THE MODERATING EFFECTS OF PERSONALITY TRAITS ON STRESSOR-SYMPTOM CONTINGENCIES IN BORDERLINE PERSONALITY DISORDER

BY

KELLY MISKEWICZ

A Thesis Submitted to the Graduate Faculty of

WAKE FOREST UNIVERSITY GRADUATE SCHOOL OF ARTS AND SCIENCES

in Partial Fulfillment of the Requirements

for the Degree of

MASTER OF ARTS

Psychology

December, 2014

Winston-Salem, NC

Approved By:

William Fleeson, Ph.D., Advisor

R. Michael Furr, Ph.D., Chair

Elizabeth Mayfield Arnold, Ph.D.

Lara K. Kammrath, Ph.D.

ACKNOWLEDGMENTS

I would first like to thank my advisor, Dr. Will Fleeson, for his guidance and support throughout my time at Wake Forest. I thank him for always challenging me intellectually and always having confidence in me. I am incredibly grateful for the time he has devoted to helping me with this project.

Next, I would like to thank Jenn Wages and the entire Triple-P lab team. This project would not be possible without Jenn's impeccable organizational and managerial skills, or without the hard work and dedication of my student collaborators. I thank Dr. Mike Furr for his guidance in the early stages of this project, and I thank Dr. Liz Arnold for joining my committee and bringing her clinical expertise to this project. I thank Teresa and Janice for their constant supply of candy and for making the psychology department feel like home.

I would also like to thank my family and friends for their encouragement and emotional support during the past year. I especially thank Jessica and Stephanie for keeping me grounded and for being a constant source of humor and sarcasm. I thank Julien for encouraging me to stay positive and for his endless supply of hugs. Finally, I thank my Mom and Dad for always being supportive of my academic and career goals. I dedicate this project to my Mom—my biggest cheerleader, my inspiration, and the most beautiful angel.

TABLE OF CONTENTS

Page

LIST OF FIGURES

Page

LIST OF TABLES

Page

Page

ABSTRACT

The purpose of this study was to reveal the way in which personality traits moderate contingent relationships among proximal situational stressors and symptoms of Borderline Personality Disorder (BPD). The main question of interest was whether personality traits explain why people with BPD experience stronger symptom reactions to proximal situational stressors, relative to people without BPD. Two hundred and thirty one (n = 231) participants, including 67 people with BPD, reported on their situational context and symptom experience five times per day for two weeks, and also completed a personality questionnaire. Multilevel modeling was used to examine the associations among personality traits and frequency of stressor experience, symptom intensity, and symptomatic reactivity to proximal stressors. The mediating effects of personality traits on the moderating effect of BPD diagnosis were also examined. Generally, results revealed that personality traits do not explain why people with BPD experience more frequent stressors, more intense symptoms, and heightened reactivity to stressors. It is concluded that traits are not a primary mechanism underlying contingencies in BPD. There are likely other aspect(s) of the disorder that account for stressor experience, symptom intensity, and symptomatic reactivity to stressors. Study limitations and future directions are discussed.

INTRODUCTION

The purpose of this thesis is to reveal the way in which personality traits moderate contingent relationships among situational stressors and Borderline Personality Disorder (BPD) symptoms. These contingent relationships reflect how closely BPD symptom experience is tied to situational circumstances, and are referred to as stressor—symptom contingencies in this paper. Previous research has found evidence for the operation of stressor—symptom contingencies in people with BPD (Berenson, Downey, Rafaeli, Coifman, & Paquin, 2011; Miskewicz et al., under review). While these studies have advanced general understanding of the mechanisms underlying symptom experience, borderline pathology is extremely complex and the precise aspects of BPD that drive contingencies remain unknown. It is possible that personality traits are one such aspect that contribute to contingent stressor—symptom relationships in people with BPD. Personality traits influence the way people perceive and appraise their situational circumstances (Serfass & Sherman, 2013), and a critical part of contingencies is how stressful or threatening an individual perceives their immediate environment to be. Thus, it stands to reason that traits may play an important role in understanding how contingencies operate in BPD.

In this paper I will argue that personality traits are associated with stressor-symptom contingencies in three ways: a) by increasing the frequency with which people perceive situational stressors, b) by increasing symptom intensity and c) by increasing the strength of contingent relationships between stressors and symptoms. I will also argue that personality traits explain some of the variability in contingency strength among people with and without BPD. Thus, the four main questions addressed in my thesis are:

a) How do personality traits directly affect experiences of situational stressors? b) How do personality traits directly affect symptom intensity? c) How do personality traits affect the strength of contingent relationships between stressors and symptoms? d) Do personality traits moderate contingencies above beyond the moderating effect of BPD diagnosis?

This research is important for practical, theoretical, and clinical reasons. Practically, research on BPD in general is important because of the severity of the disorder. High rates of self-mutilating behavior, suicide attempts, and completed suicides have been documented in people with BPD (American Psychological Association [APA], 2000; Zanarini et al., 2008). Clearly, BPD is a very serious mental illness. A better understanding of *why* the symptoms of BPD are associated with negative outcomes (i.e. the mechanisms driving them) may help people with BPD understand the root of their symptoms, manage them effectively, and thus reduce the maladaptive behaviors associated with the disorder.

Gaining a better understanding of the proximal mechanisms underlying BPD symptoms also has theoretical importance. Current theories of borderline pathology focus predominantly on distal mechanisms such as traumatic life events, hyper-reactive temperament, and emotion dysregulation as driving borderline symptoms (Linehan, 1993;

Zanarini & Frankenburg, 1997). While valuable information has been produced from these theories, less attention has been devoted to studying the proximal mechanisms underlying BPD symptoms. This is a problem because knowledge of *both* distal and proximal mechanisms is necessary to paint a complete picture of BPD. A distal focus only reveals the distal etiology of the disorder; it does not reveal any proximal factors

contributing to borderline symptomatology. My thesis study advances current theory of borderline pathology by deviating from a traditional focus on distal mechanisms, and instead focusing on the more proximal, moment-to-moment processes involved in BPD. Specifically I examine the role that personality traits play in modifying proximal contingent relationships between situational stressors and BPD symptoms.

Clinically, understanding the driving forces behind BPD may contribute to therapeutic advances in the treatment of BPD. Specifically, understanding how an individual's personality contributes to his/her reaction to stressors and subsequent symptom responses could help clinicians develop individualized and targeted therapeutic techniques for people with BPD. Additionally, understanding the role that their personality plays in contingencies can help individuals identify their own susceptibility to stressors in their immediate environment and combat their tendency to react negatively to those stressors.

What is Borderline Personality Disorder?

Borderline Personality Disorder (BPD) is a psychiatric disorder that arises in early adulthood and is characterized by a pervasive pattern of chaotic interpersonal relationships, unstable self-identity, affective instability, and impulsive behavior. The Diagnostic and Statistical Manual of Mental Disorders (DSM-V) (The American Psychiatric Association [APA], 2013) provides the following statistics about BPD: it is estimated that the prevalence rate of BPD in the general population is 1.6%, but may be as high as 5.9% in some populations. Approximately 10% of patients in outpatient mental health clinics and 20% of psychiatric inpatients meet a clinical diagnosis for BPD. BPD is diagnosed more frequently in women than in men; about 75% of individuals

diagnosed are female. Several mood and anxiety disorders commonly co-occur in people with Borderline Personality Disorder, including Major Depressive Disorder, Bipolar I Disorder, Panic Disorder, Generalized Anxiety Disorder, and Post Traumatic Stress Disorder (Grant et al., 2008; Zanarini et al., 1998b). BPD is very destructive and takes a heavy toll on individuals' emotional health and interpersonal functioning; people living with BPD find it difficult to maintain a stable network of social support, struggle to regulate their emotions, and in many cases attempt to physically harm themselves.

Symptoms of BPD

There are nine symptoms of BPD as defined by the DSM-IV (APA, 2000): a) frantic efforts to avoid real or imagined abandonment, b) a pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of idealization and devaluation, c) identity disturbance: markedly and persistently unstable self-image or sense of self, d) impulsivity in at least two areas that are potentially self-damaging (e.g., spending sprees, binge eating, substance abuse), e) recurrent suicidal or self-mutilating behavior, gestures, or threats, f) affective instability due to marked reactivity of mood, g) chronic feelings of emptiness, h) Inappropriate, intense anger or difficulty controlling anger, i) transient, stress-related paranoid ideation or dissociative symptoms. In order to be diagnosed with BPD, an individual must endorse at least five of these symptoms. There are also several problems associated with the disorder that are included in the DSM-IV description of BPD but are not considered to be symptoms. Common problems include physical injury from self-inflicted abuse, unemployment, dropping out of school, and divorce or separation from one's spouse.

For the remainder of this paper the nine symptoms will be abbreviated as follows: 1) fear of/avoid abandonment, b) interpersonal instability, c) identity disturbance, d) impulsivity, e) self-harm, f) affective instability, g) emptiness, h) anger, and, i) paranoia/dissociative symptoms.

Situational Stressors

Situational stressors are broadly defined as events in an individual's immediate environment that are perceived as threatening and that create psychological distress (Furr, Fleeson, Anderson, & Arnold, in preparation). My thesis will examine eight situational stressors—rejection, betrayal, abandonment, boredom, interpersonal offense, isolation, disappointment, or identity threat. These particular stressors were chosen based on sound theoretical arguments and empirical evidence supporting their connections to borderline pathology. I considered doing a factor analysis on these eight stressors and using the resulting factors as the situational stressor variables in this study. However, a factor analysis of these same eight stressors conducted during a previous study revealed that the commonalities among the stressors ranged from .15 to .58 (Miskewicz et al., under review). This indicates that there is still a good amount of unique variance in the individual stressors. I ultimately decided to look at each stressor individually because, while they share some similarity with one another, they are also conceptually distinct enough to warrant individual examination.

Several studies have demonstrated heightened rejection sensitivity in people with BPD. Gratz et al. (2013) found that people with BPD responded with heightened levels of threat to their social needs in response to a laboratory-based social rejection task, relative to people without BPD. Furthermore, Berenson et al. (2011) found that people

with BPD scored higher than healthy controls on the Adult Rejection Sensitivity Questionnaire, and reported higher mean levels of perceived rejection in their daily life than healthy controls over the course of a 21 day experience-sampling study. In addition to demonstrating heightened rejection sensitivity in BPD, research has also demonstrated contingent affective consequences of rejection sensitivity. Berenson et al. (2011) identified a specific rejection-rage contingency in BPD, such that perceived rejection triggers stronger feelings of rage in people with BPD than those without the disorder. Given that people with BPD are highly sensitive to rejection, I chose to include rejection as a potential trigger for BPD symptoms. Furthermore, the identification of a rejection-rage contingency is evidence that at least one BPD behavioral manifestation of a symptom is contingent upon proximal situational stressors, which provides reason to explore other potential contingencies within BPD.

Abandonment was included as a potential situation stressor based on evidence that a fear of abandonment is linked to BPD characteristics. Butler, Brown, Beck, and Grisham (2002) found that BPD patients endorse a variety of dysfunctional beliefs, especially beliefs about abandonment (e.g., "the worst possible thing would be to be abandoned"). These dysfunctional beliefs could lead individuals with BPD to react strongly and negatively to situations in which they perceive someone to be abandoning them or threatening abandonment. Furthermore, Zanarini and Frankenburg (2007), suggest that the core of borderline pathology is an intense inner pain and desperate attempts to relieve that pain manifest themselves in the form of symptoms. For instance, in response to a traumatic event in childhood (i.e., abandonment, neglect, abuse) it individuals with BPD may search for comfort and support in other people. When faced

with potential abandonment from those people, they may react with maladaptive behaviors like devaluation and demandingness. For these reasons, abandonment was selected as a potential stressor for BPD symptom manifestation.

Betrayal has been linked to attention-seeking behaviors and dysphoric states among individuals with BPD (Meloy & Boyd, 2003; Zanarini et al., 1998a). In a review of literature on self-mutilation within BPD, Favazza (1998) concluded that self-mutilating behaviors are the result of desperate attempts to gain relief from intense painful feelings. It is plausible that betrayals can cause inner pain leading to self-mutilation and other destructive behaviors commonly seen in BPD. For these reasons, betrayal was included as a stressor for BPD symptoms.

Identity threat was included as a potential stressor for BPD symptoms based on an argument from Bender and Skodol (2007) that self and other-representational disturbances are present in most major theories of BPD. Bender and Skodol argue that BPD arises out of self-other representational disturbances, in which people fear having their identities overtaken by another person. They postulate that such a self-other representational disturbance is rooted in childhood, particularly when a child is raised in an invalidating and unsupportive familial environment. When a child's emotions and experiences are not validated by a caregiver, the child fails to develop a strong self-representation because they fail to trust their own perceptions of reality, which limits their ability to develop self-confidence and a sense of self (Linehan, 1993, p. 72). As a result of a weak self-identity, people with BPD believe that they are helpless and must rely on other people for reassurance, guidance, and direction in life. In the context of interpersonal interactions, it is plausible that a threat to one's identity would activate BPD

symptoms such as a fear of abandonment, impulsive behavior, or intense anger, because the individual does not know how to respond in an appropriate way to such a threat. Thus, identity threat was proposed as a stressor for BPD symptoms because of the theorized connection between disturbed self-identity and dependence on other people.

Boredom was chosen on the basis of Linehan's (1993) biosocial theory, in which she argues that emotion dysregulation is the driving force behind BPD. People with BPD may not know how to effectively regulate their emotions when bored, and may act in maladaptive ways in an attempt to alleviate feelings of boredom. Indeed, Favazza (1998) concluded that self-mutilation in BPD may be best understood as a way to gain relief from feelings of boredom, among other negative emotions. Thus, boredom was included as a potential stressor for BPD symptoms in the present study.

Interpersonal offense and disappointment were included as two potential situational stressors because of evidence indicating heightened interpersonal sensitivity and maladaptive behavior in response to interpersonal stress in people with BPD. Coifman et al. (2012) found higher levels of relational polarity (i.e., dichotomous thinking in the context of interpersonal interactions) across a 21-day period in people with BPD, with relational polarity becoming even more intense in situations of high interpersonal stress. Furthermore, when interpersonal stress was high, relational polarity predicted risky/impulsive behavior for people with BPD. Additionally, Sadikaj et al. (2013) found that people with BPD reacted with more negative affect in response to cold-quarrelsome behavior than people without BPD. With a tendency to experience relational polarity and high levels of negative affect in the midst of a negative interpersonal interaction, it is plausible that interpersonal exchanges which are perceived

as offensive or disappointing would elicit BPD symptoms such as impulsivity, bursts of anger, or feelings of emptiness. For this reason, I included interpersonal offense and disappointment as two potential situational stressors.

Several studies have examined the role that loneliness plays in BPD, and results indicate that loneliness is related to maladaptive cognitions, affects, and behaviors including a detached attachment style, fears of abandonment, and clinging behavior (Gunderson, 1996; Meloy & Boyd, 2003). Additionally, Westen et al. (1992) found that patients with borderline experience a unique kind of depression that is characterized by emptiness and loneliness. Feeling empty, which is a symptom of BPD, is also strongly related to feelings of loneliness and isolation (Klonsky, 2008). For these reasons, being alone was included as a potential stressor for BPD symptoms.

What are Stressor-Symptom Contingencies in BPD?

Stressor-symptom contingencies are if…then relationships that explain how BPD symptoms are manifested. For example, if an individual experiences rejection then they might engage in impulsive behavior (e.g., binge drinking or a spending spree) to counteract the pain of rejection. The role of stressor—symptom contingencies is conceptualized in the Contingency Model of BPD, a new theory of borderline pathology (Furr et al., in preparation). The contingency model is symptom-focused and integrates distal and proximal theories of borderline pathology into one comprehensive model which attempts to explain the etiology of the disorder. Within the contingency model, contingent relationships between proximal situational stressors and BPD symptoms are proposed to be at the heart of the disorder.

There are three parts to a contingency: a stressor, the experience of a symptom, and a causal connection between stressor and symptom. The idea behind stressor-symptom contingencies in BPD is that a particular stressor in one's immediate environment triggers a particular symptom response (Furr et al., in preparation). This process represents a contingency because the experience of a symptom is contingent upon the presence of a stressor in an individual's immediate environment. Contingencies can alternatively be thought of in terms of reactivity. When a person experiences a symptom of BPD in direct reaction to a proximal stressful situation, they are displaying a stressor—symptom contingency. The magnitude, or strength, of a given contingency is really just a measure of symptomatic reactivity to a particular situational stressor. To illustrate this point, consider someone with a strong rejection—impulsivity contingency and someone with a weak rejection—impulsivity contingency. The person with a strong contingency would display more intense and harmful impulsive behaviors in response to being rejected by someone, in comparison to the person with a weak contingency. For example, the person with a strong contingency may experience rejection and subsequently go on a three day binge drinking and chain smoking spree in an attempt to numb the pain of rejection. Alternatively, someone with a weak rejection—impulsivity contingency may experience the same rejection and seclude him/herself at home for days, binge watching TV in an attempt to make him/herself feel better. Clearly, the person with the strong contingency displayed a more intense reaction to rejection than the person who binge watched television shows in seclusion. Thus, the magnitude of a contingency can be thought of as a measure of reactivity to a stressor.

It is important to distinguish stress reactivity from stress sensitivity in the context of contingencies. These two concepts share some similarity but are also conceptually distinct. Within a contingency framework, stress sensitivity can be defined as an individual's tendency to appraise a situation as threatening, given his/her available coping resources (Bruce, Gunnar, Pears, & Fisher, 2013), while stress reactivity can be defined as an individual's tendency to respond to a stressful situation (Schlotz, 2013). In the previous contingency example, the appraisal of rejection as hurtful is an example of stress sensitivity, and the behavior of watching countless hours of TV immediately after being rejected is an example of stress reactivity. Therefore, within contingencies stress sensitivity corresponds to the experience of a stressor, and stress reactivity corresponds to a symptom reaction in response to that stressor. In the present study I will examine contingent relationships among eight situational stressors and nine BPD symptoms, resulting in 72 contingencies of interest.

Research on contingencies is a relatively new field, but there have already been several studies which have found evidence for the operation of stressor-symptom contingencies in BPD (Berenson et al., 2011; Coifman et al., 2012; Zeigler-Hill & Abraham, 2006). One such study found that most BPD symptoms are contingent upon the experience of situational stressors, and people with a BPD diagnosis display stronger stressor-symptom contingencies than the average individual **(**Miskewicz et al., under review). In this study BPD diagnosis was used as a general proxy for borderline pathology when studying the effect of BPD on stressor-symptom contingencies. However, using diagnosis to represent all of borderline pathology is not the best way to represent the disorder because BPD is very complex, and it cannot be fully captured in

one dichotomous variable of diagnosis. BPD is considered to be a complex disorder because it does not have a known cause, nor does it have one clear, catch-all, defining feature. Using diagnosis as an all-encompassing measure of borderline pathology does not tell us exactly which aspects of BPD are responsible for stronger contingencies in people with the disorder. It is possible that certain personality traits predispose people with BPD to have stronger contingencies. Personality traits influence the way people perceive and appraise their situational circumstances (Serfass & Sherman, 2013), thus it stands to reason that traits may play an important role in understanding how contingencies operate in BPD.

