12$) Native American/Alaskan Native, 7.4% ($n = 9$) Black/African American, 4.9% ($n = 6$) Hispanic, 7.4 % ($n = 9$) Asian/Pacific Islander, and 1.6% ($n = 2$) who preferred not to respond. Within this sample, 4.8% ($n = 6$) indicated that they were currently seeking psychological treatment (2 preferred not to answer) and 6.4% ($n = 8$) reported that they were currently taking medication for a psychological disorder.

Measures

Demographics Form. Basic demographic information was collected using a self-report survey. The information includes age, gender, ethnicity, relationship status, year in school, religious affiliation, income level, and psychological and psychiatric treatment status (e.g., use of psychotropic medication).

Personality Measures

Item Response Theory-Drive Short Form (IPIP-120; Maples, Guan, Carter, & Miller, 2015). The IPIP-120 is a 120-item self-report questionnaire that assesses the five broad domains of general personality based on the original 300-item IPIP NEO measure (Goldberg, 1990), which is a free to use measure that is a representation of the NEO PI-R (Costa & McCrae, 1995). The IPIP-120 also measures six narrower facets within each domain (e.g., anxiety, anger, depression, self-consciousness, immoderation, and vulnerability are the six facets of neuroticism). Each question is answered on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). For the current study, internal consistency coefficients at T1 were acceptable to good, ranging from .77 (openness) to .90 (neuroticism and extraversion). At the facet level, most internal consistency coefficients at T1 were also acceptable to good, ranging from .70 (liberalism and orderliness) to .86 (depression and cautiousness). Six facets had questionable internal consistency, ranging from .64 (immoderation) to .69 (activity).

Participants completed only the IPIP-120 neuroticism scale at T2 and T3. The internal consistency coefficient for these time points was excellent ($\alpha = .91$ and $.90$,

respectively) at the domain level. At the facet level, most internal consistency coefficients were again acceptable to good, ranging from .71 (T2 immoderation) to .89 (T2 depressiveness). Four of the facets had poor to questionable internal consistency, ranging from .48 (T3 anxiousness) to .65 (T2 self-consciousness and T3 depressiveness). The neuroticism domain score illustrated good test-retest reliability, ranging from .80 (T1 to T3) to .84 (T2 to T3).

McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD; Zanarini et al., 2003). The MSI-BPD is a 10-item, self-report measure designed to screen individuals for BPD. The measure is based partly on a selection of questions from the Diagnostic Interview for DSM-IV Personality Disorders (DIPD; Zanarini, Frankenburg, Sickel, & Yong, 1996). The MSI-BPD contains a question for each DSM-5 diagnostic criterion (criterion nine is assessed using two questions). As previously mentioned, the MSI-BPD was included on the SONA prescreener and was used to recruit individuals with elevated BPD symptoms. The measure was also included in the data collection of the current study at T1. The internal consistency coefficient for this study was good ($\alpha = .81$). Within the current sample, 82 individuals (8.0%) scored 7 or higher (suggested clinical cutoff) and 208 individuals (20.27%) scored 5 or higher on this measure (endorsed half of the symptoms of BPD).

Rumination Measures

Anger Rumination Scale (ARS; Sukhodolsky, Golub, & Cromwell, 2001). The ARS is a 19-item measure used to assess the tendency to focus attention on current anger-provoking situations and previous anger episodes. Each item is rated on a four-point Likert scale, ranging from 1 (almost never) to 4 (almost always). The internal consistency

coefficient for this study was excellent at all three time points ($\alpha=.95$). The ARS had acceptable test-retest reliability, ranging from .74 (T1 to T3) to .84 (T2 to T3).

Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski & Kraaij, 2007).

The CERQ is a 36-item measure of cognitive emotion regulation processes, including rumination. For the current study, the 8 items from the rumination and catastrophizing subscales were used as an index of rumination, which has been supported by previous studies, (Selby & Joiner, 2013; Selby et al., 2008; 2009). The internal consistency coefficient for this combined scale was good at T1 ($\alpha = .89$) and excellent at T2 and T3 ($\alpha = .91$ and $.92$, respectively). The CERQ had poor to adequate test-retest reliability, ranging from .64 (T1 to T2 and T1 to T3) to .73 (T2 to T3).

Rumination on Interpersonal Offenses (RIO; Wade, Vogel, Liao, & Goldman,

2008). The RIO is a 6-item measure assessing the extent to which an individual ruminates about perceived interpersonal offenses. Each item is answered on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The internal consistency coefficient for this study was excellent at all three time points ($\alpha = .93$, $.90$, and $.92$). The RIO had poor test-retest reliability, ranging from .47 (T1 to T2) to .59 (T1 to T3 and T2 to T3).

Ruminative Response Scale (RRS; Nolen-Hoeksema & Morrow, 1991). The RRS

is a 22-item self-report measure that assess how much one focuses on their depressed mood, including thoughts related to the self, the symptoms, possible causes, and consequences of the depressed mood. Each item is rated on a Likert scale, ranging from 1 (almost never) to 4 (almost always). The internal consistency coefficient for this study

was excellent for all three time points ($\alpha = .96$ for T1 and T3 and $.98$ for T2). The RRS had adequate to good test-retest reliability, ranging from $.77$ (T1 to T2) to $.82$ (T2 to T3).

Rumination on Sadness Scale (RSS; Conway, Csank, Holm, & Blake, 2000). The RSS is a 13-item self-report measure that assesses the extent to which one focuses their attention on sadness. Each item is rated on a 5-point Likert scale, ranging from 1 (not at all) to 5 (very much). The internal consistency coefficient for this study was excellent at all three time points ($\alpha = .95$ for T1 and T2 and $.96$ for T3). The RSS had poor to adequate test-retest reliability, ranging from $.69$ (T1 to T2 and T3) to $.73$ (T2 to T3).

Behavioral Dysregulation Measure

Maladaptive Behavior Scale (MBS; DeShong, Helle, & Mullins-Sweatt, under review). To assess for maladaptive behaviors, items were either created or adapted from the Impulsive Behavior Scale (IBS; Rosotto, Yager, & Rorty, 1998) and the Risky Behavior Scale (RBS; Fischer & Smith, 2004) as neither measure assessed the full-range of maladaptive behaviors commonly seen in emotionally dysregulated individuals. Specifically, additional questions were added to the new measure to assess for maladaptive eating behaviors, gambling, interpersonal problems, and aggression because they were not adequately assessed by the IBS or RBS. The final MBS is a 33-item measure that assesses how often an individual has engaged in a number of maladaptive behaviors in the past month. Each item is answered on a 5-point Likert scale, ranging from 0 (Never/not at all) to 4 (Every day or nearly every day). The internal consistency coefficient for the total score of this new measure in the current study was excellent at T1 and T3 ($\alpha = .90$) and good at T2 ($\alpha = .86$). The MBS had poor to good test-retest reliability, ranging from $.38$ (T1 to T3) to $.84$ (T2 to T3).

Procedure

As described above, participants were recruited using the OSU Psychology Department undergraduate subject pool (SONA system). All participants voluntarily choose to participate using the SONA system and received participation credit that was used toward the psychology course of their choosing. All students in the SONA system were allowed to complete the study. Those who scored at least a 5 on the MSI-BPD measure on the pre-screener were solicited via email to complete the study. This email provided information explaining the study's purpose, risks, benefits, and requirements to the solicited participants. Within the SONA listing, the students were able to access available participation slots and read additional information about the study.

Participants completed the study at three time points, with approximately four weeks in between each time point. All three time points were completed online. Prior to any data collection, each participant provided his or her informed consent to participate. After consenting to complete in the study, the participant completed all self-report measures online via Qualtrics. The order of instruments was randomized to control for order effects. Participants also provided an email and phone number after completing the study so that they could be contacted to complete the second and third time points of the study. The students' information was stored separately from the data, so that they were not linked. The data across the time points was linked by the participants first and last initial and their birth month and day. At each time point, participants completed the rumination measures, maladaptive behavior scale, and the neuroticism scale from the IPIP-120. Participants who completed Time 1 were awarded with 1 research credit. Participants were awarded an additional .5 research credit for completing T2 of the study

(if applicable), and were entered into a drawing for a 10-dollar Amazon gift card. If participants did not want SONA credit, they were entered into the drawing twice. Participants who completed T3 also earned an additional .5 research credits and were entered into a second drawing for a 25-dollar Amazon gift card. Similarly, if they chose to, they could instead be entered into the drawing twice.

CHAPTER III

Analytic Strategy

Prior to data analysis, all data were evaluated for skewness and kurtosis. All total scores for each measure except for the MBS were within normal limits. The MBS total score at all three time points was positively skewed with a leptokurtic distribution. This was expected given that the MBS is a measure of discrete behaviors within the previous month that have low base rates within the general population (e.g., abusing alcohol, harming oneself; having a one night stand). Therefore, no transformation of the data was conducted.

A series of models were tested via AMOS 21 (Arbuckle, 2012) utilizing path analysis in order to parsimoniously test directional relationships between the variables at the three time points. First, two models of the original Emotional Cascade Model was tested. Specifically, a model with the stability pathways (i.e., the paths between repeated

measures) was assessed and then the model with the cross-lag pathways (e.g., paths from rumination at T1 to maladaptive behaviors at T2 and T3) was tested. Following this, a model trimming approach was utilized to find the most parsimonious and best fitting model. For each model, covariances were added between the exogenous variables and between the disturbances of the endogenous variables. The cross-lagged paths (Kenny, 1975) were examined between each of the variables to control for spuriousness. This procedure was replicated for the hypothesized model that added neuroticism. Model fit was evaluated using the CFI, TLI, and RMSEA. According to Hu and Bentler (1999), CFI and TLI values of .95 and higher and RMSEA values under .06 represent good fit. Additionally, according to Browne & Cudeck (1993), CFI and TLI values ranging from .90 to .94 and RMSEA values ranging from .10 to .07 indicate adequate fit. Last, the models tested could be directly compared utilizing the Akaike Information Criterion (AIC), with lower values indicating a better model fit (Akaike, 1987).

CHAPTER IV

FINDINGS

Preliminary comparisons between participants who returned for all three time points and those who did not were conducted in order to rule out sample bias. T-tests for the demographic data, rumination measures, maladaptive behavior scale, and IPIP-120 neuroticism were conducted. Descriptive and inferential statistics for these tests are shown in Table 1. The two groups did not differ in terms of age, sex, or ethnicity. In regards to the measures used for the models (i.e., neuroticism scale from IPIP-120, MBS, and five rumination measures), the two groups only differed on the total ARS score at T1, such that the responders who completed the follow up surveys had a significantly higher mean on the ARS at T1 ($t(936) = -2.16, p = .03$). Overall, these results suggest that attrition did not result in a biased sample though results with the ARS should be interpreted cautiously. The means and standard deviations of the variables and their intercorrelations are presented in Table 2. As expected, most of the variables were significantly correlated within and across all three time points, with most having medium

to large effect sizes. The three non-significant correlations were the CERQ T2 with the MBS T2, the RRS T1 with the MBS T3, and the RSS T2 with the MBS T3. Notably, utilizing the cross-lag path analyses allowed us to account for these significant relationships within and across time.

Replication of Emotional Cascade Model with CERQ

First, the Emotional Cascade Model was tested. Selby and Joiner (2013) measured rumination using a sum score of the rumination and catastrophizing subscales of the CERQ. Therefore, in the first model tested, those two subscales were summed and used as the proxy measure for rumination. First, the goal was to assess the stability pathways between the variables over time (e.g., rumination at T1 predicting rumination at T2 and T3, and rumination at T2 predicting rumination at T3). This model provided good fit, $\chi^2(6) = 12.54, p = .05, CFI = .99, TLI = .95, RMSEA = .03, AIC = 54.54$, as all three of the indices were within the good fit range (see Figure 3). Overall this model accounted for 16% of the variance in maladaptive behaviors at T2 and 87% at T3 and predicted 37% of the variance in rumination at T2 and 55% at T3, with most pathways having expected positive relationships. Notably, the pathway from MBS T1 to MBS T3 was unexpectedly negative.

Following this, all cross-lag paths were added and model fit was reassessed (see Figure 4). This model perfectly reproduced the correlation matrix and therefore we did not evaluate model fit. This model accounted for 15% of the variance in maladaptive behaviors at T2 and 87% at T3, while predicting 39% of the variance in rumination at T2 and 58% at T3. Next, as suggested by Kline (2011) and Joreskog (1993), the model trimming approach was used. First, any non-significant cross-lag pathways were set to

zero and the model was reassessed. This allowed for a comparison of all the pathways in order to find the most parsimonious model that also provided the closest fit to the data. This final model is shown in Figure 5. Overall, this final model provided good fit, $\chi^2 (6) = 12.54, p = .05, CFI = .99, TLI = .95, RMSEA = .03, AIC = 54.54$. This model accounted for 16% of the variance in maladaptive behaviors at T2 and 87% at T3 and predicted 37% of the variance in rumination at T2 and 55% at T3. Within the final model, the only significant pathways were the stability pathways, indicating that the most parsimonious model is utilizing the stability pathways only (i.e., not the cross-lag pathways). Based on the Emotional Cascade Model, we would have expected rumination to significantly predict maladaptive behaviors over time. Therefore, the results did not replicate the Emotional Cascade Model.

Neuroticism Model with CERQ

Next, the hypothesized model was assessed following the same steps. First, a model with only the stability pathways of the repeated measures was assessed (see Figure 6). This model provided good fit, $\chi^2 (18) = 50.58, p < .001, CFI = .97, TLI = .94, RMSEA = .04, AIC = 122.48$. Overall this model accounted for 16% of the variance in maladaptive behaviors at T2 and 87% at T3, while accounting for 36% of the variance in rumination at T2 and 55% at T3.

Following this, all cross-lag paths were entered into the model with all stability pathways and model fit was reassessed. This model perfectly reproduced the correlation matrix and therefore we did not evaluate model fit. Overall, this model accounted for 19% of the variance in maladaptive behaviors at T2 and 88% at T3 and 41% of the variance in rumination at T2 and 57% at T3. Last, the model trimming approach was used

to find the most parsimonious model. This final model is shown in Figure 7. This model provided good fit, $\chi^2(16) = 30.77, p = .01, CFI = .99, TLI = .97, RMSEA = .03, AIC = 106.77$. Overall, this model accounted for 20% of the variance in maladaptive behaviors at T2 and 86% at T3 and 40% of the variance in rumination at T2 and 55% at T3. Based on these results, neuroticism at T1 was able to predict both rumination and maladaptive behaviors at T2 but not T3. This model can also be compared with the Emotional Cascade Model described above utilizing the AIC values, with lower values indicating a better fit. Overall, this final model had better fit indices, though a higher AIC value. Therefore the evidence is mixed in regards to the best fitting model. However, as predicted, neuroticism was able to predict rumination and maladaptive behaviors one month later. Furthermore, when neuroticism was included within the model, rumination did not predict maladaptive behaviors over time, indicating that neuroticism might be an important component to be added to this model as a predispositional risk factor for both rumination and maladaptive behaviors.

Additional Rumination Measures

The current study included four additional measures of rumination. While the CERQ is a broad measure of rumination about emotions generally (e.g., “I am preoccupied with what I think and feel about what I have experienced”), the four remaining measures are designed to assess specific types of emotions (i.e., anger, depressive, and sadness) or experiences (i.e., interpersonal offenses). Each of these measures was tested similarly to the CERQ described above. First, the stability pathways were assessed. Following this, the cross-lag pathways were free to estimate and the model trimming approach was used. This was completed for the replicated Emotional

Cascade Model and the hypothesized model that includes neuroticism across the three time points. The results of these final models are summarized in Table 3. For the Emotional Cascade Model replications, all four rumination measures were able to significantly predict maladaptive behaviors over time. Therefore, these models did successfully replicate the Emotional Cascade Model.

Within the hypothesized model, neuroticism was able to predict rumination and maladaptive behaviors at T2. Additionally, neuroticism at T1 predicted rumination at T3 for the RIO. Overall, the final models provided good fit and accounted for similar levels of variance for the outcome variables (i.e., maladaptive behaviors and rumination). Additionally, when neuroticism was added to these models, rumination often no longer significantly predicted maladaptive behaviors.

Rumination as a Latent Variable

Given the high correlations between the five rumination measures, we investigated whether these five measures can be understood through a rumination latent variable utilizing AMOS. Figure 8 illustrates the model being tested. The illustrated model was tested and the modification indices were investigated. Additional models were tested with the highest modification indices added to the model. Specifically, at T1, the modification indices were investigated and the covariance between the disturbances of the RRS and RSS was the highest. Therefore, a second model was tested in which this covariance was added to the model. Following this, the modification indices were all very small and thus, this was the finalized model for this latent variable at Time 1. This finalized model was assessed at T2 and T3. The results of these analyses at each time point are presented in Table 4. Overall, this model had adequate to good fit at each time

point, with at least two of the three fit indices within the acceptable range (i.e., CFI and TLI values were all .91 or higher).

