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FIVE-YEAR PROSPECTIVE EVALUATION OF THE DEVELOPMENT OF
BORDERLINE SYMPTOMS IN PSYCHIATRICALY HOSPITALIZED
ADOLESCENTS WHO ENGAGE IN DELIBERATE SELF-HARM
AND SUICIDE-RELATED BEHAVIORS

by

Kendra J. Homan

A dissertation submitted in partial fulfillment
of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

in

Psychology

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Logan, Utah

2014

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ABSTRACT

Five-Year Prospective Evaluation of the Development of Borderline Symptoms in
Psychiatrically Hospitalized Adolescents Who Engage in Deliberate
Self-Harm and Suicide-Related Behaviors

by

Kendra J. Homan, Doctor of Philosophy

Utah State University, 2014

Major Professor: Dr. Michael P. Twohig
Department: Psychology

Borderline personality disorder (BPD) is a form of psychopathology characterized by a pervasive pattern of instability with emotion regulation, impulse control, interpersonal relationships, and sense of self. While not a required diagnostic marker, the majority of individuals with BPD engage in some form of deliberate self-harm (e.g., suicide attempts, nonsuicidal self-injurious behavior) or suicide-related behavior (e.g., suicidal ideation, suicide threats). Longitudinal data from a sample of adolescent psychiatric inpatients who were hospitalized for deliberate self-harm and suicide-related behavior were followed for 5 years to investigate whether deliberate self-harm or suicide-related behaviors predicts BPD at 3-year follow-up and 5-year chart review. The extant data set consisted of 132 consecutively admitted adolescent psychiatric inpatients who completed a series of self-report questionnaires assessing deliberate self-harm and

suicide-related behaviors, maladaptive familial behavior, peer victimization, and emotion regulation difficulties. Data regarding index psychiatric hospital admission diagnoses, childhood maltreatment, and BPD diagnoses were abstracted from the patient's medical and psychiatric records and BPD was also assessed through a structured clinical interview. Suicide threats were the only variable found to be predictive of BPD at 5-year chart review. Other empirically (e.g., history of childhood maltreatment, maladaptive familial behavior, and peer victimization) and theoretically (e.g., emotion regulation difficulties) grounded constructs were also examined and were not found to be predictive of BPD in the current study. To our knowledge, this is the first study to investigate prospective associations between deliberate self-harm and suicide-related behaviors and BPD. Future directions and limitations of the research are discussed.

(175 pages)

PUBLIC ABSTRACT

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Kendra J. Homan

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CHAPTER I

INTRODUCTION

Borderline personality disorder (BPD) is a form of psychopathology characterized by a pervasive pattern of instability in emotion regulation, impulse control, interpersonal relationships, and sense of self (American Psychiatric Association [APA], 2002, 2013; Lieb, Zanarini, Schmahl, Linehan, & Bohus, 2004). While not a required diagnostic marker, the majority of adults diagnosed with BPD engage in some form of deliberate self-harm, including nonsuicidal self-injurious behavior (NSSI; 63.9%-90.5%; Soloff, Lis, Kelly, Cornelius, & Ulrich, 1994b; Zanarini, Frankenburg, Hennen, Reich, & Silk, 2006), suicide attempts (SA; 70.6%-83.6%; Soloff, Lynch, & Kelly, 2002; Wilson, Fertuck, Kwitel, Stanley, & Stanley, 2006), and completed suicides (approximately 10%; Black, Blum, Pfohl, & Hale, 2004; Paris & Zweig-Frank, 2001; Stone, Hurt, & Stone, 1987). Additionally, a large proportion of individuals diagnosed with BPD also endorse suicide-related behaviors including suicidal ideation (92.9%; Venta, Ross, Schatte, & Sharp, 2012) and suicide threats (57.6%; Wedig, Frankenburg, Reich, Fitzmaurice, & Zanarini, 2013).

BPD is the most frequently encountered personality disorder in clinical settings (Sansone & Sansone, 2011), accounting for more than 20% of adult psychiatric outpatients (Korzekwa, Dell, Links, Thabane, & Webb, 2008) and more than 40% of adult psychiatric inpatients (Grilo et al., 1998). Although there has been resistance in the field to using the diagnosis of BPD prior to 18 years of age (Crick, Murray-Close, & Woods, 2005; Griffiths, 2011), research demonstrated that BPD symptoms are first

evidenced during adolescence and are associated with an elevated risk for meeting full criteria for BPD as an adult (Bondurant, Greenfield, & Tse, 2004; Chabrol, Montovany, Chouicha, Callahan, & Mullet, 2001; Reich & Zanarini, 2001; Westen & Chang, 2000; Winograd, Cohen, & Chen, 2008). It is estimated that as many as 49% of adolescent psychiatric patients meet adult diagnostic criteria for the disorder (Grilo et al., 1998).

Given the lack of consensus regarding the reliability and validity of diagnosing BPD in adolescence, developmental precursors of BPD have been understudied. Retrospective research has associated the development of BPD most commonly with attachment quality and childhood maltreatment (e.g., Barone, 2003; Battle et al., 2004; Fonagy et al., 1996; Zanarini et al., 1997). Prospective research has identified childhood maltreatment, maladaptive parental behavior, parental relationship conflict, early life stress, and peer victimization as precursors for BPD development (e.g., Belsky et al., 2012; Carlson, Egeland, & Sroufe, 2009; Crawford, Cohen, Chen, Anglin, & Ehrensaft, 2009; Johnson, Smailes, Cohen, Brown, & Bernstein, 2000; Spatz Widom, Czaja, & Paris, 2009; Winsper, Zanarini, & Wolke, 2012; Wolke, Schreier, Zanarini, & Winsper, 2012); these data, however, are generally collected from large community samples and not from groups that are at risk for BPD.

Although research indicates that deliberate self-harm has the highest diagnostic predictive power for BPD (Grilo et al., 2001; Grilo, Becker, Anez, & McGlashan, 2004; McGlashan et al., 2005) and tends to emerge before other BPD symptoms (Zanarini et al., 2006), no empirical study has examined what factors associated with deliberate self-harm differentiate adolescents who develop BPD from those who do not. The current study

saught to address this issue utilizing prospective longitudinal data from a sample of adolescent psychiatric inpatients who were hospitalized for deliberate self-harm or suicide-related behaviors and followed for 5 years.

CHAPTER II

REVIEW OF THE LITERATURE

Deliberate Self-Harm

Definition

Although deliberate self-harm¹ has been defined in various ways in the literature; it is generally conceptualized as the intentional infliction of physical harm on oneself through a variety of means regardless of intent to die. The intentional infliction of harm includes any behavior that causes damage or injury to the body (e.g., wrist cutting, head banging, burning skin, crashing of a motor vehicle, ingesting a substance in excess) in manners that are not socially sanctioned (e.g., piercing; Brent, 2011; Nixon, Cloutier, & Jansson, 2008; Tormoen, Rossow, Larsson, & Mehlum, 2013). In this study, the term deliberate self-harm is used as an umbrella term describing any intentional self-harm irrespective of suicidal intent. This broad category is then further divided into nonsuicidal self-injurious behavior (NSSI) or the intentional infliction of physical harm without the intent to die, and suicide attempt² (SA) or the intentional infliction of physical harm with the intent to die.

The relationship between the two types of deliberate self-harm is complex and not well understood. Past research suggests that NSSI and SA may be differentiated on the basis of prevalence, functionality, methodology, frequency and lethality (e.g., Andover & Gibb, 2010; Bellivier et al., 2011; Glenn & Klonsky, 2013). Rates of NSSI have been

¹ Deliberate self-harm is also referred to as self-injurious behavior (SIB) in the current literature (Hamza, Stewart, & Willoughby, 2012; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006).

² Suicidality does not include suicidal ideation.

consistently found to be higher than rates of attempted suicide in adolescent and adult clinical and nonclinical samples (e.g., Bellivier et al., 2011; Glenn & Klonsky, 2011; Suokas et al., 2011; Tuisku et al., 2006). In addition to the functional distinction between NSSI and SA on the basis of whether there is an intent to die, NSSI has been found to be associated with an intent to alleviate distress while SA has been found to be associated with avoidance/escape and help seeking (Maddock, Carter, Murrell, Lewin, & Conrad, 2010; Muehlenkamp, 2005). Research also indicates that the methodology of NSSI and SA differs. Specifically, the most commonly reported method of NSSI is cutting (48.9% to 89%) followed by self-hitting/head banging (38.3% to 58%), and skin picking/severe scratching (36.2% to 48%; Andover & Gibb, 2010; Glenn & Klonsky, 2013) with approximately 93% individuals engaging in more than one method (Glenn & Klonsky, 2013). The most commonly reported method of SA is overdosing (45.1% to 60.8%) followed by cutting/stabbing with the intent to die (18.3% to 30.4%), and hanging/strangulation (8.7% to 18.3%; Andover & Gibb, 2010; Asarnow et al., 2011), with individuals who engage in SA typically only using one method (Muehlenkamp, 2005). Additionally, NSSI also tends to occur more frequently than SA with the average number of past NSSI episodes ranging from 80.0 ($SD = 132.3$; Nock & Prinstein, 2004) to 156.9 ($SD = 680.8$; Andover & Gibb, 2010) and the average number of past SA ranging from 2.1 ($SD = 2.8$; Andover & Gibb, 2010) to 2.8 ($SD = 4.0$, Nock et al., 2006) among adolescent and adult psychiatric inpatients. Finally, research demonstrates that individuals who engaged in NSSI are more likely to use low-lethality methods of self-harm such as superficial cutting or burning, whereas individuals who made a suicide

attempt are more likely to use high-lethality methods of self-harm such as overdosing or hanging/strangulation, require medical attention, and die by suicide (G. K. Brown, Henriques, Sosdjan, & Beck, 2004; Harriss, Hawton, & Zahl, 2005; Maddock et al., 2010; Ougrin et al., 2012). However, despite these differences, NSSI has been found to be one of the most significant predictors of suicide attempts (Klonsky, May, & Glenn, 2013; Tuisku et al., 2014; Whitlock et al., 2013) and death by suicide (Hawton & Harriss, 2007).

Although much of the research examining deliberate self-harm has grouped NSSI and SA behaviors with suicidal ideation and suicide threats, these interrelated behaviors may represent a distinct phenomenon (Liu & Miller, 2014; Wedig et al., 2013). For the purpose of this study, suicidal ideation and suicide threats are considered to be suicide-related behaviors distinct from NSSI and SA. Suicidal ideation is defined as thoughts about or preoccupation with wanting to die or committing suicide (Gutierrez, Osman, Barrios, & Kopper, 2001; Tuisku et al., 2006) and suicide threats are defined as a statement of intention or declaration of intent to harm or kill oneself (Gutierrez et al., 2001; Wedig et al., 2013).

Prevalence

Studies of deliberate self-harm in both clinical and nonclinical samples report increasingly high rates of NSSI and suicidality in all age groups, most prominently adolescents and young adults (Jacobson & Gould, 2007; Lengel & Mullins-Sweatt, 2013; Muehlenkamp, 2005; Ting, Sullivan, Boudreaux, Miller, & Camargo, 2012). In a systematic review of 128 population-based studies of adolescents (M age = 15.7 years) it

was found that 13.2% of adolescents have engaged in NSSI and 9.7% of adolescents have attempted suicide with 11.2% of adolescents engaging in NSSI and 7.0% attempting suicide in the past six months (Evans, Hawton, Rodham, & Deeks, 2005). Reports of NSSI and suicidality are even higher in adolescent clinical samples with approximately 29% (M age = 16.4 years, SD = 1.6; Tuisku et al., 2006) to 59% (M age = 15.1 years, SD = 1.4; Klonsky et al., 2013) endorsing previous NSSI and approximately 35% (M age = 16.4 years, SD = 1.6; Tuisku et al., 2006) to 48% (M age = 13.5 years, SD = 0.8; Prinstein et al., 2008) reporting having made a previous suicide attempt.

When examining deliberate self-harm in adult clinical and nonclinical populations, lifetime rates NSSI are estimated to be between 3.5% (M age = 46 years, SD = 17; Briere & Gil, 1998) and 5.9% (M age = 55.5 years, SD = 16.6; Klonsky, 2011) in adult nonclinical populations and between 16.1% (M age = 24.5 years, SD = 1.7; Tuisku et al., 2006) and 21.0% (M age = 36 years, SD = 10; Briere & Gil, 1998) in adult clinical populations. Additionally, rates of attempted suicide are estimated to be between 6.2% (age range 20-34 years; Suokas et al., 2011) and 9.1% (M age = 21.0; Wilcox & Anthony, 2004) in adult nonclinical populations and between 12.3% (M age = 24.5 years, SD = 1.7; Tuisku et al., 2006) and 29.9% (M age = 44.6 years, SD = 12.2; Bellivier et al., 2011) in adult clinical populations.

The majority of research categorizes adolescent and adult patients who engage in deliberate self-harm into either NSSI or SA by assessing only one form of deliberate self-harm (e.g., Barrocas, Hankin, Young, & Abela, 2012; Bjarehed, Wangby-Lundh, & Lundh, 2012; Glenn & Klonsky, 2013). Allocating patients into a NSSI or SA group

based on their behavior at the time of index psychiatric hospitalization or treatment regardless of past forms of deliberate self-harm (e.g., Ferrara, Terrinoni, & Williams, 2012) and excluding patients who have engaged in both forms of deliberate self-harm (e.g., Whitlock et al., 2011) is also common. Additionally, researchers have combined NSSI and SA into the same group (e.g., Fortune, Seymour, & Lambie, 2005; Hawton & Harriss, 2007; Sansone, Gaither, & Songer, 2002) or have coded behaviors according to the most serious deliberate self-harm behavior (e.g., a subject with both NSSI and SA would be categorized in the SA group; Tuisku et al., 2006). These actions are problematic because NSSI and SA commonly co-occur within the same population (e.g., Boxer, 2010; Jacobson, Muehlenkamp, Miller, & Turner, 2008; Nock et al., 2006). Research indicates that between 14.1 % (M age = 15.9 years, SD = 1.6; Asarnow et al., 2011) and 17.6% (M age = 15.1 years, SD = 1.7; Jacobson et al., 2008) of adolescent psychiatric outpatients and between 30.9% (M age = 13.9 years, SD = 2.1; Boxer, 2010) and 70% (M age = 14.7 years, SD = 1.4; Nock et al., 2006) of adolescent psychiatric inpatients report a history of both NSSI and SA. Additionally, it is estimated that as many as 47.7% (M age = 39.5 years, SD = 12.8) of adult psychiatric patients reported a history of both NSSI and SA (Andover & Gibb, 2010).

Trajectory

Deliberate self-harm is most common during adolescence and young adulthood with the onset of NSSI typically beginning slightly earlier than SA (i.e., approximately 15.2 years of age for NSSI, approximately 16.9 years of age for SA; Thompson, Dewa, & Phare, 2012; Whitlock et al., 2011). The frequency of both behaviors tend to increase

throughout later adolescence and young adulthood and then remain relatively constant throughout middle and later adulthood (Hawton & Harriss, 2007; Sansone et al., 2002). The intensity and lethality of these behaviors, however, tends to continue increasing throughout middle and later adulthood with the greatest number of deaths occurring later in life (Hawton & Harriss, 2007; Krug, Dahlberg, Mercy, Zwi, & Lozono, 2002).

Categorization

Until the publication of the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)*, NSSI has been categorized exclusively as a criterion of BPD, and suicidality as a criterion of BPD as well as major depressive episode (APA 2002, 2013). Deliberate self-harm was even originally identified as the “behavioral specialty” of those diagnosed with BPD and was thought to only occur in psychiatric populations requiring inpatient hospitalization (Graff & Mallin, 1967; Green, 1967; Mack, 1975). Additionally, it was thought that deliberate self-harm only rarely occurred outside of the context of BPD (Glenn & Klonsky, 2013). Although the most recently published version of the *DSM*, includes suicide behavior and NSSI as conditions that warrant further study without requiring that BPD or any other psychiatric disorder also be present, until recently much of the research and treatment efforts for deliberate self-harm, especially NSSI, has been limited and has focused on its association with BPD (Lengel & Mullins-Sweatt, 2013).

Borderline Personality Disorder

Diagnostic Criteria

BPD is a chronic and complex psychiatric disorder associated with a host of adverse psychological morbidities (e.g., Grant et al., 2008; Lenzenweger, Lane, Loranger, & Kessler, 2007), significant reductions in quality of life (e.g., Chen et al., 2006; Cramer, Torgersen, & Kringlen, 2006), functional impairment (e.g., Bagge et al., 2004; Skodol et al., 2002), negative medical consequences (e.g., Frankenburg & Zanarini, 2006), and high treatment utilization (e.g., Ansell, Sanislow, McGlashan, & Grilo, 2007; Bender et al., 2001). The condition is characterized by heterogeneity of symptoms including impulse control difficulties (e.g., engagement in impulsive behaviors that have a high potential for painful consequences, self-injurious behaviors, recurrent suicidal gestures, threats, and attempts), intense struggles with regulation of emotions (e.g., difficulty controlling anger, chronic feelings of emptiness, affective instability), interpersonal turmoil (e.g., frantic efforts to evade real or imagined rejection, unstable and intense interpersonal relationships characterized by idolization then devaluation), and disturbed cognitions (e.g., pervasive patterns of an unstable sense of self, severe transitory dissociative symptoms or paranoia related to stress; APA, 2002, 2013; Lieb et al., 2004). These categories are of clinical importance as research indicates that individuals who manifest symptoms in all four categories can be differentiated from individuals exhibiting symptoms of other personality disorders (Zanarini, Gunderson, Frankenburg, & Chauncey, 1990).

Prevalence

Recent published prevalence rates of BPD are estimated to be between 1.4% (Lenzenweger et al., 2007) and 5.9% (Grant et al., 2008) of adults in the general population. Additionally, approximately 9.3% (M age = 37.0 years, SD = 12.2; Zimmerman, Rothschild, & Chelminski, 2005) to 22.6% (M age = 40.2 years, SD = 10.7; Korzekwa et al., 2008) of adult psychiatric outpatients and up to 42.7% (M age = 23.6 years, SD = 5.6; Grilo et al., 1998) of adult psychiatric inpatients meet diagnostic criteria for the disorder. Using structured diagnostic interviews based on adult BPD, prevalence rates of BPD in adolescents are estimated to be between 7.8% (M age = 16.3 years, SD = 2.8; Bernstein et al., 1993) and 14% (M age = 16.6 years, SD = 1.6; Chabrol et al., 2001) in community samples and as high as 49.3% (M age = 15.5 years, SD = 1.4; Grilo et al., 1998) in adolescent clinical psychiatric populations.

Diagnosis in Adolescence

Although research demonstrates that symptoms of BPD are first evidenced during adolescence and are associated with an elevated risk for meeting full criteria for BPD as an adult (Bondurant et al., 2004; Chabrol et al., 2001; Reich & Zanarini, 2001; Westen & Chang, 2000; Winograd et al., 2008), there has been clinical resistance to diagnosing, and, until recently, even studying BPD prior to 18 years of age (Crick et al., 2005; Griffiths, 2011). This is likely the result of concerns with the diagnostic criterion failing to consider developmental factors in the conceptualization of the disorder, lack of consensus in the field regarding how the disorder is manifested in this age group, evidence of borderline symptoms occurring during normal adolescence, overreliance on

the idea that adolescent personality lacks stability and consistency needed for such diagnosis, and belief that Axis I diagnoses can better account for the symptoms of BPD in adolescence (Chabrol et al., 2001; Crick et al., 2005; Meijer, Goedhart, & Treffers, 1998; Miller, Muehlenkamp, & Jacobson, 2008; Westen & Chang, 2000). Additionally, although the *DSM* indicates that personality disorders may be diagnosed in individuals under 18 years of age if the maladaptive traits have been present for at least one year (APA, 2002, 2013), only 14.0% of child and adolescent psychiatry delegates charged with determining if BPD is valid, useful, and acceptable as a diagnosis in children and adolescents believed that BPD is a valid diagnosis for children and adolescents. The majority of psychiatrists believe that the diagnosis in adolescence is “conceptually problematic, empirically insufficiently supported, [and] lacking in clinical utility” (Griffiths, 2011, pp. 20-21).

