

Fall 2016

## Examining Cognitive Vulnerability Models to Borderline Personality Features in a Sample of Emerging Adults

Danielle E. Seal

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EXAMINING COGNITIVE VULNERABILITY MODELS TO BORDERLINE  
PERSONALITY FEATURES IN A SAMPLE OF EMERGING ADULTS

by

Danielle E. Seal

(Under the Direction of Jeff Klibert)

ABSTRACT

Borderline personality disorder (BPD) is a chronic condition that warrants further empirical investigation. Considering the potentially lethal consequences and therapeutic challenges associated with features of BPD, it is important for researchers to explore pathways that will advance theory, assessment, and interventions that target BPD symptoms. One interactive theory that may predict variation in BPD symptoms is the cognitive-vulnerability model. Examining the cognitive vulnerability model in the context of BPD symptoms is the overall goal of the dissertation project. Specifically, the current study examined the mediator effects of maladaptive schemas on the adverse event-BPD symptom relationship. Four hundred and fifteen undergraduate students completed demographic information and three surveys online. Results indicated that both disconnection/rejection schemas and impaired limits schemas partially mediated the relationship between negative life events and borderline personality features. Further, contrast effects revealed that disconnection/rejection schemas were the better suited mediator for the model. Theoretical and practical implications are discussed.

*Keywords: Borderline Personality, Adverse Life Events, Schemas, Emerging Adulthood*

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A Dissertation Submitted to the Graduate Faculty of Georgia Southern University in Partial

Fulfillment of the Requirements for the Degree

DOCTOR OF PSYCHOLOGY

STATESBORO, Georgia Southern University

2015

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Electronic Version Approved:  
December 2016

## ACKNOWLEDGEMENTS

Completion of my dissertation was made possible by my dissertation committee, family, and friends. First, I would like to thank Dr. Jeff Klibert, for serving as my dissertation chair, and for his guidance, patience, and encouragement throughout this entire process. Thank you for helping me create a research project I was enthusiastic about and thank you for the countless hours you spent reading numerous drafts and offering suggestions. I would like to thank Dr. Thresa Yancey for serving on my committee, reading several drafts and providing grammatical and stylistic expertise, as well as moral support. Specifically, thanks for popping into dissertation meetings and making me laugh. I would like to thank Dr. Nick Holtzman for serving on my committee, reading numerous drafts, and for providing expertise and teaching me about using mediation in research.

I am grateful to my family and friends for their moral support. Many thanks to my mother, Nancy Wells, for always believing in and supporting me through my educational endeavors. Thanks for willing to be a distraction when I needed one. Thanks to my father, Michael Seal, for weekly check-in phone calls and insisting I maintain a healthy work-life balance. To my sister, Adrienne, thank you for providing comic relief with your phone calls and texts. Jordan, thank you for your support and for helping me celebrate my accomplishments along my journey. To Addison, thank you for your love, patience, and companionship. Lastly, but certainly not least, thank you to my cohort. I could not have picked better people to train and professionally grow with.

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## CHAPTER 1: INTRODUCTION

Personality traits are stable patterns of comprehending, interacting, and thinking about oneself or one's environment that are manifested in social and personal contexts (American Psychiatric Association, 2000). When these patterns become inflexible, they often precipitate debilitating levels of distress (Michonski, Sharp, Steinberg, & Zanarini, 2013). Rigidity associated with the development and maintenance of clustered personality traits often denotes the presence of a personality disorder. Personality begins to develop in childhood and solidifies in early adulthood, thus personality disorders usually reveal themselves between the ages of 18 to 25 (Fowler, O'Donohue, & Lilienfeld, 2007). Personality disorders often have wide ranging effects on an individual's ability to function. Namely, disordered personality styles often affect an individual's emotional functioning, psychological well-being, and interpersonal health (Ansell & Grilo, 2007). Commonly, those with personality disorders often report difficulties associated with relating to others and forming healthy, meaningful relationships (Skodol, 2005). If left untreated, personality disorders can ultimately facilitate the onset of severe emotional and behavioral problems including self-injury, suicide attempts, physical aggression, substance use, and reckless driving (Koalla, Eisenberg, & Links, 2008; Shelby & Joiner, 2013).

One of the more complex personality-based conditions is borderline personality disorder, BPD. There are many behavioral and emotional features that comprise BPD (Hallquist & Pilkonis, 2012). The variance in clinical presentations may result in common misdiagnosis (i.e., symptom overlap with other disorders such as bipolar disorder; Ruggero, Zimmerman, Chelminski, & Young, 2010). Given the complexity and obscurity inherent within BPD, it is important that researchers explicate core features so that BPD can be correctly identified and diagnosed, and treatment can be tailored to specific BPD features.

## **Descriptive Characteristics and Rates**

The hallmark features of BPD include unstable interpersonal relationships, identity disturbance, impulsivity, and affective dysregulation accompanied by fears of abandonment (Ansell & Grillo, 2007). Currently, there are nine diagnostic criteria for BPD and the presence of at least five symptoms is required for a diagnosis. The symptoms include: frantic efforts to avoid abandonment, patterns of intense and unstable relationships, unstable self-image/sense of self, impulsivity (e.g., substance abuse and/or risky sex), recurrent suicidal behavior, emotional lability, feelings of emptiness, intense anger, and transient paranoid ideation or dissociative symptoms (American Psychiatric Association, APA, 2013). Sansone and Sansone (2011a) reviewed five studies that examined the prevalence and type of personality disorders in the United States and reported that BPD is the third most frequently diagnosed personality-based condition. In community samples, the prevalence rates for BPD vary between 1.2% and 5.9% (Sansone & Sansone, 2011a). BPD has an 11% prevalence rate in outpatient populations and 19% rate among inpatient populations (Linehan, 1993). Of importance, BPD is diagnosed more frequently (75% to 25%) in women compared to men (Kaehler, & Freyd, 2012).

Borderline personality disordered symptoms develop in early adulthood (Trull, 2001). The prevalence rates of BPD symptoms are highest in adolescence and the early twenties and tend to decrease with age (Fonesca-Pedrero et al., 2011). For example, destructive and impulsive behavioral symptoms associated with BPD are generally more characteristic in younger adults who have been diagnosed with the condition (Linehan, 1993). In conjunction with the rapid decline of impulsive behavior across time, lethal risk associated with borderline personality disorder also tends to decrease with age (Stepp & Pilkonis, 2008). Overall, theorists posit that the most severe and life-threatening symptoms of BPD decrease at rapid rates between the ages of

30 and 40 (Nordgren, 2007). Generally, researchers theorize that the decline in high risk behaviors among individuals with a BPD diagnosis is related to improvements in interpersonal and vocational functioning and frontal lobe stabilization (Shea et al., 2009). In fact, the neurological and environmental shifts across young and middle adulthood are so drastic that many individuals diagnosed with BPD no longer meet the criteria for the diagnosis after age 40. Given these trends, it is important that researchers examine risk and protective factors to a diverse range of BPD symptoms with samples of emerging and young adults.

### **Correlates and Consequences of BPD Features**

Those diagnosed with BPD pose a challenge to mental health professionals. Specifically, BPD often co-occurs with mood, eating, substance abuse, and anxiety-related disorders, which can interfere with the ability of clinicians to accurately diagnose and effectively treat borderline symptoms (Barlow & Durand, 2009). Moreover, individuals diagnosed with BPD are characterized by impulsivity and emotional reactivity. Such a combination of traits may facilitate the desire and willingness to engage in lethal and self-destructive behaviors (Links, Eynan, Heisel, & Nisenbaum, 2008). For instance, research has shown that BPD has a 67% concurrence rate with substance abuse disorders (Chávez, Dinsmore, & Hof, 2010). Furthermore, individuals diagnosed with BPD report high levels of self-mutilation, suicide threats, and suicide behaviors (Koalla et al., 2008). Approximately 46% to 92% of individuals diagnosed with BPD attempt suicide and 9% to 33% of all suicides are completed by those diagnosed with BPD (Kolla et al., 2008; Soloff & Chiappetta, 2012). Incidentally, substance abuse and suicide behaviors are chronic conditions that continually challenge the competence, patience, and emotional resources of mental health professionals (Linehan, 1993). Considering the potentially lethal consequences and therapeutic challenges associated with BPD, it is important for researchers to explore new

avenues that will advance theory, assessment, and interventions that target BPD cluster symptoms.