Next, the stability pathways of the latent variable over time were assessed. This model provided poor fit, $\chi^2(84) = 300.57, p < .001, CFI = .86, TLI = .82, RMSEA = .16, AIC = 402.56$, accounting for 66% of the variance of rumination at T2 and 85% at T3. Second, a model was tested in which all three rumination latent variables were utilized in the Emotional Cascade Model replication. First, the stability pathway model provided adequate fit, $\chi^2(126) = 539.067, p < .001, CFI = .91, TLI = .88, RMSEA = .06, AIC = 665.067$. This model accounted for 20% of the variance in maladaptive behaviors at T2 and 87% at T3 and 81% of the variance in rumination at T2 and 86% at T3. Last, the latent variable was tested within the Emotional Cascade Model replication that included the cross-lag pathways. This model provided adequate fit, $\chi^2(68) = 516.255, p < .001, CFI = .92, TLI = .88, RMSEA = .06, AIC = 652.255$. This model accounted for 21% of the variance in maladaptive behaviors at T2 and 90% at T3 and 85% of the variance in rumination at T2 and 87% at T3. Within this model, rumination did predict maladaptive behaviors at T2 and T3. Therefore, this model did replicate the Emotional Cascade Model.

Next, the latent rumination variable was tested in the overall hypothesized model that includes neuroticism. These results also provided good fit, $\chi^2(166) = 594.59, p < .001, CFI = .93, TLI = .90, RMSEA = .05, AIC = 766.591$. It accounted for 11% of the variance in maladaptive behaviors at T2 and 78% at T3. Additionally, the model accounted for 80% of the variance at T2 for rumination and for 85% at T3. From here, the model trimming approach was used. The final model provided good fit, $\chi^2(173) =$

602.24, $p < .001$, CFI = .93, TLI = .90, RMSEA = .05, AIC = 760.247. It accounted for 12% of the variance in maladaptive behaviors at T2 and 78% at T3. Additionally, the model accounted for 80% of the variance at T2 for rumination and for 84% at T3. Within this model, there was only one significant cross-lag pathway. Specifically, neuroticism at T1 significantly predicted maladaptive behaviors at T2. Neuroticism did not predict maladaptive behaviors at T3 nor did it significantly predict rumination at either time point. Additionally, when neuroticism was included in the model, rumination no longer significantly predicted maladaptive behaviors. Overall, this model provided mixed evidence for the role of neuroticism within the Emotional Cascade Model.

CHAPTER V

DISCUSSION

Emotional instability and engagement in maladaptive behaviors are two key aspects of Borderline Personality Disorder (BPD; Linehan, 1993). Selby and Joiner (2009) have proposed the Emotional Cascade Model, which suggests that emotional instability leads to the engagement of maladaptive behaviors through rumination. Specifically, individuals who experience a negative situation will continue to think about the situation and their associated feelings. This ruminative pattern leads the individual to experience stronger, more intense negative feelings related to the stimulus. This cycle continues between negative emotion and rumination until, in order to alleviate the negative affect, an individual engages in a maladaptive behavior. As mentioned by Selby and Joiner (2009), there are likely other personality factors that are important for consideration within this model. Given that neuroticism is highly related to BPD, this

trait is an important aspect to be included within this model, such that individuals high in neuroticism are more likely to engage in rumination and maladaptive behaviors. Overall, the goal of the current study was to test this model longitudinally and to extend it by including the underlying personality trait neuroticism.

The study compared a series of cross-lag path models using five different rumination measures. Specifically, the Emotional Cascade Model was assessed and compared to a model that included neuroticism. There was mixed evidence for the original model (i.e., that rumination predicts maladaptive behaviors over time), depending on which rumination measure was used within the model (i.e., the CERQ was unable to predict maladaptive behaviors while the other four rumination measures were able to do so). This is unexpected, given that previous studies on the Emotional Cascade Model (e.g., Selby & Joiner, 2013) have used the CERQ as a measure of rumination and have found evidence to support the model. Given this discrepancy, the means and standard deviations of the CERQ were compared across studies (i.e., Selby, et al., 2008) but had similar ranges, means, and standard deviations. Instead, the discrepant results between the current and previous studies may be the result of the different methodologies used when assessing these relationships (e.g., longitudinal versus in-the-moment). Specifically, the CERQ is able to predict maladaptive behaviors within a shorter time frame (i.e., hours to days) utilizing Ecological Momentary Assessment (EMA) methods, but maybe not when predicting these behaviors longitudinally (i.e., 1 month later).

The results indicate that neuroticism is an important component to be added to this model, as this trait consistently predicted rumination and maladaptive behaviors one month later. This was true for all five measures of rumination tested. Therefore,

neuroticism is an underlying personality trait that can lead to the development of rumination and maladaptive behaviors within a one-month time span. The model was also assessed at two months but these results were largely not significant with one exception. Neuroticism did predict interpersonal rumination scores at T3.

Notably, the rumination measures were correlated with one another. Therefore, these measures were assessed as a potential latent variable. The best fitting model was one in which the sadness and depressive rumination scales were covaried. This makes sense given the overlap in those measures. Specifically, the questions for the depressive scale (RRS) ask participants to rate how often they “think or do” when they “feel down, sad, or depression,” while the sadness scale (RSS) asks participants to “rate each question in regards to your response to sadness.” Though these measures are highly related, it is unclear whether they also relate to other constructs in a similar fashion. Future studies should investigate whether individuals are prone to ruminate about multiple emotions (e.g., anger and sadness). For instance, Baer & Sauer (2011) found that both depressive and anger rumination were strongly associated with BPD when controlling for depression, anxiety, and stress. However, anger rumination was more strongly related to borderline features. Future studies should investigate if various types of rumination may relate to specific types of psychopathology to provide a better understanding of this construct overall.

When the rumination latent variable was entered within the Emotional Cascade Model, it had adequate fit overall. When neuroticism was added to the model (i.e., the hypothesized model), the model had good fit. While neuroticism was able to predict both maladaptive behaviors and rumination in the models utilizing only one rumination

measure, neuroticism was only able to predict maladaptive behaviors within the model using the rumination latent variable. These results should be interpreted cautiously however, given the sample size of the current study (i.e., 125 individuals completed all three time points). Though this was an adequate sample size to test the models using only one rumination measure, this particular model may be underpowered, given recommendations to include 10-20 participants per variable within a model (Kline, 2011). Future studies should continue to investigate rumination as a potential latent variable.

This study is important as it provides a better understanding of the potential development and maintenance of BPD symptoms. Specifically, individuals elevated in the personality trait neuroticism may be prone to engaging in rumination and maladaptive behaviors. The current Emotional Cascade Model may not be sufficient in explaining the development of these BPD symptoms. Instead, a model that includes neuroticism is more comprehensive in predicting these symptoms. Future studies should continue to investigate how other personality traits and variables may relate to this model as well. There may be other personality or cognitive variables that contribute to the development of BPD. For instance, future studies should investigate how environmental factors of the biosocial theory (e.g., parental invalidation; Linehan, 1993) relate to the Emotional Cascade Model.

Given that rumination is related to other forms of psychopathology (e.g., anxiety, depression; Just & Alloy, 1997; Muris et al., 2005; Segerstrom et al., 2000), and that these disorders also relate to maladaptive/impulsive behaviors (Miller, Flory, Lynam, & Leukefeld, 2003), future studies should investigate emotional cascades within the context of other psychological disorders. More broadly, given the strong relationship of

neuroticism with other psychological disorders (Kotov, Gamez, Schmidt, & Watson, 2010), neuroticism may underlie the relationship between these constructs (e.g., rumination, maladaptive behaviors), regardless of the disorder. The role of neuroticism within psychopathology generally may have clinical implications. Specifically, it may be possible to develop targeted treatment interventions that focus on decreasing neuroticism and thereby decrease levels of rumination, maladaptive behaviors, and even symptoms of other disorder such as depression and anxiety. In fact, Barlow, Sauer-Zavala, Carl, Bullis, and Ellard (2014) proposed that emotional disorders (i.e., depressive and anxious disorders) could be treated through focusing on decreasing neuroticism. There is strong empirical evidence for this, as neuroticism does decrease over the course of various treatments (e.g., Glinski & Page, 2010; Tang, et al., 2009).

Limitations and Future Directions

There are some limitations of the current study. First, the participants were all undergraduate college students who had relatively low base rates of the behaviors that were assessed (e.g., used illicit drugs). Although this was not a clinical sample, we did oversample for BPD traits to help with this issue. Regardless, future studies should investigate these relationships within individuals who are diagnosed with BPD and within a clinical sample generally.

A second limitation of the current study was the use of self-report measures. Though previous research has found strong empirical support for the validity of self-report measures of personality (Widiger & Boyd, 2009) and support for self-reported and other-reported personality traits being very similar (Kurtz & Parrish, 2001; Kurtz & Sherker, 2003), future studies would benefit from the use of informant-report personality

measures. Additionally, participants may not be accurately reporting on their level of engagement in specific behaviors over the past month, either due to social bias responding or due to poor memory. Future studies may better understand these relationships through the use of EMA studies and/or longitudinal studies that last for longer periods of time.

The third limitation of the current study was the high attrition rates that occurred between time points of the study. Specifically, of the 1,026 valid individuals who completed Time 1, only 285 completed Time 2 and only 163 completed Time 3. Of those participants, only 125 of them had completed all three surveys. This is likely due in part to the timing of the follow-ups. Specifically, the follow up surveys may have occurred after the end of the semester (and therefore there was no longer a need for SONA credit). Also, participants may have received solicitation to complete the survey during a hectic/busy time of the semester (e.g., midterms or finals). Notably, however, there was only one measure at T1 that was significantly different between individuals who completed all three time points and those who did not (i.e., the ARS was higher in the responders than the non-responders).

Conclusion

In conclusion, this was the first study to test the Emotional Cascade Model longitudinally and to include measures of the general personality trait neuroticism. Overall, the results were mixed in regards to replicating the Emotional Cascade Model, depending on which rumination measure was used within the model. Second, neuroticism was able to predict both rumination and maladaptive behaviors one month, but not two months, later. Therefore, the results indicated that neuroticism increases one's proneness

for engaging in rumination and maladaptive behaviors. Thus, the Emotional Cascade Model should be extended to include neuroticism as an underlying personality trait that leads to an increase in rumination and maladaptive behaviors. These findings are important in understanding how BPD may develop and be maintained in adulthood and therefore informative for intervention design and implementation.

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Table 1
Comparison of Returners and Nonreturners on Demographic Information and Self-Report Measures.

	Nonreturners (n = 901)		Returners (n = 122)		Group Comparison	
	M(Count)	SD(%)	M(Count)	SD(%)	T(χ^2)	p
Sex	-	-	-	-	-.35	.73
Male	(266)	(29.5)	(20)	(16.0)		
Female	(629)	(69.8)	(104)	(83.2)		
Age	19.78	2.68	20.43	4.12	-1.71	.09
Annual Family Income	-	-	-	-	-.52	.60
\$0-\$10,000	(15)	(1.7)	(3)	(2.4)		
\$10,000-\$20,000	(31)	(3.4)	(2)	(1.6)		
\$20,000-\$30,000	(51)	(5.7)	(8)	(6.4)		
\$30,000-\$40,000	(46)	(5.1)	(10)	(8.0)		
\$40,000-\$50,000	(56)	(6.2)	(9)	(7.2)		
\$50,000-\$60,000	(65)	(7.2)	(8)	(6.4)		
\$60,000-\$70,000	(57)	(6.3)	(6)	(4.8)		
\$70,000-\$80,000	(58)	(6.4)	(11)	(8.8)		
\$80,000-\$90,000	(53)	(5.9)	(7)	(5.6)		
\$90,000-\$100,000	(81)	(9.0)	(10)	(8.0)		
\$100,000-\$110,000	(76)	(8.4)	(15)	(12.0)		
Over \$110,000	(214)	(23.8)	(20)	(16.0)		
No Response	(98)	(10.9)	(16)	(12.8)		
Ethnicity	-	-	-	-	.25	.80
Asian	(45)	(6.6)	(9)	(7.4)		
Black	(64)	(9.4)	(8)	(6.6)		
Caucasian	(736)	(85.4)	(104)	(83.2)		
Hispanic	(59)	(8.7)	(5)	(4.1)		
Native American	(74)	(10.9)	(12)	(9.8)		
No Response	(18)	(2.7)	(2)	(1.6)		
MSI-BPD	2.33	2.50	2.56	2.63	-.94	.35
MBS	41.87	10.48	40.59	6.69	1.27	.20

ARS	30.94	10.89	33.22	10.92	-2.16	.03
CERQ	19.25	6.79	19.65	6.88	-.61	.54
RIO	13.80	6.70	13.80	6.80	.01	.99
RRS	40.57	15.62	41.21	15.63	-.42	.57
RSS	26.74	13.71	27.27	13.54	-.41	.69

Note. MSI-BPD = the McLean Screening Instrument for BPD; MBS = Maladaptive Behavior Scale; ARS = Anger Rumination Scale; CERQ = Cognitive Emotion Regulation Questionnaire – Rumination and Catastrophizing subscales combined; RIO = Rumination on Interpersonal Offenses; RRS = Ruminative Response Scale (i.e., depressive rumination); RSS = Rumination on Sadness Scale.

Table 2.

Correlations, means, and standard deviations of IPIP neuroticism, MBS, and five measures of rumination across three time points.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	-																				
2	.82	-																			
3	.80	.82	-																		
4	.28	.21	.26	-																	
5	.41	.34	.46	.44	-																
6	.21	.35	.37	.38	.84	-															
7	.57	.58	.55	.38	.39	.28	-														
8	.57	.64	.47	.29	.47	.43	.75	-													
9	.57	.55	.58	.37	.48	.39	.73	.81	-												
10	.51	.49	.52	.30	.21	.25	.60	.52	.66	-											
11	.52	.49	.50	.11	.37	.37	.56	.58	.66	.64	-										
12	.53	.55	.55	.40	.40	.40	.58	.57	.69	.63	.72	-									
13	.48	.42	.40	.29	.40	.30	.59	.46	.49	.55	.34	.45	-								
14	.46	.55	.38	.29	.48	.38	.56	.66	.58	.49	.58	.49	.47	-							
15	.49	.49	.52	.29	.48	.33	.54	.54	.71	.50	.54	.60	.59	.58	-						
16	.62	.62	.55	.35	.27	.17	.62	.58	.64	.59	.59	.60	.47	.56	.48	-					
17	.61	.70	.61	.32	.38	.42	.62	.71	.65	.53	.62	.62	.40	.58	.52	.76	-				
18	.63	.54	.62	.30	.42	.20	.60	.58	.70	.59	.64	.62	.40	.52	.59	.76	.77	-			
19	.56	.58	.50	.31	.29	.32	.61	.60	.68	.61	.57	.59	.50	.50	.46	.74	.71	.66	-		
20	.56	.61	.51	.19	.31	.09	.57	.68	.63	.49	.67	.63	.41	.58	.48	.67	.82	.67	.69	-	
21	.55	.48	.57	.29	.44	.40	.56	.57	.74	.50	.69	.69	.38	.52	.62	.63	.71	.81	.68	.71	-
M	64.3	61.8	60.9	41.7	40.4	39.4	31.2	30.3	29.8	19.3	17.4	17.5	13.8	13.0	13.2	40.7	40.0	37.3	26.8	25.2	24.5
SD	16.5	17.5	17.0	10.1	8.2	9.1	10.9	10.9	10.6	6.8	6.8	7.3	6.7	6.5	6.9	15.6	16.0	14.8	13.7	12.8	13.0

Note. **Bold** = large effect size; *italicized* = medium effect size; 1 = neuroticism T1; 2 = neuroticism T2; 3 = neuroticism T3; 4 = MBS T1; 5 = MBS T2; 6 = MBS T3; 7 = ARS T1; 8 = ARS T2; 9 = ARS T3; 10 = CERQ T1; 11 = CERQ T2; 12 = CERQ T3; 13 = RIO T1; 14 = RIO T2; 15 = RIO T3; 16 = RRS T1; 17 = RRS T2; 18 = RRS T3; 19 = RSS T1; 20 = RSS T2; and 21 = RSS T3; M = mean; SD = standard deviation.

Table 3.
Summary statistics of the models ran utilizing each additional rumination measure.

	χ^2	CFI	TLI	RMSEA	AIC	MBS % predicted		Rum % predicted	
						T2	T3	T2	T3
ARS									
Model 1	$\chi^2 (5) = 7.39$	.99	.99	.02	51.39	21	87	52	68
Model 2	$\chi^2 (16) = 26.75^*$	.99	.98	.03	102.75	18	87	51	69
RIO									
Model 1	$\chi^2 (6) = 11.90$	.99	.95	.03	53.90	15	87	22	44
Model 2	$\chi^2(13) = 19.84$	.99	.98	.02	101.84	16	86	27	46
RRS									
Model 1	$\chi^2 (6) = 8.47$	.99	.99	.02	50.47	13	88	55	64
Model 2	$\chi^2(14) = 16.76$	.99	.99	.01	96.76	18	88	59	65
RSS									
Model 1	$\chi^2 (3) = 4.72$	.99	.98	.02	52.72	19	88	46	62
Model 2	$\chi^2(13) = 18.28$	.99	.99	.02	100.28	18	88	46	61

Note. * $p < .05$; ARS = Anger Rumination Scale; RIO = Rumination on Interpersonal Offenses; RRS = Ruminative Response Scale; RSS = Rumination on Sadness Scale; Model 1 = Final model of Emotional Cascade Model; Model 2 = Final model of extended Emotional Cascade Model after model trimming.

Table 4.
Results of testing rumination as a latent variable at each time point.

	χ^2	CFI	TLI	RMSEA	AIC
Time 1					
Model 1	$\chi^2 (5) = 105.05^*$	.96	.91	.15	135.05
Model 2	$\chi^2 (4) = 19.10^*$	.99	.98	.07	51.10
Time 2					
Model 2	$\chi^2 (4) = 20.43^*$	.98	.95	.13	52.43
Time 3					
Model 2	$\chi^2 (4) = 5.51$	.99	.99	.05	37.51

Note. * $p < .05$; Model 1 = Original model for rumination as a latent variable; Model 2 = Model including covariances between the disturbances of the RRS and RSS.