Retrospective Etiological Research

The majority of available research has attempted to gain insight into the developmental trajectory of BPD by retrospectively examining the course of the disorder. Research with adults has identified several factors that potentially contribute to the development of this chronic and complex psychiatric disorder. A number of studies have associated BPD with insecure (i.e., ambivalent or preoccupied/anxious, unresolved/disorganized) attachment patterns (Barone, 2003; Fonagy et al., 1996; Fossati, Borroni, Feeney, & Maffei, 2012; Nickell, Waudby, & Trull, 2002; Patrick, Hobson, Castle, Howard, & Maughan, 1994).

Patrick and colleagues (1994), for example, compared female adults patients with

BPD ($n = 12$; M age = 35.2 years; $SD = 8.5$) to those with dysthymic disorder ($n = 12$; M age = 32.3 years; $SD = 6.7$) and found individuals with BPD were significantly more likely to be classified as preoccupied and unresolved/disorganized in their forms of attachment. Fonagy and colleagues (1996) compared adult inpatients with BPD ($n = 36$) to adult inpatients with Axis I and other Axis II disorders ($n = 44$). Inpatients with Axis I and other Axis II disorders were matched for age (M age = 29 years), sex, social class, and verbal IQ. Results indicated that significantly more inpatients with BPD were classified as having insecure-unresolved attachment patterns compared to inpatients without BPD (89% versus 65%, $p < .05$).

In a study of 393 college students (M age = 18 years), insecure-anxious and ambivalent forms of adult attachment were found to be uniquely associated with BPD features above what was accounted for by sex, childhood adversity (e.g., sexual abuse, physical abuse, loss), and Axis I and non-BPD Axis II disorders ($r^2 = .66$; $p < .001$; Nickell et al., 2002). Barone (2003) examined attachment patterns in adults with BPD ($n = 40$) compared to a nonclinical group ($n = 40$) who were matched for age (M age = 29 years; $SD = 6.3$) and sex (25 females, 15 males). Compared to the nonclinical group, adults with BPD had significantly higher rates of unresolved forms of attachment, $\chi^2(1, N = 80) = 24.59$, $p < .001$. Finally, in a review article of 13 studies examining the relationship of BPD and attachment to caregivers and peers,³ Agrawal, Gunderson, Holmes, and Lyons-Ruth (2004) found a strong association between BPD and insecure

³Attachment was assessed in these studies using a variety of different measures including the Adult Attachment Interview, Attachment Styles Inventory, Attachment Style Questionnaire, Attachment Self-Report, Reciprocal Attachment Questionnaire, Relationship Questionnaire, or Relationship Scales Questionnaire.

forms of attachment (range for the 13 studies = 23% to 100% of patients with BPD had a primary classification of insecure attachment).

Research has also associated BPD with childhood maltreatment including sexual abuse (e.g., Bandelow et al., 2005; R. Bradley, Jenei, & Westen, 2005; Schwarze et al., 2013; Westen, Ludolph, Misle, Ruffins, & Block, 1990; Yen et al., 2002; see Table 2 shown later for complete reference list), physical abuse (Bandelow et al., 2005; G. R. Brown & Anderson, 1991; Fonagy et al., 1996; Guzder, Paris, Zerkowitz, & Feldman, 1999; Herman, Perry, & Van der Kolk, 1989; Huang et al., 2012; Johnson, Cohen, Brown, Smailes, & Bernstein, 1999; Laporte & Guttman, 1996; Links, Steiner, Offord, & Eppel, 1988; Oldham, Skodol, Gallaher, & Kroll, 1996; Paris, Zweig-Frank, & Guzder, 1994a; Schwarze et al., 2013; Weaver & Clum, 1993; Yen et al., 2002; Zanarini et al., 1997), verbal abuse (Battle et al., 2004; Guzder et al., 1999; Laporte & Guttman, 1996; Zanarini et al., 1997; Zanarini et al., 1989), emotional abuse (Battle et al., 2004; Huang et al., 2012; Zanarini et al., 1997), and neglect (Battle et al., 2004; Guzder et al., 1999; Johnson et al., 1999; Ludolph, Westen, Misle, & Jackson, 1990; Westen et al., 1990; Zanarini, Gunderson, Marino, Schwartz, & Frankenburg, 1989; Zanarini et al., 1997).

Westen and colleagues (1990), for example, examined developmental histories of female adolescent inpatients who were diagnosed with BPD ($n = 27$; age range 14 to 18 years) compared to female adolescent inpatients who were not diagnosed with BPD but were primarily diagnosed with a mood disorder or anorexia nervosa ($n = 23$; age range 14 to 18 years). Medical record review indicated that a significantly higher percentage of inpatients with BPD were sexually abused by a nonparental figure, $\chi^2(1, N = 50) = 4.78, p$

< .05, and neglected, $\chi^2(1, N = 50) = 4.18, p < .05$, than the comparison group.

Compared to depressed female adult inpatients without a diagnosis of BPD ($n = 19, M \text{ age} = 34 \text{ years}, SD = 11.8$), Weaver and Clum (1993) found that significantly more female adult inpatients with BPD and comorbid depression ($n = 17; M \text{ age} = 32 \text{ years}, SD = 7.9$) reported histories of sexual abuse, $F(1, 56) = 23.59, p < .001$, and physical abuse, $F(1, 56) = 151.19, p < .001$. Fonagy and colleagues (1996) also found physical and sexual abuse to be significantly more prevalent among adult inpatients with BPD as compared to adult inpatients with other Axis II disorders (89% versus 68%, $p < .001$) and adult inpatients without Axis II disorders (89% versus 43%, $p < .001$). In a study comparing adult inpatients with BPD ($n = 358; M \text{ age} = 27.6 \text{ years}, SD = 6.8$) and other Axis II disorders ($n = 109; M \text{ age} = 29.3 \text{ years}, SD = 9.1$), Zanarini and colleagues (1997) found in patients with BPD reported significantly a higher rate of sexual abuse, $\chi^2(1, N = 467) = 27.85, p < .001$, physical abuse, $\chi^2(1, N = 467) = 19.97, p < .001$, verbal abuse, $\chi^2(1, N = 467) = 7.47, p < .01$, and caretaker neglect, $\chi^2(1, N = 467) = 21.50, p < .001$. G. R. Brown and Anderson (1991) interviewed 947 adult inpatients and found that BPD was diagnosed significantly more frequently in individuals who reported a history of physical and/or sexual abuse than in those who were not the victim of abuse, $\chi^2(2, N = 1,019) = 57.30, p < .001$.

Research by Battle and colleagues (2004) compared a mixed sample of outpatient and inpatient adults (age range = 18 to 45 years) with BPD ($n = 214$) to adults with another personality disorder ($n = 624$; avoidant personality disorder, $n = 298$; obsessive-compulsive personality disorder, $n = 242$; schizotypal personality disorder, $n = 84$) and

found BPD predicted caretaker and noncaretaker sexual abuse ($\beta = 1.13, p < .01$; $\beta = 0.96, p < .001$, respectively), verbal abuse ($\beta = 0.57, p < .01$), emotional abuse ($\beta = 0.64, p = .01$), and physical neglect ($\beta = 1.29, p < .001$) above the variance predicted by other personality disorder diagnoses. Finally, Johnson and colleagues (2005) and Zanarini (2000) provided reviews of research examining the relationship of BPD and childhood maltreatment. In the review of seven studies, Zanarini concluded that childhood sexual and physical abuse are common in individuals with BPD and, in the review of 18 studies, Johnson and colleagues found childhood sexual abuse, physical abuse, emotional abuse, and neglect contribute to increased risk for the development BPD.

Retrospective research has also associated the development of BPD with maladaptive parental behavior (e.g., low parental care, poor parental bonding, poor parental relationships, greater parental overprotection, greater parental ineffectiveness), maladaptive familial behavior (e.g., unstable family environment, less family cohesiveness, less familial expressiveness, more familial conflict, involvement with child protective services, placed in foster care), parental relationship conflict (e.g., domestic violence, parental marital problems, early parental separation), early life stress (e.g., significant childhood loss, maternal unemployment, witness to violence), temperamental factors (e.g., poor frustration tolerance, high mood reactivity), parental psychopathology, and parental criminality (Bandelow et al., 2005; R. Bradley et al., 2005; S. J. Bradley, 1979; Gunderson, Kerr, & Englund, 1980; Guzder et al., 1999; Herman et al., 1989; Laporte & Guttman, 1996; Links et al., 1988; Ludolph et al., 1990; Nickell et al., 2002; Norden, Klein, Donaldson, Pepper, & Klein, 1995; Paris et al., 1994a; Paris, Zweig-

Frank, & Guzder, 1994b; Patrick et al., 1994; Reich & Zanarini, 2001; Soloff & Millward, 1983; Weaver & Clum, 1993). See Table 1 for a summary of the variables associated with the development of BPD in retrospective research.

Taken together, retrospective evidence suggests that insecure attachment to caregivers and peers (e.g., Barone, 2003; Fossati et al., 2012; Nickell et al., 2002), childhood maltreatment (e.g., Bandelow et al., 2005; Battle et al., 2004; R. Bradley et al., 2005; Huang et al., 2012; Schwarze et al., 2013), and numerous maladaptive parental and familial factors (e.g., Bandelow et al., 2005; R. Bradley et al., 2005; Nickell et al., 2002) contribute to the development of BPD. Although these studies are numerous and represent directions for future research, the limitations inherent in retrospective research (e.g., recall bias, selection bias, information bias) and the documented tendency for individuals with BPD to have distorted perceptions of life events (Machizawa-Summers, 2007; Paris, 2008), call into question the validity of the findings and may artificially increase the association between these early childhood risk factors and the development of BPD (Crawford et al., 2009; Crick et al., 2005; Paris, 2003). Prospective longitudinal studies of the precursors of BPD are needed to accurately examine these factors (e.g., insecure attachment, childhood maltreatment, maladaptive parental and familial environment) while eliminating the biases that can occur in studies based on retrospective data.

Prospective Etiological Research

One of the most substantial gaps in the existing literature is the limited number of prospective studies examining precursors of BPD. Without baseline data gathered from

Table 1

Variables Associated with the Development of Borderline Personality Disorder in Retrospective Research

Reference	BPD sample	N	Non-BPD sample	N	Diagnostic measure(s)	Variable measure(s)	Variables associated with the development of BPD
Baker, Silk, Westen, & Nigg (1992)	Adult inpatients with BPD (C)	31	Adult inpatients with MDD (C) and nonclinical controls (NC)	29	DIB	Early Memory Test	Sexual abuse**
Bandelow et al. (2005)	Adult outpatients with BPD (C)	66	Adult case-matched nonclinical controls (NC)	109	SCID-II	203-item questionnaire ^a	Physical abuse*** Sexual abuse*** Early maternal separation*** Early paternal separation*** Parent marital problems*** Maternal unemployment*** Witnessed parental domestic violence***
Barone (2003)	Adult outpatients with BPD (C)	40	Adult case-matched nonclinical controls (NC)	40	SCID-II	AAI	Unresolved attachment***
Battle et al. (2004)	Adult outpatients with BPD (C)	214	Adult outpatients with APD, SPD, or OCPD (C)	624	DIPD-IV	CEQ-R	Sexual abuse** Verbal abuse** Emotional abuse** Physical neglect***
Bradley, R., et al. (2005)	Clinicians described a current patient diagnosed with an Axis II disorder by rating the extent to which the patient met criteria for each Axis II disorder and completing the SWAP-200 (C)			24 ^b	Clinician ratings SWAP-200	CDF	Sexual abuse*** Unstable family environment*** Parental anxiety disorder***
Bradley, S. J. (1979)	Child and adolescent outpatients with BPD (C)	14	Child and adolescent outpatients without BPD (C) and nonclinical controls (NC)	68	Unstructured interview	Unstructured interview	Early primary caretaker separation**
Briere & Zaidi (1989)	Adult psychiatric ED patients with BPD ^c (C)	14	Adult psychiatric ED patients without BPD ^c (C)	86	Medical record review	Medical record review	Sexual abuse**
Brown, G. R., & Anderson (1991)	Adult inpatients with BPD (C)	34-44 ^d	Adult inpatients with Axis I or other Axis II disorders (C)	947	Unstructured interview	Unstructured interview	Physical abuse*** Sexual abuse***

(table continues)

Reference	BPD sample	N	Non-BPD sample	N	Diagnostic measure(s)	Variable measure(s)	Variables associated with the development of BPD
Bryer, Nelson, Miller, & Krol (1987)	Adult inpatients with BPD ^c (C)	14	Adult inpatients with Axis I or other Axis II disorders ^c (C)	68	Medical record review	Self-report questionnaire	Sexual abuse***
Fonagy et al. (1996)	Adult inpatients with BPD (C)	36	Adult inpatients with Axis I or other Axis II disorders (C)	44	SCID-II	AAI	Physical and sexual abuse*** Insecure-unresolved attachment*
Fossati et al. (2012)	Adult nonclinical participants (NC)			192 ^b	PDQ-4+	ASQ	Anxious attachment***
Goldman, D'Angelo, DeMaso, & Mezzacappa (1992)	Child outpatients with BPD (C)	44	Child outpatients without BPD (C)	100	Semistructured interview	Semi-structured interview	Physical abuse*
Gunderson et al. (1980)	Adult and adolescent inpatients with BPD (C)	12	Adult and adolescent inpatients with schizophrenia or other Axis II disorders (C)	24	Unstructured interview Medical record review	Unstructured interview Medical record review	Maternal psychosis* Greater maternal ineffectiveness*** ^f Maternal depression* ^g
Guzder et al. (1999)	Child outpatients with BPD (C)	41	Child outpatients without BPD (C)	53	C-DIB	Medical record review Mother/child interview School observation	Physical abuse* Sexual abuse* Verbal abuse* Neglect* Witness to violence** Parent marital problems* Parental criminality**
Herman et al. (1989)	Adult outpatients with BPD, n = 21, and with BPD traits, n = 11 (C)	32	Adult outpatients with MDD, SPD, APD, or bipolar II disorder (C)	23	BPS	Semi-structured interview	Physical abuse*** Sexual abuse*** Parental domestic violence*
Huang et al. (2012)	Adult outpatients with BPD (C)	203	Adult outpatients with other Axis II disorders or no Axis II disorders (C)	79	MSI-BPD SCID-II	CECA.Q	Physical abuse by mother*** Physical abuse by father*** ^h Sexual abuse** Emotional abuse*
Hurlbert, Apt, & White (1992)	Adults who completed a marital workshop with BPD ^c (NC)	32	Adults who completed a marital workshop without BPD ^c (NC)	32	SIPD	Self-report questionnaire	Sexual abuse*
Johnson et al. (1999)	Adults from the community with BPD (NC)	21	Adults from the community with other Axis II disorders (NC)	618	Items drawn from PDQ	Mother/child interview	Physical abuse*** Sexual abuse*** Neglect***

(table continues)

Reference	BPD sample	N	Non-BPD sample	N	Diagnostic measure(s)	Variable measure(s)	Variables associated with the development of BPD
Laporte & Guttman (1996)	Adult and adolescent inpatients with BPD ^c (C)	366	Adult and adolescent inpatients with other Axis II disorders ^c (C)	385	Medical record review	Medical record review	Significant childhood loss*** Physical abuse*** Sexual abuse*** Verbal abuse*** Parental domestic violence***
Links et al. (1988)	Adult inpatients with BPD (C)	8	Adult inpatients with borderline traits (C)	2	DIB	Semi-structured interview	Early maternal separation** Physical abuse*** Sexual abuse** Parent marital problems** Foster care placement*
Ludolph et al. (1990)	Adolescent inpatients with BPD ^c (C)	27	Adolescent inpatients with MDD, AN, BN, or other Axis II disorders ^c (C)	23	DIB	Medical record review	Sexual abuse** Neglect** Involvement with CPS*
Nickell et al. (2002)	College students with significant borderline features (NC)	197	College students without borderline features (NC)	224	SIPD-IV DIB-R	TCM-R PBI	Insecure-anxious and ambivalent attachment*** Poor parental bonding*
Nigg, Silk, Western, & Lohr (1991)	Adult inpatients with BPD (C)	29	Adult inpatients with MDD (C) and nonclinical controls (NC)	29	DIB	Structured interview	Sexual abuse**
Norden et al. (1995)	Adult outpatients with BPD (C)	43	Adult outpatients with other Axis II disorders (C)	47	PDE	PBI EHEI	Sexual abuse** Poor parental relationships*
Ogata et al. (1990)	Adult inpatients with BPD (C)	24	Adult inpatients with MDD (C)	18	DIB	FEQ	Sexual abuse***
Oldham et al. (1996)	Adult inpatients with BPD (C)	44	Adult inpatients with other Axis II disorders (C)	6	PDQ-R	Self-report questionnaire	Physical abuse*
Paris et al. (1994a)	Adult outpatients with BPD ^c (C)	78	Adult outpatients with other Axis II disorders ^c (C)	72	DIB-R	Items drawn from SITS and FEIS	Sexual abuse*** Physical abuse* Lower maternal affection*
Paris et al. (1994b)	Adult outpatients with BPD ⁱ (C)	61	Adult outpatients with other Axis II disorders ⁱ (C)	60	DIB-R	Items drawn from SITS and FEIS	Sexual abuse** Separation or loss of primary caregiver*

(table continues)

Reference	BPD sample	N	Non-BPD sample	N	Diagnostic measure(s)	Variable measure(s)	Variables associated with the development of BPD
Patrick et al. (1994)	Adults outpatients with BPD ^c (C)	23	Adults outpatients with dysthymic disorder ^c (C)	12	Medical record review	AAI PBI	Preoccupied attachment*** Unresolved/disorganized attachment** Lower maternal care** Maternal overprotection**
Reich & Zanarini (2001)	Adult inpatients with BPD (C)	290	Adult inpatients with other Axis II disorders (C)	72	DIB-R DIPD-R	CDI	Poor frustration tolerance** Higher mood reactivity**
Schwarze et al. (2013)	Adult inpatients and outpatients with BPD (C)	100	Adult case-matched nonclinical controls (NC)	100	BSL BPDSI	Semi-structured interview	Sexual abuse*** Physical abuse*** Emotional neglect***
Soloff & Millward (1983)	Adult and adolescent inpatients with BPD (C)	45	Adult and adolescent inpatients with MDD and schizophrenia (C)	74	DIB	Medical record review Self-report questionnaire	Early paternal separation**
Waller (1994)	Adult outpatients with BPD and AN or BN ^c (C)	29	Adult outpatients with AN or BN and without BPD ^c (C)	86	Unstructured interview	Unstructured interview	Sexual abuse***
Weaver and Clum (1993)	Adult inpatients with BPD and a comorbid mood disorder ^c (C)	17	Adult inpatients with a mood disorder and without BPD ^c (C)	19	PDE	FES	Sexual abuse*** Physical abuse*** Less family cohesiveness* Less familial expressiveness* More familial conflict*
Westen et al. (1990)	Adolescent inpatients with BPD ^c (C)	27	Adolescent inpatients primarily diagnosed with mood disorder or AN ^c (C)	23	Medical record review	Medical record review	Sexual abuse* Neglect*
Yen et al. (2002)	Adult outpatients with BPD (C)	167	Adult outpatients with other Axis II disorders or MDD (C)	486	DIPD-IV	SCID Trauma Addendum	Sexual abuse*** Physical abuse*** ^j Attacked without weapon** ^k
Zanarini et al. (1989)	Adult outpatients with BPD (C)	50	Adult outpatients with APD or with another Axis II disorder and comorbid disorder (C)	55	DIB-R DIPD-R	RESQ	Sexual abuse* ^k Verbal abuse* Neglect* ^l

(table continues)

Reference	BPD sample	N	Non-BPD sample	N	Diagnostic measure(s)	Variable measure(s)	Variables associated with the development of BPD
Zanarini et al. (1997)	Adult inpatients with BPD (C)	358	Adult inpatients with other Axis II disorders (C)	109	DIB-R DIPD-R	CEQ-R	Sexual abuse*** Physical abuse*** Verbal abuse** Caretaker neglect***

Note. AAI: Adult Attachment Interview; AN: Anorexia nervosa; APD: Avoidant Personality Disorder; ASQ Attachment Style Questionnaire; BN: Bulimia nervosa; BPDSI: Borderline Personality Disorder Severity Inventory; BPS: Borderline Personality Scale; BSL: Borderline Symptom List; CDF: Clinical Data Form; CDI: Childhood Development Interview; C-DIB: Child Version of the Retrospective Diagnostic Interview for Borderlines; CECA.Q: Childhood Experiences of Care and Abuse Questionnaire; CEQ-R: Childhood Experiences Questionnaire-Revised; CPS: Child Protective Services; DIB-R: Diagnostic Interview for Borderline-Revised; DIPD-IV: Diagnostic Interview for *DSM-IV* Personality Disorders; ED: Emergency department; EHEI: Early Home Environment Interview; FEIS: Family Experience Interview Schedule; FEQ: Family experiences questionnaire; FES: Family Environment Scale; DIPD-R: Diagnostic Interview for *DSM-III-R* Personality Disorders; FEW: Family Experiences Survey; MDD: Major depressive disorder; MSI-BPD: McLean Screening Instrument for Borderline Personality Disorder; OCPD: Obsessive-Compulsive Personality Disorder; PDE: Personality Disorder Exam; PBI: Parental Bonding Instrument; PDQ: Personality Diagnostic Questionnaire; PDQ-4+: Personality Diagnostic Questionnaire-4+; RESQ: Retrospective Family Pathology Questionnaire; SCID-II: Structured Clinical Interview for *DSM-IV* Axis II Personality Disorders; SES: Sexual Experience Scale; SIPD: Structured Interview for *DSM-III* Personality Disorders; SIPD-IV: Structured Interview for *DSM-IV* Personality; SITS: Structured Interview for Trauma Study; SPD: Schizotypal Personality Disorder; SWAP-200: Shedler-Westen Assessment Procedure-200; TCM-R: Three-Category Measure of Attachment Revised.