### **Theories and Subtypes of BPD**

BPD does not have a typical or standard presentation of symptoms. To receive a diagnosis of BPD, individuals must display any five of the nine criteria in the Diagnostic and Statistical Manual of Mental Disorders 5th edition (DSM-5; Mullins-Sweatt, Edmundson, Sauer-Zavala, Lynam, Miller, & Widiger, 2012). As such, there are 256 possible combinations of symptom presentations in those diagnosed with BPD (Hallquist & Pilkonis, 2012). Moreover, it is possible for two people to meet the criteria for a diagnosis of BPD but only share one common diagnostic symptom, which “implies that there is no single unifying pattern, no core symptom, or complex of symptoms which is a particular marker of the condition” (Mearns, Gerull, Stevenson & Korner, 2011, p. 215). The lack of heterogeneity within BPD symptoms has made it difficult to explicate the etiology of the disorder, and has created challenges in identifying mechanisms of effective treatment (Hallquist & Pilkonis, 2012). In light of these difficulties it has been suggested that clinicians change the way they conceptualize and treat this condition. Specifically, it is recommended that researchers and clinicians consider integrating multiple theoretical frameworks as a means to identify robust and effective treatment options (Mullins-Sweatt et al., 2012). In response to these recommendations, it is important that researchers identify and examine interactive models to help clinicians better understand the etiology of specific BPD symptoms.

**Development of Differential Models to BPD.** Mullins-Sweatt and colleagues (2012) developed an instrument to assess BPD in accordance with the Five Factor Model (FFM) of personality functioning. They posit that BPD can be considered as a constellation of maladaptive

variants that are reflected in different components of the FFM. Uniquely, this measure conceptualizes BPD symptoms from a robust perspective that includes trait theory and empirical findings garnered through the clinical psychology literature.

Although numerous theories attempt to explain BPD functioning, interactive models may offer the needed flexibility to differentially explain the development and/or maintenance of a diverse range of BPD features. Cognitive vulnerability models suggest that psychopathology develops as result of the interaction between adverse life events and the activation of maladaptive cognitive processes (Young, Klosko, & Weisharr, 2003). Specifically, prolonged exposure to frequent noxious events in childhood is likely to result in the development of cognitive schemas that facilitate the development of personality pathology (Young et al., 2003). Research has shown that features of BPD are significantly related to overwhelming and traumatic stressors (Linehan, 1993; Lutz-Zois, Roecker-Phelps, & Reichle, 2011; Saha, Chung, & Thorne, 2011). However, BPD features may be activated by unique sets of schema processes or cognitive vulnerabilities. As such, it is important to determine what schematic themes underlie BPD features.

### **Purpose**

Given that mental health disparities exist in reports of personality disorder pathology by gender and geographic location, the current study looked to determine if BPD symptoms vary across gender and rurality. Additionally, the current study looked to validate previous research that suggests psychological stressors are associated with greater reports of BPD symptoms. Given that psychological stressors such as traumatic childhood experiences can contribute to the development of certain schema processes and psychopathology, the current study examined whether BPD symptoms were positively associated with specific maladaptive schemas. Finally,



the current study examined the mediator effects of maladaptive schemas on the psychological stress-BPD symptom relationship.

### **Significance**

By examining the relationship between psychological stressors, early maladaptive schemas, and BPD symptoms, clinicians may be able to draw out important insights into screening processes associated with BPD risk. Currently, it is difficult to screen for BPD symptoms because of high comorbidity rates with other emotional and behavioral disorders. However, if the results of the current study can highlight unique pathways between stress and cognitive vulnerabilities in BPD symptomology, clinicians may be better equipped to accurately determine if an individual has BPD or another psychological condition that may resemble BPD. Moreover, better screening protocols could lead to the development of more effective prevention strategies.

To date, few studies have examined stress-diathesis models (i.e., cognitive vulnerability) on BPD symptoms. By examining stress-diathesis models on BPD symptoms, the current study engendered some specificity regarding cognitive vulnerabilities that underlie BPD. This is significant because it will better inform researchers and clinicians as to what factors maintain and exacerbate BPD symptomatology. This line of research will also enable clinicians to better tailor treatment approaches to effectively reduce BPD symptomology. Specifically, the current study will advance the understanding of how schema therapy and other interactive models may be effective in reducing BPD symptoms.

### **Definition of Terms**

**Borderline Personality Features.** As noted above, it may be more beneficial to focus on alternative models to measure BPD functioning. The five-factor dimensional model offered by

Mullins-Sweatt and colleagues (2012) may present a unique opportunity to measure a diverse set of features associated with BPD. A total score will be used to assess BPD functioning in the current study. The total score will represent variation in the twelve features underlying Mullins-Sweatt et al.'s model which include: anxious uncertainty, dysregulated anger, despondence, self-disturbance, behavior dysregulation, affective dysregulation, fragility, dissociative tendencies, distrustfulness, manipulativeness, opposition, and rashness. In the current study, the total borderline personality score will serve as the outcome measure.

**Recent Life Experiences.** Recent life experiences are subjective accountings of stressful events. They are concerned with exposure to events that have been found to be stressful to college students (Kohn, Lafreniere, & Gurevich, 1990). Adverse life events are subjective estimates of stressful circumstances that span across different domains of college life (e.g., academia, social, and health). An overall estimate of recent life adversity/stress will be the predictor variable in the current study.

**Early Maladaptive Schemas.** Early maladaptive schemas are rigid, dysfunctional belief systems that develop in childhood/adolescence (Nysæter & Nordahl, 2008). Early maladaptive schemas are thought to be "broad pervasive themes or patterns composed of memories, emotions, cognitions, and bodily sensations regarding oneself and one's relationships with others that is developed during childhood or adolescence, elaborated throughout one's lifetime, and dysfunctional to a significant degree" (Young et al., 2003, p. 290-291). Based on theory, early maladaptive schemas theoretically linked with different BPD features will be evaluated in the current study as potential mediators.

## **CHAPTER 2: LITERATURE REVIEW**

Although personality disorders are typically diagnosed in adulthood, it is recognized that personality disordered symptoms can appear in adolescence (Crawford, Cohen, Johnson, Sneed, & Brook, 2003). The development of personality disorders in childhood and adolescence is supported by developmental theory and empirical studies (Cohen, 1996). Adolescence is a critical period of growth and development in numerous aspects of life. Important aspects of growth during this critical period include identity and social development. The inability to resolve adverse life events during adolescent development has been theoretically and empirically linked to a greater predisposition toward the development of personality disordered symptoms among older adolescents and young adults (Kasen, Cohen, Chen, Johnson, & Crawford, 2009).

### **Personality and Theories of Emerging Adulthood**

Erik Erickson's theory of psychosocial development describes different stages of personality development, in which the individual is faced with a conflict that must be resolved in order to achieve and maintain advanced levels of positive growth (Crawford et al., 2003; Schultz & Schultz, 2009). This confrontation, or crisis, involves a change in perspective that results in alterations or shifts in behavior and personality. Generally, individuals can approach the conflict in one of two ways. Individuals can respond adaptively, resolve the crisis, and acquire strength to confront the next crisis. "As successive crises are resolved, ego strengths accumulate and are integrated into the individual's personality, thus providing an internal foundation for well-being" (Crawford et al., 2003, p. 374). However, some individuals approach conflict resolution in an overly rigid and detrimental manner that generally leads to developmental confusion and/or a sense of immobilization. Failure to resolve conflict at any stage results in a diminished ability to adapt to problems in later life (Schultz & Schultz, 2009).

One of the most important developmental stages is the resolution of the identity consolidation versus identity diffusion crisis, which occurs in late adolescence (Crawford et al., 2003). This stage is marked by an individual's attempt to form his/her self-image by consolidating how he/she views himself/herself and how others view him/her in turn (Schultz & Schultz, 2009). Identity is a central component of personality, and unsuccessful resolution of this crisis leads to unclear and unstable self-perceptions, confusion about social roles, and uncertainty about inner subjective selves and feelings (Taylor & Goritsas, 1994). Without identity consolidation, individuals are less likely to develop a sense of self-acceptance and self-esteem, leaving them vulnerable to adopt more deviant personality styles. For instance, research suggests that identity diffusion is a robust predictor to numerous features of borderline personality disorder such as chronic feelings of emptiness and impulsivity (Crawford et al., 2003; Taylor & Goritsas, 1994). Furthermore, extreme dependency on others and fears of abandonment have been linked to identity difficulties as a means of compensation for an unstable self-perception (Crawford et al., 2003).