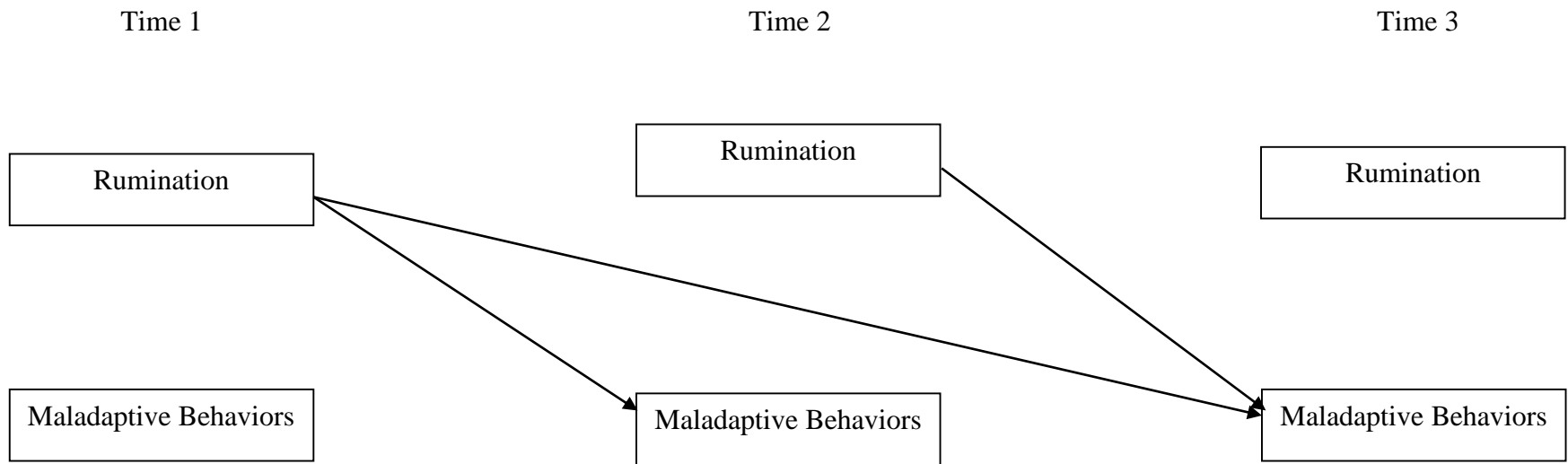


Figure 1. *Original Emotional Cascade model over time.*

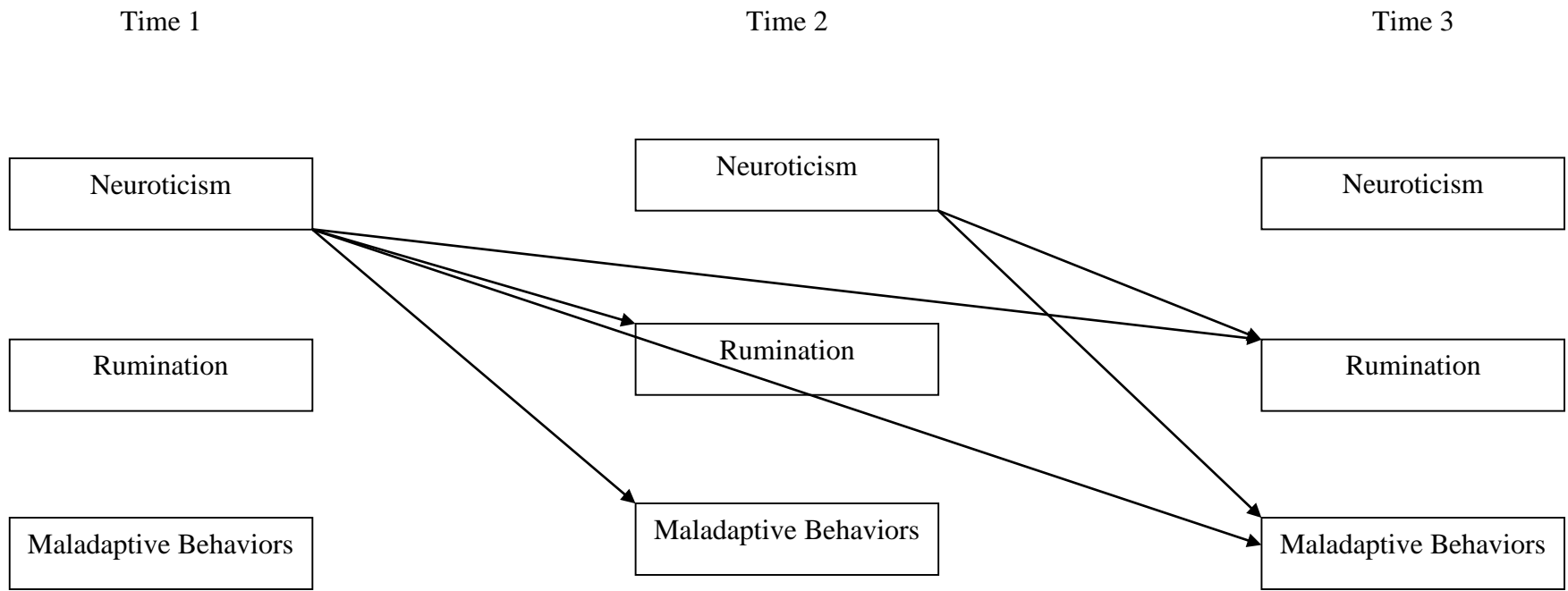
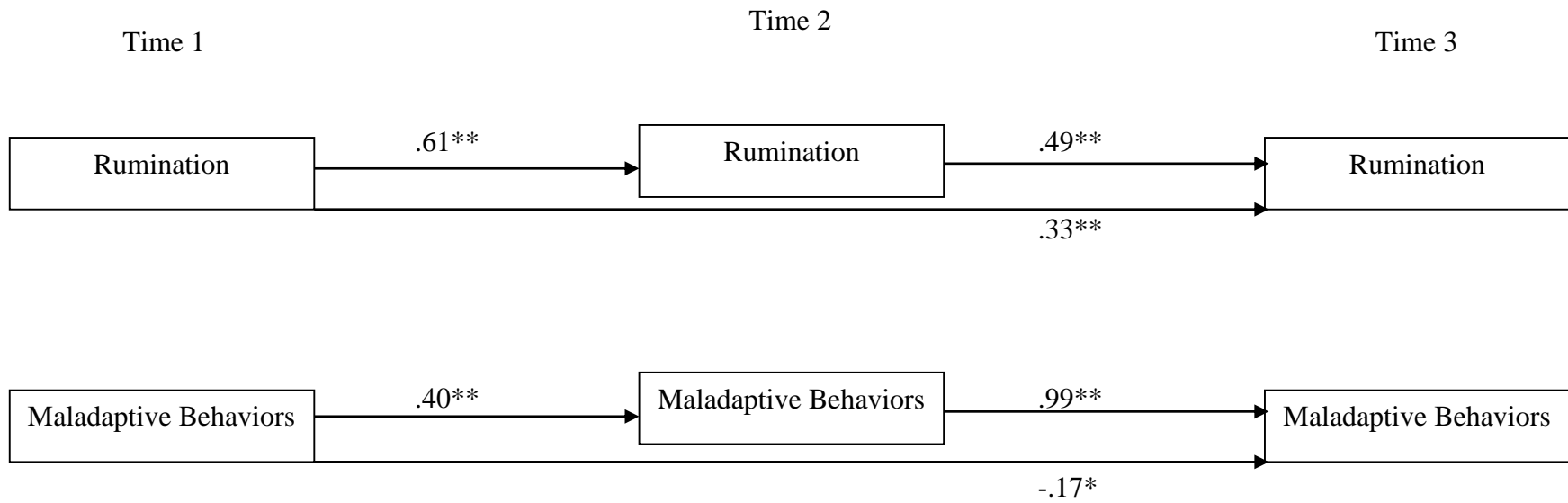
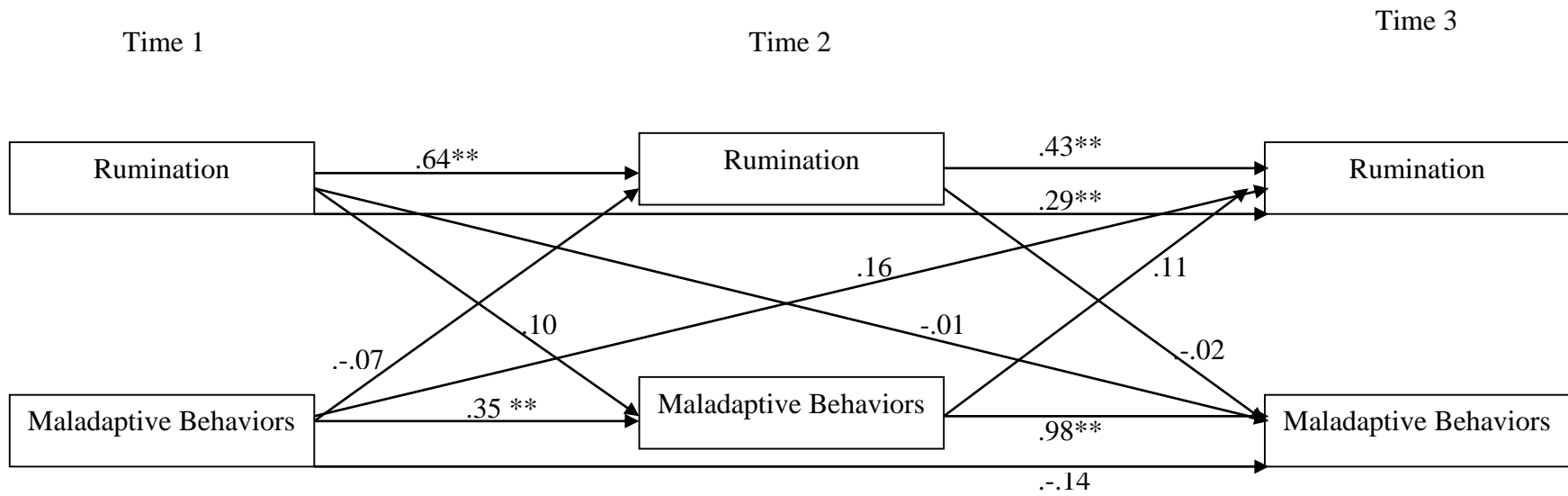


Figure 2. Hypothesized model of the Emotional Cascade model including neuroticism.



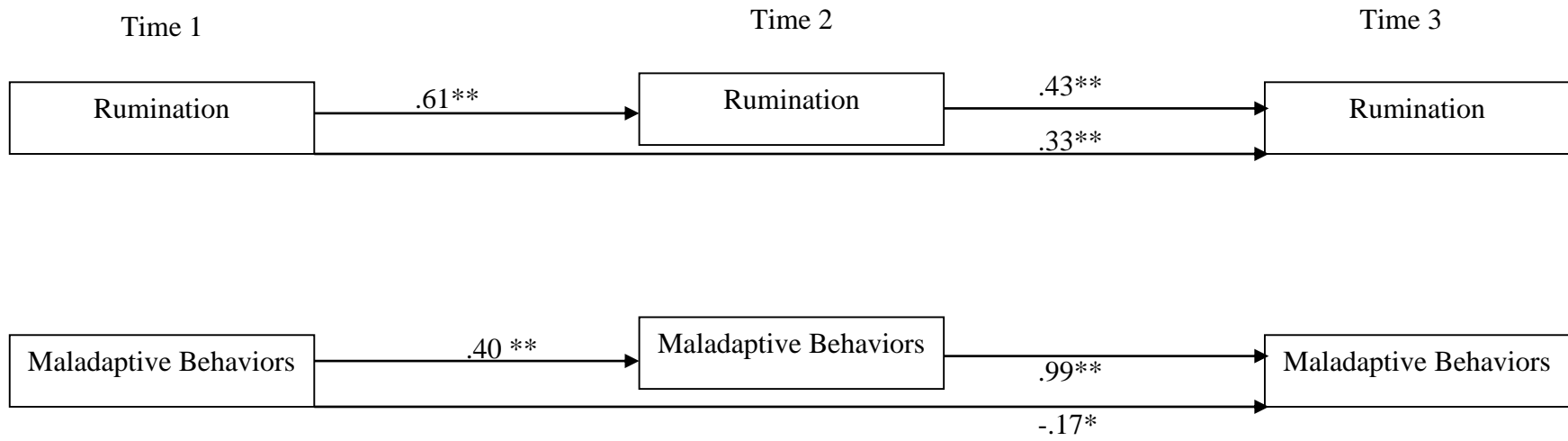
Note: $** p < .001$; $* p < .05$.

Figure 3. Results of the Emotional Cascade Model using the CERQ with stability pathways only over time.



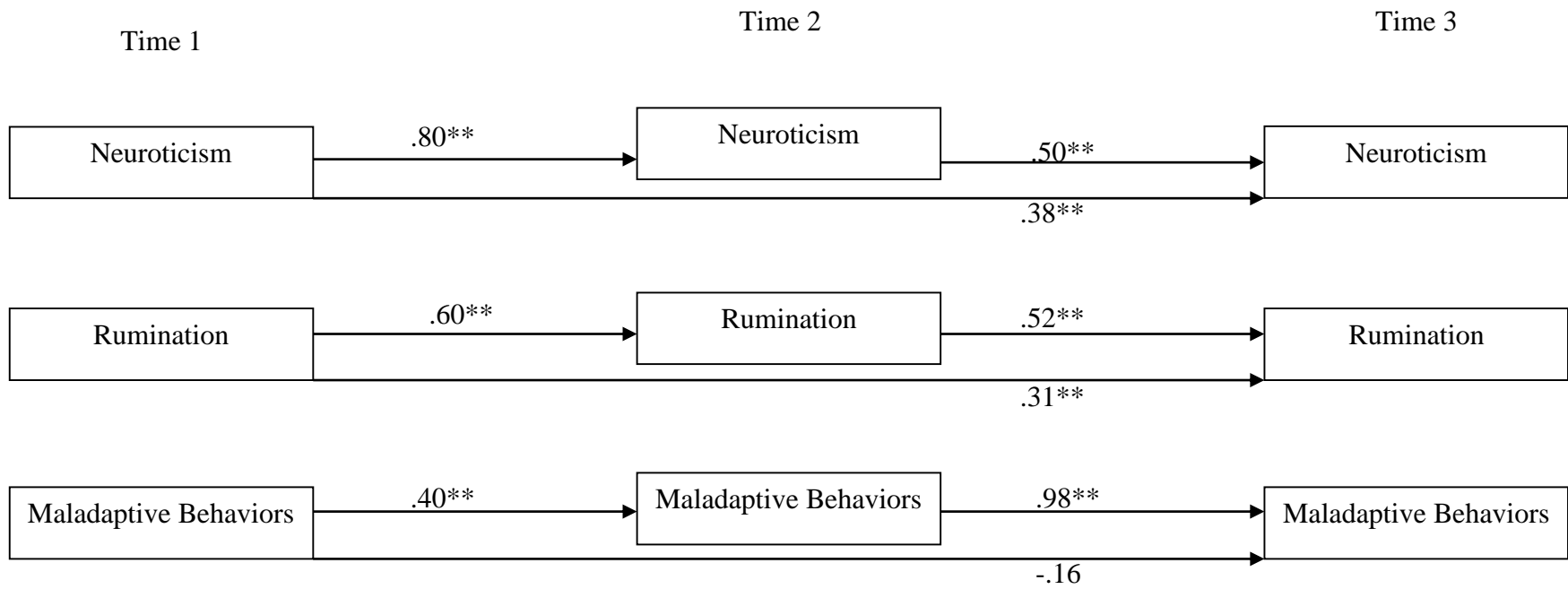
Note: ** $p < .001$.

Figure 4. Results of the Emotional Cascade Model including cross-lag pathways over time.



