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Self-Reported Posttraumatic Stress and Borderline Personality Behaviors in Relation to Reports of Traumatic Events, Attachment, Parental Behavior, and Social Support

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Thesis submitted to the
Eberly College of Arts and Sciences
at West Virginia University
in partial fulfillment of the requirements for the degree of

Master of Science in Clinical Child Psychology

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2011

Keywords: Borderline Personality Disorder, Posttraumatic Stress Disorder, Trauma, Attachment
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ABSTRACT

Self-Reported Posttraumatic Stress and Borderline Personality Behaviors in Relation to Reports of Traumatic Events, Attachment, Parental Behavior, and Social Support

Vanessa Jacoby

Borderline personality disorder (BPD) and posttraumatic stress disorder (PTSD) are conceptualized as different constructs in the *DSM-IV*, but research increasingly reveals an association among the symptoms of these disorders. Two relational models were examined: a Shared Risk Factor Model and a Continuum Model. In a sample of 603 college students, principle axis factoring of the Borderline Symptom List and PTSD Checklist showed minimal overlap in symptom presentation, partially supporting a Shared Risk Factor Model. Further support was established as regression analyses showed shared risk factors for reporting a greater number of BPD and PTSD behaviors, including experiencing at least one interpersonal traumatic event, a greater number of incidents of interpersonal trauma, and interpersonal trauma across more age periods (0-4, 5-8, etc.). Mediation analyses suggest only parental behavior mediated the relation between trauma characteristics and PTSD. However, there were multiple mediators of BPD and trauma characteristics, including parental rejection, attachment, and social support by the primary support

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Chapter 1: Literature Review

Borderline personality disorder (BPD), as discussed in the *Diagnostic and Statistical Manual of Mental Disorders-IV-TR* (DSM-IV; 4th ed.; American Psychiatric Association [APA], 2000) is an Axis II personality disorder characterized by "a pervasive pattern of instability of interpersonal relationships, self-image, and affects, and marked impulsivity beginning by early adulthood and present in a variety of contexts" (p. 710). Herman and van der Kolk (1987) classify the clinical descriptions of BPD similarly, falling into five main categories of dysfunctional behavior: (a) affect dysregulation, (b) impulse control difficulties, (c) problems with reality testing (e.g., dissociation), (d) inappropriate behavior leading to dysfunction in interpersonal relationships, and, (e) an unstable "sense of self" (e.g., feeling like they are bad or evil). Further examples of these behaviors include extreme fear and avoidance of abandonment, interpersonal instability characterized by dichotomous thinking (idealization *vs.* devaluation), and impulsivity in dangerous activity (e.g., substance abuse) and affect (e.g., uncontrolled anger). These behaviors cause distress in the life of the individual and the lives of family, and others involved.

In comparison, posttraumatic stress disorder (PTSD) is an Axis I disorder that develops in response to exposure to a traumatic stressor, which involves the threat of death or injury to themselves or others. It is characterized by a feeling of fear, helplessness, or horror at the time of the event; followed by symptoms of reexperiencing the event (e.g., dreams, intrusive thoughts), avoidance (e.g., efforts to avoid thoughts about the event, activities, or people), and hyperarousal (e.g., difficulty sleeping, exaggerated startle response).

The *DSM-IV* conceptualizes PTSD as a different disorder than BPD. BPD is an Axis II personality disorder and is thought to be chronic and pervasive. PTSD is an Axis I disorder, these disorders not typically being conceptualized as unremitting. Further, the *DSM-IV* specifies a definite etiology for the development of PTSD, whereas no such causal agent is identified for BPD. In fact, PTSD is the only diagnosis in the *DSM-IV* that specifies a distinct etiology as one of the criteria of the disorder. However, there is extensive research, noted by several authors (van der Kolk, Roth, Pelcovitz, Sunday, &

Spinazzola, 2005; van der Kolk, 2003), illustrating the numerous difficulties and psychopathology in both children and adults that can result from trauma, many of which do not fit the *DSM-IV* criteria of PTSD.

Specifically relevant to BPD is literature regarding complex PTSD (also known as disorders of extreme stress not otherwise specified [DESNOS]), which is conceptualized as primarily induced by trauma that is more chronic, interpersonal, and experienced at a younger age (van der Kolk, et al., 1996; van der Kolk, Roth, Pelcovitz, Sunday, & Spinazzola, 2005; van der Kolk, 2007). In reviewing the literature, Briere and Spinazzola (2005) list the symptoms of complex PTSD, many of which overlap with BPD symptoms (e.g., affect dysregulation, difficulties in interpersonal relationships, ~~"i~~dentity disturbance," impulsive behaviors). Herman and van der Kolk (1987) also noted that both core and associated features of PTSD resemble features of BPD. Further, comorbidity research (Bollinger, Riggs, Blake, & Ruzek, 2000; Southwick, Yehuda, & Giller, 1993; Yen et al., 2002; Zanarini et al., 1998; Zimmerman & Mattia, 1999) between Axis I and Axis II disorders has found moderate to high comorbidity between the two disorders. The current study will further examine this relation, along with parental behavior, attachment, and social support.

Borderline Personality Disorder

Prevalence

The *DSM-IV* (APA, 2000) reports prevalence estimates for BPD of 2% of the general population, 10% of outpatients in mental health facilities, and 20% among psychiatric inpatients. Data from diagnostic research somewhat match this estimate. Kernberg and Michaels (2009) report a slightly higher rate in a community sample (4%), and Torgersen, Kringlen, and Cramer (2001) found a slightly lower rate of 0.7% in a sample in Norway. In a large, epidemiological study, Grant et al. (2008) found a lifetime prevalence rate of 5.9% within the community. Here, BPD was more prevalent in younger, widowed/separated/divorced individuals with lower income and education levels. Grant et al. did not find significant differences in prevalence rates between men and women, discrepant from previous research indicating that BPD is more common among women (Lieb, Zanarini, Schmahl, Linehan, & Bohus, 2004).

Etiology

The etiology of BPD is not well understood. However, there has been research examining several factors affecting the development of the disorder, including genetic factors (e.g., the genetic influences of serotonin control), neurological factors (e.g., differences in limbic system activation), and environmental factors (e.g., a history of traumatic events, childhood attachment to primary caregiver). The literature examining the environmental risk factors of BPD has two main branches: problems in early childhood attachment, and a history of trauma. Until recently, the majority of literature for both of these areas regarding BPD has been psychoanalytic in nature, with many terms and processes referring to general, private, or inferred events. Here, when reviewing the literature, these psychoanalytic constructs will be redefined into operational, behavioral terms (as much as is possible).

Attachment and Bowlby's Attachment Theory

Within the attachment literature, several researchers rely on Bowlby's Attachment Theory (Bowlby, 1969) in their etiological models of BPD (Fonagy, Target, Gergely, Allen, & Bateman 2003; Holmes, 2004; Liotti, 2000). Bowlby's Attachment Theory is an evolutionary approach to understanding the development of personality, explaining behavior in terms of what would be of evolutionary benefit to the survival of the individual, and thus the species. Primarily, an infant will behave in a way that most ensures its survival and, because infants are solely dependant on others for survival, their behaviors center on keeping a caregiver near. These goal-oriented behaviors include: (a) behaviors that bring the caregiver to the child, both positive (e.g., smiling) and aversive (e.g., crying), and, (b) behaviors that would bring the child to the caregiver (e.g., crawling, walking). The infant engages in these behaviors not only because it needs to be fed, but also for comfort, safety, and reassurance. When illustrating Bowlby's theory, Liotti, Cortina, and Farina (2008) describe the regulation of these care-seeking behaviors (when the child will engage in the behaviors *vs*. when the child will leave the "secure base" and explore) with the cognitive term "attachment control system." They parallel this psychological system with physiological systems, such as body temperature or blood sugar regulation. When distressed, the system is "activated," setting the occasion for these care-seeking behaviors to occur. If the caregiver does not

respond appropriately to these behaviors (e.g., approach the infant, hold the infant, comfort the infant), further stress is created.

As the child develops cognitively, the many interactions between the child and caregiver form an "Internal Working Model" (IWM), the term Bowlby uses to describe a learning process. In essence, the IWM is the sum of all of the knowledge that the child acquires about another's (i.e., the primary caregiver) interests, moods, thoughts, and desires; they have a separate IWM for themselves, as well. By continuously learning from their own and other's past behavior, the child learns that the caregiver will react to help-seeking behaviors either by offering help and support, responding negatively, or not responding at all. The first results in a secure attachment, in which, when the caregiver returns from a separation with the child, the child approaches the caregiver and responds in a positive manner. The second and third reactions result in one of several types of insecure attachment, in which the child will appear anxious about separation from the caregiver or avoidant of the caregiver and ambivalent on return from separation (Ainsworth, Blehar, Waters, & Wall, 1978). An additional type of insecure attachment, identified by Main and Solomon (1990), occurs when the child engages in disorganized behaviors, alternating between the two anxious and avoidant extremes. Therefore, a caregiver's behavior leads to a parent-child attachment style. These relationship styles are carried over into relationships with others, including peers, and later, intimate relationships (Bowlby, 1973).

Attachment Theories of BPD

Focus on cognitive development. Classically, in Bowlby's Attachment Theory, as the child develops cognitively, he or she will begin to develop internal models of themselves and others. Secure and insecure attachments develop following the formation of IWMs (Fonagy et al., 2003). Fonagy and colleagues argue for the primacy of attachment; that is, a healthy attachment to a caregiver in early childhood drives healthy cognitive development, specifically "social intelligence." Problems arise when a child has an insufficient or negative environment. This could be obvious physical and psychological neglect, but can also be more subtle, such as failure of mirroring (i.e., mimicking the child's facial affect inaccurately or inconsistently) and lack of "playfulness" (i.e., an interaction which allows the child to

discriminate between his or her mental states and physical reality). Without these interactions, the child fails to learn important skills, such as the ability to cope with stress, and the ability to differentiate between their own cognitions, the cognitions of others, and physical reality. As a result of the failure to learn these skills, the individual oscillates between expressing intense emotion through physical means (i.e., self-injurious behavior) and a dissociative state in which they are separated from physical reality. With these emotional regulation skill deficits and maladaptive behaviors for expressing and coping with emotion, the individual becomes vulnerable to future negative social environments (e.g., abusive relationships). Findings from Daley, Burge, and Hammen (2000) partially support this model, showing that individuals with BPD are more likely to be involved in dysfunctional romantic relationships, including abuse. The authors stress, however, that this finding was not unique to only BPD individuals; the results stretched across many personality disorders.

Focus on caregiver trauma. Liotti (2000) and Liotti, Cortina, and Farina (2008) also use Bowbly‘s Attachment Theory and Ainsworth‘s Attachment Styles to explain the development of BPD. However, a key difference is that these authors pose that problems in attachment leading to BPD are created when the caregiver has experienced a traumatic event. According to this model, when a child with a healthy caregiver requests safety or comfort, he or she receives that support. On the other hand, a child will form an insecure attachment if the caregiver‘s response is unpredictable, erratic, fearful, or angry. These caregiver responses could be elicited if the child‘s behavior is similar to features of the traumatic events experienced by the caregiver. This, in turn, frightens the child, and as a defensive reaction, the child avoids the caregiver. This physical and emotional distance between the child and caregiver creates an increased need for safety and comfort for the child. Because the caregiver is both the ―problem‖ and the ―solution‖ for the child‘s distress, the child both actively pursues and avoids the caregiver, leading to a disorganized attachment style. In the development of psychopathology, and specifically BPD, this pattern of behavior between the child and caregiver extends into adolescence and the relationship to the caregiver remains disorganized. After years of being punished for approaching the caregiver and negatively reinforced for disorganized behavior, stimulus generalization occurs, and the individual

responds in a similar manner in interpersonal relationships with others. Holmes (2004) describes the development of BPD in a similar way. He suggests that the caregivers, along with their traumatic event, also exhibit a disorganized pattern of attachment.

Biosocial Theory. Linehan's (1993) Biosocial Theory poses that the development of BPD stems from a combination of a genetic predisposition for emotional dysregulation and an "invalidating environmental context," acknowledging an interaction between biology and environment over the lifespan. Crowell, Beauchaine, and Linehan (2009) extended this theory to add a genetic predisposition for impulsivity, as well. Within this model, a child is born with a predisposition for emotional dysregulation, which includes "(a) heightened emotional sensitivity, (b) inability to regulate intense emotional responses, and (c) slow return to emotional baseline" (Crowell, Beauchaine, & Linehan, 2009, p. 496). According to the biological research cited by these authors, biological vulnerabilities related to elevated hypothalamic-pituitary-adrenal axis (the stress response system), dysfunction of the dopaminergic system (which may be related to either or both depression and psychotic-like features), and indicators of low functioning of the parasympathetic nervous system are associated with the increased likelihood of engaging in emotional behavior of higher intensity, with a slower return to baseline. This biological vulnerability in the child creates a pattern of behavior that resembles what has been called a difficult temperament.