Personality Traits

The present study will examine the effects of six personality traits on contingencies in BPD: Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness. These six traits comprise the six factors of personality as defined by the HEXACO Personality Inventory (Lee & Ashton, 2004). Each of the six personality traits in the HEXACO model of personality are theoretically and descriptively distinct from one another, each representing a fundamental dimension of human personality (Ashton & Lee, 2007; Ashton, Lee, & DeVries, 2014). The inclusion of Emotionality, Extraversion, Agreeableness, and Conscientiousness as variables of interest in this study is based on research demonstrating their relevance to BPD symptoms and to stress sensitivity and reactivity. Honesty-Humility and Openness are included as exploratory variables. In the present study, personality traits are predicted to affect all three parts of the stressor-symptom contingency in unique ways. The hypotheses are described in the following section.

Hypotheses

Emotionality. Emotionality is defined as a tendency to experience fear and anxiety across a variety of contexts, and to be emotionally attached and dependent on others (Ashton & Lee, 2007). The facet traits of Emotionality are fearfulness, dependence, anxiety, and sentimentality. Emotionality is similar in content to the trait of Neuroticism, which is represented in the Five Factor Model of personality (Ashton et al., 2014; Costa & McCrae, 1987). Neuroticism has been associated with increased stress sensitivity (Ebstrup, Eplov, Psiinger, & Jorgensen, 2011) and increased reactivity to interpersonal conflict (Bolger & Zuckerman, 1995). Neuroticism also has strong positive correlations with the affective, cognitive, impulsive, and interpersonal features of BPD (Hopwood & Zanarini, 2010). Given the similarity in content between Neuroticism and Emotionality, it is reasonable to think that Emotionality will have similar associations with stress sensitivity and BPD features as Neuroticism. Thus, is hypothesized that Emotionality will positively predict experience of stressors and BPD symptoms, and exert a positive moderating effect on stressor – symptom contingencies in the present study.

Extraversion. Extraversion is broadly defined as engagement in social endeavors (Ashton & Lee, 2007). It is described by facet traits of sociability, liveliness, social self-esteem, and social boldness. Acting extraverted has been linked to increases in positive affect (Fleeson, Malanos, & Achille, 2002; McNiel & Fleeson, 2006), and positive affect is a key component of happiness, which has been linked to lower levels of perceived stress (Schiffrin & Nelson, 2010). Extraversion also has a significant negative association with affective, cognitive, and interpersonal features of BPD (Hopwood &

Zanarini, 2010). Based on these research findings, it is hypothesized that Extraversion will negatively predict situational stressors and BPD symptoms, and have a negative moderating effect on most contingencies in the present study. However, because Extraversion reflects a tendency to engage in social activities, it is hypothesized that Extraversion will have a positive moderating effect on contingencies involving stressors of isolation and boredom, two situations which present people with a lack of opportunity for social engagement.

Agreeableness. Agreeableness is defined as a tendency to be forgiving and tolerant of others, in the sense of refraining from retaliation in response to exploitation by others (Ashton & Lee, 2007; Hepp et al., 2014). Facet-level traits of Agreeableness are patience, gentleness, flexibility, and forgivingness. Agreeableness is negatively associated with stress sensitivity (Ebstrup et al., 2011) and with cognitive, impulsive, and interpersonal symptoms of BPD (Hopwood & Zanarini, 2010). Furthermore, low agreeableness has been associated with increased displays of both immediate and calculated retaliatory behaviors in reaction to mistreatment by others (Lee & Ashton, 2012). Thus, it stands to reason that Agreeableness will negatively predict situational stressors and BPD symptoms, and negatively moderate stressor – symptom contingencies.

Conscientiousness. Conscientiousness is defined as engagement in task-related endeavors (Ashton & Lee, 2007). It is described by facet traits diligence, prudence, organization, and perfectionism. Conscientious individuals tend to appraise stressful situations as less demanding and display more confidence in their ability to cope with such situations, as compared to less conscientious individuals (Penley & Tomaka, 2002).

Studies examining the association between features of BPD and Conscientiousness have produced mixed results and significant associations, when found, were very small (Distel et al., 2009; Morey et al., 2002;). While Hopwood and Zanarini (2010) did not find Conscientiousness to be associated with BPD features, Distel et al. (2009) found that Conscientiousness significantly predicted scores on the Personality Assessment Inventory–Borderline Features scale (PAI-BOR). Although Conscientiousness only explained 1% of the variance in PAI-BOR scores, this could be because Conscientiousness only predicts one or two specific features of BPD. Thus it is hypothesized that Conscientiousness will negatively predict situational stressors, will predict only one or two specific symptoms of BPD, and will have a negative moderating effect on select contingencies.

Openness & Honesty-Humility. Openness and Honesty-Humility are included as exploratory variables in the present study. Openness to Experience does not seem to be related to BPD symptoms (insert a citation for this). However, the role of Openness in moderating stressor—symptom contingencies has yet to be explored, so Openness is included as a variable of interest in this study. Research on Honesty-Humility is limited due to the overwhelming use of the Five-Factor Model of Personality Traits in borderline research (Costa & McCrae, 1987). Much is yet to be discovered about Honesty-Humility's relationship to BPD, and specifically about its influence on contingencies within BPD. Honesty-Humility is included as an exploratory variable in this study.

Mediated Moderation Effects of Traits and BPD Diagnosis. Traits influence the way people perceive their environment (Rauthmann, 2012; Serfass & Sherman, 2013) and are also predictive of trait-congruent behavior (Fleeson & Gallagher, 2009). Since the

fundamental elements of contingencies consist of the way people experience stressors and their behavior in reaction to them, it stands to reason that traits would be uniquely associated with contingencies, regardless of whether or not an individual has BPD. Thus, I predict that traits will be uniquely associated with contingencies. In other words, I predict that BPD diagnosis will not mediate the moderation effect of personality traits on contingencies. Conversely, I predict that traits will mediate the moderation effect of BPD on contingencies.

Recent studies have found support for a shift toward conceptualizing BPD in terms of normal personality traits (Samuel, Carroll, Rounsaville, & Ball, 2013; Wright, Hopwood, & Zanarini, 2014) . In this dimensional view, BPD does not exist on its own, but rather is a collection of maladaptive, extreme levels of personality traits. From a contingency perspective, if this is true then traits should be the true moderator of contingencies, not BPD diagnosis. In testing this mediated moderation effect, I expect that personality traits will mediate the relationship between BPD diagnosis and contingency strength.

To conclude, in this study it is predicted that traits will be uniquely and significantly associated with all three parts of contingencies, such that a) that higher levels of Emotionality will be positively associated with stressor scores and higher levels of Extraversion, Agreeableness, and Conscientiousness will be negatively associated with stressor scores; b) higher levels of Emotionality will be positively associated with BPD symptom intensity and higher levels of Extraversion, Agreeableness, and Conscientiousness will be negatively associated with symptom intensity; and c) all four

traits will mediate, to some degree, the moderating effect of BPD diagnosis on contingencies.

METHOD

Participants

Two hundred and thirty one (n = 231) participants between the ages of 18 and 65 (M = 44 years, SD = 11.2) were recruited from the Winston-Salem community and from the outpatient psychiatry clinic at Wake Forest Baptist Health's Department of Psychiatry and Behavioral Medicine. The majority of participants were female (n = 157; 68%) and either Caucasian (n = 139; 60%) or African American (n = 78; 34%). Twenty-nine percent (n = 67) of participants met diagnostic criteria for BPD as assessed by the Structured Interview for DSM-IV Personality (SIDP-IV) (Pfohl, Blum, & Zimmerman, 1997). Approximately 25% (n = 58) and 18% (n = 42) of participants met diagnostic criteria at some point during their lives for Major Depressive Disorder and Bipolar I Disorder, respectively. Approximately 10% (n = 24), 25% (n = 57), and 9% (n = 21) of participants currently suffered from Panic Disorder, Generalized Anxiety Disorder, and Post Traumatic Stress Disorder, respectively. The sample of 231 participants was comprised of two sub-samples; a *Spectrum* (n = 82) group and a *High End* (n = 149) group.

Spectrum group. Eighty-two participants (n = 82) were recruited for the Spectrum sample via direct mail advertisements, community fliers, and snowball sampling. Key inclusion criteria for this group included: a) being between the ages of 18-65, b) proficiency in the English language, c) normal cognitive functioning, as measured by a score greater than 23 on the Mini Mental State Examination (Folstein, Folstein, & McHugh, 1975), d) not actively suicidal, and e) residing within 50 miles of the study site. Key exclusion criteria included: a) having a court-appointed guardian, b) current

substance dependency with use in the last 30 days, c) a current psychotic disorder, and d) an arrest for a violent crime. Approximately 7% (*n* = 6*)* of the Spectrum sample met diagnostic criteria for BPD. This was on the high end of the expected prevalence rate of 2-7% in the general population that is reported in the DSM-IV (APA, 2000).

High End group. One hundred and forty nine (*n* = 149) participants were recruited for the High End sample mainly from the outpatient clinic at Wake Forest Baptist Health's Department of Psychiatry and Behavioral Medicine in Winston-Salem, NC. Patients in the clinic voluntarily responded to fliers containing information about the study. Additionally, some participants responded to fliers that were mailed to zip codes within 50 miles of Wake Forest University. Some participants in this sample were also recruited via snowball sampling. Participants in the High End group were screened for inclusion and exclusion based on the same criteria used for the Spectrum group, except that they were also required to score at least a seven on the McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD) (Zanarini et al., 2003). It should be noted that participants in the High End group were not necessarily diagnosed with BPD; in fact, only 41% (*n* = 61*)* of participants in this group met diagnostic criteria for BPD. However, 95% of high end participants endorsed at least one symptom of BPD, compared to only 48% of participants in the spectrum group. Thus, even though only 41% of participants in the high end group crossed the five-symptom threshold necessary for a BPD diagnosis, a large majority of these participants experienced BPD symptoms to some degree.

Measures

HEXACO Personality Inventory Revised (HEXACO-PI-R). The HEXACO Personality Inventory-Revised (HEXACO) is a 100-item self-report questionnaire developed by Lee and Ashton (2004) that measures six major factors of personality: Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience. Each factor is assessed by 16 statements to which participants rate how much they agree/disagree with the statement as it relates to their personality (e.g., "When working, I often set ambitious goals for myself"). Ratings are made on a 5-point likert scale anchored by "strongly disagree (1)" and "strongly agree (5)". Participants' scores on each of the six factors reflect their levels of Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness. Higher scores indicate stronger endorsement of the trait, while lower scores indicate weaker endorsement of the trait. Each factor scale in the HEXACO is made up of four facet scales. Facets are narrower traits that provide a more nuanced view of personality. In the HEXACO, facets of Honesty-Humility are Sincerity, Fairness, Greed-Avoidance, and Modesty. Facets of Emotionality are Fearfulness, Anxiety, Dependence, and Sentimentality. Facets of Extraversion are Social Self-Esteem, Social Boldness, Sociability, and Liveliness. Facets of Agreeableness are Forgiveness, Gentleness, Flexibility, and Patience. Facets of Conscientiousness are Organization, Diligence, Perfectionism, and Prudence. Facets of Openness to Experience are Aesthetic Appreciation, Inquisitiveness, Creativity, and Unconventionality. The HEXACO has good internal consistency ($.89 < \alpha < .93$ at the factor level; $.75 < \alpha < .88$ at the facet

level). It also has good convergent validity (.68 < r < .86) (Lee & Ashton, 2004). The 100-item version of the HEXACO used in this study is included in Appendix A.

Mini-International Neuropsychiatric Interview (M.I.N.I). The M.I.N.I. is a structured diagnostic interview that assesses past and present Axis I disorders (Sheehan et al., 1998), and was used to assess comorbidity of BPD with other mental illnesses in this study. Axis I disorders include, but are not limited to: Major Depressive Disorder, Obsessive-Compulsive Disorder, Generalized Anxiety Disorder, and Posttraumatic Stress Disorder (APA, 2000). The M.I.N.I. has demonstrated good sensitivity and specificity, as well as good inter-rater reliability (.88 < κ < 1.0) (Lecrubier et al., 1997).

Structured Interview for DSM-IV Personality (SIDP-IV). The SIDP-IV is a semi-structured interview designed to assess disordered personality (Pfohl et al., 1997). The SIDP-IV achieves this aim by assessing an individual's "usual self" in several domains of life during the past 5 years, excluding times of hospitalization or illness. The Borderline section of the SIDP-IV consists of 9 items, with each item corresponding to a symptom of BPD as defined by the DSM-IV (APA, 2000). Participant's scores on the borderline section of the SIDP-IV were used to determine whether or not they met diagnostic criteria for BPD. Participants meeting at least 5 criteria for BPD as listed in the SIDP-IV were labeled as having BPD, and those meeting less than 5 criteria were labeled as not having BPD. The items in the Borderline section of the SIDP-IV have demonstrated very good inter-rater reliability in a non-treatment seeking sample (.54 < κ < .84) (Jane, Pagan, Turkheimer, Fiedler, & Oltmanns, 2006).

Experience sampling items. Experience Sampling Methodology (ESM) was employed to assess participants' moment-to-moment fluctuations in situational context

and symptom experience. Situational ESM items assessed participants' experience of eight situational stressors: rejection, abandonment, interpersonal offense, boredom, betrayal, disappointment, identity threat, and isolation (e.g., "Someone rejected me or left me out in the last 60 minutes" and "I was alone and isolated from others in the last 60 minutes"). Stressors were assessed on a 6-point likert scale anchored by "disagree strongly (1)" and "agree strongly (6)". One item was used to assess each stressor. The reliability of all stressor items was $\alpha = .77$. See List B1 in Appendix B for a complete list of situational ESM items.

The BPD symptom items assessed participants' experience of the nine symptoms of BPD, as defined by the DSM-IV (e.g., "In the last 60 minutes, I called someone to reassure myself that he or she still cared about me" and "I was extremely moody in the last 60 minutes") (APA, 2000). BPD symptom items were assessed on a 6-point likert scale anchored by "does not describe me at all (1)" and "describes me very well (6)." Two items were used to assess each symptom, except for self-harm which was assessed by only one item. After data collection, each pair of symptom items was aggregated at the occasion-level, resulting in one symptom score per occasion for each participant. The reliability of all symptom items was $\alpha = .89$. See List B2 in Appendix B for a complete list of ESM symptom items.

Procedure

All participants came in for an initial screening at either Wake Forest University's Reynolda Campus or the Department of Psychiatry and Behavioral Medicine at Wake Forest Baptist Health. Screenings were conducted by a qualified study team member. At this meeting, all participants were screened for inclusion and exclusion criteria, and

qualified participants provided written consent to participate in the study. Participants were asked to fill out the HEXACO at home before returning for a second meeting. When participants came in for their second meeting, they were administered the Mini-International Neuropsychiatric Interview (M.I.N.I.) and the Structured Interview for DSM-IV Personality (SIDP-IV).

At the end of the second meeting participants were given a palm-pilot and instructions on how to operate it. For the following 14 days, participants carried the palm pilot with them and were prompted by an alarm on the device at five specific times per day (10am, 1 pm, 4pm, 7pm, and 10pm). Once prompted, participants responded on the palm pilot to a series of ESM items asking about their situational context and the extent to which they experienced BPD symptoms during the past 60 minutes. At the end of 14 days participants came in for an exit interview, where they returned their palm-pilot and provided feedback about their study experience. Data from each palm pilot was downloaded onto a secure server. The data was identified and analyzed by ID number, not by name, so as to maintain participant confidentiality.

Analytic Strategy

Hierarchical linear modeling was used to identify within-person contingent relationships between situational stressors and symptoms, and to examine the moderating effects of personality traits on these contingencies. In all analyses, *participants* were the Level 2 variable and the *occasion* participants filled out the ESM items was the Level 1 variable. Details for each model tested will be presented in the following section.

RESULTS

For all analyses, an alpha level of $p < .01$ was used as a determinant of statistical significance. Due to the large number of statistical tests being conducted, I chose to use this more conservative p-value in order to reduce the chance of Type I error. If you prefer to use an even more conservative determinant of statistical significance, please use an alpha level of $p < .001$ when reviewing the following results.

Are BPD Symptoms Contingent Upon Situational Stressors?

Before testing whether or not personality traits moderate stressor-symptom contingencies in BPD, it is necessary to know whether or not BPD symptoms are contingent upon the presence of situational stressors in an individual's immediate environment. The first group of results demonstrates that stressor-symptom contingencies are a real phenomenon in BPD. The first analysis in this study examined within-and between-person variability in symptom level over the course of 14 days. This was done to reveal the variability in symptom level that will be explained by stressors and personality traits in subsequent analyses. In this first analysis, nine unconditional multi-level models were tested to estimate the amount of variability in each of the nine symptoms of BPD. Refer to Table 1 for results of these analyses. Table 1 presents the average level of each symptom for the average participant, the amount of variance within participants for each symptom, and the amount of variance between participants for each symptom.

As Table 1 shows, 47% to 81% of variability in symptom experience occurred within individuals, and 19% to 53% of variability occurred between individuals. This means that the average participant experienced varying degrees of symptoms over the course of 14 days, and also that participants varied considerably from one another in their

experience of most symptoms. Variability in most symptoms was split fairly evenly between and within individuals, except for symptoms of anger and self-harm. The variability in these two symptoms was predominantly within individuals. This means that individuals varied more widely in their own experiences of anger and self-harm than they varied from other individuals' experiences of these two symptoms.

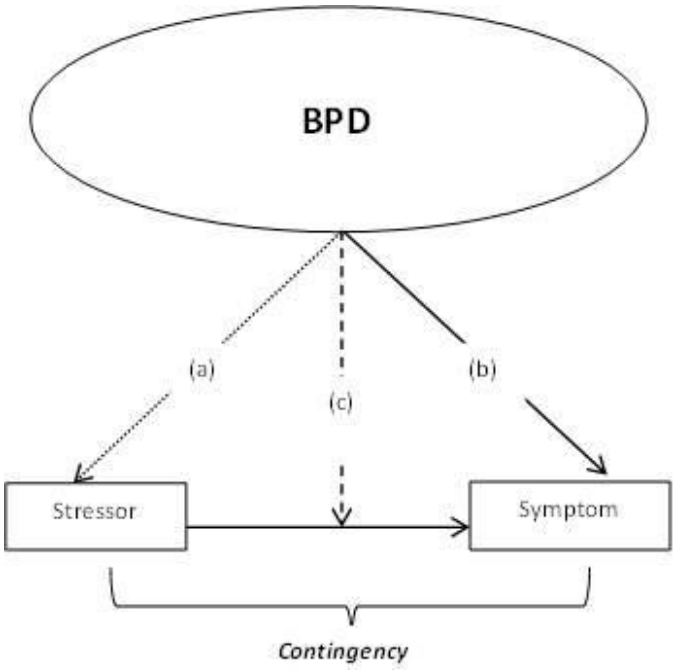
The second set of results describes contingent relationships among eight situational stressors and the nine symptoms of BPD. 72 multilevel models were tested to estimate the strength of relationships between individual stressors and individual symptoms (8 stressors x 9 symptoms = 72 contingencies). In each model symptom was the dependent variable and stressor was the independent variable. Refer to Table 2 for results of these analyses. As Table 2 shows, the majority of contingencies (86%, $n = 62$) were statistically significant ($p < .01$), meaning that, for the average individual, most BPD symptoms manifest themselves in reaction to stressful situations in an individual's immediate environment. The exception to this is self-harm; the symptom of self-harm did not fluctuate systematically with stressor experience. For this reason the symptom of self-harm will be excluded from subsequent analyses, resulting in 64 testable stressor-symptom contingencies.

Does BPD Diagnosis Have an Effect on Contingencies?