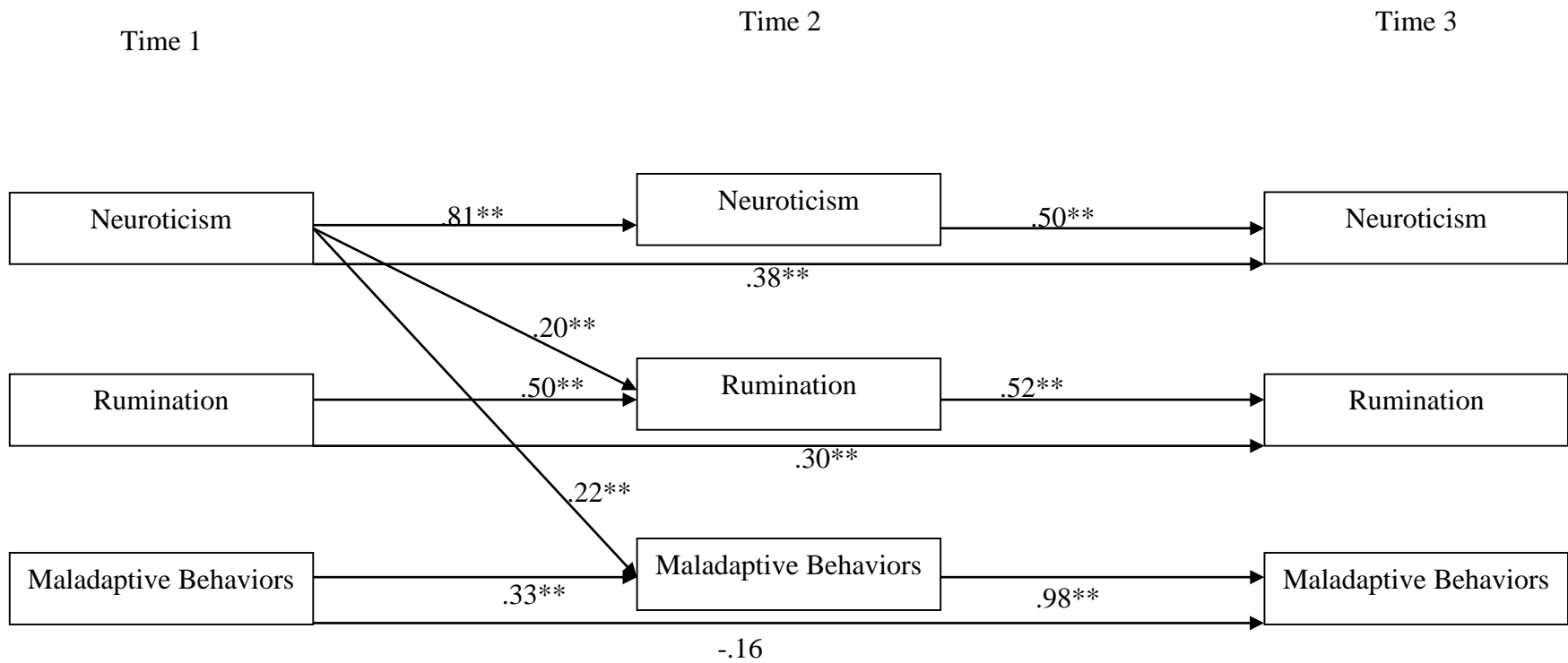
Note: ** $p < .001$; * $p < .05$.

Figure 5. Finalized model of the Emotional Cascade Model after removing nonsignificant pathways.



Note: ** $p < .001$.

Figure 6. Results of the extended model with stability pathways only over time.



Note: ** p < .001; * p < .05.

Figure 7. Results of the final extended Emotional Cascade Model with significant cross-lag pathways over time.

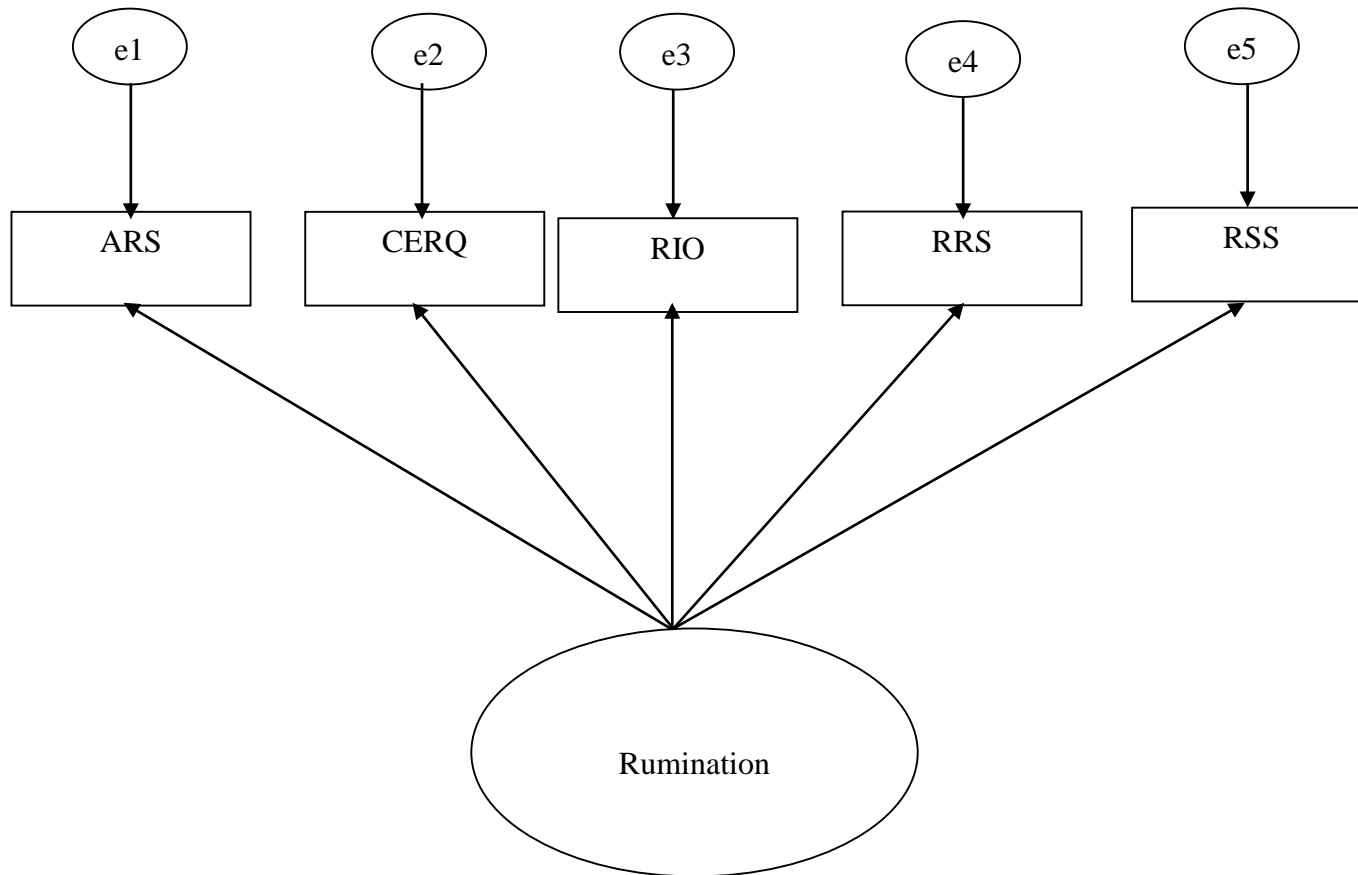


Figure 8. *Example of ruminations as a latent variable of five separate ruminations measures.*

APPENDICES

Appendix A

Dissertation Proposal Introduction and Review of the Literature

Introduction

Personality traits, like neuroticism, are related to the development and maintenance of psychopathology, such as mood and anxiety disorders (Bienvenu et al., 2004; Clark et al., 1994), as well as problems in daily functioning (Hopwood et al., 2009; Mullins-Sweatt & Widiger, 2010; Ozer & Benet-Martinez, 2006). Furthermore, when personality traits are extremely high or low, they can be considered maladaptive if they also cause the individual distress or impairment. The symptoms that arise from these extreme traits may be classified as a personality disorder (Samuel & Widiger, 2008; Widiger & Trull, 2007).

One such disorder is borderline personality disorder (BPD), which is characterized by extreme instability across a variety of areas, including interpersonal relationships, self-image, and affect. Though the current diagnostic system for BPD is a categorical model, there is strong support for conceptualizing BPD from a dimensional perspective (Arntz et al., 2009; Edens, Marcus, & Ruiz, 2008; Rothschild, Cleland, Haslam, & Zimmerman, 2003; Trull, Widiger, & Guthrie, 1990). The dimensional conceptualization of BPD may be more useful than a categorical one, as it enables the assessment of the maladaptive personality traits that underlie BPD. Therefore, it allow for the study of sub-clinical BPD individuals as well as those who do meet criteria for the categorical model (i.e., those who endorse four or less criteria versus those who endorse five or more of the nine criteria). This is an important area of study, as Zimmerman, Chelminski, Young, Dalrymple, and Martinez (2012) have shown that, in an outpatient clinical group, individuals who have even *one* symptoms of BPD have significantly more problems than individuals who do not have any BPD symptoms.

The mounting evidence for a dimensional model of BPD and other personality disorders has culminated in the proposal of a hybrid-categorical model for personality disorders, which is included in Section III “Emerging Measures and Models” of the new Diagnostic and Statistical Manual (DSM-5; APA, 2013). Part of the dimensional component of this diagnostic method includes five domains of pathological personality traits: negative affectivity (vs. emotional stability), detachment (vs. extraversion), antagonism (vs. agreeableness), psychoticism (vs. lucidity), and disinhibition (vs. conscientiousness). These domains are further broken into 25 facet-level traits and allow for the identification of specific maladaptive personality traits that cause distress and/or impairment, regardless of whether they meet criteria for a specific personality disorder.

The maladaptive personality domains and facets used within the proposed model are “an extension of the Five Factor Model,” (APA, 2012, p. 7). This has been illustrated through a number of studies that show the five domains of the DSM-5 align well with the Five Factor Model (FFM; McCrae & Costa, 2003), which is a model of general personality (De Fruyt et al., 2013; Gore & Widiger, 2013; Thomas et al., 2013; Watson, Statsik, Ro, & Clark, 2013). Furthermore, the facets of the proposed model have been shown to closely resemble the FFM facet structure (Griffin & Samuel, in press). The FFM was developed utilizing a lexical approach, and resulted in the identification of five general personality domains: neuroticism (vs. emotional stability), extraversion (vs. introversion), openness to experience (vs. closedness to experience), agreeableness (vs. antagonism), and conscientiousness (vs. disinhibition). These domains are further broken into 30 facets (Costa & McCrae, 1995). The FFM is a well validated and well replicated personality model (McCrae et al., 2005; Mullins-Sweatt & Widiger, 2006).

The FFM has been used to conceptualize BPD using meta-analytic reviews (Samuel & Widiger, 2008; Saulsman & Page, 2004), researcher ratings (Lynam & Widiger, 2001), clinician ratings (Samuel & Widiger, 2004), and translations of the DSM-IV-TR BPD symptoms (APA, 2000) into the FFM lexicon (Widiger, 2005). Through this method, 11 FFM facet level traits have been identified as underlying BPD. These facets include all six facets of neuroticism (i.e., anxiousness, angry hostility, depressiveness, self-consciousness, impulsiveness, and vulnerability), one facet of openness to experience (i.e., fantasy), three facets of agreeableness (i.e., trust, straightforwardness, and compliance), and one facet of conscientiousness (i.e., deliberation).

Research examining the relationship of BPD with FFM traits provides strong evidence that neuroticism is highly related to BPD. BPD is also often related to other, similar constructs, such as emotional dysregulation, affective/emotional lability and affective/emotional instability. These other terms may be explaining the same or similar/overlapping constructs as neuroticism and it is this inconsistency in terminology that make it difficult to understand how personality, as a general predisposition, relates to BPD. Generally, all of these constructs relate to how an individual experiences negative mood states and all have been found to relate to BPD (Crowell et al., 2009; Koenigsberg et al., 2002; Linehan, 1993; McGlashan et al., 2005; Millon & Davis, 1996; Sanislow, Grilo, & McGlashan, 2000; Westen et al., 1997). In fact, many of these terms are often used interchangeably. Researchers have developed and used different measures to assess each term, though there is evidence that suggest that there is considerable convergence among these measures, therefore indicating that the terms do likely have a great deal of

overlap with one another (Widiger, 2011). Debate continues, however, over exactly how these constructs are related (e.g., Kamen, Prior, Gaughan, & Miller, 2010; Maples, Miller, Hoffman, & Johnson, 2014; Miller & Pilkonis, 2006).

Recently, Carpenter and Trull (2013) provided a review of emotion dysregulation in the context of BPD. The authors define emotional dysregulation as “an inability to flexibly respond to and manage emotions” (p. 335) and also speculate that this construct has been studied under different names (e.g., affective instability, emotional vulnerability). Furthermore, they define emotional dysregulation as a multi-faceted construct that includes four components: emotional sensitivity, heightened and labile negative affect, a lack of adaptive regulation strategies, and an excess of maladaptive regulation strategies. Similar to neuroticism, emotional sensitivity is considered to have biological origins and be present from early life while heightened and labile negative affect is considered to be the “direct consequence of emotional sensitivity” (p. 336). These two facets are what lead to the development and maintenance of excessive maladaptive regulation strategies and a lack of adaptive ones. Based on this definition, trait neuroticism may explain the first two components. Therefore, it may be that maladaptively high neuroticism may lead to the development of these maladaptive regulation strategies within an individual, in order to cope with the high emotional sensitivity and negative affect experienced. It is the combination of these four factors that results in the presentation of BPD. These maladaptive regulation strategies are often the maladaptive behaviors seen within individuals with BPD (e.g., self-harming, substance misuse, promiscuous sexual activities), which are done in order to alleviate the extreme

negative affect the individual is experiencing. This emotional and behavioral dysregulation is at the core of BPD.

The Emotional Cascade Model of BPD suggests that this connection between emotional and behavioral dysregulation is maintained through rumination (Selby et al., 2008), which is the tendency to repetitively think about the causes, situational factors, and consequences of one's negative emotional experience (Nolen-Hoeksema, 1991). Though rumination has been linked to other psychopathology (i.e., depression and anxiety; Just & Alloy, 1997; Muris, Roelofs, Rassin, Franken, & Mayer; 2005; Segerstrom, Tsao, Alden, & Craske, 2000), it has been found to relate more strongly to BPD than other psychopathology, including other personality disorders (Abela, Payne, & Moussaly, 2003; Selby et al., 2009; Smith, Grandin, Alloy, & Abramson, 2006). Specifically, Selby and colleagues (2008) have found that high levels of rumination are related to a variety of maladaptive behaviors such as alcohol use, reassurance seeking, and binge-eating. Furthermore, Selby et al. (2009) found that individuals who meet criteria for BPD experience greater emotional reactivity and intensity of negative affect than those who do not meet criteria for BPD after completing an in-lab rumination task and that rumination fully mediated the relationship between BPD symptoms and dysregulated behavior using structural equation modeling. Finally, Selby and Joiner (2013) had participants report on their emotions, thoughts, and behaviors over a two-week period, finding that elevated rumination, negative emotion, and BPD symptoms prospectively predicted an increase in dysregulated behavior two to three hours later.

Importantly, none of the previous studies of the Emotional Cascade Model have assessed the relationship that trait neuroticism may have within the model. This

underlying personality trait may lead to the development and maintenance of rumination and behavioral dysregulation, given that neuroticism has been directly linked to depressive rumination (Cox, Enns, Walker, Kjernisted, & Pidlubny, 2001; Lam et al., 2003; Roberts, Gilboa, & Gotlib, 1998) and dysregulated behaviors (Cassin & van Ranson, 2005; Cooper et al., 2000). The current study extends the Emotion Cascade Model, by examining the influence that neuroticism has on rumination and maladaptive behaviors over time. As noted by Selby and Joiner (2009), there may be other personality or cognitive factors that interplay with rumination that could increase or decrease the emotional cascades. We propose that neuroticism is one such factor. Additionally, no other studies have tested the Emotional Cascade Model across three time points.

Literature Review

Personality and Psychopathology

Personality can influence the development of psychopathology, such that the way a person thinks, feels, behaves, and relates to others can contribute to the development of psychopathology (Widiger, 2011). For example, high neuroticism, or emotional instability, is related to anxiety and depressive disorders (Bienvenu et al., 2004; Clark et al., 1994). Personality is also related to problems in daily functioning, such as recreational, social, and work dysfunction (Hopwood et al., 2009; Mullins-Sweatt & Widiger, 2010; Ozer & Benet-Martinez, 2006). Furthermore, when these personality traits are extremely high or low, they may be considered maladaptive if they also cause distress or impairment for the individual. When these traits lead to maladaptive behaviors, they are often classified as personality disorders (Samuel & Widiger, 2008; Widiger & Trull, 2007). A personality disorder is defined as “an enduring pattern of

inner experience and behavior that deviates markedly from the expectations of the individual's culture, is pervasive and inflexible, has an onset in adolescence or early adulthood, is stable over time, and leads to distress or impairment," (p. 645; APA, 2013). A key feature of this definition is that individuals with a personality disorder have a rigid and inflexible style of interacting with their environment, such that they are unable to adapt and have difficulties across a number of areas in their life (e.g., employment, interpersonal relationships).

One of the most widely studied personality disorders is borderline personality disorder (BPD). This disorder is present in 1-3% of the general population, 10% of patients in outpatient settings, and 15-20% of patients in inpatient settings (Trull, Jahn, Tomko, Wood, & Sher 2010). According to the DSM-5 (APA, 2013), BPD is defined as "a pervasive pattern of instability of interpersonal relationships, self-image and affects, and marked impulsivity beginning by early adulthood and present in a variety of contexts," (p. 663). There are nine specific symptoms of BPD, and an individual must endorse five of the nine to reach diagnostic threshold for the disorder.

This categorical model was retained within DSM-5, despite the strong support for a shift to a dimensional approach for conceptualizing BPD (Arntz et al., 2009; Edens, Marcus, & Ruiz, 2008; Rothschild, Cleland, Haslam, & Zimmerman, 2003; Trull, Widiger, & Guthrie, 1990). Specifically, it may be more useful to conceptualize BPD as a set of maladaptive personality traits as opposed to a distinct category. A dimensional model may be useful in identifying individuals who have subthreshold symptoms of BPD (e.g., three of nine symptoms) but still have problems functioning. For example, Zimmerman, Chelminski, Young, Dalrymple, and Martinez (2012) assessed an outpatient

clinical group, comparing those with zero BPD symptoms with those who had *one* BPD symptom. The group with one symptom of BPD had significantly more problems, including more current DSM-IV Axis I disorders, suicidal ideation at the onset of treatment, a history of suicide attempts and inpatient hospitalizations, and missed time from work due to a psychiatric illness. Therefore, it is important to investigate, not just those who meet criteria for BPD, but also those who have a subset of symptoms of BPD.