NC = Nonclinical Sample

C = Clinical Sample

^a The questionnaire contained items concerning traumatic life events, parental attitudes towards the patients, and parental marital problems.

^b Total sample. Authors did not provide breakdown of individuals diagnosed with BPD versus individuals diagnosed with other Axis II disorders.

^c All female sample.

^d The number of BPD patients in were derived from a table which described the number of patients with BPD who reported physical, sexual or both types of abuse in non-exclusive categories.

^e BPD patients significantly different from patients with another Axis II disorder but not significantly different from patients with an Axis II disorder.

^f BPD patients significantly different from patients with other Axis II disorders but not significantly different from patients with schizophrenia.

^g BPD patients significantly different from patients with schizophrenia but not significantly different from patients with other Axis II disorders.

^h BPD patients significantly different from patients without Axis II disorders but not significantly different from patients with other Axis II disorders.

ⁱ All male sample.

^j BPD patients significantly different from APD patients and OCPD patients but not significantly different from SPD patients.

^k BPD patients significantly different from patients with another Axis II disorder and comorbid dysthymia but not significantly different from patients with APD disorder.

^l BPD patients significantly different from patients with APD but not significantly different from patients with another Axis II disorder and comorbid dysthymia.

$p < .05$; ** $p < .01$; *** $p < .001$.

individuals before the development of BPD, none of the potential etiological factors can be confirmed. To date, prospective research examining precursors of BPD have only been published from five unique samples each examining different variables that have been associated with the development of BPD (Belsky et al., 2012; Carlson et al., 2009; Crawford et al., 2009; Johnson et al., 1999, 2000, 2001; Johnson, Cohen, Chen, Kasen, & Brook, 2006; Spatz Widom et al., 2009; Winsper et al., 2012; Wolke et al., 2012).

Belsky and colleagues (2012) conducted a longitudinal population-based study of 1,116 pairs of same-sex twins (54% of twin pairs were monozygotic) followed from five to 12 years of age. Childhood exposure to physical maltreatment and maternal negative expressed emotion prior to ten years of age was found to predict BPD related characteristics at 12 years of age (OR = 7.22; 95% CI, 1.13-12.63; OR = 3.25; 95% CI, 2.60-4.07, respectively).

Using longitudinal data from an at-risk community-based population ($n = 162$) in which children from families living in poverty were followed from birth to 28 years of age, Carlson and colleagues (2009) found that the presence of BPD symptoms at 28 years of age was significantly related to early childhood temperament (i.e., emotionality; $r = .21, p < .01$), attachment quality (i.e., disorganization; $r = .20, p < .05$), maternal hostility (i.e., mother's expression of anger, discounting, or rejection of the child during an observed series of teaching tasks; $r = .42, p < .001$), early life stress (e.g., job loss, death of family member; $r = .29, p < .001$), and maltreatment (i.e., physical abuse, verbal abuse, psychological unavailability, neglect; $r = .20, p < .05$). Additionally, results indicated that maternal hostility ($z = 2.64, p < .01$) and early life stress ($z = 1.96, p < .05$)

predicted BPD symptoms.

A longitudinal community-study of 793 randomly sampled individuals who were initially evaluated when they were approximately 5.5 years of age ($SD = 2.8$) completed follow-up interviews at 13.7 years ($SD = 2.8$), 16.3 years ($SD = 2.8$), 22.1 years ($SD = 2.7$), and 33.1 years ($SD = 2.9$) to determine if associations exist between various childhood variables and adult BPD. After controlling for age, parental education, and parental psychiatric disorders, Johnson and colleagues (1999) found documented physical abuse ($F_{1,621} = 3.94, p < .05$), sexual abuse ($F_{1,577} = 5.77, p < .05$), and neglect ($F_{1,629} = 23.105.77, p < .001$) to be associated with an increased risk of developing BPD. Johnson and colleagues (2001) found that children who experienced verbal abuse in childhood were more than four times more likely to develop BPD in adulthood than those who did not experience verbal abuse ($OR = 4.50; 95\% CI, 1.66-12.20$).

In an attempt to gain a better understanding of the role that specific types of neglect play in the etiology of BPD, Johnson and colleagues (2000) utilized the same data to examine the association between emotional, physical, supervision, and cognitive neglect, and BPD. Results indicated that children with a history of emotional neglect (e.g., withholding praise, withholding love; $OR = 5.10; 95\% CI, 1.06-24.21$), physical neglect (e.g., failing to immunize child, failing to keep home clean; $OR = 6.92; 95\% CI, 1.83-26.4$), and supervision neglect (e.g., allowing child to go out as often as they please, tolerance of child using marijuana; $OR = 7.34; 95\% CI, 2.47-21.82$) were more likely to develop BPD during adolescence and early adulthood. Emotional neglect, physical neglect, and supervision neglect were significant after controlling for age, sex, physical

and sexual abuse, and for the other types of neglect. Cognitive neglect (e.g., failing to help child with school work where there is something the child does not understand, never reading to child) was not found to increase the risk of developing BPD.

In a study employing the same data, Johnson and colleagues (2006) investigated the role that parental child-rearing plays in the development of BPD. Results indicated that parental hostility (e.g., harsh punishment; $\chi^2 = 8.48, p < .001$) and low parental affection ($\chi^2 = 7.86, p < .001$) were associated with the development of BPD when age, sex, childhood behavioral or emotional problems, and parental psychiatric disorders were controlled statistically.

Finally, Crawford and colleagues (2009) found that early maternal separation (M length of separations = 15.7 weeks, range = 4 to 59 weeks) before the age of 5 years significantly predicted subsequent BPD symptoms in early adolescence to middle adulthood. These symptoms were more strongly associated with separations attributed to the mother being absent for personal, professional, or educational reasons or the child spending extended time with a relative as opposed to a mother's or child's illness (effect = $1.57 \times 0.0172 = 0.27 SD$).

Spatz Widom and colleagues (2009) utilized longitudinal data from children with court documented physical and sexual abuse and neglect that occurred when the children were less than 11 years of age at the time of incident ($n = 497$) and a comparison group that was matched for age, sex, race/ethnicity, and socioeconomic status (SES; $n = 395$). The follow-up interview was completed 31 to 33 years after the abuse or neglect was adjudicated in the court system. Individuals who were physically abused (OR = 2.09;

95% CI, 1.07-4.08) or neglected (OR = 1.68; 95% CI, 1.09-2.59) in childhood, but not sexually abused (OR = 1.46; 95% CI, 0.67-3.17), were found to be at an elevated risk for meeting criteria for BPD in adulthood compared to controls. The authors report that childhood maltreatment may represent a marker for family dysfunction (e.g., parental criminality, parental drug and alcohol problems, family receiving welfare when child), lifestyle characteristics (e.g., high school dropout, unemployed, criminality), and other psychiatric disorders (e.g., drug and alcohol abuse, major depressive disorder, posttraumatic stress disorder). Thus, children who are exposed to abuse and neglect may be at an increased risk for BPD because of these factors. When these risk factors were included in the model, childhood abuse and neglect became nonsignificant as a predictor of BPD (OR = 1.26; 95% CI, 0.81-1.97).

In a longitudinal population-based study of 6,050 children followed from the first trimester of pregnancy to approximately 11.7 years of age (age range = 10.4 to 13.6 years), Winsper and colleagues (2012) examined whether exposure to family adversity during pregnancy (e.g., young maternal age during pregnancy, inadequate housing, financial difficulties, problematic partner relationships excluding domestic violence, maternal affective disorder, substance abuse, involvement in crime), maladaptive parental behavior across childhood (e.g., hostility, resentment, hitting, shouting), and parental relationship conflict (e.g., emotional domestic violence, physical domestic violence, parent conflict) was associated with the development BPD symptoms at late childhood (*M* age = 11.7 years). Winsper and colleagues found physical maltreatment (OR = 1.79; 95% CI, 1.03-3.11), resentment (OR = 2.06; 95% CI, 1.07-3.95), hostility (OR = 2.38;

95% CI, 1.28-4.43), emotional domestic violence (OR = 2.56; 95% CI, 1.45-4.50), physical domestic violence (OR = 4.01; 95% CI, 2.05-7.86), and parental conflict (OR = 1.33; 95% CI, 1.07-1.65) to be predictive of BPD symptoms in late childhood.

Utilizing the same sample, Wolke and colleagues (2012) examined the association between peer victimization and the development BPD symptoms. Results indicated that children who had been bullied by their peers when they were between four and ten years of age were at an increased risk of endorsing a diagnosable level of BPD symptoms in late childhood (self-report of peer victimization, OR = 2.82; 95% CI, 2.13-3.72; mother report of peer victimization, OR = 2.43; 95% CI, 1.86-3.16; teacher report of peer victimization, OR = 1.95; 95% CI, 1.34-2.83). Additionally, children who reported being the victim of chronic peer victimization or experienced both relational and overt peer victimization had a heightened risk of endorsing BPD symptoms (OR = 5.44; 95% CI, 3.86-7.66; OR = 7.10; 95% CI, 4.79-10.51, respectively). See Table 2 for a summary of the variables found to predict BPD in prospective research.

While prospective research has found that childhood maltreatment (e.g., physical abuse, physical maltreatment, sexual abuse, verbal abuse neglect), maladaptive parental behavior (e.g., hostility, resentment, maternal negative expressed emotion, low parental affection), parental relationship conflict (e.g., emotional domestic violence, physical domestic violence, parent conflict), early life stress (e.g., early social and economic stress, early maternal separation), and relational and overt peer victimization (Belsky et al., 2012; Carlson et al., 2009; Crawford et al., 2009; Johnson et al., 1999, 2000, 2001, 2006; Spatz Widom et al., 2009; Winsper et al., 2012; Wolke et al., 2012) serve as

Table 2

Variables Found to Predict Borderline Personality Disorder in Prospective Research

Reference	Study sample	N	Age at initial contact and follow-up	Diagnostic measure(s)	Variable measure(s)	Variables found to predict BPD or BPD symptoms
Sample 1						
Belsky et al. (2012)	Population-based study of same-sex twins	2,232	Approximately 5 to 12 years of age	SWAP-200-A ^a	Mother interview Mother/child observation	Physical or sexual abuse, OR = 7.22; 95% CI, 1.13-12.63 Maternal negative expressed emotion, OR = 3.25; 95% CI, 2.60-4.07
Sample 2						
Carlson et al. (2009)	Children from families living in poverty	162	Birth to approximately 28 years of age	SCID-II	Mother/child observation LEI ^a	Maternal hostility, $z = 2.64, p < .01$ Early social and economic stress, $z = 1.96, p < .05$
Sample 3						
Crawford et al. (2009)	Community-based study of families	766 ^b	Approximately 6 to 33 years of age	Items drawn from PDQ	Mother interview	Early maternal separation (effect = 1.57 x 0.0172 = 0.27 SD)
Johnson et al. (1999)	Community-based study of families	639 ^b	Approximately 6 to 22 years of age	Items drawn from PDQ	CPS Reports Mother interview Child interview	Physical abuse, $F_{1,621} = 3.94, p < .05$ Sexual abuse, $F_{1,577} = 5.77, p < .05$ Neglect, $F_{1,629} = 23.10, p < .001$
Johnson et al. (2000)	Community-based study of families	738 ^b	Approximately 6 to 33 years of age	Items drawn from PDQ	DPI ^a CPS Reports Mother interview Child interview	Emotional neglect, OR = 5.10; 95% CI, 1.06-24.21 Physical neglect, OR = 6.92; 95% CI, 1.83-26.4 Supervision neglect, OR = 7.34; 95% CI, 2.47-21.82
Johnson et al. (2001)	Community-based study of families	793 ^b	Approximately 6 to 22 years of age	Items drawn from PDQ	CPS Reports Mother interview Child interview	Verbal abuse, OR = 4.50; 95% CI, 1.66-12.20
Johnson et al. (2006)	Community-based study of families	593 ^b	Approximately 6 to 33 years of age	Items drawn from PDQ and SCID-II	DPI ^a CPBI ^a CRPBI Mother interview	Parental hostility, $\chi^2 = 8.48, p < .001$ Low parental affection, $\chi^2 = 7.86, p < .001$

(table continues)

Reference	Study sample	N	Age at initial contact and follow-up	Diagnostic measure(s)	Variable measure(s)	Variables found to predict BPD or BPD symptoms
Sample 4						
Spatz Widom et al. (2009)	Children with court substantiated cases of abuse or neglect and matched controls	892	Maltreatment when children were < 11 years; follow-up approximately 32 years later	DIPD-R	Court Records	Physical abuse ^a OR = 2.09; 95% CI, 1.07-4.08 ^c Neglect, OR = 1.68; 95% CI, 1.09-2.59 ^c
Sample 5						
Winsper et al. (2012)	Population-based study of mothers and children	6,050	First trimester of pregnancy to approximately 12 years of age	CI-BPD-UK	FAI	Physical maltreatment, OR = 1.79; 95% CI, 1.03-3.11 Resentment, OR = 2.06; 95% CI, 1.07-3.95 Hostility, OR = 2.38; 95% CI, 1.28-4.43 Emotional domestic violence, OR = 2.56; 95% CI, 1.45-4.50 Physical domestic violence, OR = 4.01; 95% CI, 2.05-7.86 Parental conflict, OR = 1.33; 95% CI, 1.07-1.65
Wolke et al. (2012)	Population-based study of mothers and children	6,050	First trimester of pregnancy to approximately 12 years of age	CI-BPD-UK	BFIS	Peer victimization-Self-report, OR = 2.82; 95% CI, 2.13-3.72 Peer victimization-Mother report, OR = 2.43; 95% CI, 1.86-3.16 Peer victimization-Teacher report, OR = 1.95; 95% CI, 1.34-2.83 Chronic peer victimization-Self-report, OR = 5.44; 95% CI, 3.86-7.66 Both relational and overt peer victimization-Self-report, OR = 7.10; 95% CI, 4.79-10.51

Note. BFIS: Bullying and Friendship Interview Schedule; CI-BPD-UK: Childhood Interview for *DSM-IV* Borderline Personality Disorder-UK Version; CPBI: Cornell Parent Behavior Inventory; CPS: Child Protective Services; CRPBI: Child's Report of Parental Behavior Inventory; DIPD-R: Diagnostic Interview for *DSM-III-R* Personality Disorders; DPI: Disorganizing Poverty Interview; FAI: Family Adversity Index; LEI: Life Events Inventory; PDQ: Personality Diagnostic Questionnaire; SCID-II: Structured Clinical Interview for *DSM-IV* Axis II Personality Disorders; SWAP-200-A: Shedler-Westen Assessment Procedure 200-item Q-Sort for Adolescents.

^a Completed by child's mother.

^b The difference in *N* results from the different follow-up points the researchers choose to include in a given study.

^c When risk factors that have been associated with both childhood maltreatment and BPD (e.g., parental criminality, parental drug and alcohol problems, high school dropout, unemployed, criminality) were included to the model, childhood abuse and neglect became nonsignificant as a predictor of BPD (OR = 1.26; 95% CI, 0.81-1.97).

precursors for BPD development, the limited number of prospective studies serves as a limitation from which generalizations of these findings can be drawn. These findings, however, serve to augment the conclusions drawn from retrospective research by the use of baseline data gathered before the development of BPD and the ability to circumvent the limitations of recall bias, selection bias, information bias afford greater validity of the findings.

Borderline Personality Disorder and Deliberate Self-Harm

Research indicates that deliberate self-harm has the highest diagnostic predictive power for BPD (Grilo et al., 2001, 2004; McGlashan et al., 2005), and two separate studies reported that adults who engage in these behaviors have more than an 80% likelihood of fulfilling full diagnostic criteria for the disorder (Grilo et al., 2001, 2004). Additionally, deliberate self-harm tends to emerge before other BPD symptoms with up to 63% of adults with BPD reporting first harming themselves before 18 years of age (Zanarini et al., 2006).

Prevalence

Approximately 63.9% (M age = 26.7 years, SD = 7.2; Soloff et al., 1994b) to 90.5% (M age = 26.9 years, SD = 5.8; Zanarini et al., 2006) of adults with BPD have engaged in NSSI at least once. These numbers are significantly elevated compared to rates of NSSI in the general population which range from 3.9% (M age = 46 years, SD = 17; Briere & Gil, 1998) to 5.9% (M age = 55.5 years, SD = 16.6; Klonsky, 2011) in adult samples, and from 7% (age range 21-23 years; Wilcox et al., 2012) to 15.3% (M age =

20.5 years, $SD = 1.9$; Whitlock et al., 2011) in college samples. On average, cross-sectional retrospective research indicates that adults (M age = 32.4 years, $SD = 9.3$) diagnosed with BPD who continue to require psychiatric hospitalization engage in approximately 6.6 episodes of self-harm every 5 years (Sansone et al., 2002).

It is estimated that between 70.6% (M age = 24.7 years, $SD = 2.9$; Wilson et al., 2006) and 83.6% (M age = 28.2 years, $SD = 8.8$; Soloff et al., 2002) of adults diagnosed with BPD attempted suicide at least once with a mean of 3.4 ($SD = 2.9$) lifetime attempts per individual (Soloff, Lis, Kelly, Cornelius, & Ulrich, 1994a). Long-term studies have documented that approximately 10% of adults with BPD have completed suicide (Black et al., 2004; Paris & Zweig-Frank, 2001; Stone et al., 1987), a rate almost 50 times higher than that for the general population (Pompili, Girardi, Ruberto, & Tatarelli, 2005). Although research indicates that BPD symptoms tend to decline over time (Zanarini et al., 2007), most completed suicides occur after 30 years of age (Paris, 2003).

The majority of studies on deliberate self-harm in BPD are based on adult populations. Similar to adult populations, rates of NSSI in adolescent inpatients with BPD symptoms are more than three times higher than adolescents in the general population, ranging from 51.7% (M age = 14.7 years, $SD = 1.4$; Nock et al., 2006) to 63.5% (M age = 15.5 years, $SD = 1.7$; Ferrara et al., 2012). Data regarding rates of attempted and completed suicides in adolescents with BPD related characteristics have not been empirically examined.