Now that the existence of stressor—symptom contingencies in BPD has been confirmed, the question becomes: *precisely <u>how</u> does BPD drive these contingencies?* The next set of analyses tested three possible answers to this question by testing BPD's effects on three different components of a contingency—stressor, symptom, and the relationship between stressor and symptom. These three components and BPD's

proposed effects on them are depicted in Figure 1. As shown in Figure 1, path (a) represents the relationship between diagnosis and stressor, path (b) represents the relationship between diagnosis and symptom, and path (c) represents the moderating effect of diagnosis on contingency strength.

Figure 1: Hypothesized effects of BPD diagnosis on a stressor – symptom contingency



Tests of each path (a, b, and c) were designed to answer the following questions: a) *Do people with BPD encounter situational stressors more frequently than people without BPD?* b) *Do people with BPD experience more intense symptoms on a moment-by-moment basis as they go about their daily lives?* And c) *Do people with BPD exhibit stronger stressor—symptom contingencies than people without BPD?*

Path (a): Do people with BPD encounter situational stressors more frequently than people without BPD?

This purpose of this set of analyses was to see if people with BPD experience situational stressors more frequently than people without BPD. To test this, each situational stressor (n = 8) was regressed separately on BPD diagnosis (0 = No, 1 = Yes) using hierarchical linear modeling. In each regression analysis (n = 8), the dependent variable was stressor score and the independent variable was BPD diagnosis. Refer to Table 3 for results of these analyses.

As Table 3 shows, people with BPD experienced significantly more stressors on a moment-to-moment basis than people without BPD. Most interestingly, people with BPD felt alone and isolated from others nearly twice as often as people without BPD ($\beta = .85$, $p < .001$). Perhaps there is something about BPD that makes it difficult for people to establish connections with others, which results in people with BPD frequently being alone.

Path (b): Do people with BPD experience more intense symptoms than people without BPD?

The aim of the next set of analyses was to find out whether people with BPD experience more intense BPD symptoms on a moment-to-moment basis than people without BPD. To test this, each symptom of BPD was regressed on BPD diagnosis (0 = No, 1 = Yes) using hierarchical linear modeling. In each regression analysis, symptom was the dependent variable and BPD diagnosis was the independent variable. Please refer to Table 4 for the results of these analyses.

As evident in the Table 4, people with BPD reported more intense experiences of all eight symptoms of BPD. In particular, people with BPD experienced much more affective instability ($\beta = .88$, $p < .001$) and feelings of emptiness ($\beta = .87$, $p < .001$) than people without BPD. Even the weakest association, that between BPD diagnosis and anger, was still moderately strong and statistically significant ($\beta = .37$, $p < .001$). This set of results shows that BPD symptoms are something that people struggle with on a moment-to-moment basis as they go about their day.

Path (c): Do people with BPD exhibit stronger stressor—symptom contingencies than people without BPD?

The next set of analyses was designed to test if people with BPD have stronger contingent relationships between stressors and symptoms than people without BPD. Another way of thinking about this is testing whether or not BPD makes people more reactive to situational stressors encountered in their daily lives. In statistical terms, these analyses tested the moderating effect of BPD diagnosis on contingencies. In each regression analysis ($n = 64$) symptom level was the dependent variable and stressor score (mean-centered within each participant), BPD diagnosis (0 = No; 1 = Yes), and the interaction of stressor and diagnosis (stressor*diagnosis) were the independent variables. Each moderated regression analysis yielded an unstandardized regression coefficient (β) for each independent variable. These coefficients are the fixed effects for each model. The fixed effects for the stressor*diagnosis term reflect the effect of BPD diagnosis on a contingency's slope. Put differently, the fixed effects of the stressor*diagnosis term tell us the difference in contingency strength between someone with BPD and someone without BPD. Table 5 presents results of these 64 moderated regression analyses.

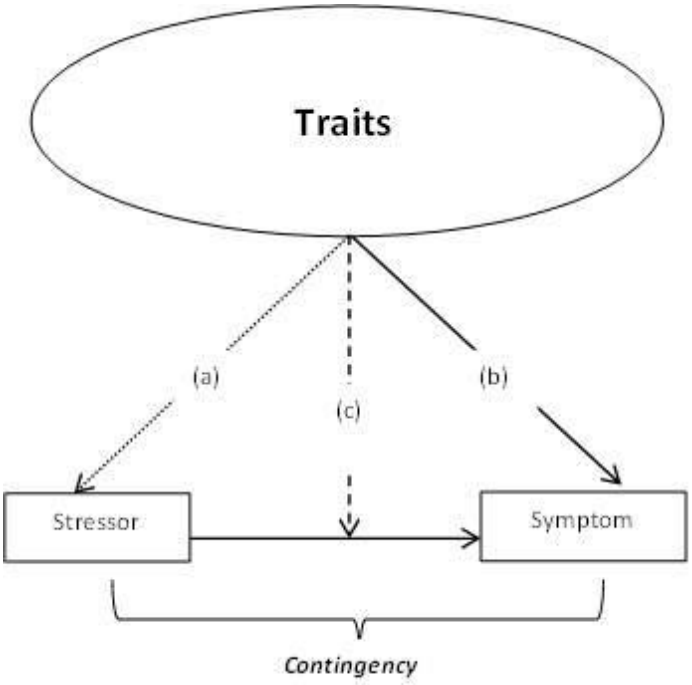
To summarize the results in Table 5: people with BPD displayed stronger stressor-symptom relationships for 63% (n = 40) of the contingencies tested. Of particular interest were contingencies involving the symptom of identity disturbance. People with BPD experienced significantly more identity disturbance in reaction to all eight situational stressors, compared to people without BPD ($.06 < \beta < .10$, all $ps < .001$). This suggests that identity disturbance is easily triggered by many situational characteristics, and people who have BPD are more sensitive to these particular situational characteristics than people without BPD. BPD diagnosis also moderated contingencies among challenges to one's self-view and seven out of eight symptoms of BPD ($.05 < \beta < .11$, *all ps* < .01). This suggests that people with BPD are highly sensitive to situations in which someone challenges their self-view, and are likely to react with one or more BPD symptoms when they feel as if their identity is being challenged.

Do Personality Traits Have an Effect on Contingencies?

The previous analyses demonstrated that BPD diagnosis influences stressor—symptom contingencies in three ways: by increasing the frequency with which people experience situational stressors, by increasing the intensity of BPD symptoms, and by increasing reactivity to most situational stressors. While this knowledge is important, it does not tell the whole story. BPD is a complex disorder; BPD diagnosis was used as a proxy for borderline pathology, but it does not tell us which specific aspects of borderline pathology are responsible for BPD's effects on contingencies that are mentioned above. One possibility is that an individual's personality traits predispose them to experience more stressors, more BPD symptoms, and to exhibit contingent stronger stressor—symptom relationships. The following set of analyses was designed to test the effects of

personality traits (Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience) on all three parts of a contingency. Personality traits' proposed effects on the three parts of a contingency are depicted in Figure 2. As shown in Figure 2, path (a) represents the relationship between personality traits and stressors, path (b) represents the relationship between personality traits and symptom level, and path (c) represents the moderating effect that personality traits have on contingency strength.

Figure 2: Hypothesized effects of traits on a stressor – symptom contingency



Tests of each path (a, b, and c) were designed to answer the following questions: a) *Do people with certain traits encounter situational stressors more frequently than others?* b) *Do people with certain traits experience more intense symptoms on a*

moment-by-moment basis than others? And c) *Do people with certain traits exhibit stronger stressor—symptom contingencies than others?*

Path (a): Do people with certain traits encounter situational stressors more frequently than others?

This purpose of this analysis was to see if personality traits influence the frequency with which people experience situational stressors on a moment-to-moment basis. To test this, each situational stressor (n = 8) was regressed separately on each of six personality traits using hierarchical linear modeling (6 traits x 8 stressors = 48 regression analyses). In each regression analysis, the dependent variable was stressor score and the independent variable was trait level. Please refer to Table 6 for the fixed effects of trait level on stressor score.

Overall, Emotionality and Agreeableness had the greatest influence on how often people experienced stressors in their environment. Highly emotional people experienced more rejection, betrayal, abandonment, personal offense, disappointment, and challenges to their self-view on a moment-to-moment basis than less emotional people ($.18 < \beta < .38$, all $ps < .01$). More agreeable people experienced less betrayal, boredom, personal offense, isolation, and disappointment than less agreeable people ($-.32 < \beta < -.16$, *all ps* $< .01$). Extraversion and Honesty-Humility had a weaker overall effect on stressors, but both traits had two particularly strong specific effects; people higher on Honesty-Humility and Extraversion experienced significantly less boredom ($\beta = -.30$, $p < .01$ for Honesty-Humility; $\beta = -.40$, $p < .001$ for Extraversion) and isolation ($\beta = -.32$, $p < .01$ for Honesty-Humility; $\beta = -.48$, $p < .001$ for Extraversion) than people lower on these two

traits. Openness to Experience had no effect on how stressful people perceived their immediate environment to be.

Path (b): Do people with certain traits experience more intense BPD symptoms than others?

The aim of the next analysis was to find out if personality traits influence the intensity of BPD symptoms on a moment-to-moment basis. To test this, each symptom of BPD (n = 8) was regressed separately on each of six personality traits using hierarchical linear modeling (8 symptoms x 6 traits = 48 regression analyses). In each regression analysis, symptom was the dependent variable and trait level was the independent variable. Please refer to Table 7 for the fixed effects of trait level on symptom intensity. Emotionality had the greatest effect on symptom experience, with more emotional people experiencing heightened intensity of all eight symptoms of BPD ($.19 < \beta < .48$, *all ps* < .01*)*. Conscientiousness also had a strong overall effect, with more conscientious individuals reporting lower symptom intensity for all symptoms except inappropriate anger ($-.46 < \beta < -.21$, *all ps* < .01). Extraversion was associated with lower intensity for six symptoms, Agreeableness for five, and Honesty-Humility for three symptoms. Openness to Experience was not associated with symptom intensity.

Path (c): Do people with certain traits exhibit stronger stressor—symptom contingencies than others?

The next set of analyses was conducted to test if people with certain levels of personality traits have stronger contingent relationships between stressors and symptoms than people with different levels of those same traits. Another way of thinking about this is testing whether or not traits influence individuals' reactivity to situational stressors. In

statistical terms, these analyses tested the moderating effect of personality traits on contingencies.

To test this, the slopes (which represent the strength of the contingent relationship between stressor and symptom) of 64 stressor—symptom contingencies obtained from earlier analyses (refer to Table 2 for values) were regressed on six personality traits (Honesty-Humility, Extraversion, Emotionality, Agreeableness, Conscientiousness, Openness to Experience) using hierarchical linear modeling. One moderated regression analysis was conducted for each contingency (n = 64) and for each trait (n = 6), resulting in 384 total moderated regression models being tested. In each model symptom level was the dependent variable and stressor score (mean-centered within each participant), trait level, and the interaction of stressor score and trait level (stressor*trait) were the independent variables. Each regression analysis yielded an unstandardized regression coefficient (β) for each independent variable, which represents the fixed effects for each model. In this particular analysis, I was only interested in looking at the fixed effects of the stressor*trait terms because those coefficients reflect the moderating effect of traits on contingencies. In other words, the fixed effect of the stressor*trait term tells us how much the strength of a given contingency changes as trait level changes.

To get a more nuanced look at the moderating effect of traits, I also tested the moderating effect of select personality facets on contingencies. For all personality traits except for Openness to Experience, I tested one facet that was conceptually related to reactivity and thus seemed likely to influence contingencies. None of the facets of Openness to Experience seemed conceptually or logically related to reactivity, so I chose not to test any facets for this trait. To test the moderating effect of facets on

contingencies I took the same statistical approach used in the personality trait analyses. For each facet, I regressed contingency slope (n = 64) on facet level using hierarchical linear modeling, resulting in 64 moderated regression analyses for each facet (384 models total).

Emotionality. Emotionality was hypothesized to have a positive moderating effect on contingencies, such that more emotional people would display stronger reactivity to stressors than less emotional people. Table 8 displays the fixed effects of stressor*emotionality terms of 64 multilevel moderated regression models.

To summarize the table, Emotionality moderated 36% (n = 23) of contingencies, and had a particularly strong effect on contingencies involving identity disturbance. In response to situational stressors, highly emotional people reacted with more intense feelings of identity threat than less emotional people ($.04 < \beta < .09$, *all ps* < .01). Highly emotional people also displayed increased reactivity to the stressors of disappointment ($.05 < \beta < .10$, $p < .001$) and challenge to self-view ($.06 < \beta < .07$, *all ps* < .01). Apart from these effects, Emotionality had little to no effect on contingencies involving symptoms of impulsivity, moodiness, anger, or dissociative symptoms. The hypothesis that Emotionality would have a positive moderating effect on contingencies was supported.

Facet: Anxiety. This analysis tested the moderating effect of Anxiety, a facet of Emotionality, on stressor—symptom contingencies. The anxiety facet in the HEXACO reflects a tendency to worry in a variety of contexts (Lee & Ashton, 2004). Highly anxious people tend to experience more stress in response to difficulties, in comparison with less anxious people. Table 9 displays the fixed effects of stressor*anxiety terms of

64 multilevel moderated regression models. To summarize the table, Anxiety moderated 48% (n = 31) of contingencies. Highly anxious people displayed significantly stronger contingencies involving symptoms of interpersonal problems (.03 < β < .10, all *ps* < *.01)* and feelings of emptiness (.05 < β < .11, all *ps* < *.01).* Highly anxious people also exhibited stronger symptom reactions to situations in which they felt disappointed (.03 < β < .11, all *ps* < *.01)* or that their sense of self had been challenged (.04 < β < .11, all *ps* < *.001).* Anxiety did not have a significant effect on contingencies involving symptoms of fear of abandonment or impulsivity. Overall, anxiety seems to predispose people to react more intensely with interpersonal difficulty and feelings of emptiness in response to disappointment and challenge to self-view.

Extraversion. Extraversion was hypothesized to have a negative moderating effect on contingencies involving rejection, betrayal, abandonment, offense, and disappointment but a positive moderating effect on contingencies involving boredom and isolation. Table 10 shows the fixed effects of stressor*extraversion terms of 64 multilevel moderated regression models predicting contingency slope from Extraversion. Overall, Extraversion moderated 25% (n = 16) of contingencies, and had a particularly strong negative moderating effect on contingencies among disappointment and BPD symptoms. More extraverted individuals had significantly weaker contingencies between being disappointed by someone and the symptoms of fearing abandonment, identity threat, feelings of emptiness, inappropriate anger, and dissociative symptoms (-.05 < β < -.03, all *ps* < .001). More extraverted people also reacted with less fear of abandonment, identity threat, and anger in response to being offended. Extraversion did not have much of an effect on contingencies involving stressors of rejection, betrayal, isolation or boredom.

The hypothesis that Extraversion would have a mixed moderating effect on contingencies was only partially supported. Extraversion had an overall negative moderating effect on contingencies, as was predicted, but did not have a significant positive moderating effect on contingencies involving boredom and isolation.

Facet: Social Self-Esteem. Table 11 shows the results of 64 multilevel moderation analyses which tested the moderation effect of Social Self-Esteem (Social SE), a facet of Extraversion, on contingencies. Social Self-Esteem reflects a tendency to have a positive sense of self, especially in social contexts (Lee & Ashton, 2004). Social Self-Esteem moderated 64% (n = 41) of contingencies. Most interestingly, people with high social self-esteem displayed significantly weaker contingencies between all stressors and feelings of emptiness ($.05 < \beta < .12$, all *ps* < *.001)*, and between most stressors and identity disturbance ($-.09 < \beta < -.03$, *all ps* < .001). These results indicate that social self-esteem plays a meaningful role in the way people react to stressors on a moment-to-moment basis, particularly in their tendency to react with feelings of emptiness and identity disturbance.

Agreeableness. Agreeableness was hypothesized to have a negative moderating effect on stressor—symptom contingencies. This analysis tested the moderating effect of Agreeableness on contingency strength. Table 12 shows the fixed effects of stressor*agreeableness terms of 64 multilevel moderated regression models predicting contingency slope from levels of Agreeableness. Agreeableness moderated nearly 55% (n = 35) of contingencies. Agreeableness had a particularly strong moderating effect on contingencies involving the symptom of anger. Contingencies among abandonment,

betrayal, rejection, personal offense, disappointment, challenge to self-view and the symptom of anger were weaker in people with high levels of Agreeableness ($-.12 < \beta < -.07$, all *ps* < .001). People with high levels of Agreeableness also displayed several weaker contingencies among challenge to self-view and the symptoms of interpersonal instability, identity disturbance, impulsivity, affective instability, feelings of emptiness, and anger ($-.10 < \beta < -.04$, *all ps* < .01). Interestingly, more agreeable people had weaker isolation—symptom contingencies for all symptoms except anger, than less agreeable people ($-.07 < \beta < -.02$, *ps* < .01). This is interesting because agreeableness describes a tendency to be forgiving and tolerant of others, and is generally thought of as operating within an interpersonal context. Yet even when reacting to a stressor that does not involve other people (being alone), less agreeable people display stronger negative reactions and experience more BPD symptoms than more agreeable people. It seems as though the effect of Agreeableness on contingencies extends to non-interpersonal, as well as interpersonal, related stressors. The hypothesis that Agreeableness would negatively moderate stressor – symptom contingencies was supported.

Facet: Patience. Table 13 shows the moderating effect of Patience, a facet of Agreeableness, on contingencies. Patience reflects a tendency to remain calm as opposed to becoming angry in response to mistreatment (Lee & Ashton, 2004). Patience moderated 61% (*n* = 39) of contingencies. Patience particularly influenced contingencies involving being alone; more patient people had significantly weaker symptom reactions to situations in which they were alone, than less patient people ($-.03 < \beta < -.02$, all *ps* < *.01).* Patience also had a large effect on contingencies involving the symptom of anger; more patient people displayed markedly weaker contingencies between most

stressors (excluding boredom) and inappropriate displays of anger (-.12 < β < -.02, all *ps* < *.01).*

Conscientiousness. Conscientiousness was hypothesized to have a weak overall moderating effect on contingencies, but a strong negative moderating effect for one or two specific contingencies. This analysis tested the moderating effect of Conscientiousness on contingency strength. Table 14 displays the fixed effects of stressor*conscientiousness terms of 64 multilevel moderated regression models predicting contingency slope from levels of Conscientiousness. Overall, conscientiousness moderated 34% (*n* = 22) of contingencies, with a particularly strong moderating effect on contingencies involving symptoms of identity disturbance and paranoia/dissociative symptoms. More conscientious people reported less identity disturbance than less conscientious people immediately following experiences of rejection, betrayal, abandonment, boredom, personal offense, isolation, disappointment and challenge to self-view (-.12 < β < -.04, all *ps* < .001). The effect of conscientiousness on paranoia/dissociative symptom contingencies was slightly weaker and less widespread than that of identity disturbance, but still considerable. More conscientious people reacted with much less paranoid/dissociative symptoms in response to rejection, betrayal, abandonment, isolation, disappointment, and challenge to self-view, than less conscientious individuals (-.07 < β < -.03, all *ps* < .01). Conscientiousness had a generally weak moderating effect for contingencies involving the remaining six symptoms of BPD. The hypothesis that Conscientiousness would have a weak overall moderating effect but strong moderating effects on one or two specific symptom contingencies was supported.