The DSM-5 (APA, 2013) includes a proposed hybrid-categorical model for personality disorders in Section III Emerging Measures and Models. Part of the dimensional component of this diagnostic method includes five domains of pathological personality traits. These domains are negative affectivity (vs. emotional stability), detachment (vs. extraversion), antagonism (vs. agreeableness), psychoticism (vs. lucidity), and disinhibition (vs. conscientiousness). According to the DSM-5, these domains are further broken into 25 facet-level traits. The model allows clinicians to identify specific maladaptive personality traits an individual may be experiencing, regardless of whether they meet criteria for a specific personality disorder. Therefore, this model allows the identification and diagnosis of individuals who are experiencing distress and impairment related to their personality, even though they do not meet criteria for the specific personality disorder. Additionally, this model enables one to identify the underlying maladaptive personality traits of a specific personality disorder. For example, one individual may be elevated on traits such as impulsiveness and low self-discipline, while another individual is elevated on traits such as angry-hostility and anxiety. Both of these individuals may have similar problems behaviorally (i.e., symptoms associated with BPD) and both may meet criteria for BPD, but each has different maladaptive personality

traits. Identifying these specific traits can be useful clinically in guiding treatment. It may also be useful in research, as it allows for further investigation and understanding of specific components of BPD.

Importantly, these maladaptive personality traits are an extension of a general model of personality, namely, the five-factor model (FFM; McCrae & Costa, 2003). The FFM is a model of general personality that was developed using a lexical paradigm, which suggests that what is most important or interesting to a culture (e.g., personality traits) will be encoded within their language. As a result, language functions as a sedimentary deposit of observations of people over thousands of years, in which the language has developed and changed. As a result of lexical studies of the English language, five general personality domains have emerged: neuroticism (vs. emotional stability), extraversion (vs. introversion), openness to experience (vs. closedness to experience), agreeableness (vs. antagonism), and conscientiousness (vs. disinhibition). Costa and McCrae (1995) have further broken each domain into six specific facets. These domains and facets account for a number of individual differences (Digman, 1990; Goldberg, 1990). The FFM has been replicated across five language families as well as cross-culturally using samples from over 50 countries (McCrae et al., 2005). Furthermore, the FFM has strong convergent and discriminant validity, with self-report as well as peer and spouse ratings. Additionally, the FFM has strong temporal stability, and generalizes across age, gender, and culture. Lastly, the FFM domains and facets have also been found to be heritable (Mullins-Sweatt & Widiger, 2006).

The FFM utilizes a similar structure as the DSM-5 proposed model and even includes many of the same domain names. In fact, as noted above, the domains and facets

used within the proposed model of the DSM-5 are “an extension of the Five Factor Model,” (APA, 2012, p. 7). Furthermore, a number of studies suggest that the five domains of the DSM-5 proposed model do, in fact, align well with the FFM general personality model (De Fruyt et al., 2013; Gore & Widiger, 2013; Thomas et al., 2013; Watson, Statsik, Ro, & Clark, 2013). Additionally, there is evidence that the 25 facets of the proposed model also closely resemble the FFM facet structure (Griffin & Samuel, in press). Therefore, the FFM appears well equipped to describe the maladaptive extremes of the personality traits that comprise BPD. Based on meta-analytic reviews (Samuel & Widiger, 2008; Saulsman & Page, 2004), researcher ratings (Lynam & Widiger, 2001), clinician ratings (Samuel & Widiger, 2004), and translations of the DSM-IV-TR BPD symptoms (APA, 2000) into the FFM lexicon (Widiger, 2005), BPD encompasses 11 specific facets of the FFM. These facets include all six facets of neuroticism (i.e., anxiousness, angry hostility, depressiveness, self-consciousness, impulsiveness, and vulnerability), one facet of openness to experience (i.e., fantasy), three facets of agreeableness (i.e., trust, straightforwardness, and compliance), and one facet of conscientiousness (i.e., deliberation).

Neuroticism and Similar Constructs

Previous research examining the relationship of BPD with FFM traits provides strong evidence and support that neuroticism and BPD are highly related constructs. This is consistent with other theories that describe BPD as a disorder of emotion dysregulation and/or instability (Linehan, 1993). An issue with understanding the role of neuroticism within BPD is the inconsistency in terminology. For instance, from the FFM perspective, neuroticism is often referred to as emotional instability. Additional terms that may be

explaining the same or similar constructs include emotional or affective lability and affective instability. The inconsistency in terminology make it difficult to have a clear understanding of how personality relates to BPD, as there is debate of whether these other terms may be the same construct as trait neuroticism.

Notably, each of these constructs relates to how an individual experiences negative mood states (e.g., proneness to experience negative mood states strongly) and are important constructs that all relate to BPD (Crowell et al., 2009; Koenigsberg et al., 2002; Linehan, 1993; McGlashen et al., 2005; Millon & Davis, 1996; Sanislow, Grilo, & McGlashan, 2000; Westen et al., 1997). In fact, many of the terms are often used interchangeably within the literature. Neuroticism, or emotional instability, is often defined as the tendency to experience negative mood states (e.g., depression, anger, anxiety; McCrae & Costa, 2003). Similarly, affective instability is considered a stable trait, defined as “predisposition to marked, rapidly reversible shifts in affective states that are extremely sensitive to meaningful environmental events,” (Siever & Davis, 1991, p. 1651). Affective/emotional lability is defined as the tendency to fluctuate between differing mood states that include both positive and negative moods (e.g., happy, anger; Harvey, Greenberg, & Seper, 1989). Importantly, these terms all tend to be assessed using different measures. There is, however, considerable convergence among these measures, indicating that these terms do likely have a great deal of overlap (Widiger, 2011). Despite these findings, there is still debate over how these constructs are related (e.g., Kamen, Prior, Gaughan, & Miller, 2010; Maples, Miller, Hoffman, & Johnson, 2014; Miller & Pilkonis, 2006). Carpenter and Trull (2013) provide a review of emotional dysregulation as it relates to BPD, defining emotion dysregulation as “an

inability to flexibly respond to and manage emotions” (p. 335). Similar to Widiger (2011), Carpenter and Trull (2013) speculate that this construct has been studied under different names, including affective instability or lability, emotional sensitivity, and emotional vulnerability.

Carpenter and Trull (2013) further argue that emotional dysregulation is a multifaceted construct that involves four components, which are based on the biosocial theory for the development of BPD (Linehan, 1993): emotional sensitivity, heightened and labile negative affect, a lack of adaptive regulation strategies, and an excess of maladaptive regulation strategies. Emotional sensitivity is considered to have biological origins and be present from early life, similar to neuroticism. Heightened and labile negative affect is considered to be the “direct consequence of emotional sensitivity” (p 336). The last two components of emotion dysregulation, as described by Carpenter and Trull (2013) are a lack of adaptive regulation strategies and an excess of maladaptive regulation strategies, which result from the first two components. Based on this definition of emotional dysregulation, emotional sensitivity and heightened and labile negative affect may be explained by the underlying trait neuroticism. If neuroticism is maladaptively high, a person may fail to develop adaptive emotion regulation strategies and instead use maladaptive ones to cope with the high emotional sensitivity and heightened and labile negative affect experienced.

The biosocial theory explains these underlying components of emotion dysregulation, suggesting that individuals are born with high emotional sensitivity or vulnerability, which is reinforced through the invalidation of one’s emotions experienced throughout childhood (Arens, Grabe, Spitzer, & Barnow, 2011; Crowell, et al., 2009;

Linehan, 1993). Then, in adulthood, individuals experience a negative stimulus (either an actual or perceived negative stimulus) in the environment. This experience leads to an increase in negative affect. This experience of high and unstable negative affect may make it difficult for one to use adaptive and appropriate emotion regulation strategies. Instead, individuals use more extreme and maladaptive regulation strategies (Linehan, 1993). These maladaptive strategies become negative coping skills that individuals may use to help alleviate their extremely high negative affect. This combination of emotional dysregulation and behavioral dysregulation is at the core of BPD.

Behavioral Dysregulation

Dysregulated behaviors are impulsive, maladaptive, difficult to control, and often result in harm to the individual. When these behaviors are engaged in chronically, they may cause impairment and distress (Selby & Joiner, 2009). Specifically within BPD, individuals engage in a number of dysregulated behaviors, including nonsuicidal self-injury (NSSI; Brown, Comtois, & Linehan, 2002), bingeing and purging (Cassin & von Ranson, 2005), substance misuse (Bornovalova, Lejuez, Daughters, Rosenthal, & Lynch, 2005), shoplifting (Selby et al., 2010), reckless driving (Sansone, Lam, & Wiederman, 2010), impulsive spending (Selby et al., 2010), starting arguments (Russell, Moskowitz, Zuroff, Sookman, & Paris, 2007), physical aggression (e.g., throwing things, hitting another person; Critchfield, Levy, Clarkin, & Kernber, 2008), and excessive reassurance seeking (Selby et al., 2008).

Emotional Cascade Model

The Emotional Cascade Model of BPD suggests that emotional dysregulation leads to behavioral dysregulation via rumination (Selby et al., 2008). Rumination

(Nolen-Hoeksema, 1991) is the tendency to repetitively think about the causes, situational factors, and consequences of one's negative emotional experience. Rumination has been linked to depression and anxiety (Just & Alloy, 1997; Muris, Roelofs, Rassin, Franken, & Mayer; 2005; Segerstrom, Tsao, Alden, & Craske, 2000), as well as BPD (Abela, Payne, & Moussaly, 2003; Selby et al., 2009; Smith, Grandin, Alloy, & Abramson, 2006). Interestingly, rumination seems to be more related to BPD than other psychopathology. Abela et al. (2003) compared rumination in individuals with comorbid BPD and Major Depressive Disorder (MDD) versus individuals with MDD who did not meet criteria for BPD. The results indicated that rumination occurred at a significantly greater level within the BPD/MDD group compared with the MDD only group. Furthermore, Smith et al. (2006) found that rumination was uniquely related to BPD when compared with other personality disorders, even after controlling for symptoms of depression.

With this apparently strong connection between rumination and BPD, Selby and colleagues have proposed the Emotional Cascade Model. Selby et al. (2008) assessed the relationship between rumination and dysregulated behaviors (i.e., alcohol use, reassurance seeking, and binge-eating) cross-sectionally and temporally, finding that high rumination predicted high levels of dysregulated behaviors. Following this study, Selby and Joiner (2009) introduced the Emotional Cascade Model, suggesting that when individuals with BPD experience negative affect, they also engage in a ruminative process that increases their negative affect. To alleviate this high negative affect, these individuals engage in extreme dysregulated behaviors to distract themselves from the

rumination and negative affect. Thus, this model explains *how* emotional dysregulation leads to behavioral dysregulation.

This model has been tested in subsequent studies. Selby et al. (2009) assessed how the emotional cascade model explains the link between BPD and behavior dysregulation. Selby et al. (2009) recruited a sample of undergraduate students to complete a series of self-report questionnaires, a structured clinical interview, and an in-lab rumination task. The authors then employed structural equation modeling to test the Emotional Cascade Model, finding that rumination fully mediated the relationship between BPD symptoms and dysregulated behavior. Additionally, the authors used an in-lab rumination task to compare the change in negative affect in individuals who met criteria for BPD versus those who did not. The results indicated that when instructed to think about a negative event, individuals who met criteria for BPD experienced greater emotional reactivity and intensity of negative affect than individuals who did not meet criteria for BPD. These results provided evidence for the link between BPD and rumination specifically, though it did not incorporate behavioral dysregulation. Most recently, Selby and Joiner (2013) recruited individuals who self-reported that they engaged in four or more dysregulated behaviors that were difficult to control (e.g., NSSI, drug use, impulsive shopping). Each participant was provided a personal digital assistant (PDA) to provide information on his or her emotions, thoughts, and behavior over a two-week period. The results indicated that elevated rumination, negative emotion, and BPD symptoms prospectively predicted an increase in dysregulated behavior two to three hours later. Furthermore, the results indicated that both rumination and negative emotion had to be elevated for the dysregulated behaviors to occur.

Importantly, the studies by Selby and colleagues include measures of affective instability/lability within the moment but not measures that assess a trait disposition of emotional instability. For example, Selby & Joiner (2013) had participants rate how they were feeling “RIGHT NOW,” as opposed to assessing their general disposition toward experiencing emotions. Therefore, studies that have tested the emotional cascade model have not included an assessment of trait neuroticism. Neuroticism may lead to the development and maintenance of rumination and behavioral dysregulation as an underlying, vulnerability to these constructs. Therefore, neuroticism may be a distal predictor of these constructs. There is evidence for this possible explanation, as neuroticism has been linked directly to depressive rumination (Cox, Enns, Walker, Kjernisted, & Pidlubny, 2001; Lam et al., 2003; Roberts, Gilboa, & Gotlib, 1998). Interestingly, some have argued that rumination may be a cognitive indicator of high neuroticism (Seegerstrom et al. 2000). Additionally, neuroticism is related to a number of dysregulated behaviors, including eating disorder symptoms (Cassin & van Ranson, 2005) and alcohol misuse (Cooper et al., 2000). A facet-trait of neuroticism, negative urgency (i.e., the tendency to act impulsively when experiencing negative affect), is strongly related to a number of these behaviors, including alcohol use, nonsuicidal self-injury, and eating problems (e.g., Dir, Karyadi, & Cyders, 2013).

Overall, neuroticism appears to influence the development of psychopathology and dysregulated behaviors. Therefore, neuroticism may influence the development and maintenance of high rumination and behavioral dysregulation. The current study hopes to extend the Emotion Cascade Model by examining the influence that neuroticism has on rumination and maladaptive behaviors over time. As noted by Selby and Joiner (2009),

there may be other personality or cognitive factors that interplay with rumination that could increase or decrease these emotional cascades that are experienced in individuals with BPD traits. We propose that neuroticism is one such factor that may influence these relationships. Additionally, no other studies have tested the Emotional Cascade Model longitudinally before.

Current Study

The current study has one specific aim: to investigate the relationship between neuroticism (or emotional instability), rumination, and behavioral dysregulation over a two-month period. Previous studies have not tested the Emotional Cascade Model longitudinally, or assessed how underlying trait neuroticism may predict rumination and behavioral dysregulation. Therefore, the current study will investigate if neuroticism can predict rumination and behavioral dysregulation at two later time points. The goal of this study is to extend the Emotional Cascade Model, which purports that rumination will predict behavioral dysregulation across time.

Hypothesis 1

As described above, neuroticism is a personality trait that is often associated with psychopathology, including depression, anxiety, and BPD. Neuroticism is also associated with rumination and a number of maladaptive behaviors, such as substance abuse and nonsuicidal self-injury. Therefore, it is hypothesized that individuals with high levels of neuroticism will report higher levels of rumination and higher levels of dysregulated and maladaptive behaviors across time. Specifically, high neuroticism at Time 1 will predict elevated levels of rumination and dysregulated behaviors at Time 2 and Time 3, and that

high neuroticism at Time 2 will predict high levels of rumination and dysregulated behaviors at Time 3.

A second model will also be tested for comparison. This model will be the alternative model to the first hypothesized model. It is predicted that this hypothesized model 1 will provide a better fit to the data than the alternative model, in which rumination at Time 1 predicts dysregulated behaviors at Time 2 and Time 3, and rumination at Time 2 predicts dysregulated behaviors at Time 3. It is predicted that the hypothesized model will be a better fit, as it will extend the alternative model by including a predispositional risk factor (i.e., neuroticism) that may influence rumination and maladaptive behaviors.

Proposed Methodology

Participants

The proposed sample will be comprised of Oklahoma State University undergraduate students ($n = 600$) who are at least 18 years of age. Within the pool of potential participants, the study will oversample for individuals who have at least 5 symptoms on the McLean Screening Instrument for BPD (MSI-BPD; Zanarini et al., 2003; Appendix A). The MSI is included on the SONA pre-screener, which is completed by all potential participants. This oversampling procedure is to ensure that the current study will include ample participants who are likely engaging in maladaptive behaviors and to tap into a broader range of emotion dysregulation. Data collection will not begin until the Oklahoma State University Institutional Review Board formally approves the study. To account for attrition across time, 600 participants will be recruited to complete the study (see power analysis).

Measures

Demographics Form (Appendix B). Basic demographic information will be collected using a self-report survey. The information that will be collected includes age, gender, ethnicity, relationship status, year in school, religious affiliation, income level, if they are currently in treatment, and if they are currently taking any medication.

Personality Measures

Abbreviated Five Factor Borderline Inventory (DeShong, Mullins-Sweatt, & Lynam, in preparation; Appendix C). The abbreviated FFBI is a 48-item self-report measure that assesses BPD from the perspective of the FFM. The abbreviated FFBI is based on the 120-item FFBI (Mullins-Sweatt et al., 2012) and includes a total score and 12 subscale scores that are coordinated with respective facets of the FFM, as measured by the NEO PI-R (Costa & McCrae, 1992), and relates to measures of PDs (Mullins-Sweatt et al., 2012). The items of the abbreviated FFBI have shown adequate to good validity and strong internal consistencies, ranging from .72 to .86 for the subscales and with a full scale alpha of .96 (DeShong et al., in preparation). Within the abbreviated FFBI will be 16 validity items from the Elemental Psychopathy Assessment (EPA; Lynam et al., 2011; Infrequency and Virtue). These two scales will be used to assess for invalid profiles within the data after each participant has completed the study. If the participant's score on either scale is elevated, they will not receive credit, as outlined in the informed consent form. Additionally, during the survey, if the participant answered in an unreliable or invalid way to a subset of the validity items, they will be prompted with a message, reminding them to answer in an honest and reliable manner in order to receive credit.