Although recurrent suicide threats and gestures are one of the diagnostic criteria for BPD, most of the current literature on suicide-related behaviors in BPD has grouped

suicide threats, suicidal ideation, and SA together or has not examined these behaviors. The available research on suicide-related behaviors in BPD suggests that rates of suicidal ideation and suicide threats are high with approximately 93% of individuals with BPD endorsing suicidal ideation (Venta et al., 2012) and 58% of individuals with BPD endorsing a history of suicide threats (Wedig et al., 2013).

Emotion Dysregulation

Extant theoretical accounts of BPD have consistently suggested that there is a prominent association between the core clinical features of emotion dysregulation in BPD and deliberate self-harm (Gratz, Breetz, & Tull, 2010; Linehan, 1993; Tragesser, Solhan, Schwartz-Mette, & Trull, 2007) with emotion regulation considered the most frequent function of deliberate self-harm (In-Albon, Burli, Ruf, & Schmid, 2013). According to Gratz and colleagues (2009), individuals who are emotionally dysregulated exhibit patterns of responding characterized by deficits in awareness and understanding of emotions, maladaptive ways of responding to emotions, and difficulties in regulating behaviors when emotionally distressed. As a result, these individuals tend to manage emotional intensity with behaviors, such as engaging in deliberate self-harm, that serve the desired function of decreased emotion, but carry the potential for harmful consequences (Gratz, 2003).

The relationship between BPD, emotion dysregulation, and deliberate self-harm has only recently been empirically examined. In the only empirical study, Gratz and colleagues (2010) reported that although emotion regulation difficulties were associated with deliberate self-harm in both individuals with clinically relevant levels of borderline

symptoms and control participants, deliberate self-harm was associated with emotional inexpressivity among only the individuals with borderline symptoms. The lack of empirical evidence is likely the result of the challenges associated with conducting research assessing emotional dysregulation in a population that tends to engage in deliberate self-harm when distressed (Rosenthal et al., 2008). As a result, little empirical evidence exists examining the relationship between emotion dysregulation and deliberate self-harm in BPD, and the role of these clinical features examined together in predicting BPD has not yet been investigated.

Despite elevated rates of rates deliberate self-harm among individuals with BPD and the association between deliberate self-harm, emotion dysregulation, and BPD, deliberate self-harm has not been evaluated as a predictor of BPD. Understanding the complex interplay between BPD and deliberate self-harm can help advance our conceptualization of BPD. Additionally, because the prevalence of deliberate self-harm is high in the general population and even higher in individuals with BPD, it is important to know how large of a risk engagement in deliberate self-harm is in the development of BPD.

Purpose of Current Study

Although BPD has received considerable attention in the literature, significant gaps in understanding the etiology of this chronic and complex psychiatric disorder exist. While a number of retrospective studies have attempted to identify factors that likely contribute to the development of BPD (e.g., Bandelow et al., 2005; Huang et al., 2012;

Schwarze et al., 2013), very little prospective research has been done to address this question (i.e., prospective data has only been published from five unique samples; see Table 2 for complete reference list).

As a result, the current study seeks to extend previous investigations of precursors for BPD in a number of important ways. First, although retrospective research indicates that deliberate self-harm has been found to have the highest diagnostic predictive power for BPD (Grilo et al., 2001, 2004; McGlashan et al., 2005) and tends to emerge before other BPD symptoms (Zanarini et al., 2006), no study has investigated deliberate self-harm or suicide-related behaviors (e.g., suicidal ideation, suicide threats) as a precursor for BPD. Being able to differentiate adolescents who engage in deliberate self-harm and suicide-related behaviors who go on to develop BPD from those who do not could have important conceptualization and treatment implications.

Second, in the majority of available research, conclusions regarding factors associated with the development of BPD were retrospectively drawn from cross-sectional samples (e.g., Barone, 2003; Battle et al., 2004; Johnson et al., 2005). Concerns regarding the potential effects of BPD on the recollection of past experiences (Crick et al., 2005; Paris, 2003), and the confounding factors that occur in cross sectional research, make it problematic to conclude that the constructs identified in this research contributes to the development of BPD solely based on retrospective findings. Prospective longitudinal study of the precursors of BPD is needed to more effectively examine these factors while eliminating the biases (e.g., recall bias, selection bias, information bias) that can occur in studies based on retrospective data.

Thus, the purpose of this study as to utilize longitudinal data from a sample of adolescent psychiatric patients who were consecutively admitted to a child and adolescent inpatient unit for deliberate self-harm and suicide-related behaviors to examine whether deliberate self-harm or suicide-related behaviors can predict BPD. Additionally the ability of variants of deliberate self-harm to predict BPD at a 3-year follow-up and 5-year chart review, beyond other constructs that have been examined in the literature, will be examined. To our knowledge, this will be the first study prospectively evaluating predictors of BPD in adolescents who deliberately self-harm. Specifically, we were interested in: (a) Which variants of deliberate self-harm and/or suicide-related behaviors are predictive of BPD at a 3-year follow-up and 5-year chart review?, and (b) How much variance does deliberate self-harm and/or suicide-related behaviors account for at a 3-year follow-up and 5-year chart review above and beyond the variance of other constructs that have been examined in the literature (e.g., history of childhood maltreatment, maladaptive familial behavior, and peer victimization) or theoretically thought to contribute to the development of BPD (e.g., emotion regulation difficulties)?

Drawing on the literature that indicates that deliberate self-harm has the highest diagnostic predictive power for BPD (Grilo et al., 2001, 2004; McGlashan et al., 2005) and tends to emerge before other BPD symptoms (Zanarini et al., 2006), it was anticipated that variants of deliberate self-harm and suicide-related behaviors would be predictive of BPD. More specifically, due to the larger proportion of individuals with BPD engaging in NSSI as compared to SA (e.g., Soloff et al., 2002; Zanarini et al., 2006)

and the functional distinctions between NSSI and SA (Maddock et al., 2010; Muehlenkamp, 2005), it was anticipated that NSSI would account for variance above and beyond the variance of SA, suicidal ideation, and suicide threat in predicting BPD. Additionally, due to the association between the core characteristics of BPD and suicide threat (Wedig et al., 2013), it was expected that suicide threat would be predictive of BPD. Finally, it was also predicted that aspects of deliberate self-harm and suicide-related behaviors, childhood maltreatment, maladaptive familial behavior, peer victimization, and emotion regulation difficulties would be predictive of BPD, however, aspects of deliberate self-harm and suicide-related behaviors would account for variance in BPD above and beyond that of the other established constructs.

CHAPTER III

METHODS

Participants

Participants for the current study were drawn from an extant data set of adolescents who were consecutively admitted to a child and adolescent psychiatry unit at Mayo Clinic College of Medicine in Rochester, Minnesota over a 12-month period spanning from November 2007 to October 2008. Any adolescent who was hospitalized on the child and adolescent unit and did not exhibit psychotic symptoms or was not diagnosed with a developmental disability was eligible to participate in the original study. Adolescents were eligible to be hospitalized on the child and adolescent unit if they were at least 13 years of age, had not yet graduated from high school, and were living with their parents.

Of the 144 patients and patient's guardians approached for consent, four declined participation in the study and one consented but later withdrew consent. The resulting extant data set consisted of 139 adolescents. These patients were asked to complete a series of self-report questionnaires during their index psychiatric hospital admission and were invited to complete a follow-up assessment 6 months and 3 years after the index hospitalization.

Of the 139 patients included in the extant data set, seven patients denied engaging in deliberate self-harm or suicide-related behaviors at index psychiatric hospital admission and were excluded from the current study. The final sample included in the

analyses consisted of 132 adolescents (M age = 16.0 years, SD = 1.42, age range = 13.2 to 18.6). Most of the sample was female (n = 94, 71.2%). Patients were predominantly White American (n = 121, 91.7%) followed by mixed ethnicity (n = 4, 3.0%), Black American (n = 3, 2.3%), Asian American (n = 2, 1.5%), and Hispanic/Latino (n = 2, 1.5%). SES was measured using the Hollingshead's four-factor index of social position (Hollingshead, 1975). The combined index of social position was 43.0 indicating a middle class sample.

Measures

Medical and Psychiatric Record Review

The ability to complete the current study is the result of a unique confluence of circumstances and resources available in Rochester, Minnesota. In addition to the questionnaires and interview as described within, access to detailed medical and psychiatric histories of these adolescents were made available through the Rochester Epidemiology Project (REP). Due to the geographic isolation of Rochester, the majority of primary and specialty medical care for residents is provided locally by Mayo Clinic. Through the REP, all medical encounters (e.g., ambulatory medical care, hospitalizations, surgeries, emergency department visits, home visits, social services, laboratory test results, psychiatry and psychology reports and test results) are indexed for computerized retrieval (Medical Diagnostic Index; Melton, 1996). Access to detailed medical and psychiatric histories of each patient was granted after informed consent and assent was obtained.

Upon index psychiatric hospital admission into the child and adolescent psychiatry unit at Mayo Clinic College of Medicine, each adolescent was diagnosed by a psychiatry resident, staff psychiatrist, or staff psychologist through a brief semistructured interview and psychosocial assessment conducted for the purposes of acute crisis stabilization and treatment planning. These diagnoses were abstracted from each patient's medical and psychiatric records.

Additionally, as previous retrospective and prospective research suggests childhood maltreatment (e.g., Bandelow et al., 2005; Belsky et al., 2012; Huang et al., 2012; Schwarze et al., 2013; Spatz Widom et al., 2009) may contribute to the development of BPD, and incidents of childhood maltreatment including sexual abuse, physical abuse, verbal abuse, emotional abuse, and neglect was also abstracted from the patient's medical and psychiatric record. These medical and psychiatric records also contained information regarding whether the childhood maltreatment was reported to appropriate authorities.

Finally, for the purpose of this study, two methods of identifying patients who met criteria for BPD were utilized. The first method consisted of completing a structured diagnostic interview three years after the patient was discharged and is described in the Structured Clinical Interview for *DSM-IV* Axis II Personality Disorders Personality Questionnaire and Structured Clinical Interview for *DSM-IV* Axis II Personality Disorders sections. Diagnoses of BPD from the diagnostic interview are referred to as BPD–SCID–II Diagnosis at 3-year follow-up throughout the remainder of the paper.

The second method of identifying patients with BPD consisted of abstracting any

diagnosis of BPD or borderline traits and the date in which the diagnosis was made from the patient's medical and psychiatric records. The abstraction of this data was completed in December of 2013, 5 years after index psychiatric hospital admission, and involved abstracting any diagnosis of BPD or borderline traits in the patient's medical and psychiatric record that was documented up until December of 2013. This time point was important as it was not until this time that all of the patients were 18 years of age or older (M age = 23.6 years, SD = 1.42, age range = 18.2 to 23.6) and, thus, reached the age in which the majority of child and adolescent psychiatrists and psychologists consider BPD to be a valid diagnosis. Diagnoses of BPD from the patient's medical and psychiatric record are referred to as BPD–Medical Record Diagnosis at 5-year chart review throughout the remainder of the paper.

General Demographic and Background Information

During the index psychiatric hospital admission, general demographic and background information was collected from each patient including sex, age, ethnicity/race, psychiatric medication history, and mental health history including past psychiatric services, hospitalizations, and emergency department visits (see Appendix A). Information regarding changes in psychiatric medication, psychiatric services, psychiatric hospitalizations, and emergency department visits for psychiatric reasons was collected between index hospitalization and 6-month follow-up and between the 6-month follow-up and the 3-year follow-up.

Self-Harm Behavior Questionnaire

The Self-Harm Behavior Questionnaire (SHBQ; Gutierrez et al., 2001; see also Gutierrez & Osman, 2008) is a 32-item combined forced-choice and free-response, self-report measure used to assess frequency and severity of self-harm behaviors (see Appendix B). The SHBQ is divided into four sections assessing intentional self-harm behaviors that the individual did not identify as suicidal in nature, suicidal ideation, suicide threats, and suicide attempts. Open and closed-ended questions are used to gather information on past and current deliberate self-harm thoughts, verbalizations, and behaviors (e.g., “Have you ever hurt yourself on purpose?” “Have you ever attempted suicide?”). Additionally, the frequency, intent, lethality, and outcome of each behavior is gathered as relevant (e.g., “Did you have a specific plan for how you would try to kill yourself?” “How many times have you attempted suicide?”).

The measure provides both weighted total and subscale scores with greater scores reflecting greater risk for future engagement in the respective behaviors, thoughts, or verbalizations. The intentional self-harm behavior domain has six scored items with scores ranging from 0 to 18, the suicidal ideation domain has five scored items with scores ranging from 0 to 14, the suicide attempts domain has six scored items with scores ranging from 0 to 23, and the suicide threats domain has six scored items with scores ranging from 0 to 19 (Gutierrez & Osman, 2008; Gutierrez et al., 2001). Gutierrez and Osman (2008) identified a total score of 22 as most useful in differentiating inpatients who have made a suicide attempt from those who have not.

Psychometric test results support the reliability and validity of the SHBQ as a

measure of four distinct aspects of self-harm and suicide-related behaviors. Fliege and colleagues (2006) reported excellent test-retest reliability for each subscale ranging from .93 to .98 over a 1-week to 150-day interval. Gutierrez and colleagues (2001) demonstrated good to strong internal consistencies for each subscale ranging from .89 to .96. The SHBQ has demonstrated moderate convergent validity with the Suicide Probability Scale (SPS; $r = .57$) and strong convergent validity with the Adult Suicidal Ideation Questionnaire (ASIQ; $r = .70$) and the Suicide Behaviors Questionnaire–R (SBQ–R; $r = .77$; Gutierrez et al., 2001).

Family Environment Scale–Third Edition

The Family Environment Scale–Third Edition (FES–3; Moos & Moos, 1994) is a 90-item self-report measure used to assess characteristics of the family environment across the dimensions of relationships, personal growth, and system maintenance (see Appendix C). For the purpose of this study, only the 27 items that load onto the relationship dimension were used. The relationship dimension contains three subscales that assess perceptions of the quality and functioning of family relationships. The cohesion subscale examines the degree to which family is perceived as committed and supportive (e.g., “Family member really help and support one another,” “We put a lot of energy into what we do at home.”). The expressiveness subscale evaluates the degree to which one is encouraged to express feelings within the family (e.g., “Family members often keep their feelings to themselves,” “We say anything we want to around home.”). The conflict subscale assesses the degree to which anger and conflict is openly expressed in the family (e.g., “We fight a lot in our family,” “Family members rarely become

openly angry.”). Each item is rated on a dichotomous true or false scale. Total scores for the relationship dimension range from 0 to 27, with greater scores reflecting more positive interpersonal relationships within the family.

The psychometric properties of the FES-3 have been well established with test-retest reliability scores for each of the 10 subscales ranging from .68 to .86 over a two-month interval and from .53 to .84 over a 1-year interval. Additionally, alpha coefficients for internal consistency for each subscale ranged from .61 to .78 (Moos & Moos, 1986, 1994). Convergent validity was supported with the Family Assessment Clinician-Rated Interview (FACI) in that the Cohesion and Expressiveness subscales of the FES-3 were positively associated with the FACI Expectations subscale ($r = .35$; $r = .28$, respectively) and the Conflict subscale was negatively associated with the FACI Warmth subscale ($r = -.33$; Ehrenreich, Mico, Fisher, & Masia Warner, 2009). Moderate to strong convergent validity of the cohesion subscale of the FES-3 has also been demonstrated with the cohesion subscale of the Family Adaptability and Cohesion Evaluation Scale-III (FACES-III; $r = .86$), the affective involvement subscale of the Family Assessment Device (FAD; $r = .68$), and all four subscales of the Structural Family Interaction Scale – Revised (SFIS-R; $r = .61$ to $.89$; Perosa & Perosa, 1990). In the current study, internal consistency correlation coefficients for the subscales comprising the relationship dimension of the FES-3 was .76 for the cohesion subscale, .51 for the expressiveness subscale, and .79 for the conflict subscale at index psychiatric hospital admission.

Social Experiences Questionnaire–Self-Report

The Social Experiences Questionnaire–Self-Report (SEQ-S; Crick & Grotpeter,

1996) is a 13-item self-report measure used to evaluate perceptions of the positive and negative behaviors from peers (see Appendix D). The measure yields three subscale scores, for the purpose of this study only the relational victimization subscale and the overt victimization subscale were used. The relational victimization subscale consists of five scored items with scores ranging from 5 to 25 assessing the frequency in which an individual feels isolated or manipulated by peers (e.g., “How often does a kid tell you that they won’t like you unless you do what the kid says?,” “How often does another kid tell lies about you to make others not like you anymore?”). The overt victimization subscale consists of three scored items with scores ranging from 3 to 15 assessing the degree to which peers are physically aggressive and threatens their physical well-being (e.g., “How often do you get pushed or shoved by another kid at school?,” “How often do you get hit?”). Each item is rated on a 5-point forced-choice Likert scale ranging from *all the time* to *never*. Greater scores for each subscale indicates a greater perception of negative interactions with peers.

Initial psychometric data collected from elementary school children revealed strong test-retest reliability over a 4-week interval ($r = .80$ to $.93$) and strong internal consistency for each subscale ($\alpha = .77$ to $.80$; Crick & Grotpeter, 1996; Rys & Bear, 1997). In a sample of adolescents, the SEQ-S was found to have moderate test-retest reliability scores for each of the subscales over a 1-year interval (intraclass correlation coefficient = $.57$ to $.73$). Additionally, in the same sample of adolescents, the SEQ-S demonstrated adequate to good internal consistency for the relational victimization subscale ($\alpha = .78$), however, it produced lower internal consistency for the overt

victimization subscale ($\alpha = .60$; Storch et al., 2005). Convergent validity was supported through the comparison of the SEQ-S with peer-reports of victimization (see Crick & Bigbee, 1998) and through the comparison of the SEQ-S with established measures of social-psychological adjustment (SEQ-S relational victimization subscale: Asher Loneliness Scale, $r = .34$; Children's Depression Inventory, $r = .49$; Social Anxiety Scale for Children–fear of negative evaluation subscale, $r = .51$; Social Anxiety Scale for Children–social avoidance and distress specific to new situations subscale, $r = .28$; Social Anxiety Scale for Children–generalized social avoidance and distress subscale, $r = .38$; SEQ-S overt victimization subscale: Asher Loneliness Scale, $r = .44$; Children's Depression Inventory, $r = .49$; Social Anxiety Scale for Children–fear of negative evaluation subscale, $r = .47$; Social Anxiety Scale for Children–social avoidance and distress specific to new situations subscale, $r = .28$; Social Anxiety Scale for Children–generalized social avoidance and distress subscale, $r = .38$; Storch, Phil, Nock, Masia-Warner, & Barlas, 2003). In the current study, the relational victimization subscale Cronbach's alpha was .88 and the overt victimization subscale Cronbach's alpha was .83 at index psychiatric hospital admission.

Emotion Expression Scale for Children

The Emotion Expression Scale for Children (EESC; Penza-Clyve & Zeman, 2002) is a 16-item self-report measure used to examine emotion expression deficits (see Appendix E). The lack of emotion awareness subscale evaluates ability to identify emotions (e.g., “Sometimes I just don't have words to describe how I feel,” “I have feelings I can't figure out.”). The lack of motivation to express negative emotion subscale

examines willingness to express emotions to others (e.g., “I do not like to talk about how I feel,” “I prefer to keep my feelings to myself.”). Each item is rated on a 5-point forced-choice Likert scale ranging from *extremely true* to *not at all true*. Each subscale consists of eight scored items with scores ranging from 8 to 40. Greater scores on the lack of emotion awareness subscale reflects poorer emotional awareness and greater scores on the lack of motivation to express negative emotion subscale is indicative of greater reluctance to express emotion.

A psychometric evaluation of the EESC revealed moderate test-retest reliability over a 2-week interval ($r = .56$ to $.59$) and good internal consistencies ranging from $.81$ to $.83$. Additionally, convergent validity was supported between the EESC and established measures of emotion regulation (EESC lack of emotion awareness subscale: Children’s Sadness Management Scale–inhibition subscale, $r = .41$; Children’s Sadness Management Scale–dysregulated expression subscale, $r = .37$; Children’s Anger Management Scale–inhibition subscale, $r = .18$; Children’s Anger Management Scale–dysregulated expression subscale, $r = .36$; EESC lack of motivation to express negative emotion subscale: Children’s Sadness Management Scale–inhibition subscale, $r = .53$; Children’s Sadness Management Scale–dysregulated expression subscale, $r = .27$; Children’s Anger Management Scale–inhibition subscale, $r = .40$; Children’s Anger Management Scale–dysregulated expression subscale, $r = .18$; Affect Regulation Interview–sadness, $r = .25$; Affect Regulation Interview–anger, $r = .21$; Affect Regulation Interview–pain, $r = .30$; Penza-Clyve & Zeman, 2002). In the current study, internal consistency correlation coefficients values were $.83$ for the lack of motivation to

express negative emotion subscale and .85 for the lack of emotion awareness subscale at index psychiatric hospital admission.