The other aspect of the Biosocial Theory is the invalidating environment. Features of an invalidating environment, discussed by Crowell et al. (2009), include an improper response to the child's emotions, inadequate parental modeling and labeling of emotional behavior, negative reinforcement of child emotions that the parent finds aversive, general ineffective parenting due to skill deficits, and insufficient family resources. The greater the number of these features, the more the environment is invalidating. Contrariwise, the fewer the number of these features and the greater the number of their opposites, the more the environment is validating. The parent's contribution to the context is one of effective or ineffective parenting, related to their own life experiences and psychopathology (such as traumatic stress, as noted by Liotti and colleagues, 2008). This creates several interactive combinations. It

would generally be a protective factor for a vulnerable child to be raised in a validating environment. However, the intensity of the vulnerable child's behavior may push the validating environment over to an invalidating one. Alternately, a child without a biological predisposition could be at high risk for BPD if the environmental context were extremely maladaptive (e.g., alcoholism, abuse, etc.). Lastly, and of greatest risk, is the vulnerable child being raised in an invalidating environment.

This aspect of Linehan's Biosocial Theory is similar to Patterson's Coercive Family Process Model (Patterson, 1976) in which mild inappropriate behavior displayed by a child eventually leads to more and more intense behavior due to the positive and negative reinforcement of the behaviors of the parent and child, respectively. Given the child and caregiver features described above, this is a likely process for a family with a predisposed child. For example, if a child engages in dysregulated emotional behavior, the caregiver may first attempt to ignore the inappropriate behavior. However, if the child increases the intensity of his behavior, an impatient caregiver may give in to the child's wants, which negatively reinforces the capitulation behavior of the caregiver and positively reinforces increased intensity of the child's emotional behavior. Conversely, if the parent interrupts the child's behavior by presentation of an aversive stimulus (e.g., yelling, spanking), the parent's behavior is negatively reinforced by the cessation of the child's behavior. As this process escalates, when the parent attempts to use punishment to control the child's behavior, he or she may have to keep increasing the intensity of their punishment in order to obtain the desired effect (cessation of inappropriate child behavior). Consequently, these two processes effectively increase inappropriate child behavior and intensive punishment (and at the high end, physical abuse) by the parents. What was once a predisposed child in a validating environment is now a predisposed child in an invalidating environment.

Another pattern of child and caregiver behavior may form in which the child's maladaptive behavior is reinforced with attention. For example, a child with a difficult temperament who is highly emotionally sensitive originally may receive an invalidation of these emotions from his or her parents. If the child's emotional intensity escalates due to the invalidation of the emotion, they may ultimately be positively reinforced for intense, aversive emotional expression, such as by comforting the child during an

intense temper tantrum (this negatively reinforces comforting behavior of the caregiver in the presence of aversive emotional expression). This pattern of reciprocal behaviors between child and caregiver then escalates.

Summary. Within these several theories of the etiology of BPD, the primary focus is on the development of attachment style and the behavior of parents. Importantly, within these theories, although these attachment problems *can* stem from abuse, no traumatic history for the child is necessary for these attachment problems to occur. Therefore, no traumatic history is necessary for the development of BPD. There is, however, another body of literature exploring the relation between a history of trauma and the development of BPD (e.g., Axelrod, Morgan, & Southwick, 2005; Golier et al., 2003; Herman, Perry, & Van der Kolk, 1989; Laporte & Guttman, 2001; Machizawa-Summers, 2007; Ogata et al., 1990; Westen, Ludolph, Misle, Ruffins, & Block, 1990; Yen et al., 2002).

Trauma, PTSD, and Comorbidity

There are several findings supporting that a history of trauma is a critical risk factor in the development of BPD (Golier et al., 2003; Herman, Perry, & Van der Kolk, 1989; Laporte & Guttman, 2001; Machizawa-Summers, 2007; McLean & Gallop, 2003; Ogata et al., 1990; Westen, Ludolph, Misle, Ruffins, & Block, 1990), with different types of interpersonal trauma being more predictive, depending on the sample. However, there are several limitations shared by the majority of the research. First, usually only interpersonal trauma is investigated, excluding technological events and natural disasters (e.g., car accident, bridge collapse, hurricane, earthquake). Inclusion of these other events would establish whether other early life traumas are or are not related to development of BPD. Also, much of the research focuses on childhood trauma, without emphasis on cumulative trauma into adulthood. Lastly, these studies use clinical samples. Research is needed on a general population sample, with a wide range of exposure to traumatic events and an array of BPD and PTSD symptoms in order to capture a spectrum of risk.

One often cited example of such research is a study conducted by Herman, Perry, and Van der Kolk (1989). These authors examined the histories of abuse (physical or sexual, witnessing domestic violence) reported by 75 mental health center outpatients participating in a larger longitudinal study of

Axis II disorders. The authors compared participants with diagnosed BPD (meeting *DSM-III* criteria and the necessary cutoff on the Borderline Personality Scale [BPS]), —borderline traits" (at least four *DSM-III* BPD characteristics and a lower cutoff on the BPS), and non-borderline patients. Results of this study showed that 81% of individuals with BPD had a history of childhood abuse; the rates were 73% and 52% for the Borderline Trait and Non-borderline Groups (the total abuse scores—ranging from 0-10—were significantly different between groups). The majority of the Borderline Group (71%) had reported physical abuse, with 67% and 62% reporting sexual abuse and witnessing domestic violence. The authors stress that early childhood abuse (0-6 years of age) was almost exclusively related to a BPD diagnosis (only four participants without a BPD diagnosis reported such trauma). Although the rates of abuse reported in childhood (7-12 years of age) and adolescence (13-18) remain significantly higher for the Borderline Group, there is an increase in trauma during these periods for the other two groups. These findings, among others, are evidence that those with BPD are more likely to have experienced abuse than those without BPD. Further, abuse occurring earlier in life may put a person at more risk for BPD than abuse later in their life. However, not all (n = 4, 19%) of the participants with BPD reported a traumatic event.

Along with the previously mentioned limitations, this study only measured three forms of interpersonal trauma, excluding neglect, emotional abuse, and criminal activity. Also, in this study, the participants were given an Impact of Event Scale (IES) for assessing only the intrusive and avoidant symptoms of PTSD; the authors report no statistically significant differences in IES scores between the three groups. However, the group means were not reported, therefore it is not known what level of PTSD symptomatology was found. Further, no comparisons were reported between IES scores, abuse history scores, and BPS scores. Such analyses would provide evidence for whether childhood abuse also leads to PTSD alone or comorbid with BPD.

Along with research showing that the majority of individuals with BPD have undergone a traumatic event, research has shown that there is a relation between BPD and PTSD. The strength of this relation, however, depends on the type of research being conducted. Research examining comorbidity of

Axis I disorders with BPD has found a comorbidity rate for BPD and PTSD of 51%-55% in a clinical sample (Yen et al., 2002; Zanarini et al., 1998) and 35% in a non-clinical sample (Zimmerman & Mattia, 1999), with significantly more PTSD diagnoses in those with BPD than without BPD in both samples (21.6%, Zanarini et al., 1998; 11.1%, Zimmerman & Mattia, 1999). Studies examining comorbidity of Axis II disorders with PTSD have been more variable. For example, in two studies with a sample of Vietnam combat veterans, Southwick, Yehuda, and Giller (1993) found that 76% of those with PTSD had a comorbid diagnosis of BPD; however, results from Bollinger, Riggs, Blake, and Ruzek (2000) indicated only a 5.7% comorbidity rate. As indicated, although PTSD has moderate comorbidity with BPD in a BPD sample, BPD in a PTSD sample shows much more variability.

Relational models. Because several core features of BPD overlap with associated features of PTSD (Gunderson & Sabo, 1993; Herman & van der Kolk, 1987), it has been questioned whether the two disorders are actually separate constructs, or one more complex construct. Boggs (2005) discusses three possible models for conceptualizing the relations between BPD and PTSD. The first model theorizes that BPD and PTSD are separate constructs, but share a common risk factor (e.g., biological, genetic, environmental). Focusing on an environmental risk factor, this model supports the hypothesis that BPD stems from a history of trauma, as does PTSD. As separate constructs, the clinical presentation of the two disorders would not greatly overlap, and so the comorbidity rates of the two disorders need not be exceptionally high. Such a position acknowledges neither BPD nor PTSD as the sole and necessary outcomes of a traumatic event. The second model poses that BPD and PTSD are not separate disorders, but instead represent different points along a continuum of psychopathology. BPD, for instance, may be a more severe form of PSTD. According to this model, the clinical presentation of the disorders does not have to be identical, but would likely overlap more than suggested by the first model. A high level of comorbidity between the two disorders would support this. In agreement with this model is select literature on complex PTSD, which suggests that interpersonal, chronic trauma beginning at a younger age leads to a wider array of PTSD symptoms, specifically, symptoms resembling those of BPD (Herman & van der Kolk, 1987, Mclean & Gallop, 2003). The last model suggests that developing one disorder

increases the risk of an individual developing the other disorder. Comorbidity rates alone would not support this model; longitudinal data would be needed to show temporal precedence of one disorder over the other.

Model I: Shared Risk Factor. Those who advocate the Shared Risk Factor Model (Gunderson & Sabo, 1993) conceptualize BPD and PTSD as two separate, distinguishable disorders that share a common risk factor. Research that supports this conceptual model of BPD and PTSD includes Heffernan and Cloitre (2000), and Zlotnick et al. (2003). For example, Zlotnick et al. (2003) examined the traumatic history, clinical features, and functional impairment of a sample of women with personality disorders (PD), comparing three groups: BPD, comorbid BPD + PTSD, and PTSD along with a different personality disorder (PTSD + PD). They found that features associated with both disorders (i.e., mistrust, aggression, suicide proneness, eccentric perceptions, detachment, and impulsivity) were not equally common among the three groups. Specifically, suicide proneness and impulsivity were more severe in the women with comorbid BPD + PTSD and those with only BPD. On the other hand, eccentric perceptions (e.g., depersonalization, derealization) were more severe in both groups of women with PTSD, as opposed to only BPD. From these findings, the authors conclude that these features may be used to distinguish between the two disorders in the given population. Of note, mistrust was found to be more severe in the BPD + PTSD Group than the BPD Group, and the PTSD Group did not differ significantly from either group. Therefore increased mistrust may be due to an interaction between the two disorders. Lastly, similar levels of detachment and aggression were found in all three groups, suggesting that these features are a commonality between the two disorders. A limitation to this study, however, is the possibility that another PD is playing a role in the symptoms, as the entire sample exhibited at least one personality disorder, and perhaps more than one. Heffernan and Cloitre (2000) also concluded that PTSD and BPD were distinct constructs due to their finding that an additional diagnosis of BPD in women with PTSD did not alter (magnify or reduce) PTSD symptoms.

Model II: Continuum. Boggs (2005) describes a Continuum Model, in which BPD and PTSD represent different points along a continuum of one construct of psychopathology. However, Boggs does

not specify which disorder is theorized to be further along the continuum from least to most psychopathology. Complex PTSD research concerning chronic trauma in childhood suggests that associated features of PTSD (which are similar to BPD behaviors) are further along the continuum than is PTSD, and that it develops when children experience chronic, interpersonal trauma. Several authors (Briere & Spinazzola, 2005; Streeck-Fischer & van der Kolk, 2000) describe multiple problematic behaviors in chronically traumatized children and adults, including an ~~"~~unpredictable sense of self" and disturbance of body image, poor impulse control and aggression towards self and others, distrust of others leading to problems with intimacy, and affect dysregulation. Many of the problematic behaviors they describe fit into the category of borderline personality disorder (e.g., disturbance of identity, aggression towards self and others, difficulties in interpersonal relationships, affect dysregulation).

Further support for this model includes a study conducted by McLean and Gallop (2003), examining whether women with sexual abuse histories were more likely to exhibit BPD along with complex PTSD. Results revealed that 94% of those with early-onset sexual abuse (before the age of 13) met criteria for both BPD and complex PTSD. Further, intrafamilial sexual abuse increased the odds of exhibiting both disorders by 26%. The authors concluded that, as almost their entire sample of sexually abused women met criteria for both disorders, this group can be separated from an Axis II diagnosis, and subsumed under a diagnosis regarding traumatic stress.