Item Response Theory-Drive Short Form (IPIP-120; Maples, Guan, Carter, & Miller, in press; Appendix D) The IPIP-120 is a 120-item self-report questionnaire that assesses the five broad domains of general personality based on the original 300-item IPIP NEO measure (Goldberg, 1990), which is a free to use measure that is a representation of the NEO PI-R. The IPIP-120 also measures six narrower facets within each domain (e.g., anxiety, anger, depression, self-consciousness, immoderation, and vulnerability are the six facets of neuroticism). Each question is answered on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). This newer measure has shown to have adequate internal consistency, similar to the full-length 300-item IPIP NEO, with internal consistency coefficients ranging from .73 to .89 for the domains, and from .55 to .89 for the facet scales (Maples et al., in press).

Personality Diagnostic Questionnaire – 4th Edition Plus (PDQ-4+; Hyler, 1994; Appendix E). The PDQ-4+ is a 99-item true/false self report measure that assesses the DSM-5 personality symptoms for each of the ten personality disorders. The PDQ-4+ is designed as a screening measure for the ten personality disorders, with each individual item corresponding to a single DSM-5 diagnostic criterion. The PDQ-4+ is scored by totaling the number of criteria endorsed for each personality disorder. Additionally, it yields a total score consisting of the total number of pathological traits endorsed. Scales of previous editions of the PDQ-4+ (e.g., PDQ-R) have shown good test-retest reliability and low to adequate internal consistencies, ranging from .27 to .69 (Trull, 1993; Uehara, Sakado, & Sato, 1997).

McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD; Zanarini et al., 2003; Appendix A). The MSI-BPD is a 10-item, self-report measure

designed to screen individuals for BPD. The measure is based partly on a selection of questions from the Diagnostic Interview for DSM-IV Personality Disorders (DIPD; Zanarini, Frankenburg, Sickel, & Yong, 1996). The MSI-BPD contains a question for each DSM-5 diagnostic criterion (criterion nine is assessed using two questions). The items have adequate internal consistency ($\alpha = 0.74$), test-retest reliability (Spearman's rho = 0.72), sensitivity (0.81), and specificity (0.85) in a sample of individuals without psychosis or mania (Zanarini et al., 2003). The MSI-BPD also has moderate sensitivity (0.69) and specificity (0.67) and diagnostic accuracy (0.74) in a community sample (Patel, Sharp, & Fonagy, 2011). As previously mentioned, the MSI-BPD is included on the SONA prescreener and will be used to recruit individuals with elevated BPD symptoms. This will also be included in the data collection of the current study.

The Short UPPS-P Impulsive Behavior Scale (SUPPS-P; Lynam, 2013; Appendix F). The SUPPS-P is a 20-item self-report measure that was developed based on the full-length 59-item UPPS-P measure. The SUPPS-P assesses five broad domains of impulsivity, including negative urgency, lack of premeditation, lack of perseverance, sensation seeking, and positive urgency. The SUPPS-P has similarly adequate internal consistencies as the full version of the UPPS-P for all five subscales, ranging from .74 to .88 (Cyders, Littlefield, Coffey, & Karyadi, 2014).

Rumination Measures

Anger Rumination Scale (ARS; Sukhodolsky, Golub, & Cromwell, 2001; Appendix G). The ARS is a 19-item measure used to assess the tendency to focus attention on current anger-provoking situations and previous anger episodes. Each item is rated on a four-point Likert scale, ranging from 1 (almost never) to 4 (almost always).

The items on the ARS have demonstrated good test-retest reliability and poor to adequate internal consistency, ranging from .39 to .72 (Sukhodolsky et al., 2001).

Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski & Kraaij, 2007; Appendix H). The CERQ is a 36-item measure of cognitive emotion regulation processes, including rumination. For the current study, the 8 items from the rumination and catastrophizing subscales will be used as an index of rumination, which has been supported by previous studies, (Selby & Joiner, 2013; Selby et al., 2008; 2009). These two subscales are highly correlated with one another at .65 (Garnefski, Kraaij, & Spinhoven, 2001) and have adequate internal consistency, with values ranging from .68 to .83 (Garnefski & Kraaij, 2007).

Rumination on Interpersonal Offenses (RIO; Wade, Vogel, Liao, & Goldman, 2008; Appendix I). The RIO is a 6-item measure assessing the extent to which an individual ruminates about perceived interpersonal offenses. Each item is answered on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The RIO has exhibited good internal consistency, ranging from .90 to .92 (Wade et al., 2008).

Ruminative Response Scale (RRS; Nolen-Hoeksema & Morrow, 1991; Appendix J). The RRS is a 22-item self-report measure that assess how much one focuses on their depressed mood, including thoughts related to the self, the symptoms, possible causes, and consequences of the depressed mood. Each item is rated on a Likert scale, ranging from 1 (almost never) to 4 (almost always). The RRS has been shown to have adequate internal reliability, ranging from .56 to .71 for the two subscales (i.e., reflection and brooding) and .90 for the full scale (Roelofs, Muris, Huibers, Peeters, & Arntz, 2006).

Rumination on Sadness Scale (RSS; Conway, Csank, Holm, & Blake, 2000; Appendix K). The RSS is a 13-item self-report measure that assesses the extent to which one focuses their attention on sadness. Each item is rated on a 5-point Likert scale, ranging from 1 (not at all) to 5 (very much). The items of the RSS have been shown to have adequate internal reliability, ranging from .54 to .74, with the full scale having an alpha of .90 (Conway et al., 2000; Roelofs et al., 2006).

Behavioral Dysregulation Measure

Maladaptive Behavior Scale (MBS; Appendix L). To assess for maladaptive behaviors, items were either created or adapted from the Impulsive Behavior Scale (IBS; Rosotto, Yager, & Rorty, 1998) and the Risky Behavior Scale (RBS; Fischer & Smith, 2004) as neither measure assessed a full-range of maladaptive behaviors commonly seen in emotionally dysregulated individuals. Additional questions were added to the new measure to assess for maladaptive eating behaviors, gambling, interpersonal problems, and aggression because they were not adequately assessed by the IBS or RBS. The MBS is a 29-item measure that assesses how often an individual has engaged in a number of maladaptive behaviors in the past month. Each item is answered on a 5-point Likert scale, ranging from 0 (Never/not at all) to 4 (Every day or nearly every day).

General Psychopathology Measures

The Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977; Appendix M). The CES-D is a 20-item self-report questionnaire that assesses one's current level of depressive symptoms across six different components (e.g., depressed mood, feelings of helplessness and hopelessness, sleep disturbance). The CES-D has

good internal consistencies, ranging from .85 in a general population sample to .90 for a psychiatric population sample (Radloff, 1977).

Zung Anxiety Scale (ZAS; Zung, 1971; Appendix N). The ZAS is a 20-item self-report measure of current anxiety symptoms and the severity of each symptom. The ZAS has been shown to have good internal consistency at .89 (DeShong et al., in press).

Emotional Instability and Dysregulation Measures

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004; Appendix O). The DERS is a 36-item self-report questionnaire that assesses emotion dysregulation in adults across six areas: Nonacceptance of emotional response, difficulties engaging in goal-directed behaviors, impulsive control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. The subscales of the DERS have illustrated adequate internal consistency in previous studies, ranging from .68 to .91 (DeShong et al., in press; Gratz & Roemer, 2004).

Emotion Vulnerability-Child (EV-Child; Sauer & Baer, 2009; Appendix P). The EV-Child is a 21-item, self-report measure examining an individual's level of emotional reactivity and intensity of negative affect retrospectively about their childhood. The EV-Child was adapted from the Affect Intensity Measure (AIM; Bryant et al., 1996) in order for participants to retrospectively report on childhood tendencies rather than current emotional reactivity. For the EV-Child, there is a total score assessing the emotional vulnerability in childhood. Internal consistency has been high ($\alpha = 0.92$; Sauer & Baer, 2009).

The Socialization of Emotion Scale (SES; Krause, Mendelson, & Lynch, 2003; Appendix Q). The SES was adapted from the Coping with Children's Negative Emotions Scale (CCNES; Fabes, Eisenberg, & Bernzweig, 1990). The authors of the SES reworded the CCNES to assess participants' retrospective recall of their caretakers' attitudes and behaviors. Participants complete each item twice: once in regards to their mother's behavior and once in regards to their father's behaviors. For the current study, the SES will be broken into four scales: the invalidation mother scale, the validation mother scale, and the two corresponding father scales. The internal consistencies have been high, ranging from .90 to .95 in a previous study (DeShong et al., in press).

Procedure

As described above, participants will be recruited using the OSU Psychology Department undergraduate subject pool (SONA system). All participants will voluntarily choose to participate using the SONA system and will receive participation credit to be used toward the psychology course of their choosing. Students will have previously completed the pre-screener measure via SONA. All students on the SONA system will be allowed to sign up and complete the study. Those who score at least a 5 on the MSI-BPD measure will be solicited via email to complete the study. This email will provide information explaining the study's purpose, risks, benefits, and requirements to the solicited participants. Within the SONA listing, the students will be able to access available participation slots and read additional information about the study.

Participants will complete the study at three time points, with approximately four weeks in between each time point. All three time points will be completed online. Prior to any data collection, each participant must provide his or her informed consent to

participate. Afterward, the participant will complete all self-report measures online via Qualtrics. The order of instruments will be randomized to control for order effects. Participants will also provide an email and phone number, so that they may be contacted to complete the second and third time points of the study. The students' information will be stored separately from the data, so that they are not linked. The data across the time points will be linked by the participants first and last name. Once all data is collected and combined, the names will be removed from the data set. For Time 2 and Time 3, participants will complete the rumination measures, maladaptive behavior scale, the neuroticism scale from the IPIP NEO, the DERS, CES-D, and ZAS. Participants will be rewarded additional research credit for completing Time 2 of the study (if applicable), as well as being entered into a drawing for a 10-dollar Amazon gift card. If participants are no longer enrolled in a psychology class, they will be entered into the drawing twice. Participants who completed Time 3 will be entered into a second drawing for a 25-dollar Amazon gift card.

Proposed Analyses

Data Screening

Power Analyses

As recommended by Kline (2011), there should be 20 participants for each variable in the tested SEM model to have adequate power. The model being tested will have 9 variables: neuroticism, rumination, and dysregulated behaviors across three time points. Accordingly, the model that will be tested would require 180 participants to complete the study. A second method to calculate sample size and power is to calculate the sample size and power at the model level as recommended by Kline (2011) and

MacCallum, Wegener, Uchino, and Fabrigar (1993). This method is based on the RMSEA of the non-close fit model and the close fit model. Accordingly, the recommended sample size would be 250 participants. Therefore, to be conservative, the current study will collect 250 participants through Time 3. To account for attrition, 600 participants will be recruited to complete the study at Time 1.

Missing Data and Outliers

Prior to analyses, data will be screened for missing data and outliers. Missing data will be imputed using an Expectation-maximization algorithm, as suggested by Tabachnick and Fidell (2001). To ensure the validity of the imputed data, all analyses will be conducted with and without the imputed data to assess for differences. To ensure that extreme values do not influence the analyses, each variable will be screened for univariate outliers. For a sample of 100 or more, it is recommended to use an absolute z-value of 3.29 or greater to identify outliers (Tabachnick & Fidell, 2001).

Hypothesis 1

It is hypothesized that neuroticism at Time 1 will predict rumination and behavior dysregulation at Time 2 and Time 3 and that neuroticism at Time 2 will predict rumination and behavior dysregulation at Time 3. This model is illustrated in Figure 1. To test this hypothesis, AMOS 21 (Arbuckle, 2012) will be utilized to estimate path analyses to parsimoniously test directional relationships between the variables at the three time points. Additionally, path analysis will account for the shared variance between the constructs at each time point. Prior to testing the model, the measures assessing rumination will be tested to ensure they fit well together as a latent variable. This will also be conducted for the behavior dysregulation measure.

For the hypothesized model, model fit will be assessed by evaluating the CFI, TLI, and RMSEA values. CFI and TLI values of .95 or higher and RMSEA values of .06 or below represent a model that has close fit to the data (Hu & Bentler, 1999). After assessing for model fit, the predictor variables will be assessed for the significant parameter estimates. An alternative model will also be assessed and compared to the hypothesized model. The alternative model will have rumination at Time 1 predicting behavioral dysregulation at Time 2 and Time 3, and have rumination at Time 2 predicting behavioral dysregulation at Time 3. This model is illustrated in Figure 2. This model will also be assessed using the CFI, TLI, and RMSEA values. After assessing for model fit, the predictor variables will be assessed for the significant parameter estimates. Additionally, the hypothesized and alternative model will be compared with one another via the AIC value. The lower AIC value indicates a better model fit (Akaike, 1987).

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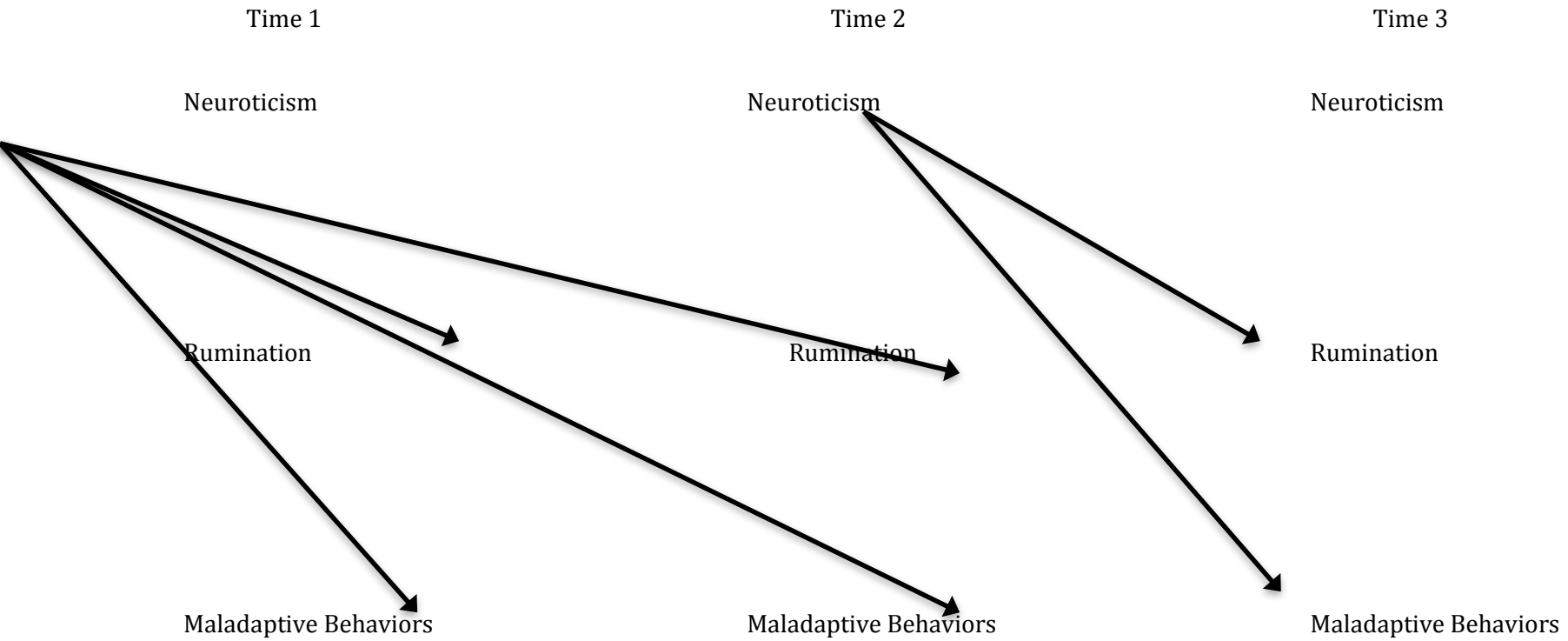


Figure 1. Hypothesized Model in which neuroticism at Time 1 predicts rumination and maladaptive behaviors at Time 2 and Time 3.