### **Adverse Life Events and BPD Symptoms**

Although the etiology of BPD has yet to be definitively identified, several factors are implicated in its development, such as problematic attachment relationships and adversity in early life events (Hooley & Wilson-Murphy, 2012). "The goal of attachment is the creation of an external environment from which the child develops an internal model of the self that is safe and secure" (Agrawal, Gunderson, Holmes, & Lyons-Ruth, 2004, p. 95). Attachment theory posits that the pattern of interaction and the emotional bond between primary caretakers and infants serves as a template for intimate interactions in later life. Children whose needs are consistently met and who have developed an emotional bond with their primary caregiver generally go on to

develop healthy relationship patterns and consistent self-images (Agrawal et al., 2004). The typical results of a secure attachment differ drastically from patterns seen in those diagnosed with BPD (i.e., unstable relationships marked by fear of abandonment). Considering these findings, it is warranted to examine borderline personality pathology in samples of older adolescents and young adults.

Borderline personality disorder is associated with adverse life events in childhood. Specifically, separation from or loss of parental figures in early childhood is reported in approximately 20% to 40% of those diagnosed with BPD (Bradley, Conklin, & Westen, 2007). Additionally, childhood maltreatment (i.e., neglect, cruelty, physical and sexual abuse) is implicated in the development of BPD, and studies have found an incidence of childhood abuse in 81% of individuals diagnosed with BPD (Bradley et al., 2007). In addition to traumatic experiences in childhood, unstable family and social environments have also been theorized and empirically supported in the manifestation of BPD symptoms (Linehan, 1993). Adverse events in social contexts during adolescence and late adulthood are also closely linked to the onset of BPD symptoms (Fall & Craig, 1998).

**Distal Life Events.** Attachment theory may be important in explaining the development of BPD features. Based on the work of Ainsworth and Bowlby (1991) personality dysfunction is congruent with attachment experience during critical periods of development in early childhood. Particularly, BPD features are associated with insecure, strained, and disorganized attachments between a child and caregiver. An insecure attachment may develop from several adverse events including: neglect, maltreatment, and abuse (Kaehler & Freyd, 2009). Failure to overcome early adverse life events contributes to the development of an emotional bond associated with maladaptive views about the self and others (i.e., negative self-image and distrustfulness of

others; Lyddon & Alford, 2007). In keeping with this position, events associated with inconsistent, uncaring, and/or over-controlling parenting is believed to lead to the development of maladaptive relationship beliefs and problematic attachment patterns that are characteristic features of BPD (Hooley & Wilson-Murphy, 2012). Specifically, the type of attachment pattern that is characteristic of BPD is disorganized, marked by numerous adverse life events (Agrawal et al., 2004).

Early life events of those diagnosed with BPD are consistent with early life events that result in disorganized attachment styles. A study found that disconnected parental behavior (e.g., frightening/threatening behaviors, keeping the child at a distance, unpredictable behaviors, and contradictions in speech and behavior toward the child) predicted disorganized attachments (Out, Bakermans-Kranenburg, & Van IJzendoorn, 2009). These types of early experiences closely match the invalidating environment that is thought to facilitate the development of BPD (Linehan, 2003). In invalidating environments, communication of inner experiences is met by inappropriate and erratic responses by caregivers (Linehan, 1993). It is hypothesized that invalidating parents are less warm and caring toward their children and respond to their children's' needs with less compassion (Robertson, Kimbrel, & Nelson-Gray, 2013). Therefore, it can be concluded that unstable family environments contribute to the development of disorganized attachments and, in turn, to the onset of BPD features. Additionally, individuals who are diagnosed with BPD and individuals with disorganized attachment styles experience similar traumatic experiences in early childhood. As previously noted, maltreatment (Carlson, 1989), abuse, and neglect (Stronach et al., 2011) have been empirically linked to disorganized attachments. Neglect, cruelty, physical and sexual abuse have been empirically linked to individuals diagnosed with BPD (Bradley et al., 2007). Overall, the similarities between early

experiences of those with disorganized attachments and those with BPD suggest that disorganized attachments may facilitate the development of BPD. Moreover, it is theoretically and empirically supported that traumatic events common within disorganized attachments are antecedents in the development of BPD (Prunetti, Framba, Barone, Fiore, Sera, & Liotti, 2008).

**Proximal Life Events.** Although adverse early childhood events have been identified as antecedents in the development of BPD, recent social experiences during adolescence and emerging adulthood contribute to unstable relationship patterns that are characteristic of BPD. Interpersonal Psychotherapy (IPT) posits that mental conditions, like BPD, arise from three components: symptom function, social and interpersonal relations, and personality and character problems (Weissman, Markowitz, & Klerman, 2000). BPD is characterized by a high level of social dysfunction (Hulbert, Jennings, Jackson, & Chanen, 2011); therefore, adverse life events associated with social and interpersonal relations component of IPT may be helpful in explaining the onset and exacerbation of BPD features.

BPD is marked by numerous disruptions in social functioning, such as anxiety, fear of aloneness, a need for intimacy but fear of rejection, and erratic feelings in relationships (Drapeau & Perry 2004). These features are often activated in response to environmental-social cues in adolescence and adulthood (e.g., in response to perceived criticism from a partner; Scott, Levy, & Pincus, 2009). Recent events of social rejection and isolation are thought to be key factors in the development and exacerbation of BPD (Herpertz, 2013). Specifically, a longitudinal study found that multiple types of peer victimization (i.e., exclusion from play, teasing, and rumors) was a predictor of BPD symptoms (Wolke, Schreier, Zanarini, & Winsper, 2012). Similarly, other researchers found evidence for a strong association between recent bullying events and the expression of BPD symptoms (Sansone, Chang, Sellbom, & Jewell, 2013).

More recent negative events are also associated with the maintenance of BPD symptoms. Pagano and colleagues (2004) reported that individuals with BPD experience greater incidents of negative life events over time, which are accompanied by increased rates of symptoms. It was reported that individuals with BPD reported more incidents of negative events and fewer incidents of positive events than those with other personality disorders (Jovev & Jackson, 2006). Similarly, Jovev and Jackson (2006) found that those with BPD had lower levels of functioning, perceived daily life hassles as more intense, and experienced more frequent negative life events especially in the interpersonal domains of life. Overall, considering these findings, it is expected that greater reports of negative life events would be positively associated with self-reported BPD features.

### **Stress-Diathesis Model**

There are many models that account for the development of psychological disorders. One activation theory that has garnered increased attention over the last decade is the stress-diathesis model. According to Ingram, Miranda, and Segal (1998), stress can be defined as incidents of significant life events or the accumulation of minor hassles that are unwelcome and interpreted as undesirable. These events are disruptive to individuals' adaptive processes and interfere with daily functioning. Based upon these parameters, Ingram and colleagues posit that stress or adverse life events are important factors that contribute to the onset of psychopathology (Ingram et al., 1998). However, the presence of intense stress or adversity is not sufficient to bring about the development of psychopathological features. For instance, findings by Martin and Martin (2002) indicate that fewer than 50% of individuals who experience adverse life events also concurrently report psychological difficulties. Taken as a whole, these findings suggest that



adverse life events or chronic stressors may be an antecedent to psychopathology, but they might not be a risk factor.

To develop a more robust theory, Ingram and colleagues (1998) indicated that the presence of a second factor was needed to explain the onset of psychopathological features. This second factor was termed a diathesis, which reflects a predisposition to illness. In psychological terms, diathesis refers to a vulnerability or susceptibility to contracting or developing health difficulties. Such vulnerabilities may include: cognitive styles, interpersonal dysfunction, biological/genetic predispositions, and family environment (Ingram et al., 1998; Kantrowitz & Citrome, 2011; Linehan, 1993).

According to stress-diathesis models, psychological disorders arise due to the interactive effect of vulnerability and stress (Hooley & Gotlib, 2000). Maladaptive cognitions, such as schemas, contribute to psychopathology when they become activated by stressful events (Eberhart, Auerbach, Bigda-Peyton, Abela, 2011). The stress-diathesis model posits that the presence of cognitive vulnerabilities (i.e., schemas) increase the chances that experiencing stressful events will contribute to psychological difficulties (Cámara & Calvete, 2012). Essentially, vulnerabilities (i.e., maladaptive schemas) lie latent and become activated in response to stressful, adverse events, which ultimately result in experiences of inner turmoil (e.g., anxiety) and the expression of psychological symptoms (i.e., impulsivity and labile emotions; Cámara & Calvete, 2012). In this model, the increased activation of vulnerability factors through adverse life events allow psychological difficulties to manifest.