An example of the type of continuum, from least to most psychopathology, which could occur in response to interpersonal trauma, is the range of social impairment represented by a continuum from typical shyness to social anxiety, to panic with agoraphobia, to PTSD, to BPD, and finally dissociative disorders. As interpersonal trauma is more extreme and impactful, behaviors associated with normal shyness might give way to social anxiety, where anxiety and avoidance of social interactions is evident. The symptoms of panic, and avoiding people, crowds, and even going outside, would be the next level of impaired social behavior, having overlap with the avoidant symptoms of PTSD. More impairing are the oscillating, unstable, and intense interpersonal behaviors seen in persons with BPD. Finally, deteriorating to partial or complete dissociation and disturbance of identity is seen in the dissociative disorders. This, of

course, is one continuum based on the notion of more and more severe interpersonal trauma creating the risk for more and more severe disruption of interpersonal behavior. How other traumatic events might lead to this or a different continuum remains to be considered (e.g., car accident leading to phobia of cars and traveling, and reluctance to leave one‘s home).

Model III: Predisposition. According to the Predisposition Model, the presence of one disorder puts an individual at greater risk for developing the other disorder. Again, Boggs (2005) does not specify which disorder is thought to predispose the other. Axelrod, Morgan, and Southwick (2005) sought to answer this question of temporal precedence. In a study with Operation Desert Storm Veterans, these authors hypothesized that pre-war features of BPD would predict post-war PTSD symptoms, above and beyond that of combat exposure. Their results showed that pre-war BPD symptoms predicted significant variability in post-war PTSD (at 6 months after their return) above and beyond that of combat exposure. Although this supports the model, they also found that PTSD at 1 month postwar predicted BPD at 6 months post-war, beyond pre-war BPD and war trauma. These findings support a predisposition model, but not the temporal precedence of one disorder over the other. A limitation in this study is that assessment of pre- and post-war BPD was done at the same time, 6 months after returning from war.

Summary

Although there is extensive literature on the relation between BDP and PTSD, there a lack of overwhelming support for any particular relational model. Some research has found distinct clinical features of the two disorders, concluding that they are separate constructs. However, other research finds that the associated features of PTSD resemble BPD symptoms, and are better accounted for as a continuum. The majority of these studies examined a limited array of trauma, did not focus on cumulative trauma into adulthood, and included a limited sample. Lastly, there is very little research examining a disposition model.

Chapter 2: Current Study

The current study examined the relation between history of traumatic events, attachment behavior in emerging adults, self-reported recall of their parent‘s behavior, social support, and symptoms related to

PTSD and BPD. The focus is on examining specific behaviors related to PTSD and BPD, rather than a diagnosis of the disorders, in order to gain information on a full spectrum of these behaviors. Also, due to the nature of this research being cross-sectional, we assessed attachment behavior as an emerging adult, as attachment styles are conceptualized as being relatively stable (Bowlby, 1969).

In this examination, we addressed two issues. We first explored the comorbidity of BPD and PTSD behaviors in order to gain evidence for one of the above discussed Comorbidity Models (Shared Risk Factor Model *vs.* Continuum Model). For the purposes of this study, we did not investigate the Predisposition Model, as this is a cross-sectional study, and that model requires reliable, longitudinal data. Secondly, we investigated the role that attachment, parental behavior, and social support plays in the development of BPD and PTSD behaviors.

Analyzing the different relations between the reported symptoms of PTSD and BPD will provide evidence as to whether BPD and PTSD are two separate psychopathologies sharing risk factors (Model I), or are similar disorders that may fall on one continuum (Model II) reflecting increasing severity of risk. If BPD and PTSD are separate constructs, it should be possible to differentiate the characteristics of trauma (type, age of onset, chronicity) that would lead to one disorder over the other, as well as clinical features. If the *Shared Risk Factor Model* is supported, and the symptoms of the two disorders are separate, analyses of their relation to different aspects of traumatic events and symptoms would illustrate this difference. If, instead, the *Continuum Model* is supported, due to greater and greater overlap of symptoms categories, the aspects of trauma must be analyzed in terms of severity in order to establish the context of the continuum.

As previously noted, research on the relations between trauma, BPD, and PTSD has focused on childhood interpersonal trauma within a clinical population. Also, there is a lack of research looking at a spectrum of behaviors; instead the focus of findings has been on diagnoses. By expanding the research to include more types of trauma, a wider age range, a non-clinical population, and a fuller range of relevant behaviors, we were able to show a fuller spectrum of risk. If consistent with previous research, those with interpersonal, chronic trauma, with the event happening at a younger age, would be more likely to exhibit

features of BPD. Alternately, those with non-interpersonal, acute trauma, happening at an older age, would be more likely to exhibit PTSD only.

As cited earlier, some literature suggests that parental behavior leading to an insecure attachment to the primary caregiver is a necessary and sufficient condition for the development of BPD. We addressed this issue by exploring the role that parental behavior and problems in attachment may play as a risk factor. We also explored how attachment and parental behavior predict BPD, focusing on attachment and parental behavior as mediators. There are several reasons for focusing on this type of relation between BPD and attachment. The first is based on the work of Heffernan and Cloitre (2000), who found that although there was little difference in number or type of abuse between women with PSTD and BPD + PTSD, the most distinguishing etiological predictor of an additional diagnosis of BPD was verbal abuse by mother. They suggest that this points to disruptions in attachment to a primary caregiver. Also, literature shows perceived social support is a mediator in the development of PTSD in both battered women (Perrin, Van Hasselt, Basilio, & Hersen, 1996) and child sexual abuse survivors (Hyman, Gold, & Cott, 2003). Social support and attachment styles in adults have been found to be related in several ways. A study conducted by Green, Furrer, and McAllister (2007) found attachment to be a mediator in the relation between social support and participant parenting behavior. Muller, Gragtmans, and Baker (2008) studied the relation between physical abuse, attachment, and perceived social support, with social support as the outcome variable instead of the independent variable. They found that attachment mediated the relation between physical abuse and perceived social support. The interrelations between these two variables give reason to suppose they play similar roles in the development of BPD and PTSD.

Chapter 3: Method

Participants

Participants consisted of 603 West Virginia University students, with 75% being female (n = 595) and 94% Caucasian (n = 597), with a mean age of 20 years, ranging from 18 years to 44 years of age (n = 600). In this sample, 43% (n = 258) consisted of sophomore undergraduate students, with approximately 23% freshmen, 19% juniors, 15% seniors, and 1% graduate students. Seventy-six percent (n = 458) of

participants reported being single (never married) and 22% reported currently being in a relationship, but never married. The majority (95%, *n* = 567) of the sample considered their biological mother to be their primary mother figure and 85% (*n* = 502) consider their biological father to be their primary father figure. Five percent of participants reported they consider their step-father to be their primary father figure and 4% reported not having a primary father figure. Approximately 70% (*n* = 414) of participants reported that their primary mother and primary father figures are currently married to each other, with 6% (*n* = 36) of primary mother figures and 9% (*n* = 52) of primary father figures being married to another person. An additional 5% of mothers and fathers were reported to be in a relationship with another person, but not married. The majority of this sample (78%, *n* = 466) considered themselves to be Christian. Ninety percent (469 of 521) of participants reported having a GPA of at least 2.5, with 35% having a 3.5 or higher, and 3.7% of participants having a GPA of less than 1.5. Ninety-one percent (*n* = 548) of participants reported experiencing at least one non-interpersonal potentially traumatic event, and 43% (*n* = 259) of participants reported experiencing at least one interpersonal potentially traumatic event.

Measures

Borderline Symptom List (BSL). The BSL (Bohus et al., 2005) is a 95-item self-report scale that quantitatively measures symptoms of BPD. In contrast to the majority of BPD measures that focus on a categorical diagnosis, the BSL is a dimensional assessment. The BSL consists of seven factors: Self-Perception, Affect Regulation, Self-Destruction, Dysphoria, Loneliness, Intrusions, and Hostility. Each item is rated on a 5-point Likert scale, ranging from 1 (*not at all*) to 5 (*very strong*). Cronbach's alpha for the subscales ranged from .80 - .94, with a total scale Cronbach's alpha of .97. One-week test-retest reliability of the subscales ranged from $r = .72$ ($p < .001$; *Affect Dysregulation*) to $r = .87$ ($p < .001$; *Self-Perception*), with the exception of *Hostility* ($r = .44$, $p < .01$). The total scale test-retest reliability was $r = .84$ ($p < .001$). BSL total scores and subscale scores of a BPD patient sample were significantly higher than a non-clinical sample, as well as patients with different Axis I disorders (schizophrenia, anxiety, depression, obsessive compulsive disorder).

Borderline Personality Inventory (BPI). The BPI (Leichsenring, 2000) is a 52-item *true-false*

self-report questionnaire designed to identify psychopathology associated with borderline personality. It consists of four subscales: Identity Diffusion, Primitive Defense Mechanisms, Reality Testing, and Fear of Fusion. This measure is based on Kernberg's (1967) theoretical model of borderline organization and the *DSM-IV*. Sensitivity of the BPI is .85 - .89, specificity is .78-.89. This is comparable to semi-structured interviews, such as the Diagnostic Interview for Borderlines-Revised (DIB-R), but less time consuming. Further, Cronbach's alpha of .68 - .91 demonstrates satisfactory internal consistency; 1-week test-retest reliability was $r = .73$-.89 (Leichsenring, 2000).

PTSD Checklist (PCL). The PCL (Weathers, Litz, Huska, & Keane, 1994) is a 17-item self-report scale assessing for symptoms of PTSD in the past 30 days. Participants rate the severity of distress for each symptom on a 5-point Likert scale, ranging from 1 (*not at all*) to 5 (*extremely*).The three subscales on this measure correspond to the *DSM-IV* diagnostic criteria for reexperiencing, avoidance, and hyperarousal. In examining the psychometric properties of the PCL, Ruggiero, Del Ben, Scotti, and Rabalais (2003) found that internal consistency was high, with $\alpha = .94$ for Reexperiencing, .85 for Avoidance, .85 for Hyperarousal, and .87 for the total PCL. Convergent validity was established ($r < .75$) by comparing the PCL with the Impact of Event Scale (Horowitz, Wilner, & Alvarez, 1979) and the Mississippi Scale for PTSD (Vreven, Gudanowski, King, & King, 1995). Test-retest reliability was demonstrated with immediate re-testers ($r = .92$, $p < .001$), 1-week re-testers ($r = .88$, $p < .001$), and 2-week re-testers ($r = .68$, $p < .001$).

Experiences in Close Relationships Scale (ECR). The ECR (Brennan, Clark, & Shaver, 1998) is a 36-item self-report measure designed to examine attachment in adult relationships. The authors designed this scale in order to integrate a number of prior adult attachment scales, encouraging users to use a common metric to measure this construct. The two subscales, Avoidance and Anxiety, correspond to Ainsworth et al.'s (1978) categories of attachment. Participants rate how much each statement describes them on a 1 (*strongly disagree*) to 7 (*strongly agree*) Likert scale. Internal consistency was established, with $\alpha = .94$ for Avoidance and $\alpha = .91$ for Anxiety.

Norbeck Social Support Questionnaire (NSSQ). The NSSQ (Norbeck, 1995) was designed to

measure social support network, as well as functional social support. Respondents are asked to list each person they consider to be a social support and rate them from highest to lowest. They are also asked questions about each social support's Network Properties (i.e., length of relationship and frequency of contact) and Functional Properties (i.e., emotional and tangible support). The authors found that these two factors accounted for 74% of the variance in a principle axes factor analysis. Multiple scores can be obtained from this measure, including a total Network Properties score, a total Functional Properties score, and total scores (Network Properties + Functional Properties) for each person listed. The current study utilized a Network Properties score, Functional Properties score, and a Total score for their primary listed social support (Person 1).

History of Psychosocial Stressors (HPS). The HPS (Scotti et al., 2000) was developed to evaluate the number and characteristics of potentially traumatic events that participants have experienced in their lives. There are two versions of the scale: a detailed version and a brief version. The brief version asks only if you have experienced or witnessed certain types of potentially traumatic events (list types of traumas) and how distressing the event is for you currently; it does not ask for details about each specific trauma. The detailed version of this scale includes items asking what the specific trauma was, age it occurred, how long it lasted, relationship to the offender, etc. The detailed version of the scale was used in order to analyze the relations between specific trauma characteristics and BPD and PTSD symptoms. Ruggiero et al. (2003) found a 1-week test-retest reliability for the HPS of $r(90) = .82$, $p < .001$.