Structured Clinical Interview for DSM-IV Axis II Personality Disorders Personality Questionnaire

The Structured Clinical Interview for *DSM-IV* Axis II Personality Disorders Personality Questionnaire (SCID–II–PQ; First, Gibbon, Spitzer, Williams, & Benjamin, 1997) is an 119-item self-report measure used as a screening tool to shorten the Structured Clinical Interview for *DSM-IV* Axis II Personality Disorders (SCID–II). For the purpose of this study, only the BPD section was administered (see Appendix F). Each item was rated on a dichotomous “yes” or “no” scale endorsing or denying *DSM-IV* criteria for BPD (e.g., “Have you often become frantic when you thought that someone you really cared about was going to leave you?” “Do your relationships with people you really care about have lots of extreme ups and downs?”). Total scores for the BPD section of the SCID–II–PQ range from 0 to 15 with a score of five or more, the threshold required for a diagnosis, signifying that the SCID–II should be administered.

The BPD section of the SCID–II–PQ was found to have excellent test-retest reliability over a 2-week interval (intraclass correlation coefficient = .87; Chanen et al., 2008a) and moderate test-retest reliability over a 1-year interval ($r = .55$; Ball, Rounsaville, Tennen, & Kranzler, 2001). The BPD section of the SCID–II–PQ has also been found to have adequate to good internal consistency ($\alpha = .75$, Ball et al., 2001; $\alpha = .87$; Chanen et al., 2008a). In the current study, Cronbach’s alpha was .82 at 3-year follow-up.

Ekselius, Lindstrom, von Knorring, Bodlund, and Kullgren (1994) compared the SCID-II-PQ with the SCID-II to determine if the SCID-II-PQ could be used as an independent diagnostic tool. Results indicated that the SCID-II-PQ was overinclusive when the same cutoff scores as the SCID-II were used (i.e., 73.4% of participants fulfilled criteria for a personality disorder according to the SCID-II-PQ versus 53.6% of participants fulfilled criteria for a personality disorder according to the SCID-II). When adjusted cutoff scores were used (i.e., SCID-II diagnostic threshold + 3), however, similar results between the SCID-II-PQ (58.0% of participants fulfilled criteria for a personality disorder) and SCID-II were obtained (Cohen's kappa = .78). These adjusted cutoff scores yielded a specificity of 75.0% and a sensitivity of 86.5%. For the purpose of this study, all individuals who completed the BPD section of the SCID-II-PQ during the 3-year follow-up and were not able to complete the BPD section of the SCID-II ($n = 9$), the adjusted cutoff score (i.e., SCID-II diagnostic threshold + 3) was used to determine if the patient could be considered to meet criteria for BPD.

Structured Clinical Interview for DSM-IV Axis II Personality Disorders

The Structured Clinical Interview for *DSM-IV* Axis II Personality Disorders (SCID-II; First et al., 1997) is a semistructured interview designed to provide categorical (i.e., *DSM-IV* diagnosis) and dimensional (i.e., symptom count) assessment of *DSM-IV* personality disorders. For the purpose of this study, only the BPD section was administered (see Appendix G). Open and closed-ended questions are used to gather information on *DSM-IV* criteria for BPD (e.g., "You've said that you have [Have you]

often become frantic when you thought that someone you really cared about was going to leave you?”). Responses are scored as absent or false = 1, subthreshold = 2, and threshold or true = 3. A rating of three is made when a criterion statement meets or exceeds the *DSM-IV* criteria for presence of a given symptom and then the presence of each personality disorder is determined if the number of positive criterion statements meets or exceeds the *DSM-IV* diagnostic threshold. In the current study, the SCID–II was administered by the first author blind to the SCID–II–PQ scores and the medical and psychiatric histories of the patients.

First, Spitzer, Gibbon, and Williams (1995) reported moderate test-retest reliability ($\kappa = .48$) from a 1-day to 2-week interval while Dreessen and Arntz (1998) found moderate test-retest reliability ($\kappa = .72$) from a one to four week interval for BPD. Farmer and Chapman (2002) reported adequate internal consistency ($\alpha = .79$) for BPD. Additionally, Ryder, Costa, and Bagby (2007) reported that the symptom to disorder coherence for items of the SCID–II for BPD, evidence of convergent validity, was found to be 80.0% with 12 of the 15 items being correlated with meeting *DSM-IV* criteria for BPD diagnosis.

Procedures

The extant data utilized in this article were collected by the first author and two research assistants from November 2007 to December 2013. Procedures for this study were approved by the Institutional Review Board of Mayo Clinic College of Medicine beginning on October 24, 2007, and were reviewed annually. After receiving approval,

parental interest forms were distributed and discussed during routine intake procedures. Families who met criteria for inclusion in the original study (i.e., adolescents without a psychotic or a significant developmental disability being admitted to Mayo Clinic for psychiatric hospitalization) and indicated interest in participating were contacted in person to schedule time to receive an overview of the study. The parents/guardians were asked to sign the Parent Consent Form (see Appendix H) and the adolescent patients were asked sign the Adolescent Assent Form (see Appendix I) acknowledging that they understood the conditions of their participation and that they were participating voluntarily. After obtaining consent, patients were asked to complete a series of self-report questionnaires containing a general demographic and background information sheet, the SHBQ, the FES-3, the SEQ-S, and the EECS.

Approximately 6 months after discharge from the index psychiatric hospital admission, researchers attempted to relocate each patient to participate in the 6-month follow-up. Seven patients were unable to be located due to change of address or telephone number. Of the 125 patients who were located, eight refused to participate or stated that they would participate but did not follow through, five were currently hospitalized and could not participate during the timeframe, two were placed in a new foster home and the previous foster parents did not know how to locate the patient, and one was deceased by suicide. As a result, 109 (82.6%) patients completed the 6-month follow-up, which is comparable to the retention rates of prior longitudinal studies of adolescent psychiatric inpatients during similar time periods (e.g., 78.2%, Boergers & Spirito, 2003; 87.5%, Kienhorst, de Wilde, Diekstra, & Wolters, 1991; 83.2%, Yen et al.,

2013).

The 6-month follow-up included questions from the general demographic and background information sheet pertaining to changes in psychiatric medication, psychiatric services, psychiatric hospitalizations, and emergency department visits for psychiatric reasons between the index psychiatric hospital admission and the 6-month follow-up. Additionally, each patient was asked to complete the SHBQ, the FES-3, and the EECS. The SEQ-S was not given at this follow-up.

Approximately 3 years after discharge from the index psychiatric hospital admission another attempt was made to locate each patient. Multiple methods were used in an effort to contact each patient. Only 41.7% ($n = 55$) of the original sample could be located and agreed to complete the assessment. A review of medical and psychiatric records indicated that three patients died between the 6-month follow-up and the 3-year follow-up. Two of these patients died by suicide and one death was ruled accidental.

The 3-year follow-up included the same questions from the general demographic and background information sheet; however, this time the questions were pertaining to changes in psychiatric medication, psychiatric services, psychiatric hospitalizations, and emergency department visits for psychiatric reasons between the 6-month follow-up and the 3-year follow-up. In addition to the same series of self-report questionnaires completed at index psychiatric hospital admission, the 3-year follow-up also contained the BPD section of the SCID-II-PQ. If the patient endorsed five or more items on the BPD section of the SCID-II-PQ, the threshold required for a diagnosis, he or she was asked to complete the BPD section of the SCID-II in person or over the phone. The

participants were reimbursed \$30 for completing each follow-up.

In addition to the self-report measures and the structured clinical interview, the patients' medical and psychiatric records were also reviewed for intake diagnoses and any incident of childhood maltreatment including sexual abuse, physical abuse, verbal abuse, emotional abuse, and neglect at index psychiatric hospital admission and at 5-year chart review. Finally, any diagnosis of BPD or BPD traits was abstracted from the patients' medical and psychiatric records by the first author in December of 2013 at 5-year chart review. Due to time constraints, no coding checks for these data were completed. See Figure 1 for a flow chart illustrating the number of patients, from the original extant sample, who were included in the current study, completed the assessments at index psychiatric hospital admission, 6-month follow-up, and 3-year follow-up, and were included in the 5-year chart review.

The use of the extant data was approved by the Institutional Review Board of Mayo Clinic College of Medicine on September 3, 2013 and by the Institutional Review Board of Utah State University on September 17, 2013.

Statistical Analysis

Descriptive statistics were calculated and group means (original sample and patients who completed the 6-month follow-up; original sample and patients who completed the 3-year follow-up) were compared using *t* test, chi-square, and Fisher's exact test, where appropriate. Means, standard deviations, ranges, skewness, kurtosis, and alphas for each subscale of the SHBQ, the FES-3, the SEQ-S, and the EECS collected at index psychiatric hospital admission and for the total score of the BPD section of the

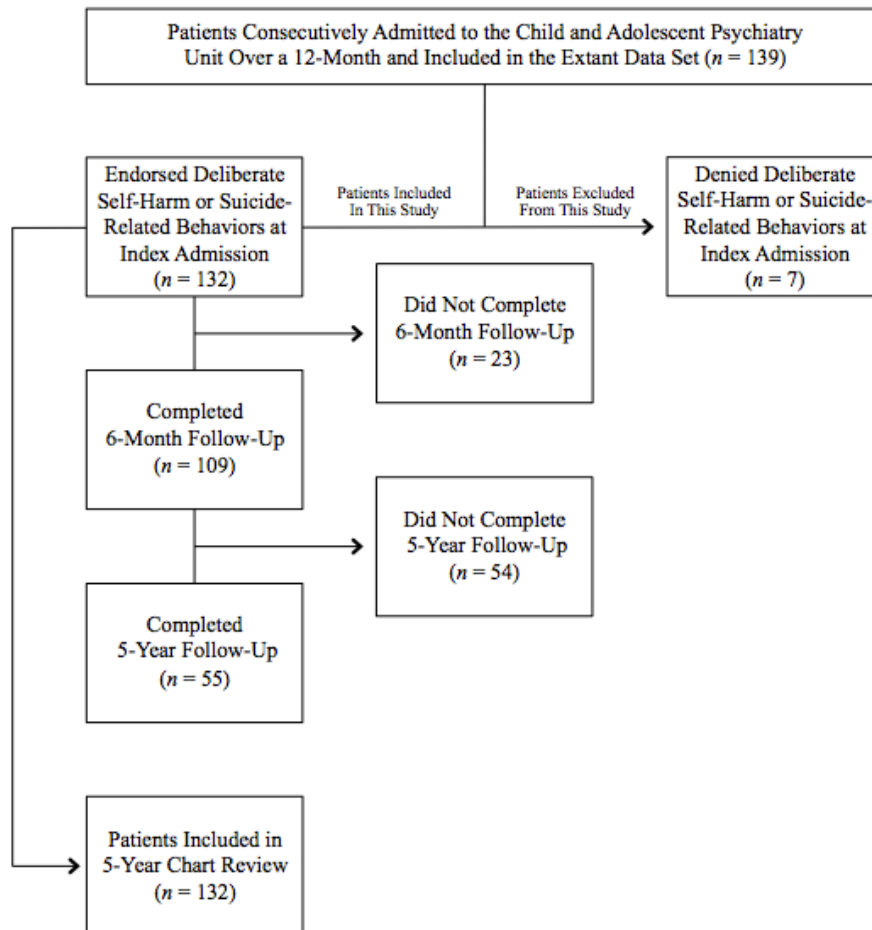


Figure 1. Flow chart describing the assessment of patients at index psychiatric hospital admission, 6-month follow-up, and 3-year follow-up, and 5-year chart review.

SCID–II–PQ that was collected 3-year follow-up were also computed.

Two dichotomous outcome variables were constructed to answer the two main research questions through the use of logistic regression analysis: BPD SCID–II categorical diagnosis (BPD–SCID–II Diagnosis) and BPD medical and psychiatric record categorical diagnosis (BPD–Medical Record Diagnosis). The BPD–SCID–II Diagnosis is based on the data collected from the BPD sections of the SCID–II–PQ and the SCID–II. The SCID–II–PQ was administered as a self-report questionnaire during the 3-year

follow-up. Any patient who positively endorsed five or more items on the SCID–II–PQ was asked to complete the SCID–II. Of the 55 patients who completed the 3-year follow-up, 41 patients positively endorsed five or more items. Of these 41 patients, 31 agreed to complete the SCID–II of which 12 met the SCID–II diagnostic threshold for BPD. For the remaining 10 patients who did not complete the SCID–II, in accordance with Ekselius and colleagues (1994), an adjusted cutoff score for the SCID–II–PQ (i.e., SCID–II diagnostic threshold + 3) was used to classify each patient. Using this procedure, another eight patients were considered to meet criteria for BPD, yielding a final sample of 20 patients meeting SCID–II criteria for BPD. Using the SCID–II–PQ and the SCID–II data, BPD was scored categorically (e.g., presence vs. absence of a disorder). See Figure 2 for a flow chart describing the identification of patients with BPD at 3-year follow-up utilizing SCID–II–PQ and the SCID–II data.

The BPD–Medical Record Diagnosis is based on a medical and psychiatric chart review that was completed in December of 2013. These diagnoses were recorded as categorical variables (e.g., presence versus absence of a diagnosis of BPD or borderline traits). Consistent with previous research (e.g., Weaver & Clum, 1993; Wolke et al., 2012), patients diagnosed with definite BPD ($n = 10$) and probable BPD (e.g., borderline traits; $n = 15$) were assigned to the BPD–Medical Record Diagnosis group ($n = 25$). Group means between definite BPD and probable BPD were compared using t test, chi-square, and Fisher’s exact test. See Figure 3 for a flow chart describing the identification of patients with BPD at 5-year chart review utilizing medical and psychiatric medical records.

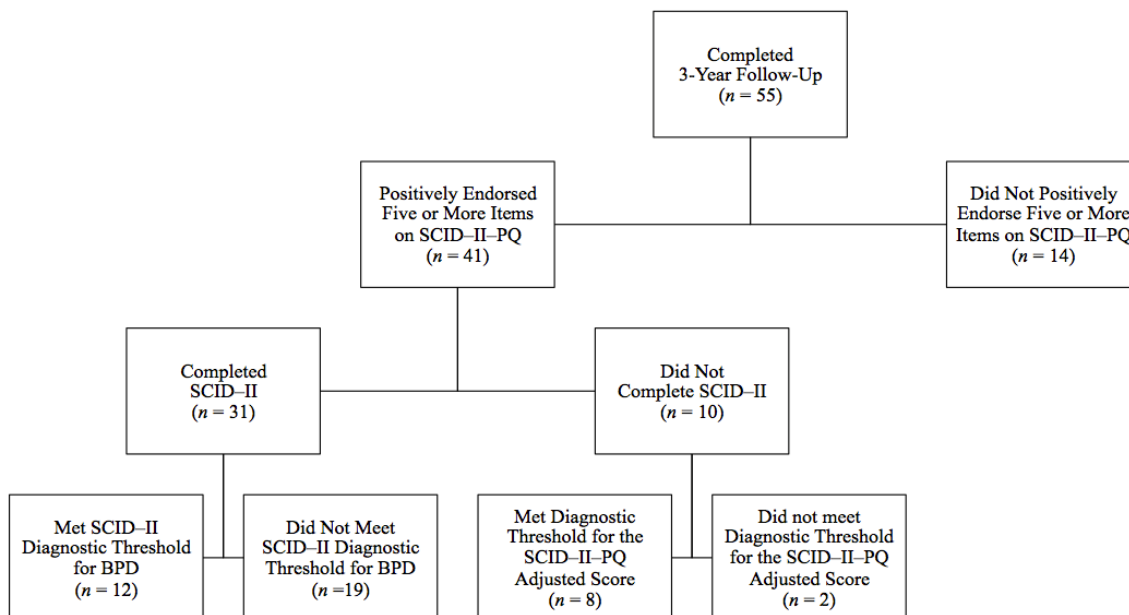


Figure 2. Flow chart describing the identification of patients with borderline personality disorder at 3-year follow-up utilizing SCID-II-PQ and the SCID-II data.

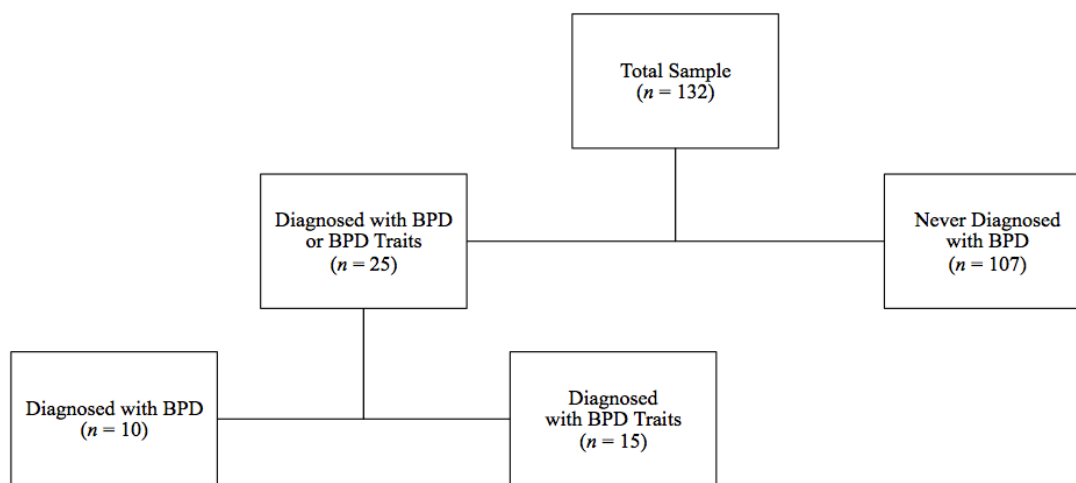


Figure 3. Flow chart describing the identification of patients with borderline personality disorder at 5-year chart review utilizing medical and psychiatric medical records.

Research Question One

In order to answer research question one, logistic regression analyses were run to determine if the variables of interest could accurately classify whether patients were diagnosed with BPD. Predictors of BPD were analyzed in two phases: (1) using BPD–SCID–II Diagnosis at 3-year follow-up as the outcome variable and (2) using BPD–Medical Record Diagnosis at 5-year chart review as the outcome variable. Univariate logistic regression analyses were conducted to determine whether patients were diagnosed with BPD using the deliberate self-harm variables (e.g., SHBQ-Intentional Self-Harm, SHBQ-Suicide Attempt) and suicide-related behaviors (e.g., SHBQ-Suicide Threat, SHBQ-Suicidal Ideation) as separate predictors. Multivariable logistic regression analyses were then utilized to examine the unique contributions of the same deliberate self-harm variables suicide-related behaviors entered simultaneously into a logistic regression model in the prediction of BPD.

Research Question Two

In order to answer research question two, logistic regression analyses were run to determine if deliberate self-harm and/or suicide-related behaviors account for variance in BPD above and beyond that of the established constructs that have been examined in the literature (e.g., history of childhood maltreatment, maladaptive familial behavior, and peer victimization) or theoretically thought to contribute to the development of BPD (e.g., emotion regulation difficulties). These analyses were only run for the BPD–SCID–II Diagnosis and the BPD–Medical Record Diagnosis outcome variables if the predictor variables were able to reliably distinguish between BPD and non-BPD in the previous

analyses. First, we utilized univariate logistic regression analyses to examine the unique contributions of the established constructs in our sample. Then, multivariable logistic regression analyses were conducted to examine whether deliberate self-harm and/or suicide-related behaviors could predict BPD over and above these established constructs.