As previously mentioned, cognitive variables can function as vulnerabilities for developing psychological disorders. Maladaptive cognitions have been linked to numerous psychological conditions (for a review see Ingram, Miranda, & Segal, 2006). One cognitive

stress-diathesis theory is based on the cognitive triad model (Beck, Rush, Shaw, & Emery, 1987). In this model, maladaptive cognitions (i.e., negative views about the self, the world, and the future) play an important role in the development of psychopathology. These maladaptive cognitions are causal agents in psychological disorders because they generate persistent, negative attitudes/beliefs that affect information processing (Slavik & Croake, 2006). If these cognitions become habitual, they often transform into maladaptive schemas (Ingram et al., 2006). Intrusive negative thoughts are typically generalized to situations that are encountered. For example, someone who has recurring thoughts about incompetency might conclude that they are stupid because they received a “B” on an assignment. The maladaptive cognition “I am incompetent” negatively impacts the way in which a grade was perceived “I am stupid.” However, intrusive thoughts rarely occur before the perceived presence of adversity, which in this scenario was receiving a “B” grade.

Schemas are also implicated in stress-diathesis models (Ingram et al., 2006). Schemas are organizing principles for meaning making of life experiences that are generally formed in childhood or adolescence and used to make sense of experiences that occur later in life (Young et al., 2003). Therefore, schemas are robust themes that include maladaptive cognitions, distorted memories, and misleading perceptions about the nature of human interactions. Schemas are often tied to psychological disorders, and become triggered by stressful life events (Ingram et al., 2006). Negative self-schemas contain information from prior experiences and are connected to each other throughout the memory system. Therefore, schemas significantly impact information processing by selecting what information is attended to, what information is encoded into, and what information is retrieved from the memory system (Ingram et al., 2006). All information is

processed through this negative belief system and is in turn interpreted with a negative and perpetuated self-system (Slavik & Croake, 2006).

Cognitive vulnerabilities are important when considering characterological problems, especially BPD. As mentioned previously, schemas can form in childhood. Early maladaptive schemas are present in those with and without personality disorders, but those with personality disorders tend to demonstrate more severe schematic functioning (Young et al., 2003). In keeping with these positions, it might be fruitful to examine BPD features through a stress-cognitive vulnerability lens. Based on theory and preliminary empirical evidence, it appears that rejection sensitivity and insufficient self-control schemas may be useful in explaining unique variance in BPD functioning.

**Rejection Sensitivity Schemas.** Rejection sensitivity is defined as “the disposition to anxiously expect, readily perceive and intensely react to rejection” (Downey, Mougios, Ayduk, London, & Shoda, 2004, p. 668). Experiences that lead to rejection sensitivity can happen at any time, but rejection sensitivity beliefs are more deeply entrenched if significant interpersonal turmoil was salient in childhood and adolescence. Such interpersonal turmoil may be marked by incidences of adverse life events including, but not limited to, abuse, neglect, and conditional love (Staebler, Helbing, Rosenbach, & Renneberg, 2011). The interaction between the experience of adverse life events and rejection sensitivity schemas may hold promise in explicating the development and maintenance of BPD features (Young et al., 2003).

According to Young and colleagues (2003), frequent and intense adverse life events inhibit the cultivation of important psychosocial resources. Adverse life events associated with relationship dysfunction often deplete one’s sense of security, safety, stability, nurturance, empathy, and unconditional acceptance. If interpersonal stressors continue to persist, individuals

will begin to alter the way they view themselves, others, and the world in which they live in a disconnected and interpersonally sensitive manner. Such alterations serve as a coping defense to manage perceived instability or reliability of support and/or connection from significant others. Counterintuitively, such defenses often consist of extreme interpersonal behaviors including hostility, aggression, recklessness, clinging to significant others, being emotionally demanding of others, and acting to impress others that place individuals at higher risk for developing personality disordered symptoms (Herr, Keenan-Miller, Rosenthal, & Feldblum, 2013; Young et al., 2003).

Individuals who have experienced repeated instances of rejection by significant others develop expectations of rejection in social interactions (Staebler et al., 2011). Those who are sensitive to rejection tend to be hypervigilant to cues of rejection, and subtle rejection cues activate maladaptive cognitive, affective, and behavioral reactions (i.e., blaming others, feeling hurt, and aggression; Staebler et al., 2011). In regard to BPD, a core feature is fear of abandonment, and rejection by others is considered a form of abandonment (Staebler et al., 2011). As such, those diagnosed with BPD interpret daily forms of rejection (e.g., a significant other not being able to attend an appointment) as a reflection of devaluation and/or disapproval. Instances like these lead individuals with BPD to conclude that significant others in their life are neglectful, uncaring, and abandoning (Staebler et al., 2011). The literature has demonstrated that individuals diagnosed with BPD frequently hold cognitive themes associated with aloneness, dependency, unlovability, emptiness, badness, interpersonal distrust and vulnerability (Arntz, 2005; Krawitz, 2012; Lloyd, Raymond, Miner, & Coleman, 2007; Lynum, Wilberg, & Karterud, 2008), all of which are contained within the schema domain disconnection/rejection. These themes are most frequently endorsed by those diagnosed with BPD than any other personality

disorder group (Lawrence, Allen, & Chanen, 2011). Moreover, Lawrence and colleagues (2011) found that abandonment/instability and mistrust/abuse schemas were the most strongly endorsed among individuals with BPD. These findings suggest that individuals with BPD report higher levels of cognitions associated with rejection and abandonment themes.

In the current study, disconnection/rejection schemas were considered as a potential mediator on the adverse life events-BPD feature relationship. Mediation analysis is beneficial because it not only provides information about the relationship between variables, but provides more useful, in-depth information concerning clinically related pathways to psychopathological outcomes (Preacher & Hayes, 2004). For instance, mediation models provide information on the extent to how and by what means causal relationships occur (Preacher & Hayes, 2008). The identification of factors that mediate the adverse life event and BPD feature relationship is essential in determining who is at-risk to develop BPD features. However, research has yet to investigate the mediational role of disconnection/rejection schemas in explaining the adverse life event-BPD feature relationship.

**Impaired Limits Schemas.** Impaired limits is an early maladaptive schema domain in which there is a persistent difficulty or refusal to use self-control and frustration tolerance to achieve goals, or to refrain from expressing emotions and impulses (Young et al., 2003). Individuals who over-rely on this schema tend to have difficulties with emotional dysregulation (a breakdown in controlling states of self, such as arousal, self-esteem, affects, and needs) which Linehan (1993) posits as the basis of BPD. According to Linehan (1993), emotion dysregulation develops as a result of invalidating environments during childhood. Individuals who are raised in invalidating environments do not trust their own emotions because when emotions were expressed as children, they were disqualified/invalidated by caregivers. In many instances, self-

control is highly valued and the expression of emotion is not tolerated, and is often trivialized and punished. When emotions are expressed they are not accepted as an accurate depiction of how the child is truly feeling (Linehan, 1993). As a result, adverse life events often strip children of their sense of self-control, leaving them unable to label and regulate arousal and effectively cope with emotional distress (Linehan, 1993).

Individuals with BPD typically endorse chronic cognitive and affective themes of impaired limits, including insufficient self-control (Young et al., 2003). Subsequent empirical studies showcase findings that are consistent with this position. For instance, Gratz, Rosenthal, Tull, Lejuez, and Gunderson (2009) found that insufficient self-control/emotion dysregulation is a defining feature of BPD. Other studies have found evidence that suggests emotional dysregulation and impulsivity distinguish individuals with BPD from non-patients and those with other psychiatric diagnoses (Tragesser & Robinson, 2009; Tragesser, Solhan, Schwartz-Mette, & Trull, 2007; Trull et al., 2008). Experimentally, Gratz and colleagues (2009) found evidence to suggest that individuals with a diagnosis of BPD were less willing to tolerate emotional distress and approach a potentially distressing event compared to others without a diagnosable mental health condition. Overall, these findings suggest that insufficient self-control and emotional dysregulation components of impaired limits schemas may be important in determining who is at-risk for developing symptoms associated with BPD.