Parent Acceptance and Rejection Questionnaire (PARQ). The PARQ (Rohner & Khaleque, 2005) was developed to measure an individual's perceptions of parental acceptance and rejection. There are multiple versions of the PARQ, including questionnaires that ask parents about their children and questionnaires that ask children about their parents. This study utilized two 60-item self-report questionnaires, asking adult respondents about their mother (PARQ -Mother) and their father (PARQ-Father). Respondents were asked to answer how true each statement is or was about their mother or father on a 1 (*almost always true*) to 4 (*almost never true*) Likert scale. This measure consists of four subscales: Warmth/Affection (reverse scored to yield "Coldness"), Hostility/Aggression, Indifference/Neglect, and

Undifferentiated Rejection. Internal consistency for the PARQ-Mother subscales ranged from $\alpha = .83$ to $\alpha = .96$. Convergent validity was established with three scales from the Child's Report of Parent Behavior Inventory (CRPBI; Schaefer, 1965) and one scale from Brofenbrenner's Parental Behavior Questionnaire (BPB; Siegelman, 1965). Warmth/Affection correlated with CRPBI Acceptance, $r = .90$, $p < .001$, and Hostility/Aggression correlated with BPB Physical Punishment, $r = .43$, $p < .001$.

Procedure

All consenting procedures, as well as full participation in the study, were conducted online using the SONA system, West Virginia University Department of Psychology's online survey participation website. After reading and electronically signing the consent form, participants answered the series of questionnaires. Upon completion, participants were granted credit that could be used as extra credit in psychology courses. The total survey was 514 questions, with some questions not being relevant to all participants; the average time for completion was 57 minutes ($SD = 52.4$).

Data Cleaning and Missing Data

The original sample consisted of 667 participants. To ensure data were accurate and complete, participants who completed the entire survey in 30 minutes or less were deleted from the data set; 30 minutes was the minimum valid time chosen after running several pilot study participants. Participants who answered less than 80% of the items on the central questionnaires (ECR, PCL, BPI, BSL) were also deleted from the data set. The PARQ-Mother, PARQ-Father, HPS, and SSQ were not included for this deletion because the number of items completed was dependent on the participant's situation (e.g., if they had a primary mother or father figure, if they had experienced or witnessed certain events, or if they had few or multiple sources of social support). The final sample consisted of 603 participants. Missing data from the remaining sample were replaced with the modal score across participants for that item. If greater than 80% of participants did not answer an item, no replacement was made and the item was not used in further analyses. Also, if the participant answered less than 80% of either PARQ, no replacement was made and their data were not used in those analyses. Finally, if a participant reported they did not have a —primary mother figure" or —primary father figure," their data on the related PARQ questionnaire were

not used.

Analyses

The data collected in this study were analyzed in a sequence of five steps. The results provide a description of the relations between the key variables in several ways. First, descriptive statistics concerning the participants and key variables and the correlations among them were conducted. Next, factor analyses were completed, examining the overlap between the BPD and PTSD constructs. This was followed by a series of regression analyses, identifying which trauma characteristics are risk factors of these constructs. Lastly, mediation analyses were conducted to identify how attachment, parental behavior, and social support strengthen the relation between trauma risk factors and PTSD and BPD symptoms.

Chapter 4: Results

Step 1: Descriptive Statistics

Descriptive statistics (i.e., mean, median, mode, standard deviation, range) were calculated, identifying aspects of the key variables (e.g., BPI, PCL, HPS). Correlations were calculated among all variables for an initial observation of their interrelations and internal consistency.

Mean scores and gender differences. Mean scores for all measures and subscales, and any gender differences, are reported in Table 1. For those measures with subscales, a multivariate analysis of variance (MANOVA) was conducted to determine if there was an overall effect for gender. If an effect was found, an ANOVA was conducted to determine if there was a gender difference on the Total score. A MANOVA did not reveal an overall gender difference on the PARQ-Mother scale, ECR, or BPI. ANOVAs found no gender differences on the total number of interpersonal events experienced or witnessed or the number of non-interpersonal events experienced or witnessed. Chi-square analyses revealed that one interpersonal event and three non-interpersonal events were more often experienced or witnessed by males; four interpersonal events and three non-interpersonal events were more often experienced or witnessed by females. Frequency of each event experienced or witnessed by gender is reported in Tables 2 and 3. Overall gender differences were revealed for PARQ -Father, $F(4, 517) = 4.3$, p

< .01, specifically on the Hostility/Aggression subscale, $F(1, 520) = 7.3$, $p < .01$, and Undifferentiated Rejection, $F(1, 520) = 5.9$, $p < .01$, with males reporting higher scores. The PCL also showed significant gender differences, $F(3, 591) = 3.8$, $p = .01$, specifically on the Reexperiencing subscale, with females reporting higher scores, $F(1, 593) = 4.6$, $p < .05$. Using *partial eta squared* [$\eta_p^2 = SS_{effect}/(SS_{effect} + SS_{error})$; with effect sizes labeled as: "small" ≥ .01, "medium" ≥ .06, "large" ≥ .14], effect sizes were small for each subscale, $\eta_p^2 = .01$, and for overall effect, $\eta_p^2 = .02$ -.03, and ANOVAs found no gender differences in total PARQ-Father scores or PCL scores. Overall gender differences were also found on the BSL, $F(8, 586) = 6.1$, $p < .01$, specifically for the Dysphoria subscale, $F(1, 593) = 5.2$, $p < .01$, and Intrusions subscale, $F(1, 593) = 6.9$, $p < .01$, with females reporting more dysphoria and males reporting more intrusions. The effect sizes for each of these subscales was small, $\eta_p^2 = .01$, but the overall gender difference for the BSL had a medium effect size, $\eta_p^2 = .07$. An ANOVA revealed no difference in total scores on the BSL. Lastly, an overall gender difference was found for the NSSQ, $F(2, 285) = 15.8$, $p < .01$, with differences on both Functional Properties, $F(1, 586) = 31.4$, $p < .01$, and Network Properties, $F(1, 586) = 30.8$, $p < .01$; females having higher scores on both subscales, with a medium effect size, $\eta_p^2 = .05$. ANOVAs revealed females also reported more social supports, $F(1, 593) = 34.3$, $p < .01$, $\eta_p^2 = .06$ (medium effect size), and reported a higher total score for the first person they listed, $F(1, 585) = 7.9$, $p < .01$, $\eta_p^2 = .01$ (small effect size). Considering the very few comparisons that indicated possible gender differences, most of which were of a small effect size, further analyses did not include gender as a variable.

Internal consistency of measures. To ensure internal consistency of central measures used, Cronbach's alphas were calculated and all subscales of a measure were correlated with each other. The Cronbach's alphas for the PARQ-Mother and PARQ-Father were .81 and .79, respectively. For the PCL, the Cronbach's alpha was .93. The BSL and the BPI had Cronbach's alphas of .98 and .91, respectively.

Lastly, the ECR had a Cronbach's alpha of .92. Due to the nature of the measures, internal consistency is not expected for the HPS and the SSQ.

Tables 4 thru 7 provide subscale correlations for the PARQ-Mother, PARQ-Father, the BSL, and the BPI, respectively, all of which were statistically significant. The Avoidance and Anxiety subscales on the ECR were correlated, $r(603) = .26$, $p < .01$. For the PCL, Reexperiencing correlated with Avoidance, $r(603) = .72$, $p < .01$, and Hyperarousal, $r(603) = .64$, $p < .01$; Hyperarousal also correlated with Avoidance, $r(603) = .73$, $p < .01$. The Functional subscale correlated with the Network Properties subscale on the SSQ, $r(596) = .97$, $p < .01$.

Parenting questionnaires. The PARQ-Mother and PARQ-Father, with higher scores indicating more perceived parental rejection, were related to each other, $r(513) = .51$, $p < .01$. The ECR, with higher scores indicating more avoidant or anxious attachment style, was related to both the PARQ-Mother, $r(554) = .30$, $p < .01$, and PARQ-Father, $r(529) = .30$, $p < .01$. Both the PARQ-Mother and PARQ - Father were also correlated with the number of psychosocial stressors (both interpersonal and non-interpersonal) that the participant reported experiencing on the HPS, $r(554) = .24$, $p < .01$, and $r(529) = .25$, $p < .01$, respectively. The PCL correlated with both parenting questionnaires, $r(554) = .30$, $p < .01$, for Mother; $r(529) = .39$, $p < .01$ for Father.

The parenting questionnaires were also correlated with measures of BPD. For example, the PARQ-Mother and PARQ-Father were correlated with the BSL, $r(554) = .38$, $p < .01$, and $r(529) = .39$, $p < .01$, respectively. Both parenting scales also correlated with both the BPI Cut-20: $r(554) = .31$, $p < .01$, for Mother; $r(529) = .34$, $p < .01$, for Father; and the BPI total score: $r(554) = .32$, $p < .01$, for Mother, $r(529) = .34$, $p < .01$, for Father.

Attachment, PTSD, and BPD. Along with both parenting scales, the ECR correlated with the PCL, $r(603) = .40$, $p < .01$, the BSL, $r(603) = .42$, $p < .01$, the BPI Cut-20, $r(603) = .46$, $p < .01$, and the BPI total score, $r(603) = .44$, $p < .01$. The ECR was also related to the total number of potentially traumatic events (interpersonal and non-interpersonal) that an individual reported experiencing, $r(603) = .13$, $p < .01$. A univariate ANOVA found an overall effect of number of events on PCL score, with those

reporting more events experienced/witnessed having significantly higher scores, $F(1, 25) = 3.44$, $p < .01$, $\eta_p^2 = .13$ (See Figure 1). Scores on the PCL, BSL, and BPI on all subscales and total scores were correlated (see Tables 8 and 9).

Step 2: Separate Factor Analyses

Factor analyses were conducted separately on the BPI, BSL, and the PCL to examine whether these constructs behave similarly. Conceptually, the PCL has three factors, these being Reexperiencing, Avoidance, and Hyperarousal. However, some researchers have found that a four-factor model, separating emotional avoidance (numbing) from active avoidance better fit the construct of PTSD, in several populations (Schinka, Brown, Borenstein, & Mortimer, 2007; Shelby, Golden-Kreutz, & Andersen, 2005; Smith, Redd, DuHamel, Vickberg, & Ricketts, 1999). Factor analyses have also been conducted for BPD. Upon conducting a confirmatory factor analysis of Diagnostic Interview for DSM-IV Personality Disorders, Sanislow et al. (2002) found that a three-factor model fit the construct of BPD: Disturbed Relatedness, Behavioral Dysregulation, and Affect Dysregulation. Different results have been found for the BPI for both adolescents (Chabrol et al., 2004) and adults (Leichsenring, 2000). Six factors were found in both cases; however, a statistically problematic issue is that the final three factors accounted for very small percentage of variances (e.g., 4%, 5%) and included only two to three items on those factors.

First, a principle components analyses (PCA) were conducted for the purpose of data reduction. Then, principle axis factorings (PAF) were conducted to identify latent constructs. Scree plots were used to determine the number of factors to keep, with the cutoff at the inflection point (Fields, 2005).

PTSD. A PCA found that a three-factor structure accounted for 61.4% of the variance on the PCL, with all items loading above .50. The PAF results deviated from prior research (Schinka, Brown, Borenstein, & Mortimer, 2007; Shelby, Golden-Kreutz, & Andersen, 2005; Smith, Redd, DuHamel, Vickberg, & Ricketts, 1999). The scree plot suggested a three-factor solution, with 54.0% of the variance accounted for. However, with this solution, the items did not group together consistent with the conceptual model (i.e. reexperiencing, avoidance, hyperarousal), and the third factor contained only two items. The Keiser criterion (Fields, 2005) suggested a two-factor solution, accounting for 50.6% of the

variance. This solution (see Table 10) clustered all Reexperiencing items together with three Avoidance items and two Hyperarousal items. The remaining Avoidance and Hyperarousal items fell on the second factor. This solution seems to cluster together those items that directly reference an event (Event Related; e.g., dreams about the event) from those that do not directly reference an event (General Symptoms; e.g., feeling "cutoff" from others, trouble concentrating).

BPD. For the BSL, a PCA found that a four-factor structure accounted for 53.9% of the variance, with all items loading above .40. Using a scree plot, the PAF revealed a four-factor solution fit the data best, with all items loading greater than .35. It accounted for 51.9% of the variance. On inspection, it was found that all nine reverse scored items (all from the Dysphoria subscale) loaded between .65 and .79 on a separate factor. As this factor appears to be a separate construct (i.e., being "mentally healthy"), it was removed from further analyses. A second PCA was conducted with the remaining 86 items, revealing a three-factor structure that accounted for 52.9% of the variance, with all items loading above .40. A second PAF was conducted; the scree plot revealed a three-factor solution fit the data best, with all items loading greater than .35 and accounting for 51.7% of the variance (see Table 11). The first factor included items asking about Emotional and Interpersonal Dysfunction (EID). The second factor asked questions concerning Reexperiencing and Avoidance of reminders of a troubling event (RA). Finally, the third factor asked questions about Worthlessness and Suicidal Ideation (WSI).