Facet: Prudence. Table 15 displays the results of 64 multilevel moderation analyses testing the moderation effect of Prudence, a facet of Conscientiousness, on contingencies. Prudence reflects a tendency to deliberate decisions carefully and inhibit impulsive actions (Lee & Ashton, 2004). Prudence moderated 56% (*n* = 36) of contingencies. Prudence significantly moderated all contingencies involving the symptom of identity disturbance (-.09 < β < -.02, all *ps* < *.01*). The strongest effect was observed for the abandonment – identity disturbance contingency; people who are high on Prudence had significantly less identity disturbance in response to being abandoned than people who are low on Prudence (β = -.09, *p* < *.001).* Prudence also had a strong effect on contingencies involving the symptom of impulsivity (-.10 < β < -.03, all *ps* < *.01*), but had a weak effect on contingencies involving symptoms of affective instability and anger.

Openness to Experience. Openness to Experience was an exploratory variable in this study. Table 16 displays the fixed effects of stressor*openness terms of 64 multilevel moderated regression models predicting contingency slope from levels of Openness. Openness moderated 28% (*n* = 18) of contingencies. The strongest effects were observed for contingencies among rejection, betrayal, personal offense, challenged self and the symptom of anger (-.08 < β < -.05, all *ps* < .01). People who scored higher on Openness reacted with less anger in the presence of these four stressors, than people who scored lower on openness. Openness had no effect on contingencies involving impulsivity and affective instability symptoms. No facets were tested for Openness because none of them seemed to be conceptually or intuitively related to contingencies.

Honesty-Humility. Honesty-Humility was included as an exploratory variable in this study, and the results of the following analyses were quite exciting. Table 17 displays the fixed effects of stressor*honesty-humility terms of 64 multilevel moderated regression models predicting contingency slope from levels of Honesty-Humility. Honesty-Humility moderated 56% (n = 36) of stressor-symptom contingencies in BPD. People who scored higher on Honesty-Humility had weaker contingencies involving situations of rejection, betrayal, abandonment, and disappointment by others. In particular, the effect of Honesty-Humility on rejection and betrayal contingencies was quite strong ($-.10 < \beta < -.07$, all $ps < .001$ for contingencies involving rejection, and $-.10 < \beta < -.05$, all $ps < .01$ for contingencies involving abandonment). These results provide evidence that Honesty-Humility is an important trait to pay attention to when thinking about how a person's personality influences borderline pathology.

Facet: Modesty. Table 18 displays the results of 64 multilevel moderation analyses testing the moderation effect of Modesty, a facet of Honesty-Humility, on contingencies. Modesty moderated 45% (n = 29) of contingencies, with particularly strong effects on contingencies involving symptoms of identity threat ($-.11 < \beta < -.04$, all $ps < .01$) and anger ($-.11 < \beta < -.04$, all $ps < .01$).

Which has a Stronger Effect on Contingencies—BPD diagnosis or Traits?

Results from the previous analyses suggested that both BPD diagnosis and personality traits influence stressor—symptom contingencies in several ways. However, the previous analyses only examined the unconditional effects of diagnosis and traits; they did not control for the effects of one another. The next step is to find out whether the effects of BPD are truly independent of the effects of traits, and vice-versa. Thus, the

questions addressed in the following analyses are: *Do personality traits explain why people with BPD have stronger stressor—symptom contingencies than people without BPD? Or does having BPD explain why people with certain personality traits have stronger contingencies than people with different traits?* The following section will present results of analyses examining BPD and personality traits' relative effects on the three parts of a contingency. To review the contingency model, path (a) is the relationship between BPD/traits and stressors, path (b) is the relationship between BPD/traits and symptom level, and path (c) is the moderating effect that BPD/traits have on contingency strength.

Path (a) – Do personality traits explain why people with BPD frequently experience situational stressors? Or does BPD explain why people with certain traits frequently experience situational stressors?

It was previously demonstrated that people with BPD experience significantly more stressors than people without BPD (refer to Table 3). The following set of analyses tested whether traits are a mediator of the effect of BPD diagnosis on stressor experience. That is, this analysis tested whether an individual's personality is partly responsible for BPD's effects on stressors. To test this, each situational stressor (n = 8) was regressed on BPD diagnosis (0 = No, 1 = Yes) and trait level (n = 6 traits) using hierarchical linear modeling, resulting in a total of 48 multiple regression analyses. In each analysis stressor score was the dependent variable and BPD diagnosis and trait level were independent variables. Each analysis yielded an unstandardized regression coefficient (β) for each independent variable. These coefficients reflect estimations of the relative associations

among BPD diagnosis, trait level, and stressor experience. Table 19 presents the results of these analyses.

As can be seen in Table 19, when controlling for BPD diagnosis the overall effects of Emotionality, Extraversion, and Conscientiousness on stressor experience are considerably dampened, and all effects of Honesty-Humility and Agreeableness are weakened to a level of non-significance. The only traits that remained significantly associated with stressor experience when controlling for BPD diagnosis were Emotionality with disappointment ($\beta = .25$, $p < .01$), Extraversion with boredom and isolation ($\beta = -.29$, $p < .01$; $\beta = -.32$, $p < .01$), and Conscientiousness with boredom ($\beta = -.35$, $p < .01$). These results suggest that in general, the effect of traits on stressor experience can actually be attributed to whether or not an individual has BPD. Traits themselves do not appear to be uniquely associated with stressor experience, except in the specific cases of Emotionality with disappointment, Extraversion with boredom and isolation, and Conscientiousness with boredom.

When controlling for the effect of traits, the effect of BPD diagnosis on stressor experience remained highly significant (*most ps* < .001). Even when taking the effect of personality traits into account, people with BPD still experienced significantly higher levels of all eight stressors than people without BPD. This suggests that BPD diagnosis is a better predictor of how often people experience stressors than personality traits.

Path (b) – Do personality traits explain why people with BPD experience more intense symptoms? Or does BPD explain why people with certain traits experience more intense symptoms?

It was previously demonstrated that people with BPD experience more intense symptoms than people without BPD (refer to Table 4). Table 20 shows the results of 48 multilevel multiple regression models which tested for associations of BPD diagnosis and personality traits with symptom intensity. In these analyses BPD diagnosis and trait scores were independent variables and symptom level was the dependent variable.

As can be seen in Table 20, the strength of association between most traits and symptom intensity is reduced when controlling for BPD diagnosis. A few traits were still significantly associated with a few specific symptoms. Conscientiousness had the most widespread overall effect above and beyond that of BPD diagnosis, with more Conscientious people experiencing significantly less identity disturbance ($\beta = -.22$, $p < .01$), impulsivity ($\beta = -.24$, $p < .001$), and feelings of emptiness ($\beta = -.31$, $p < .01$) than less Conscientious people. Emotionality was significantly associated with affective instability even when controlling for BPD diagnosis ($\beta = .28$, $p < .01$), Extraversion was associated with feelings of emptiness ($\beta = -.27$, $p < .01$), and Agreeableness was associated with impulsivity ($\beta = -.17$, $p < .01$) and anger ($\beta = -.20$, $p < .001$). All associations between Openness and BPD symptoms became non-significant when controlling for BPD diagnosis.

The effect of BPD diagnosis on symptom level remained highly significant (*all*

ps < .001) when controlling for personality traits; people with BPD still experienced significantly higher levels of all eight symptoms than people without BPD, regardless of their personality traits.

Path (c): Can the effect of BPD on contingencies be explained by personality traits?

The questions for this set of analyses were: *can the moderating effect of BPD on contingencies be accounted for by personality traits? Or is the moderating effect of personality accounted for by BPD diagnosis?* In other words, I wanted to find out whether BPD diagnosis or personality traits have a greater moderating effect on contingencies. To answer this question, I tested the mediated moderation effects of personality traits and BPD diagnosis on stressor-symptom contingencies. Additionally, I tested the mediated moderation effects of select personality facets and BPD diagnosis on contingencies.

Mediated Moderation Effects of BPD. The first set of analyses in this section tested the mediation effects of traits on the moderating effect of BPD diagnosis on contingencies. This reflects a test of mediated moderation because BPD diagnosis is a moderator of contingencies, and I wanted to see if traits mediate the relationship between BPD diagnosis and contingency strength. If the moderating effect of BPD diagnosis decreases when controlling for personality traits, that would mean that the effect of BPD on contingencies is actually related to a person's level of certain traits, not the diagnosis of BPD itself. If the moderating effect of BPD remains unchanged when controlling for traits, that would mean that an individual's personality does not have as much of an effect on how they react to situational stressors, but rather the fact that they have BPD is the reason why they have stronger contingencies.

I used hierarchical linear modeling to estimate the mediation effects of six traits on the moderating effect of BPD on 40 contingencies (I only tested the contingencies on which BPD diagnosis had a significant unconditional moderating effect). In order to examine the precise mediation effects of traits more closely, I also tested the mediation effects of facet traits Modesty (HH), Anxiety (EM), Social Self-Esteem (EX), Patience (AG), and Prudence (C) on the moderating effect of BPD diagnosis on contingencies. With 40 contingencies, 6 traits, and 5 facets, I tested a total of 440 mediated moderation models. In each model symptom level was the dependent variable and frequency of stressor experience, trait level, BPD diagnosis, the interaction of stressor score and trait level (stressor*trait) and the interaction of stressor score and BPD diagnosis (stressor*diagnosis) were independent variables.

Testing 440 models yielded an overwhelming amount of results. Each mediated moderation analysis yielded four fixed effects: those for stressor experience ($\beta_{stressor}$), trait level ($\beta_{trait)}$, stressor*trait ($\beta_{stressor*trait}$), and stressor*diagnosis ($\beta_{stressor*diagnosis)}$. For this part of my analysis, I was only interested in the fixed effects of the stressor*diagnosis term for each contingency, because those effects represent of the part of the moderating effect of BPD diagnosis on contingencies that is independent of the moderating effect of trait level. In order to summarize all 440 effects, I took a two-step approach. First, I returned to my research question for this part of my thesis: *can the moderating effect of BPD on contingencies accounted for by personality traits*? To answer this question, I needed to compare the unconditional moderating effect of BPD on contingencies to the moderating effect of BPD when controlling for trait level. To do this, for each contingency I subtracted the absolute value of the unconditional moderating effect of

BPD from the absolute value of the moderating effect of BPD when controlling for trait level. This allowed me to see the degree of change in the moderating effect of BPD diagnosis ($\Delta\beta_{stressor*diagnosis}$) once the moderating effect of trait was accounted for. I next constructed a table of $\Delta\beta_{stressor*diagnosis}$ for each contingency, and then counted how many times the moderating effect of BPD diagnosis became weaker when controlling for each trait. Table 21 shows the number of contingencies whose moderating effect of BPD dropped, and by how much, when controlling for each trait. Figure 3 presents a graphical representation of Table 21 and can be viewed as a summary of the mediating effects of traits on the moderating effect of BPD diagnosis on contingencies.

Table 21

Degree of change in moderating effect of BPD diagnosis on contingencies (*n=40)* when controlling for traits

Trait being controlled for	**> 0**	**0**	**-0.01**	**-0.02**	**-0.03**	**-0.04**	**-0.05**	**Average $\Delta_{stressor*diagnosis}$**
HH	9	6	12	8	2	2	1	-0.01
EM	7	8	20	4	1	0	0	-0.01
EX	8	17	13	2	0	0	0	0
AG	5	16	14	3	2	0	0	-0.01
C	4	21	12	2	1	0	0	0
OP	4	32	4	0	0	0	0	0

Honesty-Humility (HH), Emotionality (EM), Extraversion (EX), Agreeableness (AG), Conscientiousness (C), Openness (OP)

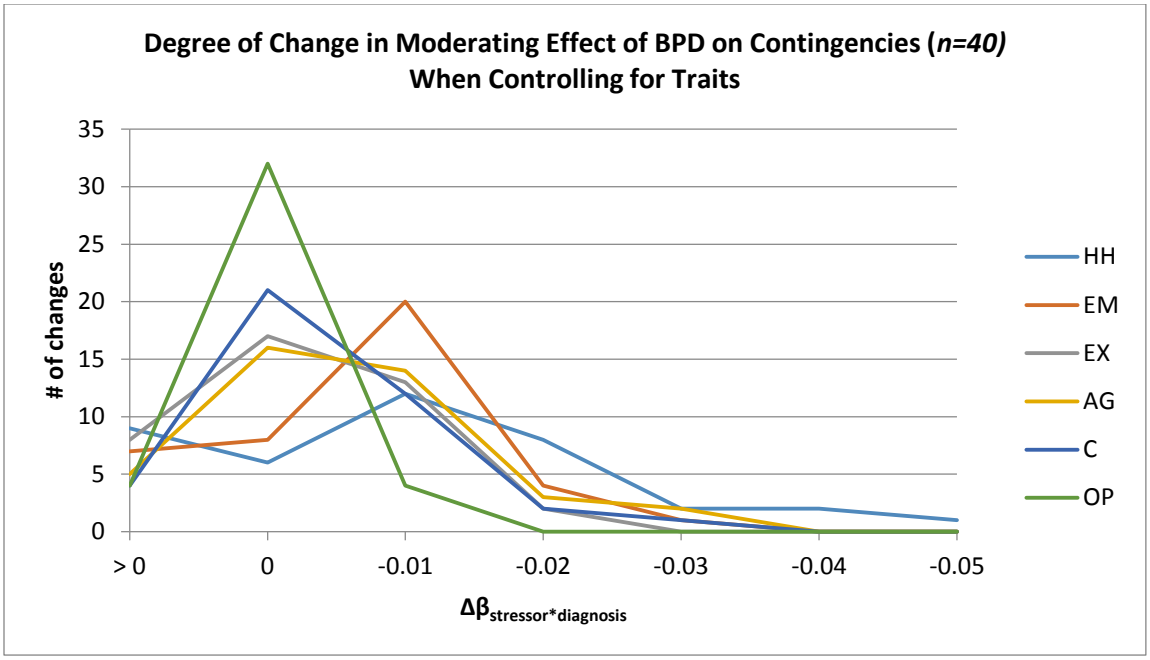


Figure 3. Change in moderating effect of BPD diagnosis when controlling for traits

As Figure 3 shows, three traits mediated the moderation effect of BPD diagnosis on contingencies: Honesty-Humility (average $\Delta\beta_{stressor*diagnosis}$ = -.01), Emotionality (average $\Delta\beta_{stressor*diagnosis}$ = -.01), and Agreeableness ($\Delta\beta_{stressor*diagnosis}$ = -.01). The average $\Delta\beta_{stressor*diagnosis}$ when controlling for Extraversion, Conscientiousness, and Openness was zero.

The same analyses were conducted for facet traits Modesty (HH), Anxiety (EM), Social Self-Esteem (EX), Patience (AG), and Prudence (C). Table 22 shows the number of contingencies whose moderating effect of BPD dropped, and by how much, when controlling for each facet, and Figure 4 presents a graphical representation of Table 22. The graph can be viewed as a summary of the mediating effects of facets on the moderating effect of BPD diagnosis on contingencies.

Table 22

Degree of change in moderating effect of BPD diagnosis on contingencies (*n=40)* when controlling for facets

Facet being controlled for	> 0	0	-0.01	-0.02	-0.03	-0.04	-0.05	Avg. $\Delta_{stressor*diagnosis}$
Modesty	6	16	14	0	3	1	0	-0.01
Anxiety	7	13	8	5	3	2	2	-0.01
SocialSE	1	6	6	16	5	1	5	-0.02
Patience	1	27	11	1	0	0	0	0
Prudence	8	12	6	6	6	2	0	-0.01

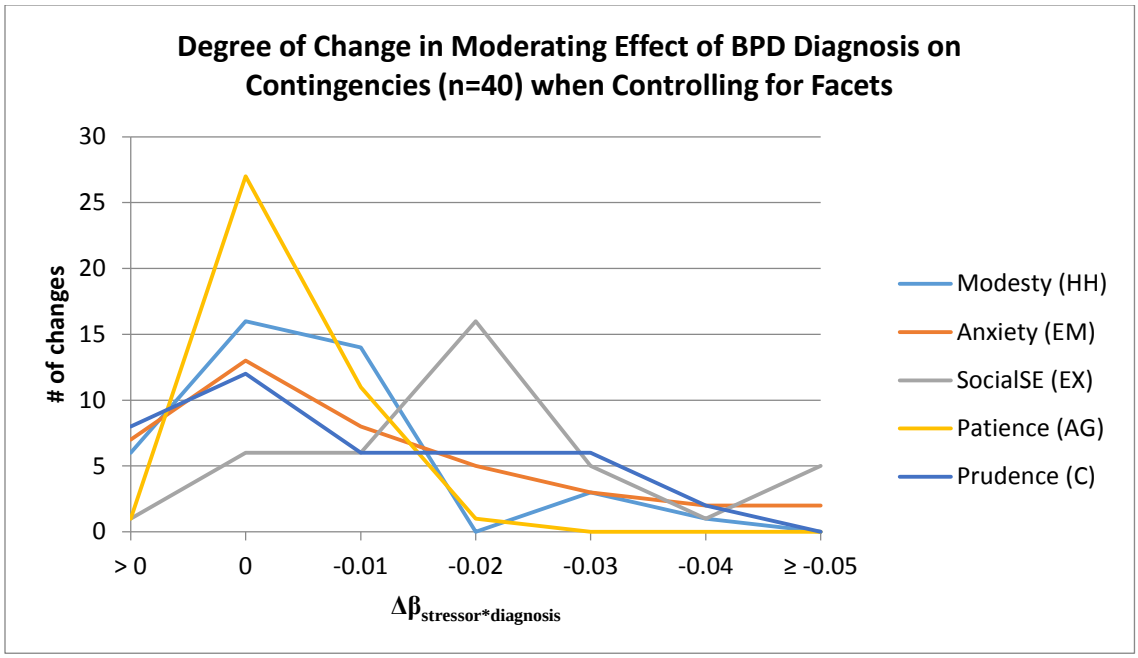


Figure 4. Change in moderating effect of BPD diagnosis when controlling for facets

As Figure 4 shows, four facet traits mediated the moderation effect of BPD on contingencies: Modesty (average $\Delta\beta_{stressor*diagnosis}$ = -.01), Anxiety (average

$\Delta\beta_{stressor*diagnosis}$ = -.01), Social SE (average $\Delta\beta_{stressor*diagnosis}$ = -.02), and Prudence (average $\Delta\beta_{stressor*diagnosis}$ = -.01).

Since the moderating effect of BPD was only weakened and not eliminated completely when controlling for traits, I cannot conclude that the trait and facets mentioned above account for all of BPD's moderating effect on stressor—symptom contingencies. However, when one considers that the magnitude of the initial moderating effect of BPD on contingencies was $.03 < |\beta| < .12$, a decrease of .01 to .02 units when controlling for traits can be considered meaningful. It is also useful to consider how many times the moderating effect of BPD became non-significant when controlling for traits and facets. Tables 23 and 24 display the number of contingencies for which the moderating effect of BPD dropped to non-significance when controlling for traits and facets. When looking at Tables 23 and 24, one can see that the moderating effect of BPD diagnosis became non-significant in 3-20% of contingencies when controlling for traits, and in 8-43% of contingencies when controlling for facets. This indicates that traits themselves do not explain much of the variance in contingency strength between people with and without BPD, but suggests that more specific facet traits may possibly account for some of the hyper-reactivity to stressors in people with the disorder.