However, similar to disconnection/rejection themes, research has yet to investigate the potential mediational role of impaired limits schemas on the adverse life event-BPD feature relationship. For the exact reasons previously noted, it is important that research identify factors that contribute to a better understanding of this relationship. In addition, it is important that research concurrently examine the mediational effects of both disconnection/rejection schemas

and impaired limits schemas on the adverse life-event-BPD relationship. The BPD literature is inundated with findings that suggest specific risk factors act as mediators in the adverse life events-BPD relationship. However, few researchers have examined and compared the magnitude of one mediator effect against the magnitude of another mediator effect on these relationships. By using Preacher and Hayes' (2008) multiple mediation analysis we were able to examine if one mediator was better suited to explain the relationship between adverse life events and BPD functioning compared to another mediator. This may be important for clinicians as it will highlight the most salient components in the prevention and treatment of BPD. However, because of the novelty of this approach within the BPD literature, no hypotheses were made regarding the fit of the mediator effects between disconnection/rejection schemas and impaired autonomy schemas. Therefore, the comparison of these two mediators was an exploratory component within the current study.

### **Current Study**

**Rurality and BPD Processes.** People from rural areas tend to report more psychopathology due to lack of resources and limited access to resources associated with psychological care (Hall & Gjesfjeld, 2013). In addition, individuals from rural areas report greater experiences with stressors and adversity (Hall & Gjesfjeld, 2013). For instance, individuals from rural areas report a greater number of experiences with depression, suicide, substance use, co-occurring disorders (e.g., higher incidence of antisocial personality disorder and generalized anxiety disorder when drugs and alcohol were used; Hauenstein, 2008), externalizing disorders, child abuse, domestic violence, and stigma (Cohn & Hastings, 2013; Reed, Messler, Coombs, & Quevillon, 2013; Robinson et al., 2012; Thompson, 2013). Considering that higher reports of adversity and chronic stress are antecedents to

psychopathological symptoms, it could be speculated that individuals from rural areas may be at greater risk to develop BPD symptoms, but research is unclear as to what other cultural dynamics promote or inhibit the development of BPD symptoms in rural communities; therefore, expectations regarding differences in BPD reports between rural and non-rural residents would be presumptive at best. However, it would be advantageous to determine if reports of BPD features differ within these two subpopulations. Therefore, an exploratory component of the current study was to determine if individuals from rural areas report higher levels of BPD features when compared to individuals from non-rural areas.

**Research Plan.** Overall, the current study investigated BPD features through a cultural and pathway model lens. First, the current study examined gender and rurality differences in BPD features. Second, the current study explored the relationships among adverse life events, early maladaptive schemas, and BPD features. Given that psychological stressors and BPD have been theoretically and empirically linked, the current study looked to validate a direct relationship between these two constructs. To extend our understanding of this relationship, the current study also sought to concurrently examine the mediational effects of two schema domains (disconnection/rejection schemas and impaired limits schema) on the adverse life event-BPD symptom relationship.

**Hypotheses.** Given the theoretical and empirical findings discussed in previous sections, it was hypothesized that (a) a positive relationship existed between reports of adverse life-events and BPD symptoms; (b) positive relationships existed between early maladaptive schema domain scores and BPD symptoms; and (c) early maladaptive schemas would, at least partially, mediate the relationship between adverse life-events and BPD features.



## CHAPTER 3: METHODS

### Participants

Data for the current study was collected from a sample of undergraduate college students attending a large university in the southeast region of the United States. Fifty-six student survey responses were removed from the final sample tally. These individuals were removed because their data violated catch item question standards and overall response rate standards. The final sample consisted of 415 undergraduate students. The ages of the sample ranged from 18-28 with an average age of 19.55. One hundred and forty-two participants were men (34.2%) and 272 were women (65.5%). One participant did not provide a response to the gender prompt. Additionally, 115 participants identified themselves as being from a rural area (27.7%) and 300 identified as being from a non-rural areas (72.3%). One hundred and forty-one participants identified themselves as African American (34.0%) and 232 identified as Caucasian (55.9%). Two participants identified as American Indian (.5%), four as Asian (1%), nine as Hispanic (2.2%), twenty-six as other (6.3%), and one participant did not provide a response to the ethnicity prompt. Participants received research credit for participating.

### Measures

Participation in this study involved the completion of an online survey, which included the following measures: (a) the Inventory of College Students' Recent Life Experiences, (b) the Young Schema Questionnaire – Short Form 3 (YSQ-L3), and (c) the Five Factor Borderline Personality Inventory (FFBI). Demographic data were also collected. Demographic information of interest to this study included: age, sex, ethnicity, marital status, sexual orientation, college classification, and community setting. Rurality was assessed by asking participants to respond to a series of questions concerning their developmental history and current living status.

Participants self-reported either growing/currently living in a rural versus urban community setting. Completion time for the survey took approximately 50 minutes.

**Inventory of College Students' Recent Life Experience (ICSRLE; Kohn, Lafreniere, & Gurevich, 1990).** The ICSRLE is a 49-item self-report instrument that measures the extent to which respondents experienced adversity/hassles over the past month. Each item is rated on a 4-point Likert scale ranging from 1 to 4 (not at all part of my life, only slightly part of my life, distinctly part of my life, and very much part of my life; Kohn et al., 1990). Total scores range from 0 to 196, with higher scores indicating more exposure to stressful, adverse events. The ICSRLE has been found to have good internal consistency estimates in college student samples ( $\alpha = .92$ ; Osman, Barrios, Longnecker, & Osman, 1994). Additionally, the ICSRLE has demonstrated excellent construct validity with other measures of negative life events and distress (Osman et al., 1994). For the current study, analysis revealed that the negative life events variable had good reliability ( $\alpha = .95$ ).

**Young Schema Questionnaire – Short Form 3 (YSQ-S3; Young, 2005).** The YSQ-S3 is a 90-item self-report inventory designed to measure dysfunctional cognitive patterns. Two schema domains are the focus of the current study: Disconnection/rejection Schemas ( $n = 25$ ) and Impaired Limits Schemas ( $n = 10$ ). Each item is rated on a 6-point Likert scale ranging from 1 (completely untrue of me) to 6 (describes me perfectly; Kriston, Schäfer, Jacob, Härter, & Hölzel, 2013). Domain scores for disconnection/rejection schema range from 25 to 150, and scores for the impaired limits domain range from 10 to 60. Higher scores indicate greater use of maladaptive thinking. Earlier versions of the YSQ-S3 report reliability estimates that range from .83 to .93, and test-retest coefficients from .50 to .82 (Sigre-Leirós, Carvalho, & Nobre, in press). Schema domain scores have also demonstrated excellent construct validity as evidenced by high

correlations with personality disorder symptoms (Young & Klosko, 2005). In this study, analysis revealed good reliabilities for the impaired limits schema domain ( $\alpha = .83$ ) and the disconnection/rejection schema domains ( $\alpha = .95$ ).

**Five-Factor Borderline Personality Inventory (FFBI; Mullins-Sweatt et al., 2012).**

The FFBI is a 120-item self-report measure of borderline personality traits based on the Five-factor model of personality. For the purpose of the current study, a total score will be used to assess borderline personality symptomatology. Each item is rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Total scores range from 240 to 1200 with higher scores reflecting the presence of more maladaptive borderline personality traits. The FFBI has been found to have good internal consistency in a sample of undergraduate students. In addition, the FFBI has demonstrated good convergent validity with other measures of personality functioning (Mullins-Sweatt et al., 2012). Good internal consistency was found for the total BPD score ( $\alpha = .98$ ) in the current study.

**Procedures**

Participants were recruited via the SONA system, an interactive website that provides a list of available studies being conducted in the Department of Psychology. Interested students sign up on SONA to participate in research studies. The system provides potential participants with different research options in which they can participate to receive research credit. The current study was an option in this system. Once participants signed up on the SONA system they were provided with a link to SurveyMonkey.com, an approved data collection site, to complete the surveys anonymously.