Three of the 52 items on the BPI were not answered by over 50% of the sample. These three items requested participants answer in a different manner than the rest of the questions (i.e., "check all that apply" format), which may have been the cause of the large amount of missing data on these items. These items were removed from further analyses. A PCA found that a four-factor structure accounted for 33.8% of the variance on the BPI. However, three items did not load above .35; these items were dropped for the PAF. There were eight additional items that failed to load at or above .35 on the PAF. Due to a low percentage of variance accounted for and 25% of the items failing to load onto a factor, the BPI was considered an unstable measure and dropped from further analyses. See Table 12 for correlations between the new factor scores and total scores of the PCL and BSL.

Step 3: Combined Factor Analyses

Following separate factor analyses, a factor analysis combining the BSL and PCL was conducted; the BPI was planned to be included in this analysis, but was found to be an unstable measure. There were several possible outcomes from this analysis. One possibility was finding independent factors containing PTSD items and BPD items, with minimal overlap between them. This would suggest that BPD and PTSD are two separate constructs, giving partial support for the Shared Risk Factor Model (which assumes BPD and PTSD are different disorders). For further support of this model, an identification of the shared risk factors is required. In an alternative outcome, there would be multiple factors, some of which contain items from one construct and others that contain items from both constructs. This would suggest varying degrees of overlap among constructs which would reflect on issues of comorbidity and, depending on the pattern of overlap, may gain support for the Continuum Model.

When the PCL and the BSL were combined, a PCA found that a four-factor solution accounted for 53.1% of the variance, with all items loading above .38. Using a scree plot, a PAF revealed a four-factor solution fit the data best, with all items loading greater than .38 and accounting for 50.8% of the variance (see Table 13). Items from the PCL loaded on the same two factors seen in the prior factor analyses, with two items from the BSL (involving insomnia and trouble concentrating) loading on the General Symptoms factor. The BSL items loaded on two factors that reflected the EID and RA factors from the prior analyses, with WSI being spread across both factors.

Step 4: Identifying Risk Factors

The outcomes of the above analyses provided guidance in this next step, in that the outcome scores on the BSL and PCL were used as the outcome variables in order to identify risk factors. This step involved a series of regression analyses in which the different aspects of traumatic events (e.g., interpersonal vs. other types of trauma) predicted scores on the PCL and BSL. If BPD and PTSD were found to be highly overlapping constructs (such as fitting within the three factors of PTSD), then regression analyses would have been used to determine which aspects of trauma are related to increasing severity of BPD/PTSD. However, the factor analyses revealed that PTSD and BPD, as measured here, are

separate constructs, supporting the "Shared Risk Factor Model." Therefore, regression analyses were used to determine whether the shared risk is trauma in general, a specific type of trauma (e.g., interpersonal *vs.* other), or severity/chronicity of trauma or type of trauma (e.g., interpersonal trauma beginning at an early age and lasting for multiple years). In other words, we examined which aspects of trauma lead to BPD, PTSD, or both, as discussed in the Shared Risk Model. If the prior analyses had supported PTSD and BPD as falling on a continuum of severity, these analyses would have determined which aspects of trauma lead to what point on that continuum.

Therefore, a series of ANOVAs and backward linear regressions were conducted to determine which characteristics of traumatic experiences may be shared risk factors for PTSD and BPD, and which may differentially predict these constructs. The first trauma characteristic examined was *Type* of event (Interpersonal event vs. Non-Interpersonal event). An "interpersonal" event was defined as a potentially traumatic event in which another individual perpetrated against the participant (e.g., assault, robbery, sexual abuse). There were no significant differences in mean scores on the PCL and BSL between those having at least one non-interpersonal event and those who did not have any non-interpersonal events. However, mean scores on both scales were significantly different for those who experienced at least one interpersonal event ($M = 35.5$, $SD = 10.5$; $M = 58.1$, $SD = 51.9$) versus those who had not ($M = 29.8$, $SD = 13.0$; $M = 42.1$, $SD = 49.2$), $F(1, 601) = 35.77$, $p < .05$, $\eta_p^2 = .06$, $F(1, 601) = 15.06$, $p < .05$, $\eta_p^2 = .02$ for the PCL and BSL, respectively. Experiencing at least one potentially traumatic interpersonal event is a shared risk factor for a higher level of PTSD and BPD behaviors.

The second trauma characteristic examined was number of *Incidents* of traumatic events. A backward regression revealed that the total number of both non-interpersonal events, $B = .10$, $t(1) = 2.07$, $p < .05$, and interpersonal events, $B = .25$, $t(1) = 5.05$, $p < .01$, experienced predicted higher scores on the PCL, $F(2, 600) = 35.73$, $p < .01$, $R^2 = .10$. For the BSL, only total number of interpersonal events predicted higher scores, $B = .28$, $t(1) = 7.17$, $p < .01$, $F(1, 601) = 51.45$, $p < .01$, $R^2 = .08$. Therefore, experiencing a greater total number of interpersonal events is a shared risk factor for PTSD and BPD, but experiencing a greater number of non-interpersonal events is a risk factor for PTSD only.

Next, the age that a traumatic event occurred (before or after 12-years-old) was used to predict scores on the PCL and BSL. A backward regression revealed that total number of types of both non-interpersonal events, $B = .09$, $t(1) = 2.17$, $p < .05$, and interpersonal events, $B = .28$, $t(1) = 6.47$, $p < .01$, experienced after the age of 12 predicted higher PCL scores, $F(2, 602) = 38.19$, $p < .01$, $R^2 = .11$. On the other hand, total number of types of interpersonal traumatic events experienced both before age 12, $B = .10$, $t(1) = 1.84$, $p = .07$, and after age 12, $B = .21$, $t(1) = 4.03$, $p < .01$, predicted higher BSL scores, $F(2, 602) = 26.15$, $p < .01$, $R^2 = .08$. These regressions show that, older age of onset of an event is a better predictor of PTSD symptoms, and that type of event (i.e., interpersonal event) is a better predictor of BPD symptoms, regardless of age.

The last traumatic event characteristic examined was *chronicity* of the events. This variable was defined as the number of age groups that the event occurred in; these age groups were 0-4-years-old, 5-8-years-old, 9-12-years-old, 13-16-years-old, 17-20-years-old, and over 21-years-old. Backward linear regression showed that experiencing both interpersonal events, $B = .29$, $t(1) = 6.47$, $p = .01$, and non-interpersonal events, $B = .08$, $t(1) = 1.80$, $p = .07$, within a greater number of age groups predicted higher scores on the PCL , $F(2, 602) = 40.10$, $p < .01$, $R^2 = .12$. Only experiencing interpersonal events, $B = .30$, $t(1) = 7.69$, $p = .01$, within a greater number of age groups predicted higher BSL scores, $F(1, 601) = 59.14$, $p < .01$ $R^2 = .09$. More chronic traumatic events are a risk factor for PTSD symptoms, regardless of event type; however, only the chronicity of interpersonal events is a risk factor shared with BPD symptoms.

Finally, event type, number of incidents, and chronicity were entered into a backward linear regression together to find which trauma characteristics were the strongest predictors of higher scores. More chronic interpersonal traumatic events, $B = .29$, $t(1) = 6.47$, $p < .01$, and more chronic non-interpersonal events, $B = .08$, $t(1) = 1.80$, $p = .07$, predicted higher PCL scores, $F(2, 602) = 40.10$, $p < .01$, $R^2 = .12$. Only chronicity of interpersonal events, $B = .30$, $t(1) = 7.69$, $p < .01$, predicted higher BSL scores, $F(1, 601) = 59.14$, $p < .01$, $R^2 = .09$. Number of incidents of each type of event did not predict PTSD or BSL scores.

Step 5: Mediation Analyses

Again, the outcomes of the prior steps steered the course of the analyses conducted in Step 5. BPD and PTSD appear to be separate constructs with several shared trauma-related risk factors (i.e., experiencing an interpersonal traumatic event, having a higher number of interpersonal types of trauma, having chronic interpersonal trauma), as well as risk factors that differentiate them (i.e. experiencing a greater number of non-interpersonal events, older age of trauma onset, more chronic non-interpersonal events). Parental behavior, attachment, and social support are thought to be aspects of a person's environment that are relevant to the development of BPD and PTSD, respectively. Thus, having identified the status of BPD and PTSD as constructs and what aspects of trauma best predict them, several mediation analyses were conducted, in which attachment, parental behavior, and social support were entered as mediators between trauma and BPD/PTSD as outcome behaviors. These analyses informed us whether a traumatic event alone is the risk factor, or if other aspects of the social environment play a key role in impacting these behaviors.

When all trauma characteristics were examined together, more chronic trauma of *either* type best predicted higher scores on the PCL. Therefore, a total chronicity score was used as the predictor variable for the mediation analyses for PTSD. On the other hand, only more chronic *interpersonal* traumatic events best predicted higher scores on the BSL. As such, this score was used as the predictor variable for the mediation analyses of BPD. Several mediation analyses were conducted, in which the ECR, PARQ, and NSSQ were entered as the mediators between the predictor variables and BPD or PTSD outcome behaviors.

Using the Sobel test (which provides a *z* score), total PARQ score (adding total scores for mother and father), NSSQ Functional Properties score, NSSQ Total Score for Person 1, and total score on the ECR were all separately entered as mediator variables, all being significantly correlated with both predictor and outcome variables. The NSSQ Network Properties score was originally planned to enter the mediation analyses, but was removed as it did not significantly correlate with the predictor and outcome variables. For the PCL, only the total PARQ score acted as a mediator in the relation between the

predictor variable and PCL score, $z = 4.92$, $p < .01$, $SE = .02$, $R^2 = .17$ (see Figure 2). Total PARQ score, $z = 5.93$, $p < .01$, $SE = .31$, $R^2 = .18$, total social support score for the first person listed, $z = 3.06$, $p < .01$, $SE = .16$, $R^2 = .13$, and total ECR score, $z = 3.31$, $p < .01$, $SE = .25$, $R^2 = .22$, all mediated the relation between the predictor variable and BSL score (see Figure 3).

In the case of BPD, it is also possible that a negative relationship with ones‘ parents predicts higher BSL scores. This model is similar to the attachment etiology theories that claim significant negative interactions with a primary caregiver are a necessary and sufficient condition to lead to BPD. However, experiencing interpersonal traumatic events within more age groups (the predictor variable for BPD) may mediate this relation. Using the Sobel test, results showed that this mediation model was also significant, $z = 4.32$, $p < .01$, $SE = .02$ (see Figure 4).

Chapter 5: Discussion

Posttraumatic stress disorder and borderline personality disorder have been conceptualized as two separate constructs in the *DSM-IV*, with distinct etiologies and behavioral patterns. Yet, there is a body of literature (e.g., in developmental and traumatic stress literature) that suggest these constructs may be highly related. Although the etiology of PTSD is clearly stated in the *DSM-IV* and widely agreed to in the literature, the etiology of BPD is still being debated. Some theories claim that negative interactions with primary caregivers, leading to an insecure attachment style, are necessary and sufficient conditions to lead to BPD. Other theories stress that experiencing a traumatic event, specifically an interpersonal traumatic event occurring at a young age, is necessary for the development of BPD. If this is the case, PTSD and BPD would share similar etiologies and whether these constructs are actually separate would be an empirical question. Boggs (2005) presented three possible theoretical relations between BPD and PTSD: A *Shared Risk Factor Model*, *Continuum Model*, and *Predisposition Model*. This study attempted to gain empirical evidence for one of the first two models, using a non-clinical sample, examining multiple aspects of potentially traumatic events, and a spectrum of reported BPD and PTSD behaviors. The second goal of this study was to understand if different aspects of the social environment strengthened the relations between certain traumatic event characteristics and reported BPD or PTSD behaviors.