From these results, I conclude that Honesty-Humility, Agreeableness, and Emotionality, Modesty, Anxiety, Social SE, and Prudence are related to reactivity independently of BPD diagnosis, in that they increase the likelihood of an individual with more intense symptom responses to situational stressors. However, these traits likely only explain a small part of why people with BPD exhibit stronger contingencies than people without BPD. It could be that specific facet traits other than ones tested here fuel

strong symptom reactions to stressors, but it is also likely that there are other aspects of BPD, besides personality traits, that predispose individuals with the disorder to react strongly to stressors. In terms of the entire contingency, Honesty-Humility, Agreeableness, and Emotionality only explained a small amount of difference in reactivity to stressors; they did not explain why people with BPD experience more stressors and symptoms than people without BPD. Again, this suggests that while some traits are associated with specific parts of contingencies, there is still something else about BPD, other than personality, that is driving stressor—symptom contingencies.

Mediated Moderation Effects of Traits. The second set of analyses in this section tested the mediation effects of BPD diagnosis on the moderating effects of personality traits on contingencies. This reflects a test of mediated moderation because traits are a moderator of contingencies, and I wanted to see if diagnosis mediates the relationship between traits and contingency strength. If the moderating effect of a particular trait is weakened when controlling for diagnosis, it would suggest that the effect of that trait is captured in the effect of diagnosis. In other words, the trait and BPD would share some conceptual overlap. If the moderating effect of traits is not weakened when controlling for diagnosis, it would suggest that personality has a meaningful influence on contingencies in BPD, regardless of an individual's diagnostic status.

To examine the mediated moderation effect of BPD diagnosis on personality traits, I took the same statistical approach that was used in the previous section. I tested the mediating effect of BPD diagnosis on the moderating effect of traits and their facets on contingencies. I only tested contingencies on which traits and facets had a significant unconditional moderating effect. This resulted in 36 tests for Honesty-Humility, 23 tests

for Emotionality, 16 tests for Extraversion, 35 tests for Agreeableness, 22 tests for Conscientiousness, and 18 tests for Openness. At the facet level, I ran 29 tests for Modesty, 31 tests for Anxiety, 41 tests for Social Self-Esteem, 39 tests for patience, and 36 tests for Prudence. This resulted in a total of 326 tests of the mediating effect of BPD diagnosis on the moderating effects of traits. I used hierarchical linear modeling to conduct all of these analyses. In each analysis, the dependent variable was symptom level and the independent variables were stressor score, trait level, BPD diagnosis, the interaction between stressor score and trait level (stressor*trait), and the interaction between BPD diagnosis and trait level (diagnosis*trait). For these analyses, I looked at the fixed effects for the stressor*trait terms ($\beta_{stressor*trait}$) because they reflect the part of the moderating effect of traits on contingencies that is independent of the moderating effect of BPD diagnosis.

In order to summarize all 326 effects, I again took a two-step approach. First, I returned to my research question for this part of my thesis: *can the moderating effect of traits on contingencies be accounted for by BPD diagnosis?* Stated differently, I was looking to see if the moderating effects of traits became weaker after controlling for BPD diagnosis. To answer this question, I needed to compare the unconditional moderating effects of each trait on contingencies to the moderating effect of each trait when controlling for BPD diagnosis. To do this, for each contingency I subtracted the absolute value of the unconditional moderating effect of traits from the absolute value of the moderating effect of traits when controlling for BPD diagnosis. This allowed me to see the degree of change in the moderating effect of each trait ($\Delta\beta_{stressor*trait}$) once the moderating effect of BPD diagnosis was accounted for. I next constructed a table of

$\Delta\beta_{stressor*trait}$ for each contingency, and then counted how many times the moderating effect of traits became weaker once controlling for diagnosis. Table 25 shows the number of contingencies for which the moderating effect of traits dropped, and by how much, when controlling for diagnosis. Figure 5 presents a graphical representation of Table 25, and can be viewed as a summary of the mediated moderation effects of traits on contingencies.

Table 25

Degree of change in moderating effect of traits when controlling for BPD diagnosis

Trait	**> 0**	**0**	**-0.01**	**-0.02**	**-0.03**	**-0.04**	**Avg. $\Delta_{stressor*trait}$**
HH	7	6	17	5	1	0	-0.01
EM	1	2	7	6	5	2	-0.02
EX	0	5	9	2	0	0	-0.01
AG	3	11	17	4	0	0	-0.01
C	3	10	5	3	1	0	-0.01
OP	4	11	3	0	0	0	0

Honesty-Humility (HH), Emotionality (EM), Extraversion (EX), Agreeableness (AG), Conscientiousness (C), Openness (OP)

As Figure 4 shows, BPD diagnosis mediated the moderation effects of Honesty-Humility (average $\Delta\beta_{stressor*trait}$ = -.01), Emotionality (average $\Delta\beta_{stressor*trait}$ = -.02), Extraversion (average $\Delta\beta_{stressor*trait}$ = -.01), Agreeableness (average $\Delta\beta_{stressor*trait}$ = -.01), and Conscientiousness (average $\Delta\beta_{stressor*trait}$ = -.01) on contingencies.

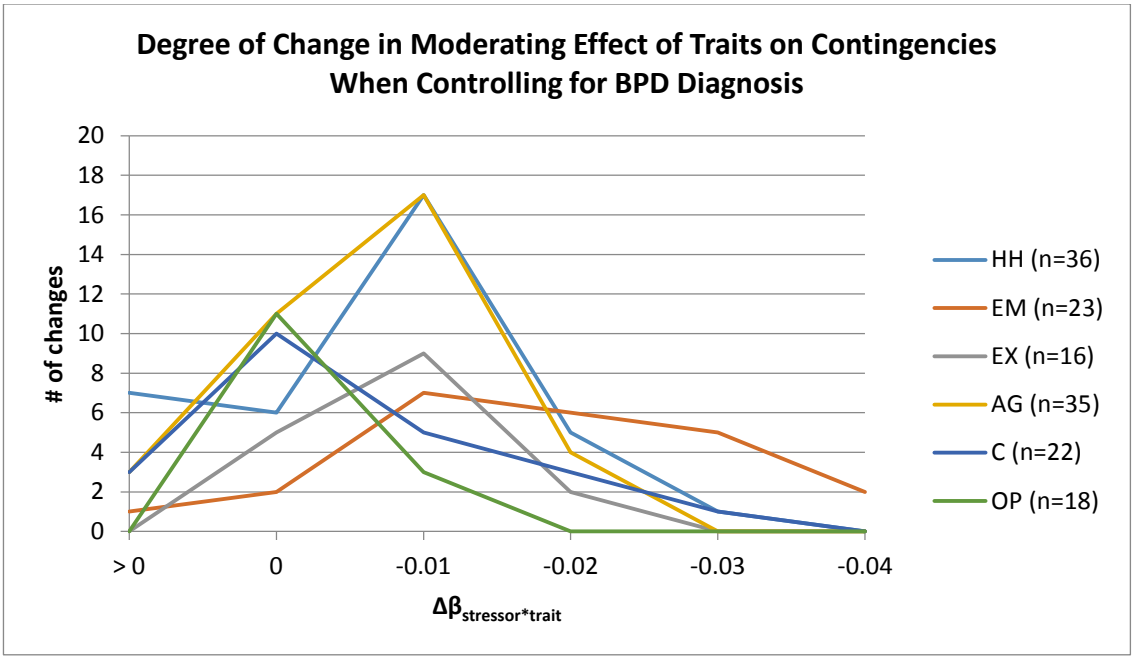


Figure 5. Change in moderating effect of traits on contingencies when controlling for BPD

Table 26 shows the number of contingencies for which the moderating effect of facets dropped, and by how much, when controlling for diagnosis, and Figure 6 presents a graphical representation of Table 26. The graph can be viewed as a summary of the mediated moderation effects of facets on contingencies.

Table 26

Change in moderation effect of facets when controlling for BPD diagnosis

Facet	> 0	0	-0.01	-0.02	-0.03	-0.04	-0.05	Avg. $\Delta_{stressor*trait}$
Modesty	4	13	12	0	0	0	0	0
Anxiety	2	11	9	8	1	0	0	-0.01
SocialSE	2	11	23	5	0	0	0	-0.01
Patience	1	33	5	0	0	0	0	0
Prudence	5	11	13	6	1	0	0	-0.01

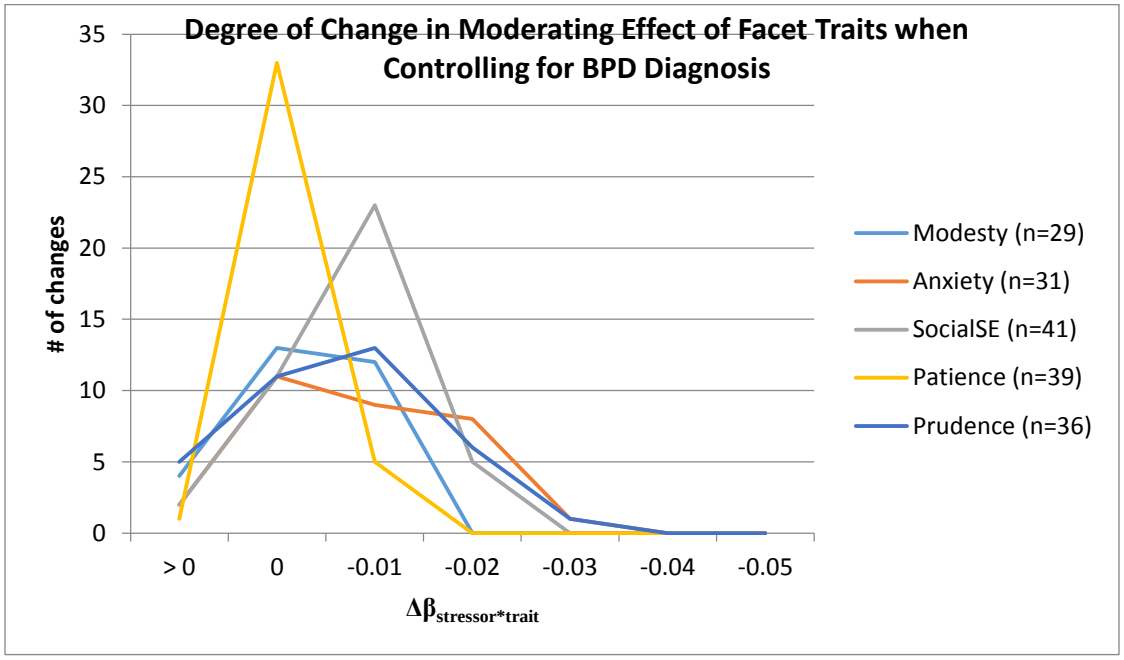


Figure 6. Change in moderating effect of facets when controlling for BPD diagnosis

As Figure 6 shows, BPD diagnosis mediated the moderation effects of Anxiety (average $\Delta\beta_{stressor*trait}$ = -.01), Social Self-Esteem (average $\Delta\beta_{stressor*trait}$ = -.01), and Prudence (average $\Delta\beta_{stressor*trait}$ = -.01).

These results suggest that the moderating effects of Honesty-Humility, Emotionality, Extraversion, Agreeableness, and Conscientiousness on contingencies, and also the moderating effects of Anxiety, Social Self-Esteem, and Prudence can be partially explained by BPD diagnosis. In other words, it seems that an individual's traits do not fully explain heightened reactivity to stressors, but rather it is BPD diagnostic status that is playing a large role in the reactivity process. Again, since the moderating effect of traits was only weakened and not eliminated completely when controlling for diagnosis, I cannot conclude that BPD diagnosis accounts for the entirety of traits' moderating effects

on stressor—symptom contingencies. However, when one considers the magnitude of the initial moderating effects of traits ($.02 < |\beta| < .12$), a decrease of -.01 to -.02 units can be considered meaningful. It is also useful to consider how many times the moderating effects of traits and facets became non-significant when controlling for BPD diagnosis. Tables 27 and 28 display the number of contingencies for which the moderating effects of traits and facets dropped to non-significance once controlling for BPD diagnosis. When looking at Tables 27 and 28, one can see that the moderating effect of traits became non-significant in 6-57% of contingencies when controlling for traits, and in 0-26% of contingencies when controlling for facets. This supports the notion that BPD diagnosis partially explains why people with certain traits, particularly high Emotionality, have stronger stressor—symptom contingencies. However, it also suggests that certain facet traits, in particular Modesty, are not mediated by BPD and thus are uniquely associated with reactivity to stressors.

The results of mediation analyses on all three parts of contingencies suggest that BPD diagnosis partly explains the effect of personality traits on contingencies. Specifically, a person's personality is not entirely responsible for predisposing an individual to experience more frequent stressors on a momentary basis, but BPD is also playing a role in increased frequency of stressor experience. Accordingly, an individual's personality does not cause them to experience more BPD symptoms, generally speaking. There are a few specific symptoms with which personality was significantly associated, such as high conscientiousness with less identity threat, impulsivity, and emptiness, but generally the effect of personality on BPD symptoms is mediated by BPD diagnosis. Finally, most interesting in my opinion, was the finding that an individual's personality is

not entirely responsible for stronger symptom reactions to situational stressors. While there were a few specific facets that moderated contingencies independently of BPD diagnosis, having BPD generally explained why traits are associated with contingency strength. Taken together, these findings suggest that there is likely something else about BPD, other than traits, that is driving contingencies in BPD.

DISCUSSION

The purpose of this study was to reveal the way in which personality traits moderate contingent relationships among situational stressors and Borderline Personality Disorder (BPD) symptoms. Individuals with BPD display stronger stressor – symptom contingencies than people without BPD (Berenson et al., 2011; Miskewicz et al., under review), but the reasons for this are unclear. This study revealed personality traits' relationships with stressor—symptom contingencies, and also tested whether or not personality traits explain why people with BPD have stronger contingencies. The four main research questions in this study were:

(a) Are Personality Traits Associated With Stressor Experience?

Personality traits were associated with situational stressors, with the exception of Openness to Experience. Emotionality was positively associated with stressor frequency, and Agreeableness, Extraversion, Conscientiousness, and Honesty-Humility were negatively associated with stressor frequency. While my hypothesis that traits would be associated with stressor frequency was supported, the hypothesis that traits would explain why people with BPD experienced more stressors was not supported. Traits were unconditionally associated with situational stressors, but when controlling for BPD diagnosis the associations between all traits and most stressors were considerably dampened, suggesting that there is something else about BPD, other than traits, that explains why people with the disorder experience stressors more frequently than people without BPD.

(b) Are Personality Traits Associated With Symptom Intensity?

Personality traits were associated with BPD symptoms, with the exception of Openness to Experience. Emotionality was positively associated with symptom intensity and Conscientiousness, Extraversion, Agreeableness, and Honesty-Humility were negatively associated with symptom intensity. My hypothesis that traits would be associated with symptom intensity was generally supported. However, my hypothesis that traits would explain why people with BPD experience more intense symptoms was not supported. After controlling for BPD diagnosis, the majority of trait—symptom associations were substantially weakened. A few symptoms remained uniquely associated with a few specific traits, namely Conscientiousness with decreased identity disturbance, impulsivity, and emptiness. It is possible that these specific symptoms are indeed associated with Conscientiousness, but it is also possible that these unique associations between symptoms and traits were simply a result of Type I error. Based on the fact that the majority of associations between traits and symptoms were weakened after controlling for BPD diagnosis and given the possibility for Type I error, I conclude that personality traits generally do not explain heightened symptom intensity in people with BPD. There is likely something else about the disorder, other than an individual's personality, that is driving symptom experience.

(c) Are Personality Traits Associated With the Strength of Contingent Relationships Between Stressors and Symptoms?

Personality traits were associated with reactivity to stressors. Agreeableness and Honesty-Humility had pervasive negative associations with contingencies, and all other

traits were associated with contingencies to some degree. My hypothesis that traits are associated with contingency strength was supported.

(d1) Is the Moderating Effect of BPD Diagnosis on Contingencies Explained by Personality Traits?

The moderating effect of BPD diagnosis on contingencies may be partially explained by three traits: Honesty-Humility, Emotionality, and Agreeableness. Lower levels of Honesty-Humility and Agreeableness and higher levels of Emotionality appear to contribute to some of the hyper-reactivity to stressors observed in people with BPD. However, their contribution is likely small, considering that Honesty-Humility, Agreeableness, and Emotionality mediated the moderation effect of BPD on only 20%, 15%, and 13% of contingencies, respectively. The remaining traits of Extraversion, Conscientiousness, and Openness did not explain any of the variability in contingency strength for people with and without BPD. Interestingly, however, Social Self-Esteem, a facet of Extraversion, and Prudence, a facet of Conscientiousness, had a pervasive effect; Social Self-Esteem and Prudence mediated the moderating effect of BPD on 43% and 30% of contingencies, respectively. This suggests that perhaps traits, in a broad sense, do not explain why people with BPD have stronger contingencies, but maybe specific facet-level traits explain some of the variability in contingency strength. If only a few facet traits have a mediating effect on BPD diagnosis' moderating effect on contingencies, perhaps their effects cannot be detected when using broad factor-level traits as the unit of analysis. Future research would benefit from looking at the unique associations between facet traits and contingency strength in BPD. From the results of the present study, my hypothesis that personality traits account for BPD diagnosis' moderating effect on

contingencies is generally unsupported, although Social Self-Esteem and Prudence seem to mediate some of BPD diagnosis' moderating effect.

(d2) Is the Moderating Effect of Personality Explained by BPD Diagnosis?

BPD had a widespread mediating effect on the moderation effects of traits on stressor—symptom contingencies. Results indicated that having a BPD diagnosis partially explains why people with higher levels of Emotionality and lower levels of Honesty-Humility, Extraversion, Agreeableness, and Conscientiousness display stronger symptom reactions in response to situational stressors. BPD seems especially tied to Emotionality, as BPD diagnosis mediated the moderating effect of Emotionality on 57% of contingencies. From these analyses I conclude that the moderating effect of personality traits can generally be explained by BPD diagnosis. My hypothesis that the moderating effect of personality traits would not mediated by BPD diagnosis was unsupported. People who score high on Emotionality and low on Honesty-Humility, Extraversion, Agreeableness, and Conscientiousness may experience stronger reactions in response to stressors, but their reactions are not fully driven by their personality; there is some other aspect of BPD that contributes to heightened reactivity to stressors.

Implications

Continuity between normal traits and BPD. The findings of this study have implications for the conceptualization of BPD in terms of normal personality traits. Recent research has supported the notion that BPD should not be considered on a categorical "you have it or you don't" basis, but instead should be considered as a dimensional collection of maladaptive, extreme variants of normal personality traits (Miller, Morse, Nolf, Stepp, & Pilkonis, 2012; Wright et al., 2014). The findings of the

present study do not support the idea that BPD can be conceptualized in terms of normal personality traits. If this view were true, then traits would have explained why people with BPD have stronger contingencies--but they did not. Furthermore if BPD was simply a collection of traits, then the moderating effects of traits on contingencies should not have been mediated by BPD diagnosis--but they were. Thus, the findings of the present study suggest that BPD cannot be defined by personality traits alone.