For the logistic regression analyses, the number of patients per variable exceeded the minimum recommended value of 10, reducing concerns about inflated standard errors when the number of cases per variable is inadequate. Additionally, in order to examine more clinically meaningful change in our predictor variables, data from the measures were standardized as a one standard deviation unit change per variable so that odds ratios and confidence intervals were interpreted as increased odds in the outcome given a 1-SD unit increase. The level of alpha was set to $p < 0.05$ and the statistical analyses were performed using SPSS version 18.0 statistical software.

CHAPTER IV

RESULTS

Descriptive Statistics

The index psychiatric hospital admission was the first psychiatric hospitalization for 72.7% ($n = 96$) of the patients while 15.9% ($n = 21$) of the patients had one psychiatric hospitalization prior to the index hospitalization, 7.6% ($n = 10$) had two prior psychiatric hospitalizations, and 3.9% ($n = 5$) had three or more previous psychiatric hospitalizations. Additionally, 80.3% ($n = 106$) of the patients received outpatient psychotherapy before the index hospitalization and 81.1% ($n = 107$) were taking one or more psychotropic medication(s).

Diagnoses at the index psychiatric hospital admission were assigned by a psychiatry resident, staff psychiatrist, or staff psychologist upon admission through a brief semistructured interview and psychosocial assessment. The patients were diagnosed in accordance with *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*). The majority of the patients received a primary Axis I diagnosis of a mood disorder ($n = 104$, 78.7%; 98 categorized as depressive type; 6 categorized as manic type), followed by an adjustment disorder ($n = 9$, 6.8%), an anxiety disorder ($n = 7$, 5.3%), an eating disorder ($n = 5$, 3.8%), an attention-deficit and disruptive behavior disorder ($n = 4$, 3.0%), a substance abuse and/or substance dependence disorder ($n = 2$, 1.5%), or an impulsive-control disorder not elsewhere classified ($n = 1$, 0.8%). Additionally, 42.4% ($n = 56$) of the patients also received a secondary comorbid

diagnosis with the majority receiving a substance abuse and/or substance dependence disorder diagnosis ($n = 15$, 11.4%) and 13.6% ($n = 18$) of the patients received a tertiary diagnosis with the majority receiving an attention-deficit and disruptive behavior disorder diagnosis ($n = 7$, 5.3%). See Table 3 for the primary, secondary, and tertiary diagnoses at index psychiatric hospital admission.

Of the 132 patients, 55.3% ($n = 73$) were engaging in nonsuicidal self-injury (NSSI) at the time of the index psychiatric hospital admission. Medical and psychiatric records indicated that the majority were engaging in wrist cutting without the intent to die as the sole NSSI behavior or combined with another NSSI behavior ($n = 70$, 96.0% of patients who were engaging in NSSI). See Table 4 for NSSI at the time of index psychiatric hospital admission. An additional 30 patients endorsed a past history of NSSI, however, they were not engaging in the behavior at the time of index hospitalization, resulting in a lifetime prevalence of 78.0% ($n = 103$) of patients in the total sample endorsing a current, or history of, NSSI at the time of index hospitalization.

Additionally, medical and psychiatric records indicated that 26.5% ($n = 35$) of the patients were hospitalized following a suicide attempt (SA). Of these 35 patients, 77.1% ($n = 27$) attempted suicide by intentional overdose, 8.6% ($n = 3$) by wrist cutting with intent to die, 5.7% ($n = 2$) by intentional firearm discharge,⁴ 2.9% ($n = 1$) by intentional crashing of a motor vehicle, 2.9% ($n = 1$) by attempting to slit throat, and 2.9% ($n = 1$) by attempted hanging.⁵ Out of the 35 patients who were hospitalized following a SA, this

⁴ The medical and psychiatric records of both patients indicated that the patient was holding a loaded gun to their head, however, was unable to pull the trigger and was admitted to the psychiatry unit as a result.

⁵ The medical and psychiatric records indicated that the patient was attempting to hang self and was stopped by a family member. The patient was admitted to the psychiatry unit as a result.

Table 3

Diagnoses at Index Psychiatric Hospital Admission

	Primary diagnosis		Secondary diagnosis		Tertiary diagnosis	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Mood disorders						
Major depressive disorder	67	50.8	3	2.3	0	0.0
Depressive disorder not otherwise specified	31	23.5	9	6.8	1	0.8
Bipolar I disorder	2	1.5	0	0.0	0	0.0
Bipolar II disorder	3	2.3	0	0.0	0	0.0
Bipolar disorder not otherwise specified	1	0.8	0	0.0	0	0.0
Adjustment disorder	9	6.8	3	2.3	0	0.0
Anxiety disorders						
Generalized anxiety disorder	1	0.8	1	0.8	0	0.0
Obsessive-compulsive disorder	2	1.5	0	0.0	1	0.8
Posttraumatic stress disorder	2	1.5	4	3.0	1	0.8
Anxiety disorder not otherwise specified	2	1.5	5	3.8	1	0.8
Eating disorders						
Anorexia nervosa	1	0.8	0	0.0	0	0.0
Bulimia nervosa	1	0.8	2	1.5	1	0.8
Eating disorder not otherwise specified	3	2.3	2	1.5	2	1.5
Attention-deficit and disruptive behavior disorders						
Attention-deficit/hyperactive disorder	0	0.0	8	6.1	1	0.8
Conduct disorder	0	0.0	1	0.8	0	0.0
Oppositional defiant disorder	3	2.3	1	0.8	6	4.5
Substance abuse and dependence disorders						
Alcohol abuse	0	0.0	3	2.3	1	0.8
Alcohol dependence	0	0.0	1	0.8	0	0.0
Substance abuse	0	0.0	5	3.8	2	1.5
Substance dependence	1	0.8	1	0.8	1	0.8
Alcohol and substance abuse	1	0.8	5	3.8	0	0.0
Somatoform disorders						
Conversion disorder	0	0.0	1	0.8	0	0.0
Impulsive-control disorder not elsewhere classified						
Intermittent explosive disorder	1	0.8	0	0.0	0	0.0
Impulsive-control disorder not otherwise specified	0	0.0	1	0.8	0	0.0
No diagnosis	0	0.0	76	57.6	114	86.4

Note. *n* = 132.

Table 4

Medical Record Review of Nonsuicidal Self-Injury at the Time of Index Psychiatric Hospital Admission

Self-injury type	<i>N</i>	% of total sample	% of patients who engaged in nonsuicidal self-injury
Wrist cutting	65	49.2	89.0
Wrist cutting and choking to pass out	2	1.5	2.7
Wrist cutting and head banging	2	1.5	2.7
Wrist cutting and burning skin	1	0.8	1.4
Head banging	2	1.5	2.7
Stabbed self	1	0.8	1.4
No current nonsuicidal self-injury	59	44.7	–

Note. $n = 132$.

was the first SA for 37.1% ($n = 13$). See Table 5 for SA at the time of index psychiatric hospital admission. Finally, of the total sample, an additional 37 patients endorsed making one or more SA prior to the index hospitalization, resulting in a lifetime prevalence of 54.5% ($n = 72$) of patients in the total sample endorsing a current, or history of, SA at the time of index hospitalization.

Medical and psychiatric records indicated that 93.9% ($n = 124$) patients endorsed suicidal ideation at the time of index psychiatric hospital admission and that, of the total sample, 19 patients (14.4%) were hospitalized for suicidal ideation without NSSI or SA. Additionally, medical and psychiatric records indicated that 56.1% ($n = 74$) of patients threatened suicide at the time of index hospitalization. See Table 6 for a grouping of patients divided by the type(s) of deliberate self-harm and related suicidal behaviors they were engaging in at the time of index hospitalization.

Table 5

Medical Record Review of Suicide Attempt at the Time of Index Psychiatric Hospital Admission

Type of suicide attempt	<i>N</i>	% of total sample	% of patients who attempted suicide
Intentional overdose	27	20.5	77.1
Wrist cutting with intent to die	3	2.3	8.6
Intentional firearm discharge	2	1.5	5.7
Intentional crashing of a motor vehicle	1	0.8	2.9
Attempting to slit throat	1	0.8	2.9
Attempted hanging	1	0.8	2.9
No current suicide attempt	97	73.5	–

Note. *n* = 132.

Table 6

Medical Record Review of the Type(s) of Deliberate Self-Harm and Related Suicidal Behavior(s) at the Time of Index Psychiatric Hospital Admission

Type of behavior	<i>N</i>	% of total sample
Nonsuicidal self-injury only	6	4.5
Suicidal ideation only	19	14.4
Nonsuicidal self-injury and suicidal ideation	22	16.7
Nonsuicidal self-injury and suicide threats	2	1.5
Suicide attempt and suicidal ideation	8	6.1
Suicidal ideation and suicide threats	23	17.4
Nonsuicidal self-injury, suicide attempt and suicidal ideation	3	2.3
Nonsuicidal self-injury, suicidal ideation, and suicide threats	25	18.9
Suicide attempt, suicidal ideation, and suicide threats	9	6.8
Nonsuicidal self-injury, suicide attempt, suicidal ideation, and suicide threats	15	11.4

Note. *n* = 132.

Comparison of Original Sample to Patients who Completed the 6-Month Follow-Up

In order to determine if the 109 patients who completed the 6-month follow-up were similar to the original sample, *t* test, chi-square, and Fisher's exact test analyses were conducted. Compared to the original sample, the patients who completed the 6-month follow-up were not significantly different in terms of age at index psychiatric hospital admission ($p = .63$), sex ($p = .71$), ethnicity ($p = 1.00$), and SES ($p = .93$). As shown in Tables 7 and 8, the patients who completed 6-month follow-up were also not significantly different from the original sample regarding the primary ($p = .99$), secondary ($p = 1.00$), or tertiary ($p = .99$) diagnoses at index hospitalization and whether they engaged in NSSI ($p = 1.00$), endorsed suicidal ideation ($p = .91$), or attempted suicide at index hospitalization ($p = .99$).

Table 7

t Test Comparing Patients Who Completed the 6-Month Follow-Up to Patients in the Original Sample

	Original sample ($n = 132$)		6-month follow-up ($n = 109$)		<i>F</i>	<i>p</i> value
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Age at index hospitalization	16.0	1.4	16.1	1.3	0.61	.63
SES at index hospitalization	42.9	12.9	43.2	12.9	0.00	.93

6-month follow-up $n = 109$.

Original sample $n = 132$.

Table 8

Chi-Square and Fisher's Exact Test Comparing Patients Who Completed the 6-Month Follow-Up to Patients in the Original Sample

Variable	Original sample (<i>n</i> = 132)		6-month follow-up (<i>n</i> = 109)		<i>p</i> value
	<i>n</i>	%	<i>n</i>	%	
Sex					.71 (χ^2)
Male	38	28.8	29	26.6	
Female	94	71.2	80	73.4	
Ethnicity					1.00 (Fisher's)
White American	121	91.1	100	91.1	
Mixed ethnicity	4	3.0	3	2.8	
Black American	3	2.3	2	1.8	
Asian American	2	1.5	2	1.8	
Hispanic/Latino	2	1.5	2	1.8	
Primary diagnosis at index hospitalization					.99 (Fisher's)
Mood disorder	104	78.7	85	78.0	
Adjustment disorder	9	6.8	6	5.5	
Anxiety disorder	7	5.3	7	6.4	
Eating disorder	5	3.8	5	4.6	
Attention-deficit/disruptive behavior disorder	4	3.0	2	1.8	
Substance abuse or dependence disorder	2	1.5	1	0.9	
Impulsive-control disorder	1	0.8	0	0.0	
Secondary diagnosis at index hospitalization					1.00 (Fisher's)
Mood disorder	10	7.6	9	8.3	
Adjustment disorder	3	2.3	1	0.9	
Anxiety disorder	12	9.1	9	8.3	
Eating disorder	4	3.0	2	1.8	
Attention-deficit/disruptive behavior disorder	10	7.6	7	6.4	
Substance abuse or dependence disorder	15	11.4	13	11.9	
Somatoform disorder	1	0.8	1	0.9	
Impulsive-control disorder	1	0.8	1	0.9	
No diagnosis	76	57.6	66	60.6	
Tertiary diagnosis at index hospitalization					.99 (Fisher's)
Mood disorder	1	0.8	1	0.9	
Anxiety disorder	3	2.3	2	1.8	
Eating disorder	3	2.3	3	2.8	
Attention-deficit/disruptive behavior disorder	7	5.3	5	4.6	
Substance abuse or dependence disorder	4	3.0	2	1.8	
No diagnosis	114	86.4	96	88.1	

(table continues)

Variable	Original sample (<i>n</i> = 132)		6-month follow-up (<i>n</i> = 109)		<i>p</i> value
	<i>n</i>	%	<i>n</i>	%	
Nonsuicidal self-injury at index hospitalization					1.00 (Fisher's)
Wrist cutting	64	48.5	53	48.6	
Wrist cutting and choking to pass out	2	1.5	2	1.8	
Wrist cutting and head banging	2	1.5	2	1.8	
Wrist cutting and burning skin	1	0.8	1	0.9	
Head banging	2	1.5	2	1.8	
Stabbed self	1	0.8	1	0.9	
No current nonsuicidal self-injury	60	45.5	48	44.0	
Suicidal ideation at index hospitalization					.91 (χ^2)
Current suicidal ideation	124	93.9	102	93.6	
No current suicidal ideation	8	6.1	7	6.4	
Attempted suicide at index hospitalization					.99 (Fisher's)
Intentional overdose	27	20.5	24	22.0	
Wrist cutting with intent to die	3	2.3	3	2.8	
Intentional firearm discharge	2	1.5	2	1.8	
Intentional crashing of a motor vehicle	1	0.8	1	0.9	
Attempting to slit throat	1	0.8	0	0.0	
Attempted hanging	1	0.8	0	0.0	
No current suicide attempt	97	73.5	79	72.5	

6-month follow-up *n* = 109.

Original sample *n* = 132.

Comparison of Original Sample to Patients Who Completed the 3-Year Follow-Up

Chi-square, *t* test, and Fisher's exact test analyses were utilized to determine whether the patients that completed the 3-year follow-up were similar to the original sample. Results indicated that the 55 patients who completed the 3-year follow-up were not significantly different from the original sample in terms of age at index psychiatric hospital admission ($p = .89$); ethnicity ($p = 1.00$); SES ($p = .88$); primary ($p = .80$), secondary ($p = .87$), or tertiary ($p = .79$) diagnoses at index hospitalization; and whether

they engaged in NSSI ($p = .66$), endorsed suicidal ideation ($p = .73$), or attempted suicide at index hospitalization ($p = .97$). Compared to the original sample, the patients who completed 3-year follow-up, however, were significantly different in terms of sex ($p = .01$) in that a significantly smaller proportion of males completed the 3-year follow-up. The larger proportion of males lost to follow-up in the current study is consistent with previous research examining personality disorders (e.g., Cohen et al., 2008; Winsper et al., 2012). See Tables 9 and 10 for comparisons of patients who completed the 3-year follow-up to patients in the original sample.

Logistic Regression Analyses

Descriptive Statistics for the Predictor and Outcome Variables

Means, standard deviations, ranges, skewness, kurtosis, and alphas for each subscale of the SHBQ, the FES-3, the SEQ-S, and the EECS collected at index psychiatric hospital admission, the total score of the borderline personality disorder

Table 9

t Test Comparing Patients Who Completed the 3-Year Follow-Up to Patients in the Original Sample

	Original sample ($n = 132$)		3-year follow-up ($n = 55$)		F	p value
	M	SD	M	SD		
Age at index hospitalization	16.0	1.4	16.0	1.4	0.08	.89
SES at index hospitalization	42.9	12.9	43.3	12.3	0.01	.89

3-year follow-up $n = 55$.

Original sample $n = 132$.

Table 10

Chi-Square and Fisher's Exact Test Comparing Patients Who Completed the 3-Year Follow-Up to Patients in the Original Sample

Variable	Original sample (<i>n</i> = 132)		3-year follow-up (<i>n</i> = 55)		<i>p</i> value
	<i>n</i>	%	<i>n</i>	%	
Sex					.01* (χ^2)
Male	38	28.8	6	10.9	
Female	94	71.2	49	89.1	
Ethnicity					1.00 (Fisher's)
White American	121	91.7	51	92.7	
Mixed ethnicity	4	3.0	1	1.8	
Black American	3	2.3	1	1.8	
Asian American	2	1.5	1	1.8	
Hispanic/Latino	2	1.5	1	1.8	
Primary diagnosis at index hospitalization					.80 (Fisher's)
Mood disorder	104	78.7	41	74.5	
Adjustment disorder	9	6.8	5	9.1	
Anxiety disorder	7	5.3	6	10.9	
Eating disorder	5	3.8	2	3.6	
Attention-deficit/disruptive behavior disorder	4	3.0	1	1.8	
Substance abuse or dependence disorder	2	1.5	0	0.0	
Impulsive-control disorder	1	0.8	0	0.0	
Secondary diagnosis at index hospitalization					.87 (Fisher's)
Mood disorder	10	7.6	7	12.7	
Adjustment disorder	3	2.3	0	0.0	
Anxiety disorder	12	9.1	4	7.3	
Eating disorder	4	3.0	2	3.6	
Attention-deficit/disruptive behavior disorder	10	7.6	3	5.5	
Substance abuse or dependence disorder	15	11.4	5	9.1	
Somatoform disorder	1	0.8	1	1.8	
Impulsive-control disorder	1	0.8	1	1.8	
No diagnosis	76	57.6	32	58.2	
Tertiary diagnosis at index hospitalization					.79 (Fisher's)
Mood disorder	1	0.8	1	1.8	
Anxiety disorder	3	2.3	1	1.8	
Eating disorder	3	2.3	2	3.6	
Attention-deficit/disruptive behavior disorder	7	5.3	2	3.6	
Substance abuse or dependence disorder	4	3.0	0	0.0	
No diagnosis	114	86.4	49	89.1	

(table continues)

Variable	Original sample (<i>n</i> = 132)		3-year follow-up (<i>n</i> = 55)		<i>p</i> value
	<i>n</i>	%	<i>n</i>	%	
Nonsuicidal self-injury at index hospitalization					.66 (Fisher's)
Wrist cutting	64	48.5	29	52.7	
Wrist cutting and choking to pass out	2	1.5	1	1.8	
Wrist cutting and head banging	2	1.5	0	0.0	
Wrist cutting and burning skin	1	0.8	1	1.8	
Head banging	2	1.5	2	3.6	
Stabbed self	1	0.8	1	1.8	
No current nonsuicidal self-injury	60	45.5	21	38.2	
Suicidal ideation at index hospitalization					.73 (Fisher's)
Current suicidal ideation	124	93.9	53	96.4	
No current suicidal ideation	8	6.1	2	3.6	
Attempted suicide at index hospitalization					.97 (Fisher's)
Intentional overdose	27	20.5	12	21.8	
Wrist cutting with intent to die	3	2.3	2	3.6	
Intentional firearm discharge	2	1.5	1	1.8	
Intentional crashing of a motor vehicle	1	0.8	0	0.0	
Attempting to slit throat	1	0.8	0	0.0	
Attempted hanging	1	0.8	0	0.0	
No current suicide attempt	97	73.5	40	72.7	

3-year follow-up *n* = 55.