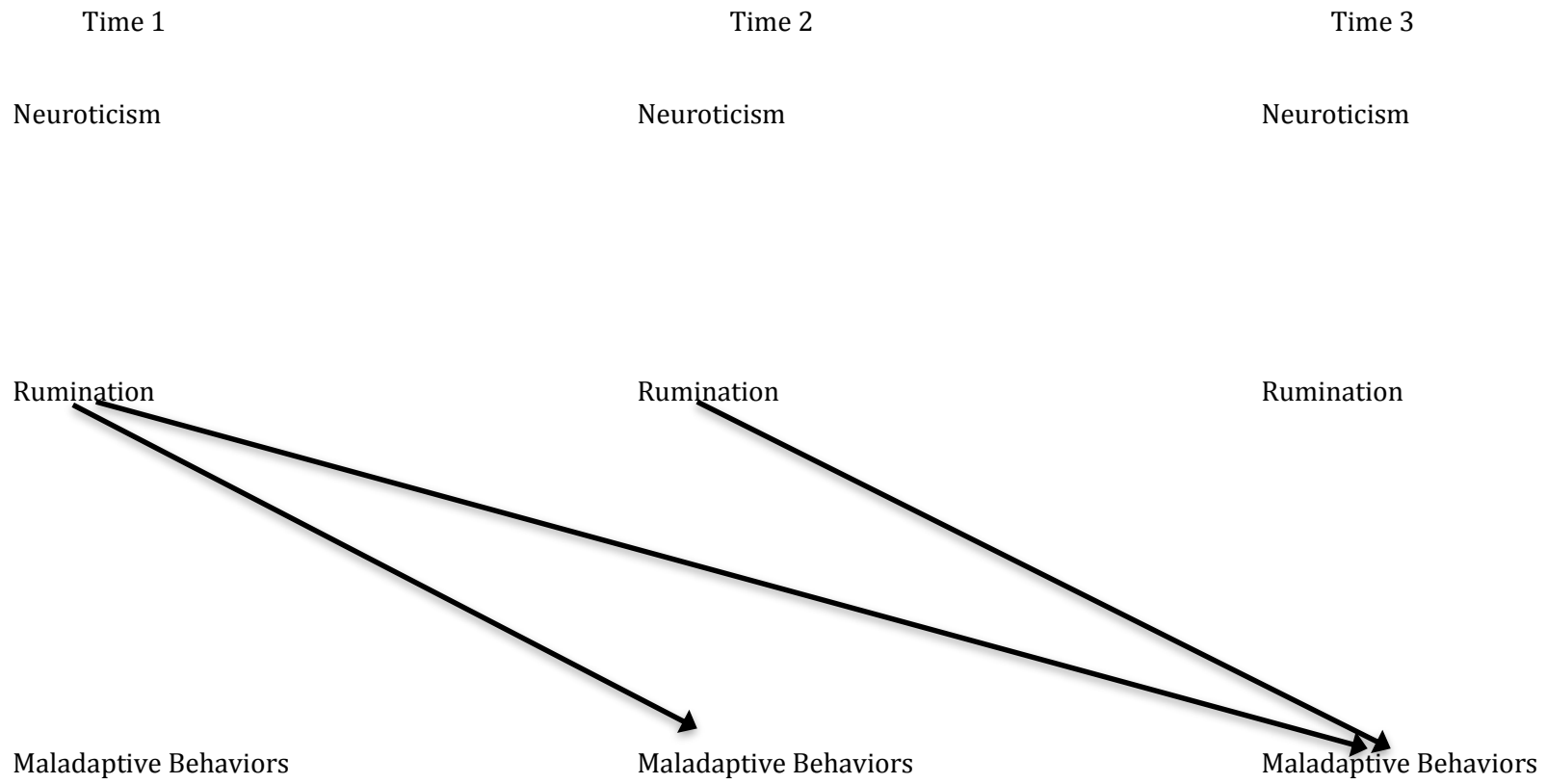


Figure 2. Alternative Model in which rumination at Time 1 predicts maladaptive behaviors at Time 2 and Time 3.

Appendix B

Measures

McLean BPD Screening Measure

Please read each item carefully and mark the response that best corresponds to your agreement or disagreement. You may skip any questions you prefer not to answer.

1. Have any of your closest relationships been troubled by a lot of arguments or repeated breakups?	1 = Yes____ 0 = No____
2. Have you deliberately hurt yourself physically (e.g., punched yourself, cut yourself, burned yourself)? How about made a suicide attempt?	1 = Yes____ 0 = No____
3. Have you had at least two other problems with impulsivity (e.g, eating binges and spending sprees, drinking too much and verbal outbursts)?	1 = Yes____ 0 = No____
4. Have you been extremely moody?	1 = Yes____ 0 = No____
5. Have you felt angry a lot of the time? How about often acted in an angry or sarcastic manner?	1 = Yes____ 0 = No____
6. Have you often been distrustful of other people?	1 = Yes____ 0 = No____
7. Have you frequently felt unreal or as if things around you were unreal?	1 = Yes____ 0 = No____
8. Have you chronically felt empty?	1 = Yes____ 0 = No____
9. Have you often felt that you had no idea of who you are or that you have no identity?	1 = Yes____ 0 = No____
10. Have you made desperate efforts to avoid feeling abandoned or being abandoned (e.g., repeatedly called someone to reassure yourself that he or she still cared, begged them not to leave you, clung to them physically)?	1 = Yes____ 0 = No____

Demographics and Employment Information

1) What is your age?

2) What is your gender?

- Male
- Female

3) What is your Ethnicity?

- Asian/Pacific Islander
- Black/African-American
- Caucasian
- Hispanic
- Native American/Alaska Native
- Other/Multi-Racial
- Decline to Respond

4) What is your current relationship status?

- Single, Never Married
- Casual Dating Relationship
- Committed Relationship
- Life Partner
- Married
- Separated
- Divorced
- Widowed

5) Current year in school?

- Freshman
- Sophomore
- Junior
- Senior
- Other

6) What is your religious affiliation?

- Agnostic

- Atheist
- Buddhist
- Catholic
- Hindu
- Muslim
- Nonaffiliated
- Protestant (e.g., Baptist, Lutheran, Methodist)
- Wiccan/Pagan
- Other

7) Please estimate your parent's income:

- \$0-\$10,000
- \$10,000-\$20,000
- \$20,000-\$30,000
- \$30,000-\$40,000
- \$40,000-\$50,000
- \$50,000-\$60,000
- \$60,000-\$70,000
- \$70,000-\$80,000
- \$80,000-\$90,000
- \$90,000-\$100,000
- \$100,000-\$110,000
- Over \$110,000

Abbreviated Five Factor Borderline Inventory with EPA validity scales

Please read all these instructions carefully before beginning. The following statements deal with how you think, feel, and act. Please read each item carefully and select the item that best corresponds to your agreement or disagreement. There are no right or wrong answers, and you need not be an expert to complete this questionnaire.

Disagree strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree strongly
1	2	3	4	5

1. I tend to be quite anxious.
2. I have had quite a few angry outbursts.
3. I sometimes feel worthless.
4. I can be so different with different people that it's like I'm not the same person.
5. I frequently have urges to do things that get me into trouble.
6. My emotions can spiral out of control.
7. I frequently forget my middle name.
8. Harming myself is one of the few ways I can tolerate my emotions.
9. I have felt that things were unreal and I was detached from life.
10. I am often distrustful of other people.
11. I have never told a lie to anyone.
12. I sometimes do things I shouldn't to get people to do things I want or need.
13. I tend to get into lots of arguments.
14. I get into trouble because I don't think things through.
15. I worry a great deal.
16. I have never been envious of anyone else.
17. My anger often feels out of control.
18. I have thought about ways to kill myself.
19. I never speak to anyone during the day.
20. I can be so different with different people that I wonder who I am.
21. Sometimes I let myself get swept away by my urges.
22. I don't seem to have much control over how I feel.
23. I have threatened to commit suicide.
24. I have never in my life been angry at another person.
25. Sometimes I feel like I am no longer connected to my body.
26. It's really hard for me to trust people
27. Other people have called me manipulative.
28. On average, I get less than an hour of sleep a night.
29. I will make threats to get people to do things.

30. I tend to act quickly without thinking things through.
31. I worry a lot about people leaving me.
32. My anger at times gets the better of me.
33. I often feel sad.
34. I have lied to someone at least once in my life.
35. I have never listened to music.
36. I tend to feel like I don't belong with anyone.
37. When I am upset, I often do things that later cause me problems.
38. My mood shift rapidly from one feeling to another.
39. I have sailed across the Atlantic Ocean in a hot air balloon.
40. Even minor setbacks can cause a great deal of drama in my life.
41. I sometimes feel like I am not real.
42. I have treated another person unfairly at least once in my life.
43. People are not as loyal to me as I wish they were.
44. I try to eat something almost every day.
45. I have been known to massage the truth to get my way.
46. I often get into arguments with people who are close to me.
47. Others have said that I do not think before I act.
48. I worry a lot about things that are out of my control.
49. I am better rested on mornings after a good night of sleep than after I have stayed awake all night.
50. My anger has at times gotten me into trouble.
51. I have, at least once, laughed or smiled at an inappropriate joke.
52. I have thought about suicide since I was a teenager.
53. I often feel like an outcast.
54. I do not like to lend things to people who will not take care of them.
55. I have done a lot of things impulsively that I later regret.
56. I have a difficult time controlling my mood.
57. I have, at least once, been impolite to another person.
58. I don't think I can continue to live like this
59. I sometimes feel that nothing is real.
60. I have not been able to trust some of my closest friends.
61. At times you have to be dishonest and manipulative to get what you need.
62. I have eaten more than I should have on at least one occasion.
63. I am easy to get along with.
64. I've done some pretty bad things on impulse.

IPIP-NEO-120

The following pages contain phrases describing people's behaviors. Please use the rating scale next to each phrase to describe how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please read each statement carefully, and then click the circle that corresponds to the accuracy of the statement.

Please read each item carefully and circle the one answer that best corresponds to your agreement or disagreement. If you the statement is **very inaccurate** circle **1**, if it is **moderately inaccurate** circle **2**, if it is **neither accurate nor inaccurate** circle **3**, if it is **moderately accurate** circle **4**, and if it is **very accurate** circle **5**.

Disagree Strongly	Disagree a little	Neither agree nor disagree	Agree a little	Strongly agree
1	2	3	4	5

1. Worry about things.
2. Make friends easily.
3. Have a vivid imagination.
4. Trust others.
5. Complete tasks successfully
6. Get angry easily
7. Love large parties.
8. See beauty in things that others might not notice
9. Use flattery to get ahead.
10. Like order.
11. Often feel blue.
12. Take charge.
13. Experience my emotions intensely.
14. Make people feel welcome.
15. Keep my promises.
16. Find it difficult to approach others.
17. Am always busy.
18. Prefer to stick with things that I know.
19. Love a good fight.
20. Work hard.
21. Often eat too much.
22. Love excitement.
23. Am not interested in abstract ideas.
24. Believe that I am better than others.
25. Start tasks right away.
26. Feel that I'm unable to deal with things.
27. Radiate joy.
28. Tend to vote for liberal political candidates.

29. Sympathize with the homeless.
30. Jump into things without thinking.
31. Fear for the worst.
32. Warm up quickly to others.
33. Enjoy wild flights of fantasy.
34. Believe that others have good intentions.
35. Excel in what I do.
36. Get irritated easily.
37. Talk to a lot of different people at parties.
38. Do not like art.
39. Know how to get around the rules.
40. Like to tidy up.
41. Dislike myself.
42. Try to lead others.
43. Seldom get emotional.
44. Love to help others.
45. Tell the truth.
46. Am easily intimidated.
47. Am always on the go.
48. Dislike changes.
49. Yell at people.
50. Do more than what's expected of me.
51. Go on binges.
52. Seek adventure.
53. Avoid philosophical discussions.
54. Think highly of myself.
55. Find it difficult to get down to work.
56. Remain calm under pressure.
57. Have a lot of fun.
58. Believe in one true religion.
59. Feel sympathy for those who are worse off than myself.
60. Make rash decisions.
61. Am afraid of many things.
62. Feel comfortable around people.
63. Love to daydream.
64. Trust what people say.
65. Handle tasks smoothly.
66. Lose my temper.
67. Don't like crowded events.
68. Do not like poetry.
69. Cheat to get ahead.
70. Leave a mess in my room.
71. Am often down in the dumps.
72. Take control of things.
73. Am not easily affected by my emotions.
74. Am concerned about others.

75. Break my promises.
76. Am not embarrassed easily.
77. Do a lot in my spare time.
78. Don't like the idea of change.
79. Insult people.
80. Set high standards for myself and others.
81. Rarely overindulge.
82. Love action.
83. Have difficulty understanding abstract ideas.
84. Have a high opinion of myself.
85. Need a push to get started.
86. Know how to cope.
87. Love life.
88. Tend to vote for conservative political candidates.
89. Suffer from others' sorrows.
90. Rush into things.
91. Get stressed out easily.
92. Act comfortably with others.
93. Like to get lost in thought.
94. Distrust people.
95. Know how to get things done.
96. Rarely get irritated.
97. Avoid crowds.
98. Do not enjoy going to art museums.
99. Take advantage of others.
100. Leave my belongings around.
101. Have a low opinion of myself.
102. Wait for others to lead the way.
103. Experience very few emotional highs and lows.
104. Turn my back on others.
105. Get others to do my duties.
106. Am able to stand up for myself.
107. Can manage many things at the same time.
108. Am attached to conventional ways.
109. Get back at others.
110. Am not highly motivated to succeed.
111. Am able to control my cravings.
112. Enjoy being reckless.
113. Am not interested in theoretical discussions.
114. Make myself the center of attention.
115. Have difficulty starting tasks.
116. Am calm even in tense situations.
117. Laugh aloud.
118. Like to stand during the national anthem.
119. Am not interested in other people's problems.
120. Act without thinking.

27. I fear losing the support of others if I disagree with them.	T	F
28. I suffer from low self-esteem.	T	F
29. I put my work ahead of being with my family or friends or having fun.	T	F
30. I show my emotions easily.	T	F
31. Only certain special people can really appreciate and understand me.	T	F
32. I often wonder who I really am.	T	F
33. I have difficulty paying bills because I don't stay at one job for long.	T	F
34. Sex just doesn't interest me.	T	F
35. Others consider me moody and "hot tempered."	T	F
36. I can often sense, or feel things, that others can't.	T	F
37. Others will use what I tell them against me.	T	F
38. There are some people I do not like.	T	F
39. I am more sensitive to criticism or rejection than most people.	T	F
40. I find it difficult to start something if I have to do it by myself.	T	F
41. I have a higher sense of morality than other people.	T	F
42. I am my own worst critic.	T	F
43. I use my "looks" to get the attention that I need.	T	F
44. I need very much for other people to take notice of me or compliment me.	T	F
45. I have tried to hurt or kill myself.	T	F
46. I do a lot of things without considering the consequences.	T	F
47. There are few activities that I have any interest in.	T	F
48. People often have difficulty understanding what I say.	T	F
49. I object to supervisors telling me how I should do my job.	T	F
50. I keep alert to figure out the real meaning of what people are saying.	T	F
51. I have never told a lie.	T	F
52. I am afraid to meet new people because I feel inadequate.	T	F
53. I want people to like me so much that I volunteer to do things that I'd rather not do.	T	F
54. I have accumulated lots of things I don't need that I can't bear to throw out.	T	F
55. Even though I talk a lot, people say I have trouble getting to the point.	T	F
56. I worry a lot.	T	F
57. I expect other people to do favors for me even though I do not usually do favors for others.	T	F
58. I am a very moody person.	T	F
59. Lying comes easily to me and I often do it.	T	F
60. I am not interested in having close friends.	T	F
61. I am often on guard against being taken advantage of.	T	F
62. I never forget, or forgive, those who do me wrong.	T	F
63. I resent those who have more "luck" than I do.	T	F
64. A nuclear war may not be such a bad idea.	T	F
65. When alone I feel helpless and unable to care for myself.	T	F
66. If others can't do things correctly, I would prefer to do things myself.	T	F
67. I have a flair for the dramatic.	T	F

- | | | |
|--|---|---|
| 68. Some people think that I take advantage of others. | T | F |
| 69. I feel that my life is dull and meaningless. | T | F |
| 70. I am critical of others. | T | F |
| 71. I don't care what others have to say about me. | T | F |
| 72. I have difficulties relating to others in a one-to-one situation. | T | F |
| 73. People have often complained that I did not realize I was upset. | T | F |
| 74. By looking at me, people might think that I am pretty odd, eccentric or weird. | T | F |
| 75. I enjoy doing risky things. | T | F |
| 76. I have lied a lot on this questionnaire. | T | F |
| 77. I complain a lot about my hardships. | T | F |
| 78. I have difficulty controlling my anger or temper. | T | F |
| 79. Some people are jealous of me. | T | F |
| 80. I am easily influenced by others. | T | F |
| 81. I see myself as being thrifty but others see me as being cheap. | T | F |
| 82. When a close relationship ends, I need to get involved with someone else immediately. | T | F |
| 83. I suffer from low self-esteem. | T | F |
| 84. I am a pessimist. | T | F |
| 85. I waste no time in getting back at people who insult me. | T | F |
| 86. Being around other people makes me nervous. | T | F |
| 87. In new situations, I fear being embarrassed. | T | F |
| 88. I am terrified of being left to care for myself. | T | F |
| 89. People complain that I am "stubborn as a mule." | T | F |
| 90. I take relationships more seriously than do those who I am involved with. | T | F |
| 91. I can be nasty with someone one minute then find myself apologizing to them the next minute. | T | F |
| 92. Others consider me to be stuck up. | T | F |
| 93. When stressed, things happen. Like I get paranoid or just "black out". | T | F |
| 94. I don't care if others get hurt so long as I get what I want. | T | F |
| 95. I keep my distance from others. | T | F |
| 96. I often wonder whether my wife/husband (girlfriend/ boyfriend) has been unfaithful to me. | T | F |
| 97. I often feel guilty. | T | F |
| 98. I have done things on impulse (such as those below) that can get me into trouble. Check all that apply to me: | T | F |
| a. Spending more money than I have. _____ | | |
| b. Having sex with people I hardly know. _____ | | |
| c. Drinking too much. _____ | | |
| d. Taking drugs. _____ | | |
| e. Eating binges. _____ | | |
| f. Reckless driving. _____ | | |
| 99. When I was a kid (before age 15) I was somewhat of a juvenile delinquent, doing some of the things below. Check all that apply to me: | T | F |
| a. was considered a bully. _____ | | |

- b. used to fights with other kids. _____
- c. used a weapon in fights that I had. _____
- d. robbed or mugged other people. _____
- e. was physically cruel to other people. _____
- f. was physically cruel to animals. _____
- g. forced someone to has sex with me. _____
- h. lied a lot. _____
- i. stayed out late at night without my parents permission. _____
- j. stole things from others. _____
- k. set fires. _____
- l. broke windows or destroyed property. _____
- m. ran away from home overnight more than once. _____
- n. began skipping school, a lot, before age 13. _____
- o. broke into someone's house, building or car. _____

The Short UPPS-P Impulsive Behavior Scale

Below are a number of statements that describe ways in which people act and think. For each statement, please indicate how much you agree or disagree with the statement. If you **Agree Strongly** circle **1**, if you **Agree Somewhat** circle **2**, if you **Disagree somewhat** circle **3**, and if you **Disagree Strongly** circle **4**. Be sure to indicate your agreement or disagreement for every statement below. Also, there are questions on the following pages.