Clinical relevance. The findings of this study also have implications for clinical practice. The clinical utility of contingencies is that they may provide a road map of sorts to people suffering from BPD. If an individual can identify particular situations that are likely to trigger a symptom response, they may be able to avoid those situations or learn skills to effectively manage their symptoms when such situations are unavoidable. One particular treatment for which the results of this study are relevant is Dialectical Behavioral Therapy (DBT) (Linehan, 1993). Behavioral analysis is a key component of DBT, in which a therapist works with the patient to identify problem behaviors and then subsequently identify events that facilitate those behaviors (Robins, Ivanoff & Linehan, 2001). If patients become aware of their personal "triggering" situations that elicit symptoms of BPD, they can work with their therapist to manage their emotions and improve their coping skills in the midst of triggering situations. The results of the present study indicate that an individual's personality is not entirely responsible for their experiences of triggering situations subsequent reactions to them. This hopefully provides some level of relief to people suffering from BPD, because it suggests that their disorder is not a result of their personality--there is something about the disorder itself that is driving them to react in a maladaptive way to triggering situations. In this regard,

the continued use of DBT in treating patients with BPD is supported by the findings of this study. Contingencies are at work within BPD and cannot be attributed to an individual's personality characteristics. A focus on the behavioral components of contingencies, by working with patients to identify potential triggers and rectify unhealthy responses to those triggers, is a promising way to decrease the strength of contingencies in people with BPD.

Limitations

The main limitation of this study is the lack of statistical significance tests on the mediated moderation effects of traits and BPD diagnosis. The complexity of such statistical analyses was beyond my scope of knowledge, so I did not perform significance tests on the changes in the moderation effect of traits when controlling for BPD diagnosis, or on the changes in the moderation effect of diagnosis when controlling for traits. In place of performing significance tests, I calculated the average change in magnitude of the moderating effect of traits when controlling for BPD diagnosis, and vice-versa, across all contingencies. Having performed tests of significance on the changes in moderation effects would have allowed me to draw stronger and more definitive conclusions about the mediated moderation effects of traits and BPD diagnosis on contingencies.

Another limitation of this study was the possibility of Type I error due to the large number of statistical tests conducted. I attempted to minimize Type I error by using a conservative p-value of .01 as a threshold for statistical significance. However, I tested over 1,000 multilevel models in this study, so there is still a chance for Type I error even

when using a conservative p-value. One solution to this problem would be to use a more conservative p-value of .001 when interpreting the results of each analysis.

A final possible limitation of this study was the treatment-seeking nature of the sample. Of the 43 participants with BPD who provided data on their treatment situation in the month prior to completing the ESM portion of the study, over one-third (37%) had been actively seeking some sort of therapy. It is reasonable to think that treatment-seeking participants would display weaker stressor—symptom contingencies than non-treatment seeking participants, because they would learn skills to manage reactions to stressors in their therapy sessions. The fact that 37% of participants with BPD were actively seeking treatment during this study may have impacted my results by dampening the true effect of BPD on contingencies. Had my sample included only non-treatment seeking participants with BPD, I expect that the effect of BPD diagnosis on contingencies would have been even stronger than what was observed in my sample, thus lending further support to my conclusions.

Future Directions

This study looked primarily at the effects of factor-level traits on contingencies. I examined the effects of select personality facet traits, but exploration into more facet-level traits is suggested in order to get a more nuanced look at the specific relationship between traits and contingencies. There may be specific facet traits that contribute to stronger contingencies in people with BPD, but it is possible that their effect may be undetectable when looking at broader, factor-level traits. Results from facet trait analyses in the present study indicated that some facets are associated with contingencies in

unique ways, but more in-depth analysis is necessary to elucidate facets' precise effects on contingencies.

Additionally, future research may benefit from focusing on specific stressor—symptom contingencies, in contrast to the broad perspective on contingencies that was used in this study. While personality traits did not *generally* explain the effect of BPD on contingencies, certain traits did account for the moderating effect of BPD on specific contingencies. Taking a more narrowly focused approach to studying contingencies in BPD can reveal important information that might be overlooked when studying contingencies more generally.

Finally, future research should be directed at examining other aspects of BPD that might explain why people with BPD have stronger stressor—symptom contingencies. Personality traits certainly do not account for all of the variability in contingency strength between people with and without BPD, so there must be some other aspect of the disorder that contributes to increased stressor experience, more intense symptoms, and stronger reactions to stressors in people with BPD. Possible variables of interest might include attachment style, coping mechanisms, and stress level.

Conclusions

From the results of this study I conclude that the traits Honesty-Humility, Emotionality, and Agreeableness contribute to heightened reactivity to stressors, but traits themselves are not the driving force behind contingencies in BPD. Traits do not explain why people with BPD experience more stressors or more intense symptoms, and the moderating effect of traits on contingencies can be partially explained by BPD diagnosis,

indicating that there must be some other aspect of the disorder, besides traits, that explains variability in contingency strength between people with and without BPD.

REFERENCES

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

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Association.

Ashton, M. C., & Lee, K. (2007). Empirical, theoretical, and practical advantages of the HEXACO Model of Personality Structure. *Personality and Social Psychology Review*, *11*(2), 150–166. doi:10.1177/1088868306294907

Ashton, M. C., Lee, K., & de Vries, R. E. (2014). The HEXACO honesty-humility, agreeableness, and emotionality factors: A review of research and theory. *Personality and Social Psychology Review*, *18*(2), 139–152. doi:10.1177/1088868314523838

Bender, D. S., & Skodol, A. E. (2007). Borderline personality as self-other representational disturbance. *Journal of Personality Disorders*, *21*(5), 500–517. doi:10.1521/pedi.2007.21.5.500

Berenson, K. R., Downey, G., Rafaeli, E., Coifman, K. G., & Paquin, N. L. (2011). The rejection–rage contingency in borderline personality disorder. *Journal of Abnormal Psychology*, *120*(3), 681–690. doi:10.1037/a0023335

Bolger, N., & Zuckerman, A. (1995). A framework for studying personality in the stress process. *Journal of Personality and Social Psychology*, *69*(5), 890–902. doi:10.1037/0022-3514.69.5.890

Bruce, J., Gunnar, M. R., Pears, K. C., & Fisher, P. A. (2013). Early adverse care, stress neurobiology, and prevention science: Lessons learned. *Prevention Science*, *14*(3), 247–256. doi:10.1007/s11121-012-0354-6

Butler, A. C., Brown, G. K., Beck, A. T., & Grisham, J. R. (2002). Assessment of dysfunctional beliefs in borderline personality disorder. *Behaviour Research and Therapy*, *40*(10), 1231–1240. doi:10.1016/S0005-7967(02)00031-1

Coifman, K. G., Berenson, K. R., Rafaeli, E., & Downey, G. (2012). From negative to positive and back again: Polarized affective and relational experience in borderline personality disorder. *Journal of Abnormal Psychology*, *121*(3), 668–679. doi:10.1037/a0028502

Distel, M. A., Trull, T. J., Willemsen, G., Vink, J. M., Derom, C. A., Lynskey, M., … Boomsma, D. I. (2009). The five-factor model of personality and borderline personality disorder: A genetic analysis of comorbidity. *Biological Psychiatry*, *66*(12), 1131–1138. doi:10.1016/j.biopsych.2009.07.017

Ebstrup, J. F., Eplov, L. F., Pisinger, C., & Jørgensen, T. (2011). Association between the Five Factor personality traits and perceived stress: Is the effect mediated by general self-efficacy? *Anxiety, Stress & Coping: An International Journal*, *24*(4), 407–419. doi:10.1080/10615806.2010.540012

Favazza, R. (1998). "The coming of age of self-mutilation." *Journal of Nervous and Mental Disease, 186*(5), 259–268. doi:10.1097/00005053- 199805000-00001.

Fleeson, W., & Gallagher, P. (2009). The implications of Big Five standing for the distribution of trait manifestation in behavior: Fifteen experience-sampling studies and a meta-analysis. *Journal of Personality and Social Psychology, 97*(6), 1097–1114. doi:10.1037/a0016786

Fleeson, W., Malanos, A. B., & Achille, N. M. (2002). An intraindividual process approach to the relationship between extraversion and positive affect: Is acting extraverted as "good" as being extraverted? *Journal of Personality and Social Psychology*, *83*(6), 1409–1422. doi:10.1037/0022-3514.83.6.1409

Folstein, M. F., Folstein, S. E., & McHugh, P. R. (1975). Mini-mental state: A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research*, *12*(3), 189–198. doi:10.1016/0022-3956(75)90026-6

Furr, R. M., Fleeson, W., Anderson, M., & Arnold, E. M., A general model of borderline symptomology based on the core-contingency principle. *Manuscript in preparation.*

Grant, B. F., Chou, S. P., Goldstein, R. B., Huang, B., Stinson, F. S., Saha, T. D., … Ruan, W. J. (2008). Prevalence, correlates, disability, and comorbidity of DSM-IV borderline personality disorder: Results from the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Clinical Psychiatry*, *69*(4), 533–545. doi:10.4088/JCP.v69n0404

Gratz, K. L., Dixon-Gordon, K. L., Breetz, A., & Tull, M. (2013). A laboratory-based examination of responses to social rejection in borderline personality disorder: The mediating role of emotion dysregulation. *Journal of Personality Disorders*, *27*(2), 157–171. doi:10.1521/pedi.2013.27.2.157

Gunderson, J. G. (1996). Borderline patient's intolerance of aloneness: Insecure attachments and therapist availability. *The American Journal of Psychiatry*, *153*(6), 752–758.

Hepp, J., Hilbig, B. E., Moshagen, M., Zettler, I., Schmahl, C., & Niedtfeld, I. (2014). Active versus reactive cooperativeness in borderline psychopathology: A dissection based on the HEXACO model of personality. *Personality and Individual Differences*, *56*, 19–23. doi:10.1016/j.paid.2013.08.013

Hopwood, C. J., & Zanarini, M. C. (2010). Borderline personality traits and disorder: Predicting prospective patient functioning. *Journal of Consulting and Clinical Psychology*, *78*(4), 585–589. doi:10.1037/a0019003

Jane, J. S., Pagan, J. L., Turkheimer, E., Fiedler, E. R., & Oltmanns, T. F. (2006). The interrater reliability of the Structured Interview for DSM-IV Personality. *Comprehensive Psychiatry*, *47*(5), 368–375. doi:10.1016/j.comppsych.2006.01.009

Klonsky, E. D. (2008). What is emptiness? Clarifying the 7th criterion for borderline personality disorder. *Journal of Personality Disorders*, *22*(4), 418–426. doi:10.1521/pedi.2008.22.4.418

Lecrubier, Y., Sheehan, D., Weiller, E., Amorim, P., Bonora, I., Harnett Sheehan, K., … Dunbar, G. (1997). The Mini International Neuropsychiatric Interview (MINI). A short diagnostic structured interview: reliability and validity according to the CIDI. *European Psychiatry*, *12*(5), 224–231. doi:10.1016/S0924-9338(97)83296-8

Lee, K., & Ashton, M.C. (2004) Psychometric properties of the HEXACO Personality Inventory. *Multivariate Behavioral Research, 39*(2), 329–358. doi:10.1207/s15327906mbr3902_8

Lee, K., & Ashton, M. C. (2012). Getting mad and getting even: Agreeableness and Honesty-Humility as predictors of revenge intentions. *Personality and Individual Differences*, *52*(5), 596–600. doi:10.1016/j.paid.2011.12.004

Linehan, M. M. (1993). Dialectical and biosocial underpinnings of treatment. *Cognitive-behavioral treatment of borderline personality disorder* (pp. 28-65). New York, NY: The Guilford Press.

McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology*, *52*(1), 81–90. doi:10.1037/0022-3514.52.1.81

McNiel, J. M., & Fleeson, W. (2006). The causal effects of extraversion on positive affect and neuroticism on negative affect: Manipulating state extraversion and state neuroticism in an experimental approach. *Journal of Research in Personality*, *40*(5), 529–550. doi:10.1016/j.jrp.2005.05.003

Meloy, J. R., & Boyd, C. (2003). Female stalkers and their victims. *Journal of the American Academy of Psychiatry and the Law*, *31*(2), 211–219.

Miller, J. D., Morse, J. Q., Nolf, K., Stepp, S. D., & Pilkonis, P. A. (2012). Can DSM–IV borderline personality disorder be diagnosed via dimensional personality traits? Implications for the DSM-5 personality disorder proposal. *Journal of Abnormal Psychology*, *121*(4), 944–950. doi:10.1037/a0027410

Miskewicz, K., Fleeson, W., Arnold, E., Law, M. K., Mneimne, M., & Furr, R. M. (2013). A contingency-oriented approach for studying borderline personality disorder: Situational stressors and symptoms. *Manuscript under review*.

Morey, L. C., Gunderson, J. G., Quigley, B. D., Shea, M. T., Skodol, A. E., McGlashan, T. H., … Zanarini, M. C. (2002). The representation of borderline, avoidant, obsessive-compulsive, and schizotypal personality disorders by the Five-Factor Model. *Journal of Personality Disorders*, *16*(3), 215–234. doi:10.1521/pedi.16.3.215.22541

Penley, J. A., & Tomaka, J. (2002). Associations among the Big Five, emotional responses, and coping with acute stress. *Personality and Individual Differences*, *32*(7), 1215–1228. doi:10.1016/S0191-8869(01)00087-3

Pfohl, B., Blum, N., & Zimmerman, M. (1997). *Structured interview for DSM-IV personality*. American Psychiatric Publications.

Rauthmann, J. F. (2012). You say the party is dull, I say it is lively: A componential approach to how situations are perceived to disentangle perceiver, situation, and perceiver × situation variance. *Social Psychological and Personality Science*, *3*(5), 519–528. doi:10.1177/1948550611427609

Robins, C. J., Ivanoff, A. M., Linehan, M. M. (2001). Dialectical behavior therapy. In W.J. Livesely (Ed), *Handbook of personality disorders: Theory, research, and treatment* (pp. 437-459). New York, NY: Guilford Publications.

Sadikaj, G., Moskowitz, D. S., Russell, J. J., Zuroff, D. C., & Paris, J. (2013). Quarrelsome behavior in borderline personality disorder: Influence of behavioral and affective reactivity to perceptions of others. *Journal of Abnormal Psychology*, *122*(1), 195–207. doi:10.1037/a0030871

Samuel, D. B., Carroll, K. M., Rounsaville, B. J., & Ball, S. A. (2013). Personality disorders as maladaptive, extreme variants of normal personality: Borderline personality disorder and neuroticism in a substance using sample. *Journal of Personality Disorders*, *27*(5), 625–635. doi:10.1521/pedi.2013.27.5.625

Schiffrin, H. H., & Nelson, S. K. (2010). Stressed and happy? Investigating the relationship between happiness and perceived stress. *Journal of Happiness Studies*, *11*(1), 33–39. doi:10.1007/s10902-008-9104-7

Schlotz, D. W. (2013). Stress reactivity. In M. D. Gellman & J. R. Turner (Eds.), *Encyclopedia of behavioral medicine* (pp. 1891–1894). New York: Springer.

Serfass, D. G., & Sherman, R. A. (2013). Personality and perceptions of situations from the Thematic Apperception Test. *Journal of Research in Personality*, *47*(6), 708–718. doi:10.1016/j.jrp.2013.06.007

Sheehan, D. V., Lecrubier, Y., Sheehan, K. H., Amorim, P., Janavs, J., Weiller, E., … Dunbar, G. C. (1998). The Mini-International Neuropsychiatric Interview (M.I.N.I): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of Clinical Psychiatry*, *59*(Suppl 20), 22–33.

Westen, D., Moses, M. J., Silk, K. R., Lohr, N. E., Cohen, R., & Segal, H. (1992). Quality of depressive experience in borderline personality disorder and major depression: When depression is not just depression. *Journal of Personality Disorders*, *6*(4), 382–393. doi:10.1521/pedi.1992.6.4.382

Wright, A. G. C., Hopwood, C. J., & Zanarini, M. C. (2014). Associations between changes in normal personality traits and borderline personality disorder symptoms over 16 years. *Personality Disorders: Theory, Research, and Treatment*. Advance online publication. http://dx.doi.org/10.1037/per0000092

Zanarini, M. C., & Frankenburg, F. R. (1997). Pathways to the development of borderline personality disorder. *Journal of Personality Disorders*, *11*(1), 93–104. doi:10.1521/pedi.1997.11.1.93

Zanarini, M. C., & Frankenburg, F. R. (2007). The essential nature of borderline psychopathology. *Journal of Personality Disorders*, *21*(5), 518–535. doi:10.1521/pedi.2007.21.5.518

Zanarini, M. C., Frankenburg, F. R., DeLuca, C. J., Hennen, J., Khera, G. S., & Gunderson, J. G. (1998a). The pain of being borderline: Dysphoric states specific to borderline personality disorder. *Harvard Review of Psychiatry*, *6*(4), 201–207. doi:10.3109/10673229809000330

Zanarini, M. C., Frankenburg, F. R., Dubo, E. D., Sickel, A. E., Trikha, A., Levin, A., & Reynolds, V. (1998b). Axis I comorbidity of borderline personality disorder. *The American Journal of Psychiatry*, *155*(12), 1733–1739.

Zanarini, M. C., Frankenburg, F. R., Reich, D. B., Fitzmaurice, G., Weinberg, I., & Gunderson, J. G. (2008). The 10-year course of physically self-destructive acts reported by borderline patients and axis II comparison subjects. *Acta Psychiatrica Scandinavica*, *117*(3), 177–184. doi:10.1111/j.1600-0447.2008.01155.x

Zanarini, M. C., Vujanovic, A. A., Parachini, E. A., Boulanger, J. L., Frankenburg, F. R., & Hennen, J. (2003). A screening measure for BPD: The Mclean Screening Instrument for Borderline Personality Disorder (MSI-BPD). *Journal of Personality Disorders*, *17*(6), 568–573. doi:10.1521/pedi.17.6.568.25355

Zeigler-Hill, V., & Abraham, J. (2006). Borderline personality features: Instability of self-esteem and affect. *Journal of Social and Clinical Psychology*, *25*(6), 668-687. doi:10.1521/jscp.2006.25.6.668

TABLES & FIGURES

Table 1
Variability in symptom experience

	Avoid Abandonment	Interperson. Instability	Identity Disturb.	Impulsivity	Affective Instability	Emptiness	Anger	Dissociative Symptoms	Self-Harm
Average level of symptom	.34	.45	.36	.40	.78	.58	.36	.35	.05
Variance within individuals (% of total)	.46 (47%)	.61(60%)	.45 (55%)	.58 (64%)	1.03 (58%)	.81 (53%)	.68 (71%)	.34 (48%)	.10 (81%)
Variance between individuals (% of total)	.52 (53%)	.40 (40%)	.37 (45%)	.33 (36%)	.74 (42%)	.71 (47%)	.28 (29%)	.36 (52%)	.02 (19%)

Table 2
Stressor – symptom contingencies

Stressor	Avoid Abandonment	Interpersonal Instability	Identity Disturb.	Impulsivity	Affective Instability	Emptiness	Anger	Dissociative Symptoms	Self-Harm
Abandonment	**.21*** **	**.29*** **	**.22*** **	**.14*** **	**.42*** **	**.30*** **	**.21*** **	**.23*** **	.02*
Betrayal	**.13*** **	**.32*** **	**.20*** **	**.16*** **	**.44*** **	**.25*** **	**.35*** **	**.22*** **	.01
Rejection	**.15*** **	**.28*** **	**.18*** **	**.14*** **	**.40*** **	**.26*** **	**.24*** **	**.17*** **	.01
Boring Situation	.02	**.04** **	**.05*** **	**.03** **	**.08*** **	**.11*** **	.03*	**.04*** **	.01
Alone	**.05*** **	**.04** **	**.08*** **	**.05*** **	**.10*** **	**.16*** **	**.04** **	**.06*** **	.01
Offense	**.07*** **	**.27*** **	**.15*** **	**.12*** **	**.36*** **	**.17*** **	**.33*** **	**.14*** **	.01*
Disappointment	**.08*** **	**.22*** **	**.12*** **	**.10*** **	**.30*** **	**.16*** **	**.24*** **	**.10*** **	.01*
Challenge Self	**.10*** **	**.26*** **	**.22*** **	**.13*** **	**.37*** **	**.24*** **	**.28*** **	**.16*** **	.02*