Initially, 471 participants participated in the survey (as noted previously, fifty-six were removed from the final sample tally). Interested students were directed to the SONA system

website, where they were presented with the opportunity to learn more about the study. Interested students who wanted to participate in the survey were asked to click on a link where they were directed to the informed consent. They were then asked to read the informed consent thoroughly, and if they agreed to participate, electronically sign that page. Participants were informed that they had the right to withdraw from the study at any time, and that they could skip any items that made them feel uncomfortable. After providing electronic consent, participants completed the demographic questionnaire, the ICSRLE, the YSQ-S3, and the FFBI. It took approximately 50 minutes to complete 204 survey questions. Once responses were submitted, participants were directed to the debriefing page. The debriefing page provided additional information concerning the purpose of the current study and free to low cost health care services that were accessible on campus or via the internet. Finally, participants were instructed to e-mail the primary investigator with their name, date, and time they completed the study to ensure they received their course credit.

All data were initially collected and stored by SurveyMonkey.com. Upon completion of data collection, the primary investigator retrieved the data from SurveyMonkey.com and converted them to a SPSS data file. Once the data were converted, they were deleted from SurveyMonkey.com. The SPSS data file will be stored on a password protected computer for five years by the mentor of the primary researcher.

### **Statistical Analyses**

A 2 (gender) by 2 (rurality) Factorial MANOVA was conducted to determine mean differences among the study's main variables. Bivariate correlations were analyzed to determine whether relationships existed among adverse life events, early maladaptive schemas, and borderline personality functioning. A multiple mediation model using Preacher and Hayes' (2008) approach was analyzed. In the model, adverse life events were a predictor variable,

disconnection/rejection schemas and impaired limits schemas were mediator variables, and the total FFBI BPD score was the outcome variable. Preacher and Hayes' (2008) multiple mediation approach is advantageous because in many cases it is unlikely that the effect of a predictor variable on the outcome variable is accounted for by one mediator variable. "When multiple mediators are entertained, it is often more convenient, precise, and parsimonious to include all of them in the same model" (Preacher & Hayes, 2008, p. 887). In regard to the current study, using Preacher and Hayes' (2008) multiple mediation analysis enabled us to determine which schema domain was better suited to explain the covariance between adverse life events and BPD features.

## CHAPTER 4: RESULTS

### Gender and Rural Differences

A two (gender) by two (rural) Factorial MANOVA examined differences on self-reported measures of negative life events, borderline personality traits, and schema functioning. Overall, the analysis yielded a significant main effect for rurality (*Wilks' Lambda* (4, 404) = 2.46,  $p = .04$ ,  $\eta^2 = .02$ ) but not gender (*Wilks' Lambda* (4, 404) = .39,  $p = .81$ ,  $\eta^2 = .00$ ). Also, there was a significant gender by rural interaction effect, (*Wilks' Lambda* (4, 404) = 3.20,  $p = .01$ ,  $\eta^2 = .03$ ).

Follow-up 2 (gender) x 2 (rural) ANOVAs revealed non-significant interaction effects for gender and rurality on total borderline personality scores,  $F(1, 407) = .35$ ,  $p >.05$ ,  $\eta^2 = .00$ . In addition, results revealed non-significant gender,  $F(1, 407) = .00$ ,  $p >.05$ ,  $\eta^2 = .00$ , and rural,  $F(1, 407) = .23$ ,  $p >.05$ ,  $\eta^2 = .00$ , main effects. These results suggest men report similar levels of borderline personality traits ( $M = 284.69$ ,  $SD = 80.57$ ) when compared to women ( $M = 282.42$ ,  $SD = 83.78$ ). Similarly, individuals from rural areas ( $M = 281.16$ ,  $SD = 75.16$ ) report comparable levels of borderline personality traits when compared to individuals from non-rural areas ( $M = 283.97$ ,  $SD = 85.37$ ).

Results also revealed a non-significant interaction effect for gender and rurality on negative life events,  $F(1, 407) = 1.75$ ,  $p >.05$ ,  $\eta^2 = .00$ . Similarly, results revealed non-significant gender  $F(1, 407) = .02$ ,  $p >.05$ ,  $\eta^2 = .00$ , and rural,  $F(1, 407) = .46$ ,  $p >.05$ ,  $\eta^2 = .00$ , main effects. These results suggest men report similar levels of negative life events ( $M = 97.52$ ,  $SD = 25.85$ ) when compared to women ( $M = 98.94$ ,  $SD = 25.93$ ).

Additionally, individuals from rural areas ( $M = 96.07$ ,  $SD = 23.81$ ) report comparable levels of negative life events when compared to individuals not from a rural area ( $M = 99.45$ ,  $SD = 26.61$ ).

Non-significant interaction effects for gender and rurality on the disconnection/rejection schema domains,  $F(1, 407) = .08, p >.05, \eta^2 = .00$ , were revealed. Additionally, results demonstrated non-significant gender  $F(1, 407) = .20, p >.05, \eta^2 = .00$ , and rural,  $F(1, 407) = .98, p >.05, \eta^2 = .00$ , main effects. These results suggest men report similar levels of disconnection/rejection schemas ( $M = 58.05, SD = 23.14$ ) when compared to women ( $M = 57.23, SD = 21.49$ ). Additionally, individuals from rural areas ( $M = 55.50, SD = 20.20$ ) report comparable levels of disconnection/rejection schemas when compared to individuals from non-rural areas ( $M = 58.27, SD = 22.70$ ).

Lastly, results revealed a non-significant interaction effect for gender and rurality on the impaired limits schemas  $F(1, 407) = 2.43, p >.05, \eta^2 = .01$ . Additionally, results highlighted a non-significant gender,  $F(1, 407) = .30, p >.05, \eta^2 = .00$ , main effect. Alternatively, a significant main effect for rurality was detected,  $F(1, 407) = 6.93, p <.01, \eta^2 = .02$ . These results suggest men reported similar levels of impaired limits schemas ( $M = 26.83, SD = 8.52$ ) when compared to women ( $M = 26.69, SD = 8.30$ ). However, individuals from non-rural areas ( $M = 27.31, SD = 8.63$ ) reported higher scores on impaired limits schemas when compared to individuals from rural areas ( $M = 25.23, SD = 7.46$ ). See Table 1 for a summary of data related to gender and rurality differences on the study's variables.

### **Bivariate Correlations**

Bivariate correlations were conducted to determine the relationships among total borderline personality traits, impaired limits schemas, disconnection/rejection schemas, and negative life events. These results are presented in Table 2. As expected, total borderline personality scores were positively correlated with reports of negative life events ( $r = .72$ ),

disconnection/rejection schemas ( $r = .77$ ), and impaired limits schemas ( $r = .66$ ). These results suggest that students who endorse higher levels of adverse events and maladaptive schematic functioning are also likely to report a greater number of symptoms related to borderline personality disorder.

### **Mediation Models**

Using Preacher and Hayes' (2008) multiple mediation approach, a direct, positive relationship (labeled  $c$ ) was revealed,  $b = .26$  ( $SE = .11$ ),  $t = 20.74$ ,  $p < .01$ . This result indicates that, as expected, increased frequency of adverse life events is associated with greater reports of borderline personality features. Next, we examined the indirect (mediated) effects of impaired limits and disconnection/rejection schema domains on the adverse life event-borderline personality relationship. Again, we used the multiple mediation software created by Preacher and Hayes (2008) to determine mediation. This software is capable of using a single analysis to simultaneously test more than one mediational hypothesis. Figure 1 displays the mediation model examined.

When considering both mediators, the unstandardized relationship between negative life events and borderline personality disorder decreased (from 2.26) to .99 (i.e., the latter being labeled  $c'$ ); the effect remained significant,  $t = 7.93$ ,  $p < .01$ , indicating partial mediation. This finding suggests that schema domains appear important in explaining the covariance between negative life events and borderline personality traits; however, other variables may be equally salient or more important in explaining the covariance between these variables.

Next, we tested for the possibility that the individual mediators were significant in the overall model for borderline personality disorder. Table 3 displays the results for the multiple mediation analysis. The table includes the estimate of the effect, the lower and upper bounds for the 99% bias corrected confidence intervals, and the 99% bias corrected and accelerated



confidence intervals. Importantly, if the 99% CIs for the bootstrapped estimate do not contain zero, then the mediator is significant at  $p \leq .01$ . As can be seen in the top half of Table 3, the mediational effects for both impaired limits and disconnection/rejection schemas were statistically significant. Using the information from Figure 1, examination of the impaired limits schemas ( $b = 0.361$ ;  $SE = .084$ ; 99% BCA confidence interval: 0.158 – 0.599) and the disconnection/rejection coefficient ( $b = 0.909$ ;  $SE = 0.110$ ; 99% BCA confidence interval: 0.627 – 1.20) revealed that the paths were statistically significant. These results provide empirical evidence for the idea that impaired limits and disconnection/rejection schemas can attenuate the positive link between negative life events and borderline personality disorder.