1. I generally like to see things through to the end.
2. My thinking is usually careful and purposeful.
3. When I am in great mood, I tend to get into situations that could cause me problems.
4. Unfinished tasks really bother me.
5. I like to stop and think things over before I do them.
6. When I feel bad, I will often do things I later regret in order to make myself feel better now.
7. Once I get going on something I hate to stop.
8. Sometimes when I feel bad, I can't seem to stop what I am doing even though it is making me feel worse.
9. I quite enjoy taking risks.
10. I tend to lose control when I am in a great mood.
11. I finish what I start
12. I tend to value and follow a rational, "sensible" approach to things.
13. When I am upset I often act without thinking.
14. I welcome new and exciting experiences and sensations, even if they are a little frightening and unconventional.
15. When I feel rejected, I will often say things that I later regret.
16. I would like to learn to fly an airplane.
17. Others are shocked or worried about the things I do when I am feeling very excited.
18. I would enjoy the sensation of skiing very fast down a high mountain slope.
19. I usually think carefully before doing anything.
20. I tend to act without thinking when I am really excited.

Anger Rumination Scale

ARS

Using the scale below, please respond to the 19 statements below. Indicate how often each situation occur/have occurred to you.

1	2	3	4
Almost Never	Sometimes	Often	Almost Always

1. I ruminate about my past anger experiences.
2. I ponder about the injustices that have been done to me.
3. I keep thinking about events that angered me for a long time.
4. I have long living fantasies of revenge after the conflict is over.
5. I think about certain events from a long time ago and they still make me angry.
6. I have difficulty forgiving people who have hurt me.
7. After an argument is over, I keep fighting with this person in my imagination.
8. Memories of being aggravated pop up into my mind before I fall asleep.
9. Whenever I experience anger, I keep thinking about it for a while.
10. I have had times when I could not stop being preoccupied with a particular conflict.
11. I analyze events that make me angry.
12. I think about the reasons people treat me badly.
13. I have day dreams and fantasies of violent nature.
14. I feel angry about certain things in my life.
15. When someone makes me angry I can't stop thinking about how to get back at this person.
16. When someone provokes me, I keep wondering why this should have happened to me.
17. Memories of even minor annoyances bother me for a while.
18. When something makes me angry, I turn this matter over and over again in my mind.
19. I re-enact the anger episode in my mind after it has happened.

Cognitive Emotion Regulation Questionnaire

Please answer the following questions about yourself, on the following scale:

1 almost never 2 rarely 3 sometimes 4 often 5 almost always

1. I often think about how I feel about what I have experienced.
2. I am preoccupied with what I think and feel about what I have experienced.
3. I want to understand why I feel the way I do about what I have experienced.
4. I dwell upon the feelings the situation has evoked in me.
5. I often think that what I have experienced is much worse than what others have experienced.
6. I keep thinking about how terrible it is what I have experienced.
7. I often think that what I have experienced is the worst that can happen to a person.
8. I continually think how horrible the situation has been.

Rumination on Interpersonal Offenses

Directions:

The following items describe reactions people can have to being hurt by others. Think back over your experience in the last 7 days and indicate your agreement or disagreement with the following statements.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

1. I can't stop thinking about how I was wronged by this person.
2. Memories about this person's wrongful actions have limited my enjoyment of life.
3. I have a hard time getting thoughts of how I was mistreated out of my head.
4. I try to figure out the reasons why this person hurt me.
5. The wrong I suffered is never far from my mind.
6. I find myself replaying the events over and over in my mind.

Ruminative Response Scale

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

1 almost never 2 sometimes 3 often 4 almost always

1. think about how alone you feel
2. think "I won't be able to do my job if I don't snap out of this"
3. think about your feelings of fatigue and achiness
4. think about how hard it is to concentrate
5. think "What am I doing to deserve this?"
6. think about how passive and unmotivated you feel.
7. analyze recent events to try to understand why you are depressed
8. think about how you don't seem to feel anything anymore
9. think "Why can't I get going?"
10. think "Why do I always react this way?"
11. go away by yourself and think about why you feel this way
12. write down what you are thinking about and analyze it
13. think about a recent situation, wishing it had gone better
14. think "I won't be able to concentrate if I keep feeling this way."
15. think "Why do I have problems other people don't have?"
16. think "Why can't I handle things better?"
17. think about how sad you feel.
18. think about all your shortcomings, failings, faults, mistakes
19. think about how you don't feel up to doing anything
20. analyze your personality to try to understand why you are depressed
21. go someplace alone to think about your feelings
22. think about how angry you are with yourself

Rumination on Sadness Scale

Please rate each question in regards to your response to sadness, on the following scale:

- 1 = Not at all like me
- 2 = Somewhat like me
- 3 = Neutral
- 4 = Mostly like me
- 5 = Very much like me

When I am sad, down, or feel blue...

1. I have difficulty getting myself to stop thinking about how sad I am.
2. I repeatedly analyze and keep thinking about the reasons for my sadness.
3. I search my mind many times to try and figure out if there is anything about my personality that may have led me to feel this way.
4. I get absorbed in thinking about why I am sad and find it difficult to think about other things.
5. I search my mind repeatedly for events or experiences in my childhood that may help me understand my sad feelings.
6. I keep wondering about how I was able to be happy at other points in my life.
7. I lie in bed and keep thinking about my lack of motivation and wonder about whether it will ever return.
8. If people try to talk to me or ask me a question it feels as though they are interrupting an ongoing silent conversation I am having with myself about my sadness.
9. I question and keep wondering about the meaning of life to find clues that may help me understand my sadness.
10. I repeatedly think about what sadness really is by concentrating on my feelings and trying to understand them.
11. I get the feeling that if I think long enough about my sadness I will find that it has some deeper meaning and that I will be able to understand myself better because of it.
12. I keep thinking about my problems to try and examine where things went wrong.
13. I exhaust myself by thinking so much about myself and the reasons for my sadness.

Maladaptive Behavior Scale

Please rate the following questions based on the following scale, about the past month:

0 = Never/not at all

1 = Once this past month

2 = Once a week over the past month

3 = More than once a week

4 = Every day or nearly every day

In the past month, how often have you:

1. Used illicit drugs or misused prescription drugs?
2. Consumed too much alcohol for your own good?
3. Driven under the influence of drugs and/or alcohol?
4. Had problems related to your marijuana use?
5. Had a one-night stand?
6. Had sex with someone who was involved with someone else?
7. Had sex with someone you didn't want to have sex with?
8. Engaged in unsafe sex?
9. Hurt yourself on purpose (e.g., cutting, scratching, burning)?
10. Hurt yourself on purpose severely enough to require medical treatment or hospitalization?
11. Attempted suicide?
12. Binged on large amounts of food?
13. Fasted an entire day for nonreligious and/or nonmedical reasons?
14. Forced yourself to vomit?
15. Abused laxatives, diuretics, or diet pills?
16. Eaten food in the grocery store before paying for it?
17. Stolen food?
18. Stolen material goods (such as clothes or jewelry) from a store or vendor?
19. Stolen personal items or money from acquaintances, friends, or family?
20. Driven recklessly?
21. Received a speeding ticket?
22. Texted or used social media/internet while driving?
23. Impulsively spent money on clothes, jewelry, or other items?
24. Gambled more than you intended to?
25. Bet more money than you could really afford to lose?
26. Got into an argument with a close friend or family member?
27. Physically hit someone?
28. Thrown objects during a fight or argument?
29. Vandalized school or private property?

30. Asked people you feel close to how they truly feel about you?
31. Sought reassurance from the people you feel close to as to whether they really care about you?
32. Had people you feel close to sometimes become irritated with you for seeking reassurance from them about whether they really care about you?

The Center for Epidemiological Studies Depression Scale

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

During the Past Week:

- 1 = Rarely or none of the time (less than 1 day)
- 2 = Some or a little of the time (1-2 days)
- 3 = Occasionally or a moderate amount of time (3-4 days)
- 4 = Most or all of the time (5-7 days)

1. I was bothered by things that usually don't bother me.
2. I did not feel like eating; my appetite was poor.
3. I felt that I could not shake off the blues even with help from my family or friends.
4. I felt I was just as good as other people.
5. I had trouble keeping my mind on what I was doing.
6. I felt depressed.
7. I felt that everything I did was an effort.
8. I felt hopeful about the future.
9. I thought my life had been a failure.
10. I felt fearful.
11. My sleep was restless.
12. I was happy.
13. I talked less than usual.
14. I felt lonely.
15. People were unfriendly.
16. I enjoyed life.
17. I had crying spells.
18. I felt sad.
19. I felt that people dislike me.
20. I could not get "going."

Zung Anxiety Scale

For each item below, please choose which statement best describes how often you felt or behaved this way during the past several days.

- 1 = A little of the time
- 2 = Some of the time
- 3 = Good part of the time
- 4 = Most of the time

- 1 I feel more nervous and anxious than usual.
- 2 I feel afraid for no reason at all.
- 3 I get upset easily or feel panicky.
- 4 I feel like I'm falling apart and going to pieces.
- 5 I feel that everything is all right and nothing bad will happen.
- 6 My arms and legs shake and tremble.
- 7 I am bothered by headaches neck and back pain.
- 8 I feel weak and get tired easily.
- 9 I feel calm and can sit still easily.
- 10 I can feel my heart beating fast.
- 11 I am bothered by dizzy spells.
- 12 I have fainting spells or feel like it.
- 13 I can breathe in and out easily.
- 14 I get feelings of numbness and tingling in my fingers & toes.
- 15 I am bothered by stomach aches or indigestion.
- 16 I have to empty my bladder often.
- 17 My hands are usually dry and warm.
- 18 My face gets hot and blushes.
- 19 I fall asleep easily and get a good night's rest.
- 20 I have nightmares.

DERS

Directions: Please indicate how often the following statements apply to you by selecting the appropriate number from the scale below on the line beside each item:

1-----2-----3-----4-----5
almost never sometimes about half the time most of the time almost always
(0-10%) (11-35%) (36-65%) (66-90%) (91-100%)

1. I am clear about my feelings.
2. I pay attention to how I feel.
3. I experience my emotions as overwhelming and out of control.
4. I have no idea how I am feeling.
5. I have difficulty making sense out of my feelings.
6. I am attentive to my feelings.
7. I know exactly how I am feeling.
8. I care about what I am feeling.
9. I am confused about how I feel.
10. When I'm upset, I acknowledge my emotions.
11. When I'm upset, I become angry with myself for feeling that way.
12. When I'm upset, I become embarrassed for feeling that way.
13. When I'm upset, I have difficulty getting work done.
14. When I'm upset, I become out of control.
15. When I'm upset, I believe that I will remain that way for a long time.
16. When I'm upset, I believe that I'll end up feeling very depressed.
17. When I'm upset, I believe that my feelings are valid and important.
18. When I'm upset, I have difficulty focusing on other things.
19. When I'm upset, I feel out of control.
20. When I'm upset, I can still get things done.
21. When I'm upset, I feel ashamed with myself for feeling that way.
22. When I'm upset, I know that I can find a way to eventually feel better.
23. When I'm upset, I feel like I am weak.
24. When I'm upset, I feel like I can remain in control of my behaviors.
25. When I'm upset, I feel guilty for feeling that way.
26. When I'm upset, I have difficulty concentrating.
27. When I'm upset, I have difficulty controlling my behaviors.
28. When I'm upset, I believe that there is nothing I can do to make myself feel better.
29. When I'm upset, I become irritated with myself for feeling that way.

30. When I'm upset, I start to feel very bad about myself.
31. When I'm upset, I believe that wallowing in it is all I can do.
32. When I'm upset, I lose control over my behaviors.
33. When I'm upset, I have difficulty thinking about anything else.
34. When I'm upset, I take time to figure out what I'm really feeling.
35. When I'm upset, it takes me a long time to feel better.
36. When I'm upset, my emotions feel overwhelming.

Emotion Vulnerability – Child Scale

Below are some statements about your emotional style **when you were a child**. Please read each statement and rate how much it applied to you, **when you were a child**, using the following scale. Select the appropriate number in each blank.

1	2	3	4	5	6
Never	Almost never	Occasionally	Usually	Almost always	Always

IN CHILDHOOD:

- ___ 1. My emotions tended to be more intense than those of most children.
- ___ 2. When I got angry it was a very intense anger.
- ___ 3. People who knew me would have said I was emotional.
- ___ 4. Sad stories, TV shows, or movies deeply affected me.
- ___ 5. When I felt sad, this emotion was very strong.
- ___ 6. When I felt anxiety, it was a very strong feeling.
- ___ 7. The sight of someone who was hurt affected me strongly.
- ___ 8. People who knew me would have said that I got upset very easily.
- ___ 9. If things didn't go my way, I got quite distressed.
- ___ 10. People who knew me would have said that I was a tense or high-strung child.
- ___ 11. Seeing something violent or scary in a book, TV show, or movie made me very upset.
- ___ 12. Things that seemed minor to others caused strong negative emotions in me.
- ___ 13. In scary situations, I got more scared than most other children.
- ___ 14. When I felt guilty, this emotion was quite strong.
- ___ 15. I was easily bothered by things that others just brushed off or ignored.
- ___ 16. When I did something wrong, I had strong feelings of shame or guilt.
- ___ 17. When I got upset, I stayed upset for quite a while.
- ___ 18. When I felt nervous I got shaky all over.
- ___ 19. My negative emotions were long-lasting.
- ___ 20. When I tried something new for the first time, I got shaky all over.
- ___ 21. It took me a long time to calm down after getting upset about something.

Socialization of emotion scale (SES)

In the following items, please indicate on a scale from 1 (very unlikely) to 7 (very likely) the likelihood that your primary female and/or male caretaker as a child would have responded in the ways listed for each item. Answer for your mother, stepmother, or foster-mother and for your father, stepfather, or foster-father. Please read each item carefully and respond as honestly and sincerely as you can. If an item never happened to you, try your best to recall a similar event and your primary mother or father figure would have responded to the best of your recollection. For each response, please indicate a number 1-7 for each parent.

Very Unlikely			Medium			Very Likely
1	2	3	4	5	6	7

Mother
 (step or foster) Father
 (step or foster)

1. If I lost some prized possession and reacted with tears, my caretaker would:

- a. get upset with me for being so careless and crying
- b. tell me that I was over-reacting.
- c. help me think of places I hadn't looked yet.
- d. distract me by talking about happy things.
- e. tell me it's okay to cry when you feel unhappy.
- f. tell me that's what happens when you're not careful.

2. If I was going to spend the afternoon at a friend's house and became nervous and upset because my caretaker couldn't stay there with me, my caretaker would:

- a. distract me by talking about all the fun I was going to have with my friend.
- b. help me think of things I could do so that being at the friend's house without him/her wasn't scary (e.g., take a favorite book or toy with me).
- c. tell me to quit over-reacting and being a baby
- d. tell me that if I didn't stop that I wouldn't be allowed to go out anymore.
- e. feel upset and uncomfortable because of my reactions.
- f. encourage me to talk about my nervous feelings.

3. If I was about to appear in a recital or sports activity and became visibly nervous about people watching me, my caretaker would:

- a. help me think of things I could do to get ready for my turn (e.g., to some warm ups and not to look at the audience).

- b. suggest that I think about something relaxing so that my nervousness would go away.
- c. tell me that I was being a baby about it.
- d. tell me that if I didn't calm down, we'd have to leave and go home right away.
- e. encourage me to talk about my nervous feelings.

4. If I was panicky and couldn't go to sleep after watching a scary TV show, my caretaker would:

- a. encourage me to talk about what scared me.
- b. get upset with me for being silly.
- c. tell me that I was over-reacting.
- d. help me think of something to do that I could get to sleep (e.g., Take a toy to bed, leave the lights on).
- e. tell me to go to bed or I wouldn't be allowed to watch TV anymore.
- f. do something fun with me to help me forget about what scared me.

5. If I was left at a park and appeared to be on the verge of tears because other children were being mean to me and wouldn't let me play with them, my caretaker would:

- a. tell me that if I started crying then we'd have to go home right away.
- b. tell me I was over-reacting.
- c. comfort me and try to get me to think about something happy.
- d. help me to think of something else to do.
- e. tell me that I would feel better soon.

6. If I was shy and scared around strangers and consistently became teary and wanted to stay in my bedroom whenever family friends came to visit, my caregiver would:

- a. help me think of things to do that would make meeting her/his friends less scary (e.g. to take a favorite toy with me when meeting the friends).
- b. tell me that it is okay to feel nervous.
- c. try to make me happy by talking about the fun thing can do with the friends.
- d. feel upset and uncomfortable because of my reactions.
- e. tell me that I was being a baby.

VITA

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