Original sample *n* = 132.

sections of the SCID–II–PQ and SCID–II assessed at 3-year follow-up, and rates of childhood abuse and borderline personality disorder diagnosis abstracted from the patient's medical and psychiatric record at 5-year chart review are presented in Table 11. The distributional shape of each measure was examined to determine the extent to which the assumption normality was met. Results indicated that the skewness and kurtosis were well within a tolerable range for assuming a normal distribution for the SHBQ, the FES–3, the SEQ–S, the EECS, the SCID–II–PQ, and the SCID–II. For multivariable logistic regression analyses using dichotomous values (i.e., childhood physical abuse, childhood

Table 11

Descriptive Statistics for SHBQ, FES-3, SEQ-S, and EESC at Intake Psychiatric Hospital Admission (n = 132); Total Score for the BPD Sections of the SCID-II-PQ and SCID-II at 3-Year Follow-Up (n = 55); and Rates of Childhood Abuse and BPD Diagnosis at 5-Year Chart review (n = 132)

Scale	Range	Mean	SD	Skewness (SE)	Kurtosis (SE)	α
Self-Harm Behavior Questionnaire (SHBQ)						
SHBQ-Nonsuicidal Self-Injury	0-16	9.8	5.45	-1.15 (.21)	-0.44 (.42)	–
SHBQ-Suicide Attempt(s)	0-13	7.1	3.01	-0.85 (.21)	0.45 (.42)	–
SHBQ-Suicide Threat(s)	0-23	9.6	9.07	-0.03 (.21)	-1.83 (.42)	–
SHBQ-Suicidal Ideation	0-19	7.6	6.97	-0.05 (.21)	-1.76 (.42)	–
Family Environment Scale–Third Edition (FES-3)						
Cohesion subscale	0-9	4.6	2.61	-0.02 (.21)	-1.06 (.42)	0.76
Expressiveness subscale	0-9	4.0	2.00	0.37 (.21)	-0.12 (.42)	0.51
Conflict subscale	0-9	4.7	2.61	-0.13 (.21)	-1.15 (.42)	0.79
Social Experiences Questionnaire–Self-Report (SEQ-S)						
Relational Victimization subscale	5-24	11.2	4.65	0.59 (.21)	-0.28 (.42)	0.88
Overt Victimization subscale	3-12	5.3	2.39	1.07 (.21)	0.54 (.42)	0.83
Emotion Expression Scale for Children (EECS)						
Lack of Emotion Awareness subscale	9-40	24.5	6.83	-0.13 (.21)	-0.75 (.42)	0.85
Lack of Motivation to Express Negative Emotion subscale	8-39	24.6	6.98	-0.23 (.21)	-0.53 (.42)	0.83
Structured Clinical Interview for <i>DSM-IV</i> Axis II Personality Disorders Personality Questionnaire (SCID-II-PQ) BPD section						
Structured Clinical Interview for <i>DSM-IV</i> Axis II Personality Disorders (SCID-II) BPD section (Categorical)	0-1	0.36	0.49	0.58 (.32)	-1.72 (.63)	–
Childhood abuse						
Childhood physical abuse	0-1	0.12	0.33	2.35 (.21)	3.57 (.42)	–
Childhood sexual abuse	0-1	0.20	0.40	1.48 (.21)	0.20 (.42)	–
Borderline personality disorder diagnosis	0-1	0.19	0.39	1.60 (.21)	0.58 (.42)	–

sexual abuse), there are no assumptions of normality. There was no missing data for any of these measures as each patient completed the measures through a computer program that did not allow patient to proceed without answering each question.

Zero-Order Relationships Among Predictor Variables

Correlations were examined among the predictor variables of the SHBQ, the FES-3, the SEQ-S, and the EECS, along with history of childhood maltreatment. Results are presented in Table 12. For the purpose of this study, correlations above .80 were

Table 12

Zero-Order-Correlations Among Predictor Variables at the Time of Index Psychiatric Hospital Admission

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. SHBQ- Nonsuicidal self-injury	–											
2. SHBQ-Suicide attempt(s)	.30	–										
3. SHBQ-Suicide threat(s)	.10	.23	–									
4. SHBQ-Suicidal ideation	.33	.45	.42	–								
5. Childhood physical abuse	.17	.20	.05	.16	–							
6. Childhood sexual abuse	-.02	-.10	-.18	-.12	-.02	–						
7. FES-3-Cohesion	-.12	.01	-.06	-.04	.07	.17	–					
8. FES-3-Expressiveness	-.20	.03	-.10	-.16	.09	.10	.71	–				
9. FES-3-Conflict	.06	-.07	-.06	-.05	.11	.10	-.09	-.12	–			
10. SEQ-S-Relational victimization	.03	.09	.02	.10	.21	-.03	-.19	-.14	.45	–		
11. SEQ-S-Overt victimization	-.06	.08	.17	-.01	-.18	-.15	.02	.02	-.69	-.30	–	
12. EECS-Poor emotion awareness	.02	.04	-.03	.07	-.16	-.11	.24	.24	-.23	-.20	.22	–
13. EECS-Expressive reluctance	-.03	.04	.02	.15	-.16	-.16	.19	.12	-.23	-.14	.26	.69

Note. $n = 132$.

SHBQ: Self-Harm Behavior Questionnaire; FES-3: Family Environment Scale-Third Edition; SEQ-S: Social Experiences Questionnaire-Self-Report; EECS: Emotion Expression Scale for Children. Correlations greater than $\pm .17$ are significant at $p < .05$ and correlations greater than $\pm .23$ are significant at

$p < .01$.

examined in order to identify predictor variables that were highly related. Results indicated that none of the predictor variables were correlated above .80. As a result, all of the subscale scores were included in the logistic regression analysis.

Dichotomous Outcome Variables

Two dichotomous outcome variables were constructed for use in the logistic regression analysis: BPD SCID–II categorical diagnosis (BPD–SCID–II Diagnosis) at 3-year follow-up and BPD medical and psychiatric record categorical diagnosis (BPD–Medical Record Diagnosis) at 5-year chart review. As the BPD–Medical Record Diagnosis variable was constructed by combining patients with definite and probable BPD, group means were compared using *t* test, chi-square, and Fisher’s exact test analyses. Results indicated that there were no significant differences between the individuals with definite BPD and probable BPD in terms of the demographic variables. See Tables 13 and 14 for comparisons of patients diagnosed with definite BPD and probable BPD.

Table 13

t Test Comparing Patients Diagnosed with Definite Borderline Personality Disorder to Patients Diagnosed with Probable Borderline Personality Disorder at 5-Year Chart Review

Variables	Definite BPD (<i>n</i> = 10)		Probable BPD (<i>n</i> = 15)		<i>F</i>	<i>p</i> value
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Age at index hospitalization	16.0	1.4	16.1	1.6	3.30	.24
SES at index hospitalization	49.0	19.3	42.6	11.5	1.02	.57

Table 14

Chi-Square and Fisher's Exact Test Comparing Patients Diagnosed with Definite Borderline Personality Disorder to Patients Diagnosed with Probable Borderline Personality Disorder at 5-Year Chart Review

Variables	Definite BPD (n = 10)		Probable BPD (n = 15)		p value
	n	%	n	%	
Sex					1.00 (Fisher's)
Male	1	10.0	1	6.7	
Female	9	90.0	14	93.3	
Ethnicity					.80 (Fisher's)
White American	9	90.0	13	92.7	
Black American	1	10.0	0	0.0	
Asian American	0	0.0	1	6.7	
Hispanic/Latino	0	0.0	1	6.7	
Primary diagnosis at index hospitalization					.50 (Fisher's)
Mood disorder	8	80.0	14	93.4	
Adjustment disorder	1	10.0	0	0.0	
Eating disorder	1	10.0	1	6.7	
Secondary diagnosis at index hospitalization					.96 (Fisher's)
Mood disorder	0	0.0	1	6.7	
Anxiety disorder	2	20.0	2	13.3	
Eating disorder	1	10.0	3	20.0	
Attention-deficit/disruptive behavior disorder	1	10.0	0	0.0	
Substance abuse or dependence disorder	1	10.0	2	13.3	
Impulsive-control disorder	1	10.0	1	6.7	
No diagnosis	4	40.0	6	40.0	
Tertiary diagnosis at index hospitalization					.34 (Fisher's)
Mood disorder	1	10.0	0	0.0	
Anxiety disorder	0	0.0	1	6.7	
Eating disorder	1	10.0	0	0.0	
Attention-deficit/disruptive behavior disorder	0	0.0	2	13.3	
Substance abuse or dependence disorder	0	0.0	2	13.3	
No diagnosis	8	80.0	10	66.7	
Nonsuicidal self-injury at index hospitalization					.34 (Fisher's)
Wrist cutting	5	50.0	11	73.3	
Head banging	1	10.0	0	0.0	
Stabbed self	1	10.0	0	0.0	
No current nonsuicidal self-injury	3	30.0	4	26.7	

(table continues)

Variables	Definite BPD (<i>n</i> = 10)		Probable BPD (<i>n</i> = 15)		<i>p</i> value
	<i>n</i>	%	<i>n</i>	%	
Suicidal ideation at index hospitalization					1.00 (Fisher's)
Current suicidal ideation	10	100.0	14	93.3	
No current suicidal ideation	0	0.0	1	6.7	
Attempted suicide at index hospitalization					.17 (Fisher's)
Intentional overdose	1	10.0	6	40.0	
Wrist cutting with intent to die	1	10.0	0	0.0	
Attempting to slit throat	0	0.0	1	6.7	
No current suicide attempt	8	80.0	8	53.3	

Comparison of BPD–SCID–II Diagnosis Sample to the BPD–Medical Record Diagnosis Sample

In order to determine if the 20 patients who made up the BPD–SCID–II Diagnosis sample differed from the 25 patients who made up the BPD–Medical Record Diagnosis sample, *t* test, chi-square, and Fisher's exact test analyses were conducted. Results indicated that the two samples were not significantly different in terms of age at index psychiatric hospital admission ($p = .28$), sex ($p = .69$), ethnicity ($p = 1.00$), and SES ($p = .56$). The BPD–SCID–II Diagnosis sample was also not significantly different from the BPD–Medical Record Diagnosis sample regarding the primary ($p = .32$), secondary ($p = .74$), or tertiary ($p = .61$) diagnoses at index hospitalization and whether they engaged in NSSI ($p = .93$), endorsed suicidal ideation ($p = 1.00$), or attempted suicide at index hospitalization ($p = .92$). See Tables 15 and 16 for comparisons of the BPD–SCID–II Diagnosis sample to the BPD–Medical Record Diagnosis sample.

Table 15

t Test Comparing BPD–SCID–II Diagnosis Sample to the BPD–Medical Record Diagnosis Sample

Variables	BPD– SCID–II (<i>n</i> = 20)		BPD–Medical Record (<i>n</i> = 25)		<i>F</i>	<i>p</i> value
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Age at index hospitalization	15.9	1.5	16.3	1.4	0.20	.28
SES at index hospitalization	41.4	13.3	45.0	13.9	0.19	.56

Note. BPD–Medical Record Diagnosis: Borderline personality disorder medical and psychiatric record categorical diagnosis; BPD–SCID–II Diagnosis: Borderline personality disorder SCID–II categorical diagnosis; SES: Socioeconomic Status.

Research Question One

In order to determine if the variables of interest could accurately classify whether patients were diagnosed with BPD, a series of logistic regression analyses were conducted. First, univariate logistic regression analyses were utilized to determine whether deliberate self-harm variables (e.g., SHBQ-Intentional Self-Harm, SHBQ-Suicide Attempt) and suicide-related behaviors (e.g., SHBQ-Suicide Threat, SHBQ-Suicidal Ideation) could independently predict BPD–SCID–II Diagnosis at 3-year follow-up. The results of the univariate logistic regression analyses with BPD–SCID–II Diagnosis as the outcome variable indicated that only non-suicidal self-injury predicted BPD–SCID–II Diagnosis, $\chi^2(1, N = 55) = 3.70, p = .05$. See Table 17 for the results of the univariate logistic regression analyses assessing the Self-Harm Behavior Questionnaire variables as predictors of BPD–SCID–II Diagnosis.

Table 16

Chi-Square and Fisher's Exact Test Comparing BPD–SCID–II Diagnosis Sample to the BPD–Medical Record Diagnosis Sample

Variables	BPD– SCID–II (<i>n</i> = 20)		BPD–Medical Record (<i>n</i> = 25)		<i>p</i> value
	<i>n</i>	%	<i>n</i>	%	
Sex					1.00 (Fisher's)
Male	1	5.0	2	8.0	
Female	19	95.0	23	92.0	
Ethnicity					1.00 (Fisher's)
White American	19	95.0	22	88.0	
Black American	1	5.0	1	4.0	
Asian American	0	0.0	1	4.0	
Hispanic/Latino	0	0.0	1	4.0	
Primary diagnosis at index hospitalization					.32 (Fisher's)
Mood disorder	16	80.0	22	88.0	
Adjustment disorder	2	10.0	1	4.0	
Anxiety disorder	1	5.0	0	0.0	
Eating disorder	0	0.0	2	8.0	
Attention-deficit/disruptive behavior disorder	1	5.0	0	0.0	
Secondary diagnosis at index hospitalization					.74 (Fisher's)
Mood disorder	1	5.0	1	4.0	
Anxiety disorder	2	10.0	4	16.0	
Eating disorder	2	10.0	4	16.0	
Attention-deficit/disruptive behavior disorder	0	0.0	2	8.0	
Substance abuse or dependence disorder	1	5.0	3	12.0	
Impulsive-control disorder	1	5.0	1	4.0	
No diagnosis	13	65.0	10	40.0	
Tertiary diagnosis at index hospitalization					.61 (Fisher's)
Mood disorder	0	0.0	1	4.0	
Anxiety disorder	0	0.0	1	4.0	
Eating disorder	1	5.0	1	4.0	
Attention-deficit/disruptive behavior disorder	1	5.0	2	8.0	
Substance abuse or dependence disorder	0	0.0	2	8.0	
No diagnosis	18	16.0	18	72.0	

(table continues)

Variables	BPD– SCID–II (<i>n</i> = 20)		BPD–Medical Record (<i>n</i> = 25)		<i>p</i> value
	<i>n</i>	%	<i>n</i>	%	
Nonsuicidal self-injury at index hospitalization					.93 (Fisher’s)
Wrist cutting	12	60.0	16	64.0	
Head banging	0	0.0	1	4.0	
Stabbed self	1	5.0	1	4.0	
No current nonsuicidal self-injury	7	35.0	7	28.0	
Suicidal ideation at index hospitalization					1.00 (Fisher’s)
Current suicidal ideation	19	95.0	24	96.0	
No current suicidal ideation	1	5.0	1	4.0	
Attempted suicide at index hospitalization					.92 (Fisher’s)
Intentional overdose	5	25.0	7	28.0	
Wrist cutting with intent to die	0	0.0	1	4.0	
Attempting to slit throat	0	0.0	1	4.0	
No current suicide attempt	15	75.0	16	64.0	

Table 17

Univariate Logistic Regression Analyses Assessing Self-Harm Behavior Questionnaire Variables as Predictors of BPD–SCID–II Diagnosis at 3-Year Follow-Up

Variables	Odds ratio	95% CI	<i>p</i> value
Self-Harm Behavior Questionnaire - Nonsuicidal self-injury	1.79	0.93-3.45	.08
Self-Harm Behavior Questionnaire - Suicide attempt(s)	1.04	0.86-1.25	.68
Self-Harm Behavior Questionnaire - Suicide threat(s)	1.38	0.65-2.92	.40
Self-Harm Behavior Questionnaire - Suicidal ideation	3.04	0.67-13.67	.15

Note. *n* = 55.

BPD–SCID–II Diagnosis: Borderline personality disorder SCID–II categorical diagnosis; CI: Confidence interval.

Data from the measures were standardized as a 1 *SD* unit change per variable so that odds ratios and confidence intervals are interpreted as increased odds in the outcome given a 1-*SD* unit increase.

Next, the unique contributions of the same deliberate self-harm variables and suicide-related behaviors in the prediction of BPD–SCID–II diagnosis was examined by simultaneously entering the prediction variables into a multivariable logistic regression. The test of the full model against a constant-only model was not statistically significant, indicating that the predictors as a set were not able to reliably distinguished between BPD and non-BPD, $\chi^2(4, N = 55) = 6.45, p = .17$. These findings suggest that past engagement in intentional self-harm, suicide attempt(s), suicide threat(s), and/or suicidal ideation did not significantly predict whether adolescent psychiatric inpatient were diagnosed with BPD according to the SCID. The logistic regression model regarding the predictive properties of the Self-Harm Behavior Questionnaire variables on BPD–SCID–II Diagnosis are presented in Table 18.

Table 18

Multivariable Logistic Regression Model Assessing Self-Harm Behavior Questionnaire Variables as Predictors of BPD–SCID–II Diagnosis at 3-Year Follow-Up

Variables	Odds ratio	95% CI	<i>p</i> value
Self-Harm Behavior Questionnaire - Nonsuicidal self-injury	1.97	0.92-4.20	.08
Self-Harm Behavior Questionnaire - Suicide attempt(s)	0.83	0.62-1.1	.20
Self-Harm Behavior Questionnaire - Suicide threat(s)	1.27	0.51-3.14	.60
Self-Harm Behavior Questionnaire - Suicidal ideation	3.62	0.39-33.51	.26

Note. $n = 55$.

BPD–SCID–II Diagnosis: Borderline personality disorder SCID–II categorical diagnosis; CI: Confidence interval.

Data from the measures were standardized as a 1 *SD* unit change per variable so that odds ratios and confidence intervals are interpreted as increased odds in the outcome given a 1-*SD* unit increase.

Next, the same analyses were run to determine if the variables of interest could accurately predict BPD–Medical Record Diagnosis at 5-year chart review. Univariate logistic regression analyses revealed that both non-suicidal self-injury, $\chi^2(1, N = 132) = 4.84, p = .03$, and suicide threat(s), $\chi^2(1, N = 132) = 7.54, p = .01$, could predict BPD–Medical Record Diagnosis. See Table 19 for the univariate logistic regression analyses assessing the Self-Harm Behavior Questionnaire variables as predictors of BPD–Medical Record Diagnosis.

Next, a multivariable logistic regression analyses was conducted to examine the unique contributions of the same deliberate self-harm variables and suicide-related behaviors in the prediction of BPD–Medical Record Diagnosis. The test of the full model with the four predictor variables against a constant-only model was statistically

Table 19

Univariate Logistic Regression Analyses Assessing Self-Harm Behavior Questionnaire Variables as Predictors of BPD–Medical Record Diagnosis at 5-Year Chart Review

Variables	Odds ratio	95% CI	<i>p</i> value
Self-Harm Behavior Questionnaire - Nonsuicidal self-injury	1.81	0.99-3.33	.05
Self-Harm Behavior Questionnaire - Suicide attempt(s)	1.10	0.95-1.28	.21
Self-Harm Behavior Questionnaire - Suicide threat(s)	2.34	1.23-4.45	.01
Self-Harm Behavior Questionnaire - Suicidal ideation	2.23	0.76-6.55	.15

Note. $n = 132$.

BPD–SCID–II Diagnosis: Borderline personality disorder SCID–II categorical diagnosis; CI: Confidence interval.

Data from the measures were standardized as a 1 *SD* unit change per variable so that odds ratios and confidence intervals are interpreted as increased odds in the outcome given a 1-*SD* unit increase.

significant, indicating that the predictors as a set were able to reliably distinguished between BPD and non-BPD, $\chi^2(4, N = 132) = 11.33, p = .02$. However, a Nagelkerke's R^2 of .132 indicated a weak relationship between the set of predictors overall and the outcome variable. Prediction success overall was 81.1% (e.g., 100.0% for no diagnosis of BPD, 0.0% for diagnosis of BPD) indicating 81.1% of patients have been accurately classified as being diagnosed with BPD or not being diagnosed with BPD on the basis of our four variable model. The Wald criterion demonstrated that only Suicide Threat made a significant contribution to the prediction model over and above Intentional Self-Harm, Suicide Attempt, and Suicidal Ideation ($p = .03$). Results indicated that individuals with BPD are more likely to make suicide threats compared to individuals without BPD, OR = 1.09; 95% CI, 1.01-1.19, with the odds for BPD increasing by 9% for every one standard deviation unit change in Suicide Threat. The multivariable logistic regression model regarding the predictive properties of the Self-Harm Behavior Questionnaire variables on BPD–Medical Record Diagnosis are presented in Table 20.

Research Question Two

In order to determine if deliberate self-harm and/or suicide-related behaviors account for variance in BPD above and beyond that of the established constructs that have been examined in the literature or theoretically thought to contribute to the development of BPD a series of logistic regression analyses were conducted. These established constructs included a history of childhood abuse (abstracted from the patient's medical or psychiatric record), maladaptive familial behavior (FES–3), peer victimization (SEQ–S), and emotion regulation difficulties (EESC). The results of the

Table 20

Multivariable Logistic Regression Model Assessing Self-Harm Behavior Questionnaire Variables as Predictors of BPD–Medical Record Diagnosis at 5-Year Chart Review

Variables	Odds ratio	95% CI	<i>p</i> value
Self-Harm Behavior Questionnaire - Nonsuicidal self-injury	1.69	0.85-1.21	.10
Self-Harm Behavior Questionnaire - Suicide attempt(s)	1.02	0.85-1.21	.86
Self-Harm Behavior Questionnaire - Suicide threat(s)	2.27	1.10-4.65	.03
Self-Harm Behavior Questionnaire - Suicidal ideation	0.83	0.22-3.15	.78

Note. *n* = 132.