Preacher and Hayes' (2008) approach also allows for an evaluation of mediation fit through contrast effects. In the current model, the mediated effects of impaired limits schemas were compared against the mediated effects of disconnection/rejection schemas to determine best fit as a mediator in the negative life events-borderline personality traits relationship. Significant contrast effects are said to exist when the 99% CI for the bootstrapped estimate does not contain zero. Results indicated that there was a significant contrast difference (99% BCA CI: -0.970 to -0.136), suggesting that disconnection/rejection schemas were a more suited mediator for the model.

## CHAPTER 5: DISCUSSION

### Review of Purpose

The purpose of the current study was to better understand BPD symptoms through a stress-vulnerability context. To accomplish this, we attempted to answer the following questions: (a) whether a positive relationship existed between reports of adverse life-events and BPD symptoms; (b) whether positive relationships existed between early maladaptive schema domain scores and BPD symptoms; and (c) whether early maladaptive schemas would, at least partially, mediate the relationship between adverse life-events and BPD features.

### Gender Differences

Non-significant gender differences among self-reports of negative life-events, maladaptive schemas, and BPD features were revealed. Interestingly, these findings suggest women and men self-report comparable estimates of borderline personality characteristics. This result is inconsistent with a litany of previous findings suggesting borderline personality disorder occurs more frequently in women than men (APA, 2013; Sharp, Michonski, Steinberg, Fowler, Frueh, & Oldham, 2014; Sansone & Sansone, 2011b). The lack of gender differences in the current study could be a result of how borderline personality features were measured. The FFBI contains several subscales that contribute to a total BPD score. It is possible that subscale scores had a cancelling-out effect that reduced gender differences for total BPD scores. For instance, behavioral dysregulation and rashness are subscales of BPD total scores that are highly associated with impulsivity and behavioral acting out. In turn, impulsivity and behavioral acting out are two behavioral patterns reflective of how emerging adult men manage threats to self-esteem (Sharp et al., 2014) and consistent with gender-role expectations for emerging men in terms of emotional expression (Genuchi & Valdez, 2014). Alternatively, affective dysregulation

and despondence are two different features of BPD total scores that are highly associated with instances of emotional turmoil and emotional vulnerability/sensitivity (Mullins-Sweatt et al., 2012), two conditions by which women commonly self-report more difficulties (Bloise & Johnson, 2007). Therefore, it is possible that men's higher impulsivity-related scores canceled out women's higher emotional vulnerability-related scores resulting in similar overall total BPD scores for each gender. Future research may look to examine gender differences among unique features of BPD (i.e., impulsivity vs. emotional vulnerability) rather than a total BPD score. This may clarify if and how men and women differentially experience and manifest symptoms of BPD. Such a line of inquiry may enable clinicians to develop more targeted gender-specific treatment plans for BPD.

### **Rural Differences**

Investigating rural differences among reports of negative life events, schemas, and BPD features was an exploratory component of the current study. Overall, results yielded non-significant results, suggesting that there are no differences between rural and non-rural residents on the main variables in the study. Of interest, lack of rural differences associated with reports of BPD symptoms were somewhat surprising as research has shown that individuals in rural areas are more prone to psychopathology than individuals in non-rural areas (Hall & Gjesfjeld, 2013; Hauenstein, 2008; Cohn & Hastings, 2013; Reed, Messler, Coombs, & Quevillon, 2013; Robinson et al., 2012; Thompson, 2013).

One possible explanation for this finding may be related to how the current study differentiated rural versus non-rural participants. Participants were classified as either rural or non-rural based upon their response to a prompt asking whether they were from a rural or a more urban area. It is possible that participants may hold different perceptions of what constitutes rural

versus non-rural living. Participants may have used random, surfaced, and/or erroneous comparative procedures to determine if they were raised in a rural versus non-rural area. For instance, participants may have defined rural versus non-rural living based on perceptions associated with the availability of shopping, entertainment, and other recreational opportunities. Without a more definitive definition and structure regarding rural versus non-rural living, there was no standard by which participants could identify their rural status. In the future, it is important that researchers provide more concrete definitions of rural versus non-rural areas/living/dynamics, so that participants have a standard to judge the living status in which they were reared.

Additionally, the participants in the current study were all college students. Given the environment by which colleges are structured, college life may dilute cultural dynamics that differentiate rural versus non-rural communities. For instance, college students have access to immediate resources (e.g., physical and mental health care), the opportunities to set up unique social dynamics given the diversity of students on campus, and exposure to diverging conceptions of community development and community involvement. These dynamics may generate new pathways for cultural identity growth and perceptions of cultural fit that detract from traditional components of rural community living. Ultimately, it is possible college life may affect the behaviors, attitudes, and identities of individuals from rural areas in a way that may diminish rural differences on reports of psychological outcome variables. Future research may seek to examine rural differences in BPD functioning using purer samples of rural versus non-rural emerging adults. Using such samples may help determine if rates of psychopathology are more or less prevalent in rural versus non-rural areas.

## **Direct Relationships**

Results indicate that negative life events are positively and directly associated with reports of BPD traits. This result indicates that individuals who experience more negative life events also report higher levels of BPD traits. These results are consistent with previous research indicating a strong relationship between indices of stress and BPD pathology (Bradley, Conklin, & Westen, 2007; Fall & Craig, 1998; Linehan, 1993).

However, due to restrictions on the research design, the current study cannot speak to a causal pathway between negative life events and BPD features. Using longitudinal and experimental designs can help clarify the role of negative life events in terms of contributing to the onset and exacerbation of BPD features. Specifically, it is important that researchers determine stress as a risk factor versus a vulnerability factor to BPD symptoms. The distinction between risk factors and vulnerability factors is important in terms of devising effective treatment plans. Specifically, treatment plans focused on reducing the activation of vulnerability factors over risk factors appear more effective in terms minimizing debilitating symptoms and enhancing life-promoting resources (Ingram, Atchley, & Segal, 2011).

Ingram and colleagues (2011) define vulnerability as the susceptibility to emotional pain and directly attribute the concept to the onset and maintenance of psychopathology. Risk factors, on the other hand, describe the extent to which individuals have an increased likelihood of developing a psychological disorder (Ingram et al., 2011). Risk factors speak to the features associated with probability of developing a disorder, while vulnerability is concerned with the mechanisms that cause the disorder (Ingram et al., 2011). The clarification of stress as either a vulnerability factor or risk factor could potentially influence how theories conceptualize

underlying etiological influences of BPD features. This, in turn, will direct more beneficial lines of inquiry to support prevention and intervention efforts.

### **Indirect Relationships**

Results indicated that the two maladaptive schema domains partially mediated the relationship between negative life events and BPD features. These results are consistent with stress-diathesis models of BPD functioning (Young et al., 2003). Overall, these findings present preliminary evidence for the importance of considering indirect pathways by which negative life events are related to BPD traits.

One unique component of the current study was our ability to examine multiple indirect effects through the use of multiple mediation model analysis (Preacher & Hayes, 2008). This is important as the covariance between negative life events and BPD traits is thought to be complex and best conceptualized through multiple cognitive factors (Young et al., 2003). In the current study, we examined two potential mediators (disconnection/rejection schemas and impaired limits schemas) as a part of the multiple mediation process. We were able to compare, through contrast effects, the fit of disconnection/rejection schemas versus impaired limits schemas as mediators in the current model. Results indicated that disconnection/rejection schemas are better suited to mediate the relationship between negative life events and BPD traits when compared to impaired limits schemas. Such analysis provides very specific information regarding the covariance shared between negative life events and BPD features. Of importance, cognitive thoughts associated with themes of conditional acceptance, defectiveness, and isolation seem to be important in explaining how negative life events are related to BPD traits.

Despite significant indirect effects, the nature of this research design was correlational and cross-sectional. This limits our ability to make causal interpretations with regard to how

negative life events and disconnection/rejection schemas contribute to the onset and exacerbation of BPD traits. Experimental and longitudinal research is needed to explicate the contributions of negative life events and disconnection/rejection schemas to the experience of BPD features. Moreover, complex structural equation modeling from a longitudinal perspective is needed to determine if negative life events activate disconnection/rejection schemas, which in turn, influence the development of BPD symptoms.