It was found that BPD and PTSD, as measured here, appear to be separate constructs, which adds empirical support for the *Shared Risk Factor Model*. The *Continuum Model,* which conceptualized BPD to be a more severe, complex form of PTSD, was not supported. Experiencing a traumatic event increases the risk that an individual will engage in these problematic behaviors, yet these clusters of behaviors are separate. Although there are shared risk factors, there are also risk factors that differentially predict these two outcomes. This study found that experiencing at least one interpersonal traumatic event, experiencing a greater number of incidents of interpersonal trauma, and experiencing interpersonal trauma across more age groups are all shared risk factors for reporting a greater number of behaviors related to PTSD and behaviors related to BPD. However, experiencing a greater number of incidents of non-interpersonal trauma, experiencing a traumatic event after 12-years-old, and experiencing non-interpersonal traumatic events across more age groups were shown to only predict higher reports of PTSD symptoms. Certain characteristics of *interpersonal* events predict higher reports of PTSD and BPD symptoms; only PTSD is predicted by certain characteristics of *non-interpersonal* events. These results are similar to previous research examining the types of trauma that predict BPD (more chronic, interpersonal trauma; e.g., van der Kolk et al., 1996) However, this study failed to find that trauma happening at a younger age differentially predicted BPD, which differs from similar past research. This study also did not find a differential predictor of higher reports of BPD symptoms alone. One characteristic of interpersonal trauma that was not explored in this study was relationship of the offender to the victim of the traumatic event, which may be a trauma characteristic that differentially predicts BPD and not PTSD.

The trauma characteristic that was the strongest predictor of higher reports of BPD symptoms was more chronic, interpersonal trauma; more chronic trauma, regardless of event-type best predicted higher reports of PTSD symptoms. Therefore, these were the risk factors used as predictor variables when analyzing which aspects of the social environment might mediate the relations between traumatic events and reported PTSD or BPD behavior. This study found that only reported parental behavior toward the participant mediated the relation between chronic trauma and PTSD. Of note, social support was not found to mediate the relation between traumatic events and PTSD, which deviates from prior research

(Perrin, Van Hasselt, Basilio, & Hersen, 1996; Hyman, Gold, & Cott, 2003). One explanation is that this mediation model examined a range of both interpersonal and non-interpersonal events, whereas the previous literature typically focuses on a single kind of interpersonal event (e.g., physical abuse). Also, those studies used a different measure of social support. Potentially, when events of a non-interpersonal nature occur, individuals in this age group may be more likely to fall back on their families for support. Alternately, when the events are more interpersonal (and more likely to be due to the family) a broader range of social supports are important.

Reported parental behavior, reported current attachment behavior, and social support from the participant‘s primary person listed all mediated the relation between more chronic, interpersonal trauma and reported BPD symptoms. This may be evidence that those engaging in more BPD-type behaviors are less able to cope with stressors due to lack of support from multiple domains. Alternatively, the lack of support and current attachment behavior may simply be an artifact of BPD symptoms. There is a potential confound for the analysis of parental behavior, as it may be the parents who are the abusers reported under chronic, interpersonal trauma.

This study supports borderline personality disorder as being an outcome of chronic, interpersonal events, with poor parenting behavior, insecure attachment, and poor primary social support as factors that increase the likelihood of a poorer outcome. Also, more parental rejection is correlated with BPD, with more chronic, interpersonal trauma strengthening that relation. This is consistent with both attachment etiology theories of BPD and traumatic stress theories of BPD. This study also supports that BPD is related to PTSD, specifically that PTSD and BPD are separate constructs with a shared risk factor of chronic, interpersonal trauma. Although these clusters of behaviors appear to be separate, it is important to note their similarities. Because they have multiple shared risk factors, it is likely that the functions of some of these behaviors are similar. For example, self-injury or dangerous, impulsive behaviors in BPD may serve to avoid reexperiencing just as social withdrawal and staying away from reminders does in PTSD. Therefore, it is important to have a trauma-informed perspective when evaluating and treating individuals who present with BPD behaviors.

Strengths and Limitations

This study has several strengths. Previous studies typically utilized a smaller, clinical sample, which resulted in an examination of only more severe BPD and PTSD symptoms. Further, these studies focused on interpersonal trauma without regard to the chronicity of these events. In the current study, we were able to obtain a large sample size with a minimal amount of missing data. Also, we utilized a non-clinical sample, which resulted in a broad range of symptoms (e.g., no symptoms to severe symptoms). Lastly, many types and aspects of traumatic events, including the chronicity of those events, were measured. This allowed us to examine multiple pathways of events and outcomes of behavior.

One limitation to this study is the purely self-report nature of the data. Participants may over-estimate or under-estimate symptoms, or may have different thresholds for what is, for example, ―moderately distressing.‖ This could affect the soundness of the data. Also, the questionnaire packet was long. Participant fatigue may lead participants to answer quickly or randomly. This could cause spurious relations between variables, or lead to missing actual relations (Type I or Type II error). However, the high internal consistency of the measures, and aspects of validity (correlations among measures) argue for the soundness of the data set.

Another limitation to this research is the nature of the concepts discussed. Constructs such as ―attachment,‖ particularly when not directly measured with overt behavior, are difficult to evaluate empirically. Further, when attempting to examine etiology of complex clusters of behavior, such as BPD, it is difficult to see the ―full picture,‖ as it is likely a complicated combination of events within the environment that lead to these patterns of behavior. This is even more difficult to study when examining these events retrospectively. For example, as discussed in the Linehan's Biosocial Model, genetic factors may also play a role in the development of these behaviors, which were not investigated here.

A final limitation pertains to the differences between the results from the separate factor analyses and that from previous research. Although the PCL factored in a coherent manner, the results were different from the typical conceptual factors. This raises a question whether the BSL also did not factor how it ―should have,‖ conceptually. Finally, the BPI was found to be an unstable measure with this

population. Given these measurement issues, particularly with BPD, it remains possible that PTSD and BPD are overlapping constructs. As there is currently no BPD measure taken directly from the *DSM-IV* (APA, 2000) criteria, future research could build such a measure and utilize it in similar factor analyses.

Given these research challenges, one should interpret these findings cautiously. However, even with these limitations, this study contributes to the literature on the relation between potentially traumatic events, PTSD, and BPD, with more inductive evidence to support that BPD and PTSD are separate constructs, with certain characteristics of traumatic events as shared risk factors for their development.

Future Directions

As with the majority of existing research examining risk factors for the development BPD and PTSD, this study was cross-sectional and retrospective. This aspect is another limitation that could only be addressed by future research being of a longitudinal nature. Clearly, this would be an intensive and expensive process requiring a large sample size followed over decades. To begin that process, however, an understanding of potential risk factors needs to be gathered in cross-sectional studies, with the realization that these risk factors might be weak, overlapping, or proxies for one another (Kramer et al., 2001). In the current study, several aspects of the social environment were environment were examined as potential mediators between traumatic event characteristics and symptoms. As Kramer and colleagues note, to be a mediator, the predictor variable must temporally predict the potential mediator. However, this is not easily done in cross-sectional research, particularly with a mediator as diffuse as one‘s social environment and a predictor as diffuse and the chronicity of traumatic events. That is, an individual is embedded in a social environment both prior to and following a particular event and may experience a sequence of multiple events. This study included multiple events over many years and the social environment at several points in time (e.g., the PARQ measured previous parental behavior, and the NSSQ measured current social support). Establishing temporal precedence would thus be extremely difficult, especially retrospectively. Still, the selected mediators accounted for meaningful proportions of the variance (using effect size rather than *p* values as per Kramer et al.) in the relation between traumatic event characteristics and symptoms. Future cross-sectional research might attempt to measure the social

environment at discrete ages, as this study did for traumatic events. This will still have the problem of retrospective recall. Longitudinal research might measure these variables at different points in time, having found, in this and other studies, that the social environment is important in the development of traumatic stress and borderline personality symptoms. Whether these are true mediators, proxy risk factors, or overlapping risk factors remains to be determined by such research.

Broadly, there were no meaningful gender differences for most of the measures used in this study, particularly for traumatic events. There appear to be gender differences for the overall measures of borderline personality symptoms (BSL) and social support. These relations suggest that gender may moderate the impact of trauma on these outcome measures; these analyses were not conducted for the current study. In addition to gender as a moderator, future research might look at the relation between the perpetrators in interpersonal traumatic events and outcome.

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Table 1

Descriptive Statistics for all Measures and Subscales

Measures/Statistics	N	Mean	SD	Min. (Possible)	Max. (Possible)
PARQ-Mother					
Hostility/Aggression	549	23.6	7.8	15 (15)	60 (60)
Indifference/Neglect	549	20.6	6.7	15 (15)	54 (60)
Undifferentiated Rejection	549	15.8	5.0	10 (10)	40 (40)
Coldness	549	26.8	9.2	20 (20)	77 (80)
Total Score	549	86.7	25.6	60 (60)	217 (240)
PARQ-Father					
Hostility/Aggression					
Male	129	24.9	9.7	15 (15)	54 (60)
Female	393	22.5	8.3	15 (15)	60 (60)
Indifference/Neglect	522	23.5	8.9	15 (15)	60 (60)
Undifferentiated Rejection					
Male	129	16.9	5.9	10 (10)	35 (40)
Female	393	15.5	5.4	10 (10)	40 (40)
Coldness	522	31.4	12.6	20 (20)	80 (80)
Total Score	522	93.8	31.9	60 (60)	233 (240)
ECR					
Avoidance	595	56.6	20.2	18 (18)	125 (126)
Anxiety	595	69.5	18.8	18 (18)	120 (126)
Total Score	595	126.2	31.0	38 (36)	227 (252)
HPS					
Non-Interpersonal	595	5.6	3.7	0 (0)	24 (31)
Interpersonal	595	1.0	1.4	0 (0)	8 (10)

Table 1 (continued)

Measures/Statistics	N	Mean	SD	Min. (Possible)	Max. (Possible)
PCL					
Reexperiencing					
Male	149	9.5	4.1	5 (5)	25 (25)
Female	446	10.4	4.5	5 (5)	25 (25)
Avoidance	595	12.7	5.0	7 (7)	31 (35)
Hyperarousal	595	9.8	4.2	5 (5)	24 (25)
Total score	595	32.7	12.2	17 (17)	75 (85)
BSL					
Self-Perception	595	9.8	11.3	0 (0)	57 (76)
Affect Regulation	595	10.7	9.7	0 (0)	45 (52)
Self Destruction	595	4.1	6.5	0 (0)	41 (44)
Dysphoria					
Male	149	18.5	7.9	0 (0)	32 (40)
Female	446	20.1	7.6	0 (0)	36 (40)
Loneliness	595	7.8	8.7	0 (0)	48 (48)
Hostility	595	4.5	4.0	0 (0)	22 (24)
Intrusions					
Male	149	4.5	7.2	0(0)	41 (44)
Female	446	3.1	5.0	0 (0)	27 (44)
No Subscale	595	8.1	8.5	0 (0)	39 (48)
Total Score	595	68.1	54.6	0 (0)	286 (380)

Table 1 (continued)

Measures/Statistics	N	Mean	SD	Min. (Possible)	Max. (Possible)
BPI					
Identity Diffusion	595	2.6	2.5	0 (0)	12 (12)
Primitive Defenses	595	1.6	1.9	0 (0)	8 (8)
Impaired Reality Testing	595	.24	.60	0 (0)	3 (3)
Fear of Fusion	595	1.6	1.7	0 (0)	8 (8)
Cut 20	595	3.4	3.6	0 (0)	19 (19)
Total Score	595	9.7	7.8	0 (0)	47 (47)
NSSQ					
Number of Supports					
Male	149	4.2	3.3	1 (0)	15 (15)
Female	446	6.3	4.0	1 (0)	15 (15)
Functional Properties					
Male	146	88.5	61.9	0 (0)	353 (360)
Female	442	129.0	79.8	0 (0)	360 (360)
Network Properties					
Male	149	41.7	29.9	1 (0)	149 (165)
Female	446	60.6	36.9	1 (0)	154 (165)
Total Score: Person 1					
Male	146	21.2	4.5	0 (0)	24 (24)
Female	441	22.1	3.1	0 (0)	24 (24)

Note. Items 12 and 13 on the Impaired Reality Subscale, and item 49 on the Cut-20 from the BPI were not used, due to insufficient responding. Descriptive statistics reflect this.