*Values are unstandardized regression coefficients in multilevel models where symptom level is the dependent variable and stressor score is the independent variable. Stressor scores are mean-centered for each individual; p < .001*** p < .01** p < .05**

Table 3
Path (a): The effect of BPD diagnosis on stressor experience

	Rejection	Betrayal	Abandonment	Boring Situation	Personal Offense	Isolation	Disappointment	Challenge Self
Diagnosis	.41***	.39***	.37***	.60***	.44***	.85***	.61***	.43***

*Values are unstandardized regression coefficients (β) in multi-level regression models where stressor is the dependent variable and BPD Diagnosis (0 = No, 1 = Yes) is the independent variable; p < .001*** p < .01** p < .05**

Table 4
Path (b): The effect of BPD diagnosis on symptom level

	Avoid abandonment	Interpersonal instability	Identity disturbance	Impulsivity	Affective instability	Emptiness	Anger	Dissociative Symptoms
Diagnosis	.65***	.63***	.62***	.47***	.88***	.87***	.37***	.54***

*Values are unstandardized regression coefficients (β) in multi-level regression models where symptom level is the dependent variable and BPD Diagnosis (0 = No, 1 = Yes) is the independent variable, p < .001*** p < .01** p < .05**

Table 5
Path (c): The moderating effect of BPD diagnosis on contingencies

Stressor	Avoid abandonment	Interpersonal instability	Identity disturbance	Impulsivity	Affective instability	Emptiness	Anger	Dissociative
Rejection	**.10*** **	**.06** **	**.06*** **	.04*	.04	.01	**.08*** **	**-.05*** **
Betrayal	**.08*** **	.03	**.06*** **	.01	-.01	.00	.04*	**-.08*** **
Abandonment	**.12*** **	.04*	**.09*** **	**.10*** **	.05*	.03	**.10*** **	**-.06*** **
Boring situation	.01	.02	**.06*** **	.02	**.06*** **	**.11*** **	**.07*** **	.02*
Offense	**.07*** **	**.06*** **	**.08*** **	**.04** **	.03	.03	.04*	-.02
Alone	-.01	.01	**.05*** **	**.03** **	.04*	**.06*** **	**.05*** **	**.03** **
Disappointment	**.08*** **	**.11*** **	**.10*** **	**.04** **	**.10*** **	**.08*** **	**.08*** **	.01
Challenge self	**.09*** **	**.08*** **	**.09*** **	**.07*** **	**.11*** **	**.07** **	**.05** **	-.02

*Values are unstandardized regression coefficients (β) for stressor*diagnosis terms in multilevel moderated regression models where symptom level is the dependent variable and diagnosis (0 = No, 1 = Yes), stressor, and stressor*diagnosis are independent variables, p < .001***, p < .01**, p < .05**

Table 6
Path (a): The effect of traits on stressor experience

Trait	Rejection	Betrayal	Abandonment	BoringSit	Offense	Isolation	Disappointment	Challenge Self
HH	-.09	-.08	-.09	**-.30****	-.15*	**-.32****	-.15	-.12
EM	**.19****	**.19****	**.18****	.27*	**.21****	.17	**.38*****	**.24****
EX	-.10	**-.15****	-.12*	**-.40*****	-.12	**-.48*****	-.15	-.15*
AG	-.11*	**-.16****	-.10	**-.32****	**-.19****	**-.28****	**-.31*****	-.06
C	-.10	-.08	-.06	**-.44*****	-.10	-.28*	-.12	**-.21****
OP	.04	-.03	-.01	-.13	.03	.14	-.02	.10

Honesty-Humility (HH), Emotionality (EM), Extraversion (EX), Agreeableness (AG), Conscientiousness (C), Openness (OP)
*Numbers are unstandardized regression coefficients (β) in multi-level regression models where stressor is the dependent variable and trait is the independent variable, $p < .001$***, $p < .01$**, $p < .05$**

Table 7
Path (b): The effect of traits on symptom intensity

Trait	Avoid abandonment	Interp. instability	Identity disturbance	Impulsivity	Affective instability	Emptiness	Anger	Dissociative Symptoms
HH	**-.30*****	-.16*	-.14*	**-.18****	**-.29****	-.19	-.13*	-.14*
EM	**.29****	**.31****	**.23****	**.25*****	**.48*****	**.39*****	**.19****	**.20****
EX	-.11	-.16*	**-.22****	**-.21****	**-.36*****	**-.44*****	**-.18****	**-.20****
AG	-.19*	**-.23****	-.12	**-.26*****	**-.36*****	-.19*	**-.26*****	**-.20****
C	**-.23****	**-.21****	**-.32*****	**-.32*****	**-.30****	**-.46*****	-.17*	**-.27*****
OP	.08	.07	.12	.03	-.01	.03	-.10	.05

Honesty-Humility (HH), Emotionality (EM), Extraversion (EX), Agreeableness (AG), Conscientiousness (C), Openness (OP)
*Numbers are unstandardized regression coefficients (β) in multi-level regression models where symptom score is the dependent variable and trait level is the independent variable $p < .001$***, $p < .01$**, $p < .05$**

Table 8
Path (c): Moderating Effect of Emotionality on Stressor – Symptom Contingencies

Stressor	Fear of Abandonment	Interpersonal Instability	Identity Disturbance	Impulsivity	Affective Instability	Emptiness	Anger	Dissociative Symptoms
Rejection	**.07*** **	.01	**.04** **	.00	-.03	.01	.02	**.04** **
Betrayal	.04*	.01	**.09*** **	.00	-.02	.00	-.03	.00
Abandonment	.04*	.06**	**.09*** **	-.02	.04	.00	.05*	-.01
BoringSit	.01	.03*	.02	.01	.03*	**.07*** **	.02*	**.02** **
Offensive	**.06*** **	**.05** **	**.05*** **	.03*	.00	**.06** **	.01	.01
Alone	-.01	.01	.01	.01	-.01	.03*	.00	.02*
Disappointed	**.05*** **	**.06*** **	**.07*** **	.02	**.05*** **	**.10*** **	**.05*** **	.02*
Challenged	.03*	**.06*** **	**.07*** **	.02	**.06** **	**.07** **	**.06** **	.02

*Values are unstandardized regression (β) coefficients for stressor*emotionality interaction terms in multilevel moderated regression analyses where symptom level is the dependent variable and stressor, emotionality, and stressor*emotionality are independent variables, p < .001***, p < .01**, p < .05**

Table 9
Path (c): Moderating effect of Anxiety on Stressor – Symptom Contingencies

Stressor	Fear of Abandonment	Interpersonal Instability	Identity Disturbance	Impulsivity	Affective Instability	Emptiness	Anger	Dissociative Symptoms
Rejection	.02	**.06*** **	-.01	-.01	-.03	**.05** **	.00	.01
Betrayal	-.02	**.04** **	.00	-.03*	-.03	.00	**-.05** **	-.02*
Abandonment	.03	**.09*** **	.03*	.00	.00	**.05** **	-.01	-.01
BoringSit	.01	**.03** **	**.02** **	**.02** **	**.04*** **	**.06*** **	.02	**.02*** **
Offensive	.03*	**.07*** **	.01	.02	.00	**.06*** **	**.06*** **	.00
Alone	-.01	.00	**.02** **	.01	.01	**.05*** **	.00	**.02** **
Disappointed	**.03** **	**.09*** **	**.04*** **	.02*	**.04*** **	**.11*** **	**.05*** **	**.03*** **
Challenged	.01	**.10*** **	**.06*** **	.03*	**.09*** **	**.11*** **	**.07*** **	**.04*** **

*Values are unstandardized regression (β) coefficients for stressor*anxiety interaction terms in multilevel moderated regression analyses where symptom level is the dependent variable and stressor, anxiety, and stressor*anxiety are independent variables, p < .001***, p < .01**, p < .05**

Table 10
Path (c): Moderating Effect of Extraversion on Stressor – Symptom Contingencies

Stressor	Fear of Abandonment	Interpersonal Instability	Identity Disturbance	Impulsivity	Affective Instability	Emptiness	Anger	Dissociative Symptoms
Rejection	-.01	.00	-.01	-.01	.00	.01	-.04*	-.02
Betrayal	-.02	.00	.00	.00	.03	.02	**.05****	-.01
Abandonment	**-.04****	.04*	**-.07*****	-.03	-.01	-.01	.00	-.01
BoringSit	.00	.00	-.02	-.01	-.01	-.01	-.01	**-.03****
Offensive	**-.04*****	-.02*	**-.05*****	.00	.00	-.03*	**-.05*****	-.01
Alone	**.04*****	.02*	.01	.00	.03*	-.01	.01	-.01
Disappointed	**-.04*****	-.01	**-.05*****	**-.03****	-.03*	**-.04*****	**-.04*****	**-.05*****
Challenged	-.02	-.02	-.02	**-.09*****	-.03	**-.04****	-.01	-.02

*Values are unstandardized regression coefficients (β) for stressor*extraversion interaction terms in multilevel moderated regression analyses where symptom level is the dependent variable and stressor, extraversion, and stressor*extraversion are independent variables, p < .001***, p < .01**, p < .05**

Table 11
Path (c): Moderating effect of Social Self-Esteem on Stressor – Symptom Contingencies

Stressor	Fear of Abandonment	Interpersonal Instability	Identity Disturbance	Impulsivity	Affective Instability	Emptiness	Anger	Dissociative Symptoms
Rejection	-.02	-.01	**-.04*****	-.01	-.02	**-.08*****	**-.04*****	**.05*****
Betrayal	**-.04*****	.00	**-.05*****	-.02	.01	**-.08*****	.00	**.06*****
Abandonment	**-.07*****	.00	-.02*	**-.05*****	-.01	**-.07*****	-.02	**.05*****
BoringSit	-.01	**-.02****	**-.03*****	-.01	**-.04*****	**-.05*****	**-.04*****	**-.03*****
Offensive	**-.06*****	**-.03*****	**-.08*****	**-.03****	-.02	**-.11*****	**-.04*****	.01
Alone	.01	.00	**-.03*****	-.01	-.02	**-.06*****	**-.04*****	-.01
Disappointed	**-.05*****	**-.05*****	**-.09*****	**-.04*****	**-.05*****	**-.12*****	**-.04*****	-.01*
Challenged	**-.03****	**-.04*****	**-.07*****	**-.07*****	**-.07*****	**-.11*****	**-.05*****	.00

*Values are unstandardized regression coefficients (β) for stressor*socialSE interaction terms in multilevel moderated regression analyses. The dependent variable in all analyses is symptom level. The independent variables are stressor score, socialSE score, and stressor*socialSE . p < .001***, p < .01**, p < .05**

Table 12
Path (c): Moderating Effect of Agreeableness on Stressor – Symptom Contingencies

Stressor	Fear of Abandonment	Interpersonal Instability	Identity Disturbance	Impulsivity	Affective Instability	Emptiness	Anger	Dissociative Symptoms
Rejection	-.01	-.03*	**-.04****	-.02	**-.05****	.00	**-.07*****	-.02
Betrayal	.02	**-.04****	.00	-.02	**-.09*****	.01	**-.07*****	**-.05*****
Abandonment	.00	**-.05****	**-.11*****	-.01	**-.10*****	-.04	**-.12*****	**-.04****
BoringSit	**-.02****	.00	**-.04*****	.00	.01	-.01	.00	-.01
Offensive	**.04*****	-.01	.00	-.02	.00	.02	**-.08*****	-.01
Alone	**-.02****	**-.04*****	**-.05*****	**-.04*****	**-.05*****	**-.07*****	**-.02***	**-.03*****
Disappointed	.00	**-.03****	-.01	**-.05*****	**-.04****	**-.04****	**-.07*****	**-.03****
Challenged	-.02	**-.05****	**-.06*****	**-.04****	**-.05****	**-.08*****	**-.10*****	.02

*Values are unstandardized regression coefficients (β) for stressor*agreeableness interaction terms in multilevel moderated regression analyses where symptom level is the dependent variable and stressor, agreeableness, and stressor*agreeableness are the independent variables. p < .001***, p < .01**, p < .05**

Table 13
Path (c): Moderating Effect of Patience on Stressor – Symptom Contingencies

Stressor	Fear of Abandonment	Interpersonal Instability	Identity Disturbance	Impulsivity	Affective Instability	Emptiness	Anger	Dissociative Symptoms
Rejection	.01	**-.04****	**-.04*****	-.01	-.03*	**-.04****	**-.09*****	**-.02****
Betrayal	**.04*****	**-.04*****	-.01	.00	**-.05*****	-.03*	**-.09*****	**-.04*****
Abandonment	.03*	-.03*	**-.06*****	.01	**-.04****	**-.04****	**-.11*****	**-.03****
BoringSit	**-.02****	.00	**-.02*****	-.01	.01	-.01	.00	.00
Offensive	**.03*****	-.02	-.01	.00	-.01	-.03*	**-.09*****	.00
Alone	**-.03*****	**-.03*****	**-.03*****	**-.03*****	**-.03*****	**-.05*****	**-.02****	**-.03*****
Disappointed	.00	**-.03*****	**-.02****	**-.02****	-.02*	**-.05*****	**-.08*****	**-.03*****
Challenged	-.02	**-.04*****	**-.05*****	**-.05*****	**-.04****	**-.10*****	**-.12*****	.00

*Values are unstandardized regression coefficients (β) for stressor*patience interaction terms in multilevel moderated regression analyses. The dependent variable in all analyses is symptom level. The independent variables are stressor, patience, and stressor*patience . p < .001***, p < .01**, p < .05**

Table 14
Path (c): Moderating Effect of Conscientiousness on Stressor – Symptom Contingencies

Stressor	Fear of Abandonment	Interpersonal Instability	Identity Disturbance	Impulsivity	Affective Instability	Emptiness	Anger	Dissociative Symptoms
Rejection	-.02	-.01	**-.10*** **	-.04*	.01	-.03	-.01	**-.04****
Betrayal	-.02	-.03*	**-.06*** **	-.04*	-.03	-.05*	-.03*	**-.06*** **
Abandonment	-.04*	.00	**-.12*** **	**-.05****	-.05*	-.04	-.04*	**-.07*** **
BoringSit	.02*	.02	**-.04*** **	.02	.02	**-.04****	-.02*	.00
Offensive	.01	-.01	**-.07*** **	.01	.03*	-.03*	.00	-.01
Alone	.01	.00	**-.04*** **	**-.04*** **	-.02	**-.03****	-.02*	**-.03*** **
Disappointed	-.02	-.01	**-.08*** **	-.01	-.02	**-.04****	-.02*	**-.06*** **
Challenged	**-.04****	.02	**-.07*** **	**-.11*** **	-.02	**-.06*** **	-.04*	**-.04*** **

*Values are unstandardized regression coefficients (β) for stressor*conscientiousness interaction terms in multilevel moderated regression analyses where symptom level is the dependent variable and stressor, conscientiousness, and stressor*conscientiousness are independent variables, p < .001***, p < .01**, p < .05**

Table 15
Path (c): Moderating Effect of Prudence on Stressor – Symptom Contingencies

Stressor	Fear of Abandonment	Interpersonal Instability	Identity Disturbance	Impulsivity	Affective Instability	Emptiness	Anger	Dissociative Symptoms
Rejection	**-.05*** **	**-.03****	**-.06*** **	**-.05*** **	.03	-.01	.00	**-.04*** **
Betrayal	-.02*	**-.04*** **	**-.04*** **	**-.04*** **	.00	-.01	.01	**-.04*** **
Abandonment	**-.05*** **	**-.04*** **	**-.09*** **	**-.04*** **	-.02	-.02	.01	**-.05*** **
BoringSit	.01	.01	**-.02****	.01	**.03****	**-.03*** **	-.01	.00
Offensive	-.02*	**-.02****	**-.06*** **	**-.03****	.02*	-.02*	-.01	-.01
Alone	.01*	.01	**-.02*** **	**-.03*** **	.00	**-.04*** **	-.01	**-.02*** **
Disappointed	**-.03*** **	**-.05*** **	**-.06*** **	**-.04*** **	-.02*	**-.04*** **	-.02*	**-.05*** **
Challenged	**-.03****	-.02*	**-.06*** **	**-.10*** **	-.03*	**-.06*** **	**-.03****	**-.05*** **

*Values are unstandardized regression coefficients (β) for stressor*prudence interaction terms in multilevel moderated regression analyses where symptom level is the dependent variable and stressor, prudence, and stressor*prudence are independent variables, p < .001***, p < .01**, p < .05**

Table 16
Path (c): Moderating Effect of Openness on Stressor – Symptom Contingencies

Stressor	Fear of Abandonment	Interpersonal Instability	Identity Disturbance	Impulsivity	Affective Instability	Emptiness	Anger	Dissociative Symptoms
Rejection	.01	-.02	.02	.01	-.04*	**-.05****	**-.08*****	**.04*****
Betrayal	-.01	-.02	**.06*****	.01	-.04*	-.04*	**-.05****	.00
Abandonment	.00	.02	.03*	.00	-.02	**-.05****	-.04*	**.04****
BoringSit	-.02*	-.01	.00	.00	-.01	.00	-.02	-.01
Offensive	.01	-.01	**.03****	.03*	-.02	-.04*	**-.05*****	.00
Alone	**-.05*****	**-.05*****	.00	-.01	-.03*	**-.05*****	-.02*	-.02*
Disappointed	.01	**.04*****	**.06*****	.01	.00	.00	-.01	.01*
Challenged	**.07*****	.02	**.05*****	.03*	-.01	-.04*	**-.07*****	**.03****

*Values are unstandardized regression coefficients (β) for stressor*openness interaction terms in multilevel moderated regression analyses where symptom level is the dependent variable and stressor, openness, and stressor*openness are independent variables, p < .001***, p < .01**, p < .05**

Table 17
Path (c): Moderating Effect of Honesty-Humility on Stressor – Symptom Contingencies

Stressor	Fear of Abandonment	Interpersonal Instability	Identity Disturbance	Impulsivity	Affective Instability	Emptiness	Anger	Dissociative Symptoms
Rejection	**-.09*****	**-.06*****	**-.10*****	**-.08*****	-.01	**-.09*****	**-.07*****	-.01
Betrayal	-.01	**-.05****	**-.09*****	**-.07*****	-.03	**-.07*****	**-.09*****	-.02
Abandonment	**-.05*****	-.03*	**-.09*****	**-.06*****	**-.06****	**-.10*****	**-.10*****	.01
BoringSit	.01	**.03****	-.01	**.03****	**.03****	.00	-.01	.02*
Offensive	**-.03****	-.02	**-.04*****	-.01	-.01	**-.06*****	-.03*	-.02
Alone	.01	-.01	-.01	-.01	-.01	-.01	**-.03****	.00
Disappointed	**-.05*****	**-.04*****	**-.05*****	**-.05*****	**-.05*****	**-.07*****	**-.08*****	-.02*
Challenged	**-.04****	.00	**-.06*****	-.03*	-.03	**-.05****	**-.10*****	.01

*Values are unstandardized regression coefficients (β) for stressor*honesty-humility interaction terms in multilevel moderated regression analyses where symptom level is the dependent variable and stressor, honesty-humility, and stressor*honesty-humility are independent variables, p < .001***, p < .01**, p < .05**

Table 18
Path (c): Moderating Effect of Modesty on Stressor – Symptom Contingencies