It is also important to note that disconnection/rejection schemas were only a partial mediator of the relationship between negative life events and BPD features. This suggests other factors may be equally or even more important in explaining the relationship between negative life events and BPD traits. One factor that may be important in explaining the relationship between negative life events and BPD features is resilience. For instance, individuals who experience multiple negative life events have been found to have a hard time marshaling resources that build resilience (Seery, Holman, & Silver, 2010). This inability to align resources in the face of adversity may explain some of the development of BPD traits. In the future, researchers may want to examine the role of resilience in the negative life events-BPD feature relationship.

### **Practical Implications**

Results imply that when an individual experiences negative life events, it is important to block the activation of disconnection/rejection schemas to prevent different features of BPD from emerging. Disconnection/rejection schemas pertain to beliefs about relationships and assumptions associated with basic needs for acceptance, sharing of feelings, empathy, respect, and stability (Yoo, Park, & Jun, 2014; Young et al., 2003). Dialectical Behavioral Therapy (DBT) offers several strategies to block the activation of disconnection/rejection schemas. First,

DBT stresses the importance of establishing a strong therapeutic relationship. The therapeutic relationship offers the experience of being genuinely accepted and cared for (Linehan, 1993), which may counter some of the beliefs associated with disconnection/rejection schemas. The use of dialectics in therapy would also be useful in preventing disconnection/rejection schemas from taking hold. Specifically, dialectics stress acceptance and the need for change (Linehan, 1993). For instance, this would serve to validate clients' feelings and experiences and help them accept their painful relationship histories while balancing movement toward change and transcendence (Linehan, 1993). This balance of acceptance and change may help weaken the rigid, negative beliefs associated with the disconnection/rejection schema while simultaneously propelling clients to adopt newer patterns of behavior (e.g., help-seeking) that could further prevent this schema from being activated. DBT also emphasizes skills training to help individuals cope more effectively. Interpersonal effectiveness and distress tolerance skills could mitigate the negative effects of disconnection/rejection schemas. An aim of interpersonal effectiveness skills would be to decrease interpersonal turmoil (Stepp, Epler, Jahng, & Trull, 2008), which would help individuals decrease interpersonal tension and discord, thereby strengthening their interpersonal relationships. Strengthening interpersonal relationships may, in turn, make disconnection/rejection schemas less salient to individuals because some of their relational needs are likely being met. Distress tolerance skills help foster the development of effective coping tactics (Marschke, 1997). Specifically, these skills would buffer against becoming overwhelmed in stressful situations which would keep the activation of disconnection/rejection schemas at bay. Lastly, DBT utilizes concepts from cognitive behavioral therapy such as cognitive modification (Linehan, 1993), which would also be useful in decreasing the activation of disconnection/rejection schemas. Cognitive modification involves examining the usefulness of



thoughts and beliefs and restructuring these belief patterns. Disconnection/rejection schemas could be targeted by cognitive modification. Identifying and confronting maladaptive beliefs related to this schema (e.g., everyone will reject me) could decrease the activation of this schema and could ultimately lead to the development of beliefs that contradict the disconnection/rejection schemas. In sum, DBT can be used to block the activation of disconnection/rejection schemas, thereby reducing the expression of BPD symptomatology.

### **Limitations**

Throughout this study, several limitations that pertain to the sample, measures, and design were identified. First, the findings from this study can only be generalized to African American and European American undergraduate students. Future researchers are encouraged to re-examine the study's questions to determine if the noted findings are generalizable to other ethnic and non-traditional college student groups. Second, the measures used in the current study were all self-report instruments. Self-report measures are largely subjective and may be influenced by response bias and social desirability. Future researchers may wish to use behavioral (e.g., stress induction) or observational measures to analyze the study's questions. Third, considering the correlational nature of the research design, a number of limits can be inferred. Correlation does not imply causation. Future researchers may need to consider using experimental designs to determine if schemas contribute to the onset of BPD symptoms. Fourth, this study was carried out through a cross-sectional design, which prohibits any inferences regarding the temporal structure of relationships among negative life events, schemas, and BPD features. Cole and Maxwell (2003) suggest using mediation models that examine these relationships through autoregressive equations that would measure negative life events, schemas,

and BPD traits in a three wave longitudinal study. This method allows more thorough inferences to be drawn regarding the temporal nature of the variables examine within the current study.

### **General Conclusions**

Our results yielded interesting insights about the unique pathways between stress and cognitive vulnerabilities in BPD symptomology. The finding that disconnection/rejection schemas partially mediated this relationship is important because it highlights potential cognitive vulnerabilities that underlie the development, maintenance, and exacerbation of BPD symptoms. This specificity may, in turn, aid clinicians in developing better screening protocols for BPD. In addition, this finding may help clinicians better tailor treatment of BPD by addressing disconnection/rejection schemas in therapy.

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Table 1

*Means, Standard Deviations, and Minimum and Maximum Scores for Impaired Limits Schemas, Disconnection/Rejection Schemas, Negative Life Events, and Total Borderline Personality Features in Rural and Non Rural College Students*

Variables (N)	Mean (SD)	Min-Max Scores
<b>Men</b>		
Impaired Limits (n = 113)	26.83 (8.52)	10.00 – 52.00
Disconnection/rejection (n = 115)	58.19 (23.12)	25.00 – 142.00
Negative Life Events (n = 115)	97.70 (25.85)	49.00 – 161.00
Total BPD (n = 115)	285.13 (80.46)	123.00 – 466.00
<b>Women</b>		
Impaired Limits (n = 113)	26.69 (8.30)	10.00 – 55.00
Disconnection/rejection (n = 115)	57.10 (21.49)	25.00 – 145.00
Negative Life Events (n = 115)	99.03 (25.89)	49.00 – 194.00
Total BPD (n = 115)	282.41 (83.54)	126.00 – 511.00
<b>Rural</b>		
Impaired Limits (n = 113)	25.23 (7.46)	10.00 – 44.00
Disconnection/rejection (n = 115)	55.23 (20.19)	25.00 – 116.00
Negative Life Events (n = 115)	96.35 (23.76)	49.00 – 161.00
Total BPD (n = 115)	281.16 (74.67)	126.00 – 452.00
<b>Non Rural</b>		
Impaired Limits (n = 299)	27.35 (8.64)	10.00 – 55.00
Disconnection/rejection (n = 300)	58.51 (22.84)	25.00 – 145.00
Negative Life Events (n = 300)	99.72 (27.02)	49.00 – 194.00
Total BPD (n = 300)	284.51 (85.35)	123.00 – 511.00

Table 2

*Inter-correlations among Measures of Impaired Limits and Disconnection/Rejection Schemas, Negative Life Events, and Borderline Personality Disorder for College Students Attending a Rural University*

Variables	IL	DR	NLE	BPD
IL	---	.67**	.59**	.66**
DR	.67**	---	.68**	.77**
NLE	.59**	.68**	---	.72**
BPD	.66**	.77**	.72**	---

Note: \* Correlation is significant at the .05 level.

\*\* Correlation is significant at the .01 level

IL – Impaired Limits (YSQ-3), DR – Disconnection/Rejection (YSQ-3), NLE – Negative Life Events (ICSRLE), BPD – Borderline Personality Disorder (FFBI)

Table 3

*Multiple Mediation Results for Disconnection/Rejection Schemas on the Negative Life Events – Borderline Personality Disorder Relationship*

	Effect	BC 99% CI		BCA 99% CI	
		Lower	Upper	Lower	Upper
Indirect Effects					
DIS/REJ Schemas	0.909	0.636	1.203	0.627	1.199
Impaired Limits Schemas	0.361	0.151	0.592	0.158	0.599
TOTAL	1.270	0.998	1.561	0.992	1.559
Contrasts					
DIS/REJ Schemas minus Impaired Limits Schemas	0.548	0.982	0.146	0.970	0.136

\*\* Note: BC refers to Bias Corrected. BCA refers to Bias Corrected and Accelerated. We used 5,000 bootstrap samples.

Figure 1. Negative Life Events – Borderline Personality Disorder Mediation Model: illustrates the direct and indirect relationship between negative life events and borderline personality features. Disconnection/rejection schemas and impaired limits are the mediating variables. Unstandardized beta coefficients are depicted on each path of the model.