Table 2

Frequency of Non-Interpersonal Events by Gender

Event	Frequency		Chi-Square	Higher Frequency:
	Males (N = 149)	Females (N = 446)		
Motor Vehicle Accident	101	314	NS	
Train Accident	9	13	NS	
Boat Accident	4	16	NS	
Pedestrian Accident	31	71	NS	
Natural Disaster	58	165	NS	
Fire	37	95	NS	
Industrial/Construction Accident	10	24	NS	
Exposure to Toxins	6	16	NS	
Evacuation	17	54	NS	
Military Combat	5	7	NS	
Military Support (Non-Combat)	6	7	NS	
Exposure to Warzone as a Civilian	3	1	5.35*	Males
Exposure to Bombing or Terrorism	39	157	4.12*	Females
Living in High-crime Area (i.e., frequent robberies, violence, etc.)	19	56	NS	
Being in Jail/Prison	16	44	NS	
Emergency Rescue as a Civilian (e.g., EMT)	27	57	NS	
Seeing a Dead Body (Not at Funeral)	26	66	NS	
Exposure to Mass Injuries or Fatalities	10	7	10.64**	Males
Life Threatening Illness	52	188	NS	
Abortion or Miscarriage (Self or Partner)	18	91	5.17*	Females

Event	Frequency		Chi-Square	Higher Frequency:
	Males (N = 149)	Females (N = 446)		
Serious Mental Illness	22	77	NS	
Serious Mental Illness of Someone Close	28	139	8.47**	Females
Serious Physical Disability or Injury	45	98	4.14*	Males
Death of Spouse/Significant Other	26	77	NS	
Death of Child	15	48	NS	
Death of Parent	15	44	NS	
Death of Other Significant Person	104	345	NS	
Divorce/Separation	37	134	NS	
Separation from Family (e.g., adoption)	10	47	NS	
Viewing Homicide or Attempted Homicide	7	13	NS	
Attempting or Viewing Suicide or Att. Suicide	25	85	NS	
Severe Loss of Resources (e.g., homelessness)	10	24	NS	

*Correlations significant at $p < .05$.

**Correlations significant at $p < .01$.

Table 3

Frequency of Interpersonal Events by Gender

Event	Frequency		Chi-Square	Higher Frequency:
	Males (N = 149)	Females (N = 446)		
Robbery	34	68	4.51*	Males
Neglect as a Child	6	14	NS	
Emotional Abuse	22	134	13.48**	Females
Physical Assault without Weapon	30	76	NS	
Physical Assault with Weapon	11	22	NS	
Kidnapping (As adult or child)	2	7	NS	
Sexual Abuse 1 (Exposure of genitals/pornography)	3	35	6.36**	Females
Sexual Abuse 2 (Fondling)	2	40	9.90**	Females
Sexual Assault (oral/vaginal/anal penetration)	2	31	6.71**	Females

*Correlations significant at $p < .05$.

**Correlations significant at $p < .01$.

Table 4

Parental Acceptance and Rejection Questionnaire - Mother Subscale Correlations

Subscales	Hostility/Aggression	Indifference/Neglect	Undifferentiated Rejection
Indifference/Neglect	.70		
Undifferentiated rejection	.89	.70	
Coldness	.65	.86	.62

Note. All correlations significant at $p < .01$.

Table 5

Parental Acceptance and Rejection Questionnaire - Father Subscale Correlations

Subscales	Hostility/Aggression	Indifference/Neglect	Undifferentiated Rejection
Indifference/Neglect	.65		
Undifferentiated rejection	.90	.68	
Coldness	.61	.89	.61

Note. All correlations significant at $p < .01$.

Table 6

Borderline Symptom List Subscale Correlations

Subscales	Self Perception	Affect Regulation	Self Destruction	Dysphoria	Loneliness	Hostility	Intrusions
Affect Regulation	.84						
Self Destruction	.89	.78					
Dysphoria	.49	.55	.44				
Loneliness	.87	.87	.84	.52			
Hostility	.73	.77	.69	.39	.75		
Intrusions	.83	.70	.81	.30	.73	.71	
No subscale	.91	.90	.85	.56	.90	.76	.76

Note. All correlations significant at $p < .01$.

Table 7

Borderline Personality Inventory Subscale Correlations

Subscales	Identity Diffusion	Primitive Defenses	Impaired Reality Testing
Primitive Defenses	.71		
Impaired Reality Testing	.57	.51	
Fear of Fusion	.64	.56	.45

Note. All correlations significant at $p < .01$.

Table 8

PTSD Checklist Total Score and Subscale Correlations with the Borderline Symptom List and the Borderline Personality Inventory Total Scores and Subscales

Subscales and Total Scores	PCL			
	Reexperiencing	Avoidance	Hyperarousal	Total Score
BSL				
Self Perception	.54	.67	.59	.67
Affect Regulation	.62	.68	.64	.73
Self Destruction	.48	.59	.49	.59
Dysphoria	.33	.39	.39	.41
Loneliness	.55	.68	.59	.68
Hostility	.52	.61	.63	.66
Intrusions	.53	.57	.52	.61
No subscale	.56	.69	.64	.71
Total Score	.59	.70	.64	.73
BPI				
Identity Diffusion	.43	.52	.54	.56
Primitive Defenses	.48	.55	.58	.60
Impaired Reality Testing	.29	. 36	.37	.38
Fear of Fusion	.35	.47	.46	.48
Cut-20	.44	. 57	. 57	. 59
Total Score	.45	.56	. 59	. 59

Note. All correlations significant at $p < .01$.

Table 9

Total Score and Subscale Correlations of the Borderline Symptom List and the Borderline Personality Inventory

BSL	BPI					
	Identity Diffusion	Primitive Defenses	Impaired Reality Testing	Fear of Fusion	Cut-20	Total Score
Self Perception	.62	.63	.40	.53	.67	.63
Affect Regulation	.60	.66	.34	.51	.64	.62
Self Destruction	.58	.60	.41	.51	.65	.60
Dysphoria	.38	.44	.15	.32	. 40	. 36
Loneliness	.60	.66	.35	.55	.67	.62
Hostility	.59	.61	.39	.51	.63	.63
Intrusions	.58	.55	.50	.61	. 61	. 60
No subscale	.63	.67	.39	.55	. 68	. 66
Total Score	.65	.69	.41	.57	. 71	.67

Note. All correlations significant at $p < .01$.

Table 10

Factor Analyses of the PTSD Checklist, Showing Loadings of Conceptual Scales of Reexperiencing (RE), Avoidance (AV), and Hyperarousal (HA) in the Two-Factor Solution

PCL Item	Original Factor	Factor Loading	
		1	2
1. Repeated, disturbing memories, thoughts, or images about it	RE	.71	
2. Repeated, disturbing dreams about it	RE	.65	
3. Suddenly acting or feeling as if it were happening again (as if you were reliving it)	RE	.67	
4. Feeling very upset when something reminded you of it	RE	.74	
5. Having physical reactions (e.g., heart pounding, trouble breathing, sweating) when something reminded you	RE	.69	
6. Avoiding thinking about or talking about it or avoiding having feelings related to it	AV	.61	
7. Avoiding activities or situations because they reminded you of it	AV	.71	
8. Trouble remembering important parts of it	AV	.48	
16. Being "super-alert" or watchful or on guard?	HA	.49	
17. Feeling jumpy or easily startled?	HA	.53	
9. Loss of interest in activities that you used to enjoy	AV		.68
10. Feeling distant or cut off from other people	AV		.77
11. Feeling emotionally numb or being unable to have loving feelings for those close to you	AV		.72
12. Feeling as if your future will somehow be cut short	AV		.60
13. Trouble falling or staying asleep	HA		.59
14. Feeling irritable or having angry outbursts	HA		.62
15. Having difficulty concentrating	HA		.67

Table 11

Factor Analyses of the Borderline Symptom List, Showing Original Scales of Affect Regulation (AR), Loneliness (LON), Self Perceptions (SP), Self Destruction (SD), Hostility (HOS), Intrusions (INT), and Items Only in the Total Score (TOT), with New Factor Loading Labels of Emotional and Interpersonal Dysfunction (EID),Reexperiencing and Avoidance (RA), and Worthlessness and Suicidal Ideations (WSI) in the Three-Factor Solution

BSL Item	New Factor	Original Factor	Factor		
			1	2	3
30 I experienced stressful inner tension	EID	AR	.70		
56 I found myself in emotional chaos	EID	AR	.62		
91 I was overwhelmed by my feelings	EID	AR	.61		
31 I was afraid of being abandoned by someone close to me	EID	AR	.65		
50 I felt insecure	EID	AR	.61		
10 I was afraid of making mistakes	EID	AR	.60		
4 I was suffering from massive states of anxiety	EID	AR	.58		
73 I felt vulnerable	EID	AR	.52		
42 It was hard for me to be alone	EID	AR	.51		
70 I needed to have someone with me	EID	AR	.49		
47 I suffered from shame	EID	AR	.40		
83 I was suffering from feelings of guilt	EID	AR	.39		
11 I thought nobody could help me	EID	LON	.63		
19 I was envious of other people	EID	LON	.57		
65 Nobody realized how I was really feeling	EID	LON	.56		
48 I felt isolated from others	EID	LON	.51		
51 I felt abandoned	EID	LON	.49		
3 I felt like I was not noticed by others	EID	LON	.49		
13 I rejected other people that I used to like	EID	LON	.45		
84 I believed that nobody could understand me	EID	LON	.46		
89 I was not able to accept other people_s help	EID	LON	.37		

24 There was no one to whom I was really important	EID	LON	.41	
69 Criticism had a devastating effect on me	EID	LON	.39	
7 I felt helpless	EID	TOT	.67	
6 I didn‘t know what to do with myself	EID	TOT	.65	
49 My mood rapidly cycled in terms of anxiety, anger, and depression	EID	TOT	.64	
9 I was torn apart inside	EID	TOT	.61	
29 I was lonely	EID	TOT	.60	
37 Everyday decisions were difficult for me	EID	TOT	.50	
2 I suffered from insomnia	EID	TOT	.45	
8 Everything felt tight inside of me	EID	SP	.61	
15 I felt depressed	EID	SP	.60	
1 I felt stressed out	EID	SP	.56	
12 I was absent-minded and unable to remember what I was actually doing	EID	SP	.55	
23 It was difficult for me to perceive my emotions	EID	SP	.52	
60 I was irritated	EID	HOS	.66	
40 I was angry	EID	HOS	.63	
27I didn‘t trust other people	EID	HOS	.52	
64 I had difficulties with other people	EID	HOS	.55	
53 I was aggressive	EID	HOS	.42	
20 I felt disgust	EID	INT	.58	
5 It was hard for me to concentrate	EID	DYS	.67	
59 I was unable to touch parts of my body	RA	INT		.64
81 I felt as if I had different people inside of me	RA	INT		.63
67 I suffered from voices and noises from inside my head	RA	INT		.63
66 I suffered from voices and noises from outside my head	RA	INT		.62
57 I was tortured by images	RA	INT		.62
52 I felt the presence of someone who was not really there	RA	INT		.61
44 I felt threatened	RA	INT		.55
41 I could hardly control my memories	RA	INT		.50
78 I suffered from nightmares	RA	INT		.43

43 I couldn‗t feel parts of my body	RA	SP	.75	
36 I experienced parts of my body dissolving	RA	SP	.73	
61 It felt as if I was petrified	RA	SP	.66	
14 I looked upon myself as an object, not as a human being	RA	SP	.56	
16 I felt paralyzed	RA	SP	.55	
17 I could hardly talk	RA	SP	.54	
92 I felt numb	RA	SP	.46	
71 I felt as if I was standing beside myself	RA	SP	.45	
22 I thought of hurting myself	RA	SD	.62	
45 I terminated relationships all of a sudden	RA	HOS	.42	
34 I could not bear other people‗s closeness	RA	TOT	.48	
86 I felt I had to give in to my bad thoughts	RA	TOT	.58	
32 I had images that I was very much afraid of	WSI	AR	.40	
58 I felt empty inside	WSI	SP		.62
54 I felt kind of cut off from myself	WSI	SP		.58
75 I felt deficient	WSI	SP		.56
90 I felt as if I was far away from myself	WSI	SP		.56
33 I didn‘t feel alive	WSI	SP		.51
46 I had no idea of who I really was	WSI	SP		.47
94 I felt worthless	WSI	SD		.64
35 I hated myself	WSI	SD		.61
93 I felt hopeless	WSI	SD		.59
38 I wanted to punish myself	WSI	SD		.55
82 I found my body completely unacceptable in its present state	WSI	SD		.51
85 Everything seemed senseless to me	WSI	SD		.50
18 I was longing for death	WSI	SD		.35
62 I suffered from suicidal thoughts	WSI	SD		.40
28 I didn‘t believe in my right to live	WSI	SD		.37
74 The idea of death had a certain fascination for me	WSI	SD		.42
87 I was afraid of losing control	WSI	SD		.37

77 I was full of despair	WSI	TOT	.63
76 I had the feeling of being inadequate	WSI	TOT	.63
88 I felt disgusted by myself	WSI	TOT	.61
79 I was afraid people would see through me	WSI	LON	.49

Table 12

Correlations of the PTSD Checklist and the Borderline Symptom List Factors and New Total Scores

Subscales and Total Scores	PCL			BSL		
	Direct Event Reference	General Symptom	Total PCL	IED	RA	WSI
PCL						
General Symptom	.65					
Total PCL	.94	.87				
BSL						
Interpersonal/Emotional Dysregulation (IED)	.65	.74	.75			
Reexperiencing and Avoidance (RA)	.55	.56	.61	.75		
Worthlessness and Suicidal Ideation (WSI)	.52	.61	.61	.86	.86	
Total Score	.63	.71	.73	.97	.88	.95

Note. All correlations significant at $p < .01$.