Stressor	Fear of Abandonment	Interpersonal Instability	Identity Disturbance	Impulsivity	Affective Instability	Emptiness	Anger	Dissociative Symptoms
Rejection	**-.04*** **	**-.05*** **	**-.11*** **	**-.05*** **	-.01	**-.10*** **	**-.11*** **	-.02
Betrayal	-.01	-.03*	**-.07*** **	**-.06*** **	-.04*	**-.07*** **	**-.11*** **	**-.03** **
Abandonment	-.03*	-.01	**-.08*** **	-.04*	-.03	**-.08*** **	**-.11*** **	-.01
BoringSit	.00	.01	-.01	**.02** **	**.03** **	.00	-.02	.00
Offensive	-.02	-.01	**-.06*** **	-.02	-.02	**-.07*** **	-.02	**-.02** **
Alone	-.01	**-.04*** **	-.02*	.00	.00	.00	**-.04*** **	-.01
Disappointed	**-.03** **	-.01	**-.04*** **	**-.04*** **	**-.04*** **	**-.05*** **	**-.05*** **	-.02*
Challenged	-.03*	.02	**-.04** **	-.03*	.01	-.04*	**-.05** **	.02*

*Values are unstandardized regression coefficients (β) for stressor*modesty interaction terms in multilevel moderated regression analyses where symptom level is the dependent variable and stressor, modesty, and stressor*modesty are independent variables, $p < .001$***, $p < .01$**, $p < .05$**

Table 19
Path (a): The Relative Effects of BPD Diagnosis & Traits On Stressor Experience

	Rejection	Betrayal	Abandonment	BoringSit	Offense	Alone	Disappointment	Challenge Self
HH	.00	.00	-.01	-.20	-.06	-.16	-.03	-.03
Diagnosis	**.41*** **	**.39*** **	**.37*** **	**.53*** **	**.42*** **	**.79*** **	**.60*** **	**.42*** **
EM	.09	.09	.08	.13	.11	-.06	**.25** **	.14
Diagnosis	**.38*** **	**.35*** **	**.34*** **	**.55*** **	**.39*** **	**.87*** **	**.50*** **	**.37*** **
EX	.00	-.07	-.05	**-.29** **	-.02	**-.32** **	-.02	-.06
Diagnosis	**.41*** **	**.36*** **	**.36*** **	**.48** **	**.43*** **	**.72*** **	**.60*** **	**.40*** **
AG	-.03	-.09	-.03	-.22*	-.11	-.12	-.20*	.03
Diagnosis	**.40*** **	**.35*** **	**.36*** **	**.51*** **	**.39*** **	**.80*** **	**.53*** **	**.44*** **
C	-.03	.00	.02	**-.35** **	-.01	-.13	.00	-.13
Diagnosis	**.41*** **	**.39*** **	**.38*** **	**.50*** **	**.43*** **	**.81*** **	**.61*** **	**.39*** **
OP	.02	-.04	-.02	-.15	.01	.10	-.05	.08
Diagnosis	**.41*** **	**.39*** **	**.38*** **	**.61*** **	**.44*** **	**.84*** **	**.61*** **	**.42*** **

Honesty-Humility (HH), Emotionality (EM), Extraversion (EX), Agreeableness (AG), Conscientiousness (C), Openness (OP)
*Values are unstandardized regression coefficients (β) in multilevel multiple regression models where stressor is the dependent variable and BPD diagnosis and trait are independent variables, $p < .001$***, $p < .01$**, $p < .05$**

Table 20
Path (b): The Relative Effects of BPD Diagnosis and Traits on Symptom Intensity

Predictor	Fear of Abandonment	Interpersonal Instability	Identity Disturbance	Impulsivity	Affective Instability	Emptiness	Anger	Dissociative Symptoms
HH	-.18*	-.04	-.02	-.09	-.12	-.01	-.06	-.03
Diagnosis	**.59*** **	**.61*** **	**.61*** **	**.44*** **	**.84*** **	**.86*** **	**.35*** **	**.53*** **
EM	.13	.16*	.08	.14*	**.28** **	.18	.10	.07
Diagnosis	**.60*** **	**.56*** **	**.58*** **	**.41*** **	**.76*** **	**.79*** **	**.32*** **	**.52*** **
EX	.04	-.03	-.10	-.12	-.19*	**-.27** **	-.11	-.09
Diagnosis	**.67*** **	**.61*** **	**.58*** **	**.42*** **	**.80*** **	**.76*** **	**.33*** **	**.51*** **
AG	-.06	-.11	.01	-.17**	-.20*	-.01	**-.20*** **	-.10
Diagnosis	**.63*** **	**.58*** **	**.62*** **	**.41*** **	**.80*** **	**.86*** **	**.29*** **	**.51*** **
C	-.11	-.09	**-.22** **	**-.24*** **	-.14	-.**31** **	-.10	-.17*
Diagnosis	**.62*** **	**.60*** **	**.56*** **	**.41*** **	**.84*** **	**.78*** **	**.34*** **	**.50*** **
OP	.06	.05	.10	.01	-.04	.00	-.11*	.03
Diagnosis	**.65*** **	**.62*** **	**.61*** **	**.47*** **	**.88*** **	**.87*** **	**.38*** **	**.54*** **

Honesty-Humility (HH), Emotionality (EM), Extraversion (EX), Agreeableness (AG), Conscientiousness (C), Openness (OP)
*Values are unstandardized regression coefficients (β)in multilevel multiple regression models where symptom level is the dependent variable and BPD diagnosis and trait are independent variables, $p < .001$***, $p < .01$**, $p < .05$**

Table 23
Summary of Mediation Effects of Traits on the Moderating Effect of BPD on Contingencies

Trait being controlled for	How many contingencies (*n* = 64) are moderated by BPD diagnosis before controlling for trait level?	How many times did stressor*diagnosis term drop once controlling for trait level? (*n* = 40)	How many times did stressor*diagnosis term drop to NS once controlling for trait level? (*n* = 40)
Honesty-Humility	40 (63%)	25 (63%)	8 (20%)
Emotionality	40 (63%)	25 (63%)	5 (13%)
Extraversion	40 (63%)	15 (38%)	1 (3%)
Agreeableness	40 (63%)	19 (48%)	6 (15%)
Conscientiousness	40 (63%)	15 (38%)	2 (5%)
Openness to Experience	40 (63%)	4 (10%)	1 (3%)

Table 24
Summary of Mediation Effects of Facets on the Moderating Effect of BPD Diagnosis on Contingencies

Facet being controlled for	How many contingencies (*n* = 64) are moderated by BPD diagnosis before controlling for facet level?	How many times did stressor*diagnosis term drop once controlling for facet level? (*n* = 40)	How many times did stressor*diagnosis term drop to NS once controlling for facet level? (*n* = 40)
Modesty	40 (63%)	18 (45%)	4 (10%)
Anxiety	40 (63%)	20 (50%)	11 (28%)
Social Self-Esteem	40 (63%)	33 (83%)	17 (43%)
Patience	40 (63%)	12 (30%)	3 (8%)
Prudence	40 (63%)	20 (50%)	12 (30%)

Table 27
Summary of Mediation Effect of BPD Diagnosis on the Moderating Effects of Traits on Contingencies

Trait	How many contingencies (*n = 64*) are moderated by trait level before controlling for BPD diagnosis?	How many times did stressor*trait term drop once controlling for BPD diagnosis?	How many times did stressor*trait term drop to NS once controlling for BPD diagnosis?
Honesty-Humility	36 (56%)	23 (64%) (*n = 36)*	9 (25%) (*n = 36)*
Emotionality	23 (36%)	20 (87%) (*n = 23*)	13 (57%) (*n = 23*)
Extraversion	16 (25%)	11 (69%) (*n = 16)*	4 (25%) (*n = 16)*
Agreeableness	35 (55%)	22 (63%) (*n = 35)*	11 (31%) (*n = 35)*
Conscientiousness	22 (34%)	9 (41%) (*n = 22)*	5 (23%) (*n = 22)*
Openness to Experience	18 (28%)	3 (17%) (*n = 18)*	1 (6%) (*n = 18)*

Table 28
Summary of Mediation Effect of BPD Diagnosis on the Moderating Effects of Facets on Contingencies

Trait	How many contingencies (*n = 64*) are moderated by facet level before controlling for BPD diagnosis?	How many times did stressor*trait term drop once controlling for BPD diagnosis?	How many times did stressor*trait term drop to NS once controlling for BPD diagnosis?
Modesty	29 (45%)	12 (41%) *(n = 29)*	0 (0%) *(n = 29)*
Anxiety	31 (48%)	18 (58%) *(n = 31)*	8 (26%) *(n = 31)*
Social SE	41 (64%)	28 (68%) *(n = 41)*	5 (12%) *(n = 41)*
Patience	39 (61%)	5 (13%) *(n = 39)*	5 (13%) *(n = 39)*
Prudence	36 (56%)	20 (56%) *(n = 36)*	8 (22%) *(n = 36)*

APPENDIX A
HEXACO Personality Inventory (100-item version)

On the following pages you will find a series of statements about personality. Please read each statement and decide how much you agree or disagree with that statement as it relates to ***your personality***. Then write your response in the space next to the statement using the following scale:

1= strongly disagree; 2 = disagree; 3 = neutral (neither agree nor disagree); 4 = agree; 5 = strongly agree

1. I would be quite bored by a visit to an art gallery.
2. I clean my office or home quite frequently.
3. I rarely hold a grudge, even against people who have badly wronged me.
4. I feel reasonably satisfied with myself overall.
5. I would feel afraid if I had to travel in bad weather conditions.
6. If I want something from a person I dislike, I will act very nicely toward that person in order to get it.
7. I'm interested in learning about the history and politics of other countries.
8. When working, I often set ambitious goals for myself.
9. People sometimes tell me that I am too critical of others.
10. I rarely express my opinions in group meetings.
11. I sometimes can't help worrying about little things.
12. If I knew that I could never get caught, I would be willing to steal a million dollars.
13. I would like a job that requires following a routine rather than being creative.
14. I often check my work over repeatedly to find any mistakes.
15. People sometimes tell me that I'm too stubborn.
16. I avoid making "small talk" with people.
17. When I suffer from a painful experience, I need someone to make me feel comfortable.
18. Having a lot of money is not especially important to me.
19. I think that paying attention to radical ideas is a waste of time.
20. I make decisions based on the feeling of the moment rather than on careful thought.
21. People think of me as someone who has a quick temper.

22. I am energetic nearly all the time.
23. I feel like crying when I see other people crying.
24. I am an ordinary person who is no better than others.
25. I wouldn't spend my time reading a book of poetry.
26. I plan ahead and organize things, to avoid scrambling at the last minute.
27. My attitude toward people who have treated me badly is "forgive and forget".
28. I think that most people like some aspects of my personality.
29. I don't mind doing jobs that involve dangerous work.
30. I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed.
31. I enjoy looking at maps of different places.
32. I often push myself very hard when trying to achieve a goal.
33. I generally accept people's faults without complaining about them.
34. In social situations, I'm usually the one who makes the first move.
35. I worry a lot less than most people do.
36. I would be tempted to buy stolen property if I were financially tight.
37. I would enjoy creating a work of art, such as a novel, a song, or a painting.
38. When working on something, I don't pay much attention to small details.
39. I am usually quite flexible in my opinions when people disagree with me.
40. I enjoy having lots of people around to talk with.
41. I can handle difficult situations without needing emotional support from anyone else.
42. I would like to live in a very expensive, high-class neighborhood.
43. I like people who have unconventional views.
44. I make a lot of mistakes because I don't think before I act.
45. I rarely feel anger, even when people treat me quite badly.
46. On most days, I feel cheerful and optimistic.
47. When someone I know well is unhappy, I can almost feel that person's pain myself.
48. I wouldn't want people to treat me as though I were superior to them.
49. If I had the opportunity, I would like to attend a classical music concert.
50. People often joke with me about the messiness of my room or desk.
51. If someone has cheated me once, I will always feel suspicious of that person.

52. I feel that I am an unpopular person.
53. When it comes to physical danger, I am very fearful.
54. If I want something from someone, I will laugh at that person's worst jokes.
55. I would be very bored by a book about the history of science and technology.
56. Often when I set a goal, I end up quitting without having reached it.
57. I tend to be lenient in judging other people.
58. When I'm in a group of people, I'm often the one who speaks on behalf of the group.
59. I rarely, if ever, have trouble sleeping due to stress or anxiety.
60. I would never accept a bribe, even if it were very large.
61. People have often told me that I have a good imagination.
62. I always try to be accurate in my work, even at the expense of time.
63. When people tell me that I'm wrong, my first reaction is to argue with them.
64. I prefer jobs that involve active social interaction to those that involve working alone.
65. Whenever I feel worried about something, I want to share my concern with another person.
66. I would like to be seen driving around in a very expensive car.
67. I think of myself as a somewhat eccentric person.
68. I don't allow my impulses to govern my behavior.
69. Most people tend to get angry more quickly than I do.
70. People often tell me that I should try to cheer up.
71. I feel strong emotions when someone close to me is going away for a long time.
72. I think that I am entitled to more respect than the average person is.
73. Sometimes I like to just watch the wind as it blows through the trees.
74. When working, I sometimes have difficulties due to being disorganized.
75. I find it hard to fully forgive someone who has done something mean to me.
76. I sometimes feel that I am a worthless person.
77. Even in an emergency I wouldn't feel like panicking.
78. I wouldn't pretend to like someone just to get that person to do favors for me.
79. I've never really enjoyed looking through an encyclopedia.
80. I do only the minimum amount of work needed to get by.

81. Even when people make a lot of mistakes, I rarely say anything negative.
82. I tend to feel quite self-conscious when speaking in front of a group of people.
83. I get very anxious when waiting to hear about an important decision.
84. I'd be tempted to use counterfeit money, if I were sure I could get away with it.
85. I don't think of myself as the artistic or creative type.
86. People often call me a perfectionist.

87. I find it hard to compromise with people when I really think I'm right.
88. The first thing that I always do in a new place is to make friends.
89. I rarely discuss my problems with other people.
90. I would get a lot of pleasure from owning expensive luxury goods.
91. I find it boring to discuss philosophy.
92. I prefer to do whatever comes to mind, rather than stick to a plan.
93. I find it hard to keep my temper when people insult me.
94. Most people are more upbeat and dynamic than I generally am.
95. I remain unemotional even in situations where most people get very sentimental.
96. I want people to know that I am an important person of high status.
97. I have sympathy for people who are less fortunate than I am.
98. I try to give generously to those in need.
99. It wouldn't bother me to harm someone I didn't like.
100. People see me as a hard-hearted person.

APPENDIX B
ESM Items

List B1: Stressor Items

(1 = Disagree strongly, 6 = Agree strongly, Answer 1-6)

1) Someone rejected me or left me out in the last 60 minutes.
2) Someone betrayed me in the last 60 minutes.
3) Someone abandoned me in the last 60 minutes.
4) The situation was boring in the last 60 minutes.
5) Someone did something offensive to me in the last 60 minutes.
6) I was alone and isolated from others in the last 60 minutes.
7) Someone disappointed me in the last 60 minutes.
8) Someone did or said something in the last 60 minutes that challenged my important part of self-view.

List B2: Symptom Items

(1 = Does not describe me at all, 6 = Describes me very well, Answer 1-6)

1) In the last 60 minutes, I called someone to reassure myself that he or she still cared about me.
2) In the last 60 minutes, I did things to avoid feeling abandoned or being abandoned, like trying to stop someone from leaving or keeping tabs on someone.

3) An interpersonal relationship of mine was unstable or intense in the last 60 minutes.
4) I thought that people close to me were worthless in the last 60 minutes, although recently I have thought they were wonderful.

5) My sense of self was unstable in the last 60 minutes.
6) In the last 60 minutes, I felt like I didn't know who I am or like I had no identity.

7) I couldn't stop myself from overdoing something bad in the last 60 minutes.
8) I had a problem with impulsivity (e.g. an eating binge, spending spree, drinking too much or a verbal outburst) in the last 60 minutes.

9) I hurt myself on purpose (e.g. punched myself, cut myself, or burned myself) in the last 60 minutes.

10) My emotions were on a roller coaster in the last 60 minutes.
11) I was extremely moody in the last 60 minutes.

12) I felt hollow inside in the last 60 minutes.
13) I had feelings of emptiness in the last 60 minutes.

14) In the last 60 minutes, I had difficulty controlling my anger.
15) I lost my temper with someone in the last 60 minutes.

16) I was thinking suspicious or paranoid thoughts in the last 60 minutes.
17) In the last 60 minutes, I felt unreal or things around me felt unreal.

Kelly R. Miskewicz

131 Scholastic Court Winston-Salem, NC 27106 (847) 830-1332 miskkr8@wfu.edu

Education

Wake Forest University, Winston-Salem, NC
August 2012 – December 2014 (expected)

- M.A. in General Psychology
- Thesis: The Moderating Effects of Personality Traits on Stressor – Symptom Contingencies in Borderline Personality Disorder

Wake Forest University, Winston-Salem, NC
August 2008 – May 2012

- B.A. in Psychology, minor in Neuroscience, Cum Laude
- Graduated with Honors
- Honors Thesis: The Effects of Traumatic Childhood Events on Interpersonal Instability and Impulsivity in Borderline Personality Disorder

Honors and Awards

- Wake Forest University Dean's List: 2008 - 2012
- Psychology Honors Program: 2011 - 2012
- Psi Chi International Honor Society in Psychology

Volunteer Experience

Founder & Chapter President
Actively Moving Forward, Wake Forest University Chapter
October 2012 – October 2013

- Offered students a positive outlet and safe environment to connect with fellow students who are grieving the death and/or serious illness of a loved one
- Collaborated with the University Counseling Center, Chaplain's Office, and AMF national leadership team to recruit student members on campus
- Facilitated bi-weekly support group meetings and coordinated a

chapter service event in October 2013

Volunteer
Cancer Patient Support Program, Wake Forest Baptist Medical Center
January 2013 – April 2013
- Greeted patients and made them feel comfortable while waiting for appointments and treatments
- Stocked and maintained food & beverages in patient hospitality room

Volunteer
Støtte-og-Kontaktcentret, Copenhagen, Denmark
August 2010 – December 2010
- Prepared hot meals for clients seeking social psychiatric services

Research Experience

Research Assistant
The Character Project, Wake Forest University Department of Psychology
August 2012 – August 2013
- Helped create materials and collect data for several studies investigating the psychology of moral character

Research Assistant/ Undergraduate Honors Thesis Research
Wake Forest University Department of Psychology
January 2011 – May 2012
- Completed and wrote up an original thesis research project under the supervision of Dr. William Fleeson
- Assisted with participant recruitment, data management, and analysis
- Used Hierarchical Linear Modeling to analyze results

Research Assistant
Wake Forest Baptist Medical Center Department of Psychiatry & Behavioral Medicine
June 2010 – August 2010
- Assisted with participant recruitment and data management for a study on traumatic brain injury
- Maintained and organized documentation related to study protocol and regulatory requirements

Publications	Miskewicz, K., Fleeson, W., Law, M. K., Furr, R. M., & Arnold, E. M. (2013). *A contingency-oriented approach for studying borderline personality disorder: situational stressors and symptoms.* Manuscript submitted for publication.
Presentations	Miskewicz, K., Furr, R. M., Arnold, E. M., Anderson, M., & Fleeson, W. (2012, June). *A contingency – oriented approach to understanding borderline personality disorder.* Poster session presented at the biannual meeting of the Association for Research in Personality, Charlotte, NC.