Table 13

Factor Analyses of the PTSD Checklist and Borderline Symptom List Combined, Showing Original Scales, as well as New Factor Loading Labels

Item	Original Scale	New Factor (Original Factor)	Factor			
			1	2	3	4
50	BSL	EID (AR)	.70			
56	BSL	EID (AR)	.67			
91	BSL	EID (AR)	.65			
30	BSL	EID (AR)	.59			
73	BSL	EID (AR)	.58			
47	BSL	EID (AR)	.54			
83	BSL	EID (AR)	.54			
31	BSL	EID (AR)	.52			
10	BSL	EID (AR)	.47			
70	BSL	EID (AR)	.45			
4	BSL	EID (AR)	.43			
42	BSL	EID (AR)	.42			
65	BSL	EID (LON)	.66			
48	BSL	EID (LON)	.62			
84	BSL	EID (LON)	.62	.		
19	BSL	EID (LON)	.61			
11	BSL	EID (LON)	.60			
51	BSL	EID (LON)	.58			
89	BSL	EID (LON)	.51			
24	BSL	EID (LON)	.49			

69	BSL	EID (LON)	.47
13	BSL	EID (LON)	.44
3	BSL	EID (LON)	.42
6	BSL	EID (TOT)	.56
29	BSL	EID (TOT)	.67
88	BSL	WSI (TOT)	.65
77	BSL	WSI (TOT)	.65
76	BSL	WSI (TOT)	.63
7	BSL	EID (TOT)	.63
49	BSL	EID (TOT)	.62
9	BSL	EID (TOT)	.54
37	BSL	EID (TOT)	.50
15	BSL	EID (SP)	.69
58	BSL	WSI (SP)	.64
54	BSL	WSI (SP)	.61
75	BSL	WSI (SP)	.52
8	BSL	EID (SP)	.49
12	BSL	EID (SP)	.45
1	BSL	EID (SP)	.43
23	BSL	EID (SP)	.40
94	BSL	WSI (SD)	.66
93	BSL	WSI (SD)	.72
35	BSL	WSI (SD)	.59
82	BSL	WSI (SD)	.57
85	BSL	WSI (SD)	.55
87	BSL	WSI (SD)	.43

60	BSL	EID (HOS)	.50	
40	BSL	EID (HOS)	.43	
64	BSL	EID (HOS)	.42	
27	BSL	EID (HOS)	.41	
20	BSL	EID (INT)	.51	
36	BSL	RA (SP)		.75
43	BSL	RA (SP)		.67
61	BSL	RA (SP)		.66
33	BSL	WSI (SP)		.62
16	BSL	RA (SP)		.60
14	BSL	RA (SP)		.59
90	BSL	WSI (SP)		.57
92	BSL	RA (SP)		.55
17	BSL	RA (SP)		.54
46	BSL	WSI (SP)		.53
71	BSL	RA (SP)		.50
59	BSL	RA (INT)		.68
67	BSL	RA (INT)		.68
81	BSL	RA (INT)		.67
66	BSL	RA (INT)		.63
57	BSL	RA (INT)		.63
25	BSL	RA (INT)		.57
52	BSL	RA (INT)		.55
44	BSL	RA (INT)		.53
41	BSL	RA (INT)		.46
78	BSL	RA (INT)		.42

18	BSL	WSI (SD)	.72		
74	BSL	WSI (SD)	.70		
62	BSL	WSI (SD)	.69		
28	BSL	WSI (SD)	.68		
22	BSL	RA (SD)	.67		
38	BSL	WSI (SD)	.59		
86	BSL	RA (TOT)	.62		
34	BSL	RA (TOT)	.50		
53	BSL	EID (HOS)	.46		
45	BSL	RA (HOS)	.44		
79	BSL	WSI (LON)	.54		
32	BSL	WSI (AR)	.41		
1	PCL	RE		.68	
2	PCL	RE		.64	
3	PCL	RE		.64	
4	PCL	RE		.69	
5	PCL	RE		.65	
6	PCL	AV		.57	
7	PCL	AV		.67	
8	PCL	AV		.47	
16	PCL	HA		.47	
17	PCL	HA		.52	
9	PCL	AV			.51
10	PCL	AV			.56
11	PCL	AV			.54
12	PCL	AV			.39

13 H	PCL	HA	.57
14	PCL	HA	.53
15	PCL	HA	.67
5	BSL	EID (DYS)	.50
2	BSL	EID (TOT)	.44

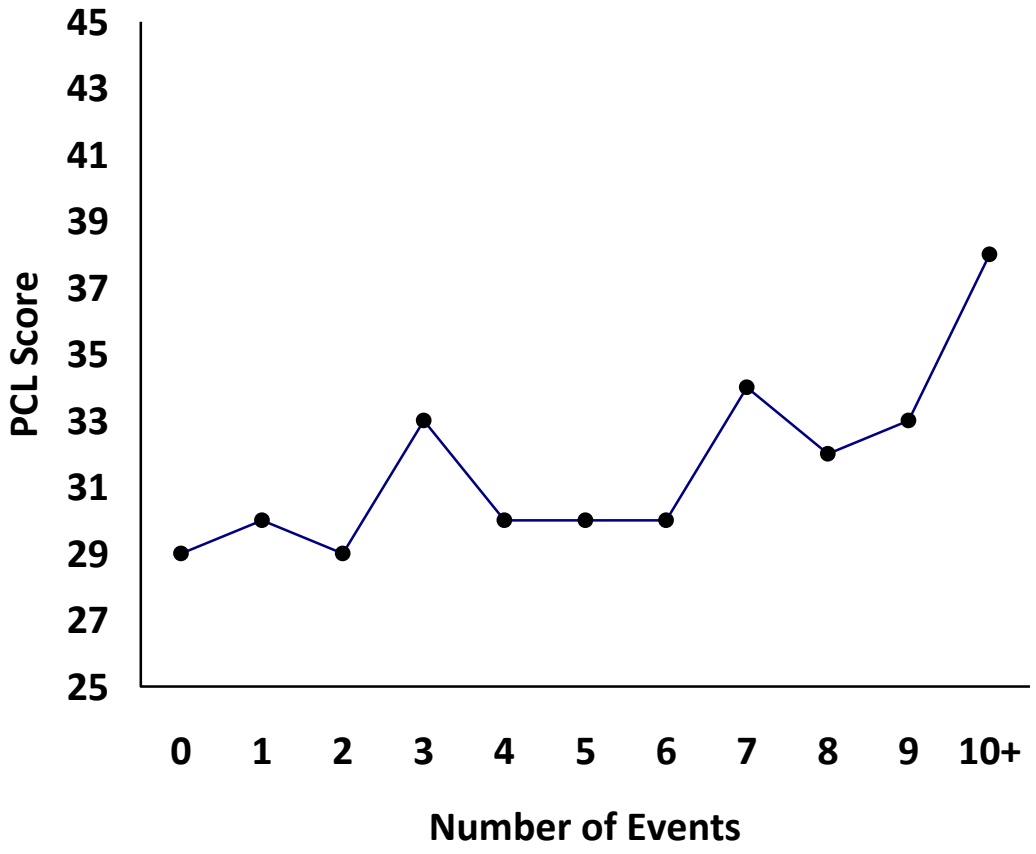

Figure 1. Graph showing mean PCL score by number of potentially traumatic events experienced or witnessed, both interpersonal and non-interpersonal.

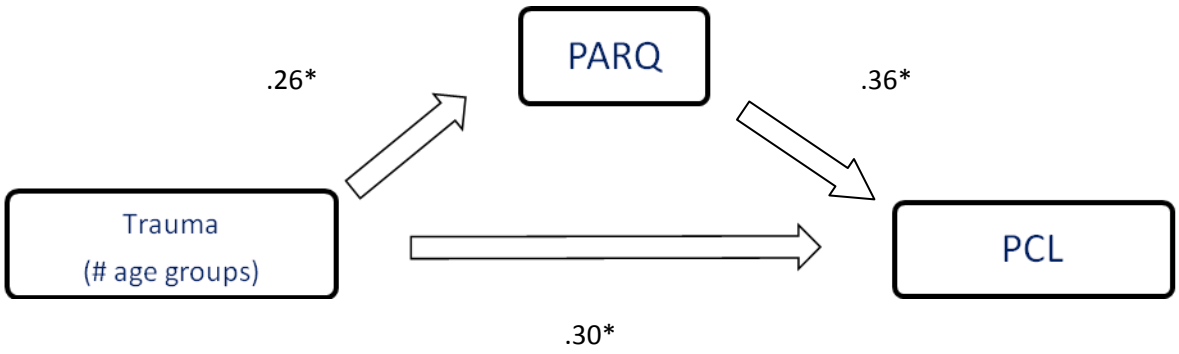

Figure 2. Risk factor model for posttraumatic stress symptoms (PCL score), with chronicity of traumatic events (non-interpersonal and interpersonal) as the predictor and total PARQ score (mother and father) as the mediator (*$p <$ .001)

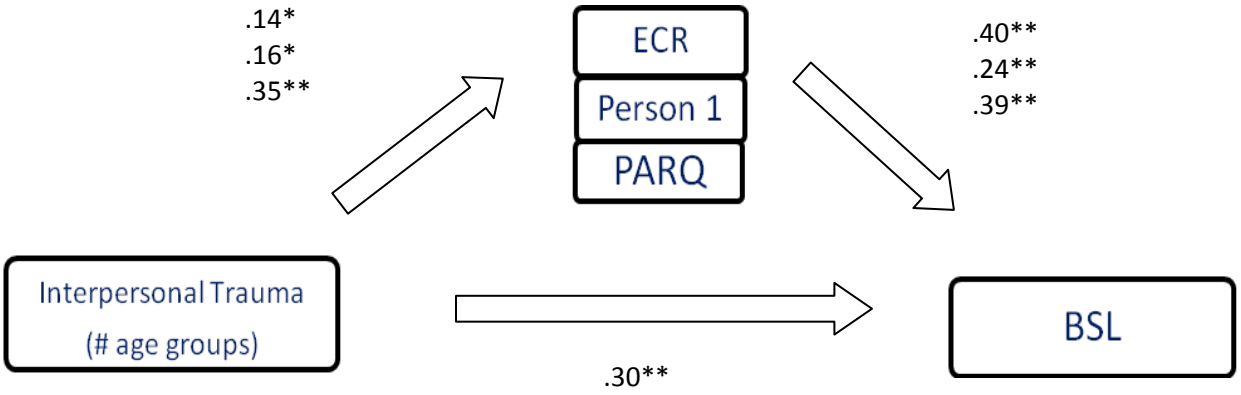

Figure 3. Risk factor model for borderline personality disorder behaviors (BSL score), with chronicity of interpersonal traumatic events as the predictor and the three separate mediators of total ECR score, social support by Person #1, and total PARQ score (mother and father) (*$p < .01$; **$p < .001$).

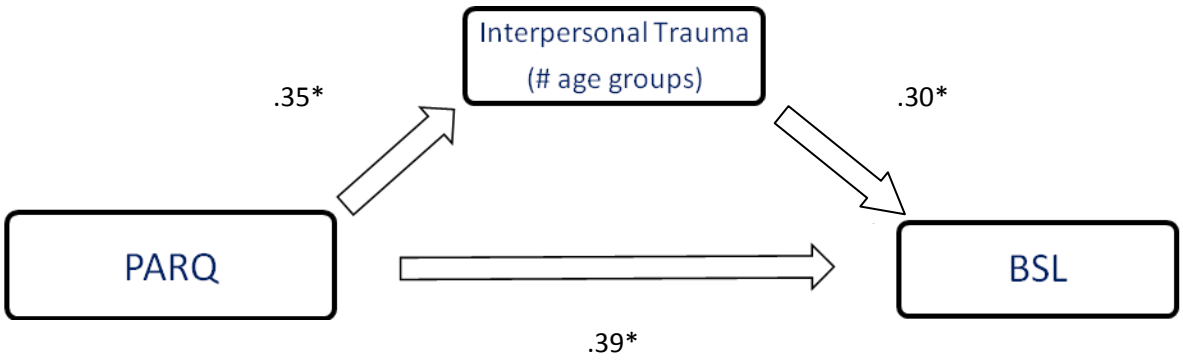

Figure 4. Risk factor model for borderline personality disorder behaviors (BSL score), with total PARQ score (mother and father) as the predictor and chronicity of interpersonal traumatic events as the mediator (*$p < .001$).

John H. Hagen
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