BPD–SCID–II Diagnosis: Borderline personality disorder SCID–II categorical diagnosis; CI: Confidence interval.

Data from the measures were standardized as a 1 *SD* unit change per variable so that odds ratios and confidence intervals are interpreted as increased odds in the outcome given a 1-*SD* unit increase.

univariate logistic regression analyses with BPD–Medical Record Diagnosis as the outcome variable indicated that none of the established constructs were able to predict BPD–Medical Record Diagnosis. The univariate logistic regression analyses regarding the predictive properties of established constructs on BPD–Medical Record Diagnosis are presented in Table 21.

Then, multivariable logistic regression analyses were conducted to examine whether deliberate self-harm and/or suicide-related behaviors could predict BPD over and above these established constructs. As BPD status derived from patient’s medical and psychiatric record was only predicted by deliberate self-harm and suicide-related behaviors, an expanded set of models using these predictors and this outcome was evaluated. In each of four models tested, one of the four sets of established predictor

Table 21

Univariate Logistic Regression Analyses Assessing Established Constructs as Predictors of BPD–Medical Record Diagnosis at 5-Year Chart Review

Variables	Odds ratio	95% CI	<i>p</i> value
History of physical abuse	1.57	0.79-3.11	.20
History of sexual abuse	0.90	0.60-1.36	.63
Emotion expression scale for children-poor emotion awareness	0.80	0.51-1.24	.31
Emotion expression scale for children - expressive reluctance	0.97	0.62-1.50	.89
Family environment scale—3 rd ed.-cohesion	1.30	0.83-2.05	.25
Family environment scale—3 rd ed.-expressiveness	1.38	0.82-2.13	.15
Family environment scale—3 rd ed. - conflict	0.90	0.58-1.40	.64
Social experiences questionnaire—self-report-relational victimization	0.77	0.48-1.23	.23
Social experiences questionnaire—self-report-overt victimization	0.85	0.53-1.35	.49

Note. *n* = 132.

BPD–Medical Record Diagnosis: Borderline personality disorder medical and psychiatric record categorical diagnosis; CI: Confidence interval.

Data from the measures were standardized as a one standard deviation unit change per variable so that odds ratios and confidence intervals are interpreted as increased odds in the outcome given a 1-SD unit increase.

variables were included to better understand the contribution of deliberate self-harm and suicide-related behaviors above and beyond the traditional predictors on the diagnosis of BPD: a history of childhood maltreatment (history of physical and sexual abuse; Model 1), maladaptive familial behavior (FES–3; Model 2), peer victimization (SEQ–S; Model 3), and emotion regulation difficulties (EESC; Model 4).

The results of the series of multivariable logistic regression analyses indicated that the test of the full model against a constant only model was statistically significant

for Model 1, $\chi^2(6, N = 132) = 12.64, p = .05$; Model 2, $\chi^2(6, N = 132) = 15.54, p = .02$; and Model 3, $\chi^2(7, N = 132) = 15.11, p < .04$, indicating that these predictors collectively distinguished between the BPD and non-BPD. For each of these models, the Wald criterion demonstrated that only Suicide Threat was found to make a significant contribution to prediction model over and above the other predictor variables. This indicates that magnitude of the OR for Suicide Threat in each of these models is relatively strong. Additionally, results indicated that the full model against a constant only model was not significant for Model 4, $\chi^2(6, N = 132) = 12.10, p = .06$. Table 22 provides the results for the four expanded logistic regression models with BPD–Medical Record Diagnosis at 5-year chart review as the outcome.

Table 22

Multivariable Logistic Regression Models Assessing Self-Harm Behavior Questionnaire Variables and Established Constructs as Predictors of BPD–Medical Record Diagnosis at 5-Year Chart Review

Variables	Odds ratio	95% CI	<i>p</i> value
Model 1			
Self-Harm Behavior Questionnaire - Nonsuicidal self-injury	1.71	0.93-3.19	0.09
Self-Harm Behavior Questionnaire - Suicide attempt(s)	1.01	0.85-1.20	0.94
Self-Harm Behavior Questionnaire - Suicide threat(s)	2.18	1.05-4.53	0.04
Self-Harm Behavior Questionnaire - Suicidal ideation	0.80	0.21-3.10	0.75
History of physical abuse	1.43	0.71-2.89	0.31
History of sexual abuse	1.01	0.65-1.57	0.98
Model 2			
Self-Harm Behavior Questionnaire - Nonsuicidal self-injury	1.86	0.96-3.60	0.07
Self-Harm Behavior Questionnaire - Suicide attempt(s)	0.96	0.80-1.16	0.70
Self-Harm Behavior Questionnaire - Suicide threat(s)	2.95	1.32-6.58	0.01
Self-Harm Behavior Questionnaire - Suicidal ideation	0.78	0.20-3.07	0.72
Emotion expression scale for children-poor emotion awareness	0.58	0.29-1.16	0.12
Emotion expression scale for children-expressive reluctance	1.72	0.84-3.50	0.14
Model 3			
Self-Harm Behavior Questionnaire - Nonsuicidal self-injury	1.67	0.89-3.13	0.11
Self-Harm Behavior Questionnaire - Suicide attempt(s)	1.00	0.83-1.20	0.98
Self-Harm Behavior Questionnaire - Suicide threat(s)	2.97	1.28-6.87	0.01
Self-Harm Behavior Questionnaire - Suicidal ideation	0.58	0.14-2.38	0.45

(table continues)

Variables	Odds ratio	95% CI	<i>p</i> value
Family environment scale—3 rd ed.- cohesion	1.21	-.59-2.49	0.61
Family environment scale—3 rd ed.- expressiveness	1.27	0.76-2.14	0.37
Family environment scale—3 rd ed. - conflict	0.95	0.48-1.88	0.89
Model 4			
Self-Harm Behavior Questionnaire - Nonsuicidal self-injury	1.68	0.89-3.17	0.11
Self-Harm Behavior Questionnaire - Suicide attempt(s)	1.05	0.88-1.26	0.59
Self-Harm Behavior Questionnaire - Suicide threat(s)	2.09	1.04-4.35	0.05
Self-Harm Behavior Questionnaire - Suicidal ideation	0.87	0.21-3.56	0.85
Social experiences questionnaire— self-report-relational victimization	0.69	0.34-1.43	0.32
Social experiences questionnaire— self-report-overt victimization	1.07	0.53-2.16	0.84

Note. *n* = 132.

BPD—Medical Record Diagnosis: Borderline personality disorder medical and psychiatric record categorical diagnosis; S.E.: Standard error; df: Degrees of freedom; CI: Confidence interval.

Data from the measures were standardized as a one standard deviation unit change per variable so that odds ratios and confidence intervals are interpreted as increased odds in the outcome given a 1-SD unit increase.

CHAPTER V

DISCUSSION

Outcomes

Although considerable progress has been made on the etiology of BPD, deficits in our understanding of this chronic and complex psychiatric disorder remain. While numerous predictors of BPD have been theorized to contribute to the development of BPD (e.g., Glenn & Klonsky, 2009; Gratz et al., 2009) and have been identified retrospectively from cross-sectional samples (e.g., Barone, 2003; Battle et al., 2004; Johnson et al., 2005), prospective longitudinal research examining correlates that likely contribute to the development of BPD are scarce (prospective data has only been published from five unique samples; See Table 2 for complete reference list) and are nonexistent for populations at risk (e.g., inpatient psychiatric patients). Additionally, despite the significant overlap of deliberate self-harm and BPD (e.g., Grilo et al., 2004; McGlashan et al., 2005; Zanarini et al., 2006), no study has investigated deliberate self-harm and suicide-related behaviors as a precursor for BPD.

Accordingly, the goals of the current study were to determine whether deliberate self-harm and suicide-related behaviors would prospectively predict BPD and whether these behaviors account for variance in BPD above and beyond the variance of other constructs that have been previously associated with the development BPD. To our knowledge, this is the first study to investigate prospective associations between deliberate self-harm and suicide-related behaviors and BPD.

This sample consisted of adolescent psychiatric patients who were consecutively hospitalized for deliberate self-harm and suicide-related behaviors. The sample was followed for 5 years after discharge. The first objective of the study was to determine whether deliberate self-harm and suicide-related behaviors could prospectively predict BPD at a 3-year follow-up and 5-year chart review. It was hypothesized that NSSI and suicide threat would account for variance above and beyond the variance of SA and suicidal ideation in predicting BPD. Contrary to the hypothesis, it was found that only suicide threats were predictive of the medical record diagnosis of BPD. Although this was not predicted, it fits in the context of BPD. To date, no study has examined the function of suicide threats in isolation, and, as a result, data is not available regarding the motives behind suicide threats. Available research does suggest that individuals with BPD may differ in regards to the functionality of deliberate self-harm behaviors as compared to individuals without BPD. Specifically, unlike the majority of individuals in the general population who report engaging in deliberate self-harm to alleviate distress or to end their lives (66.5% and 56.7%, respectively; Scoliers et al., 2009), research indicates that the most common reasons individuals with BPD engage in deliberate self-harm are to achieve emotional relief (96% of NSSI episodes; 86% of SA episodes), to influence others to act differently or change (61% of NSSI episodes; 45% of SA episodes), and to feel pain (54% of NSSI episodes; 21% of SA episodes; M. Z. Brown, Comtois, & Linehan, 2002). Although engaging in deliberate self-harm and threatening suicide are distinct behaviors, given the core features of BPD it is reasonable to assume that the functions of suicide threats in BPD may follow the same pattern as the functions

of deliberate self-harm in BPD and may serve a different function in individuals with BPD and compared to individuals without BPD.

Additionally, as one of the core features of BPD is intense struggles with the regulation of emotions (APA, 2002, 2013; Lieb et al., 2004), individuals with BPD are emotionally reactive often experiencing extreme fluctuations in affective states (Lieb et al., 2004). These individuals are typically not able to adaptively manage these intense mood states and easily become distressed by discrete emotional events (Rosenthal et al., 2008). Additionally, BPD is characterized by an instability in interpersonal relationships (APA, 2002, 2013; Lieb et al., 2004) and research indicates that individuals with BPD experience turmoil when they perceive both increased dependency on relationships with important others (Bornstein, Becker-Matero, Winarick, & Reichman, 2010) and decreased connectedness (Stepp, Pilkonis, Yaggi, Morse, & Feske, 2009). As a result of the difficulty with both affect regulation and instability in interpersonal relationships, important others in their lives tend to withdraw. This, in turn, typically produces unbearable feelings of rejection, devaluation, and hopelessness which the individual with BPD struggles to tolerate or regulate. Suicide threats come to function as a way to manage, albeit maladaptively, emotions and regain or demand the attention of others (Giffin, 2008). Additionally, in the only study that examined suicidal threats in BPD in isolation, Wedig and colleagues (2013) found that feelings of abandonment and hopelessness, and being demanding and manipulative were predictive of suicide threats. Therefore, it makes sense that suicide threats would be predictive of BPD when the suicide threats function as a way to manage intense mood states and gain the attention of

others to feel less hopeless and alone.

The second objective was to determine whether deliberate self-harm and suicide-related behaviors accounts for variance in BPD at a 3-year follow-up and 5-year chart review above and beyond that of established constructs that have been previously associated with the development BPD. It was hypothesized that aspects of deliberate self-harm and suicide-related behaviors, childhood maltreatment, maladaptive familial behavior, peer victimization, and emotion regulation difficulties would be predictive of BPD, however, aspects of deliberate self-harm and suicide-related behaviors would account for variance in BPD above and beyond that of the established constructs.

Contrary to the theoretical association between BPD and emotion dysregulation and results of previous retrospective and prospective research suggesting that childhood maltreatment, maladaptive familial behavior, and peer victimization were predictive of BPD, it was found that these constructs were not predictive of BPD. Additionally, when deliberate self-harm and suicide-related behaviors were entered into separate models with constructs that have been previously associated with the development BPD, no variable emerged as significant predictor of BPD including suicide threats.

Finally, when examining constructs that have been found to be predictive of BPD in previous retrospective and prospective studies, results indicated that childhood maltreatment, maladaptive familial behavior, peer victimization, and emotion regulation difficulties were not predictive of BPD in our sample. There are several possible explanations for these inconsistent findings. First, the results of a large proportion of published studies are based on whether the variable(s) of interest are able to predict

symptoms or characteristics of BPD rather than a clinical diagnosis of BPD (e.g., Belsky et al., 2012; Carlson et al., 2009; Cohen et al., 2008; Crawford et al., 2009; Wolke et al., 2012). Moreover, these symptoms are generally assessed through solely self-report measures or interviews and are typically obtained through one informant as opposed to utilizing both a structure diagnostic interview and medical record review confirm a diagnosis (e.g., Nickell et al., 2002; Reich & Zanarini, 2001; Schwarze et al., 2013). As a result, it is possible that these inconsistent finds are due in part to the difference in the classification and assessment of BPD.

Additionally, childhood maltreatment including histories of sexual and physical abuse and neglect in this sample could represent more severe or chronic forms childhood maltreatment than described in previous research. The results from past studies are generally based on minor or single incidences of childhood abuse or neglect (e.g., 80.0% of patients in the sample reported a single incidence of sexual abuse; Paris et al., 1994b). Reports of abuse and neglect from both retrospective and prospective research are also typically collected from a single observer (e.g., Bandelow et al., 2005; Battle et al., 2004; Huang et al., 2012; Schwarze et al., 2013) sometimes including potential perpetrators as sole informants of the abuse and neglect or as corroborators of patient's reports of the abuse and neglect (e.g., Goldman et al., 1992; Guzder et al., 1999). The reports of childhood maltreatment in this study were abstracted from medical and psychiatric record documentation of abuse and neglect potentially differing in significant ways from these previous reports. Additionally, the majority of available research on childhood maltreatment relies solely on retrospective reports of abuse and neglect, sometimes

occurring more than 27 years after the maltreatment took place (e.g., Battle et al., 2004; Huang et al., 2012). These methods, along with the documented tendency for individuals with BPD to have distorted perceptions of life events (Machizawa-Summers, 2007; Paris, 2008), raise concerns regarding the validity of findings based solely on retrospective reports.

In regard to maladaptive familial behavior, most previous studies evaluating familial conflict, familial cohesion, parental marital problems, poor parental relationship, and poor parental care had adult patients with BPD retrospectively account whether these familial patterns occurred at specific times during childhood (e.g., Bandelow et al., 2005; Links et al., 1988; Norden et al., 1995; Patrick et al., 1994; Weaver & Clum, 1993). This method of retrospectively assessing maladaptive familial behavior, especially in patients with current psychopathology, calls into question the validity of the data as results depend on the accurate reporting of events that occurred sometime more than four decades earlier. As a result, the conflicting results could be due to the differences in assessing maladaptive familial behavior in childhood, as in the current study, versus asking adult patients to report on a constellation of negative family characteristics that may have occurred years prior.

Next, in the sole study examining the predictive value of peer victimization, Wolke and colleagues (2012) derived the results from a population-based nonclinical sample and, as a result, the findings may not be able to generalize to more severe populations such as this at-risk clinical population. Additionally, unlike the current study which examined peer victimization as a predictor of a clinical diagnosis of BPD assessed

when the patient was 18 years of age or older, Wolke and colleagues investigated peer victimization as a predictor of BPD symptoms assessed when the child was approximately 12 years of age. Again, the inconsistent results could be due to the use of a more severe population in this study. This also may be due to the differences in the classification of BPD versus BPD symptoms or the use of a child versus an adult sample when the assessment of BPD occurred.

Lastly, although there is considerable theoretical support for the association between emotion regulation difficulties and BPD, no study has examined the predictive properties of emotion regulation deficits in the development of BPD. While BPD is considered “primarily a disorder of the emotion regulation system” (Linehan, 1993, p. 43) and research has consistently demonstrated that individuals with BPD evidence emotion regulation difficulties (e.g., Glenn & Klonsky, 2009; Gratz et al., 2009), when emotion regulation deficits were examined empirically as a predictor for BPD, results indicated that emotion dysregulation was not predictive of BPD in this sample.

Strengths of the Current Study

The current study represents the first investigation of deliberate self-harm and suicide-related behaviors as a precursor for BPD. While the majority of available research examining precursors of BPD is based on retrospective data, a major strength of this study lies in the prospective longitudinal design. Prospective research allows for a more reliable determination of causality in predicting what contributes to the development of BPD as data concerning potential predictors are collected prior to the

development of BPD. Additionally, prospective research allows for continuous measurement of data and changes over time. These advantages may eliminate the biases (e.g., recall bias, selection bias, information bias) that can occur in studies based on retrospective data. The use of a longitudinal design also represents an improvement over cross-sectional research models. The advantage of a longitudinal design is that it allows for the more accurate observation of individual change, temporal order of events, onset, developmental trends, and continuity.

Additionally, the current study extends prior prospective research which utilized population-based (Belsky et al., 2012; Winsper et al., 2012) and community-based (Crawford et al., 2009; Johnson et al., 1999, 2000, 2001, 2006) samples to examine predictors of BPD through the use of an at-risk sample of adolescent inpatients who were hospitalized for deliberate self-harm and suicide-related behaviors. Individuals from population-based or community-based samples with BPD who have not engaged in deliberate self-harm and suicide-related behaviors or have not been hospitalized may be functionally different from clinical samples.

Another strength of the current study lies in the use of both formal assessment of BPD using the SCID-II and clinical diagnosis of BPD abstracted from the patient's medical and psychiatric records. Unlike the majority of the prior prospective research which only assessed borderline symptoms or borderline related characteristics (Belsky et al., 2012; Carlson et al., 2009; Cohen et al., 2008; Crawford et al., 2009; Johnson et al., 1999, 2000, 2001, 2006; Wolke et al., 2012), the use of the SCID-II to establish a diagnosis of BPD in the current study augments the validity of the diagnosis and the use

of the clinical diagnosis abstracted from the patient's medical and psychiatric records strengthens generalizability of the results to clinical practice.

Finally, the ability to empirically examine constructs that have been theoretically associated with BPD or found to be predictive of BPD in previous retrospective and prospective literature is a strength of the current study. While theoretical accounts and past research has provided important insights into the development of BPD and represents an advancement toward a greater understanding of this chronic and complex psychiatric disorder, additional study of the precursors of BPD is needed to clarify role that specific constructs play in the etiology of BPD.

Limitations of the Current Study

Although the results of this investigation contribute to the growing body of literature examining precursors of BPD, potential limitations of this study need to be recognized. The first limitation relates to the generalizability of these findings. This sample consisted of predominately white, middle-class adolescent psychiatric inpatients who were engaging in deliberate self-harm and suicide-related behaviors at time of index psychiatric hospital admission. As a result, it is unknown whether these results would generalize to a less disturbed group of patients and inferences to other populations or settings need to be made with caution. Nevertheless, because past research indicates that the majority of individuals with BPD are hospitalized at least once during the course of their illnesses (e.g., Swartz, Blazer, George, & Winfield, 1990) and engage in some form of deliberate self-harm (e.g., Soloff et al., 2002; Zanarini et al., 2006), these findings

would likely generalize to other inpatients and outpatients diagnosed with BPD.

Next, a diagnostic interview was not used as part of the assessment during the index psychiatric hospital admission or to corroborate the medical record diagnosis of BPD. The diagnoses at the index psychiatric hospital admission were assigned by a psychiatry resident, staff psychiatrist, or staff psychologist upon admission through a brief semistructured interview focused on axis I disorders while the medical record diagnosis of BPD was assigned during return hospital visits. Both the intake diagnoses and BPD diagnosis were then abstracted from the patient's medical and psychiatric record. Additionally, due to time constraints, no coding checks for these data were completed. As a result, reliability and validity of these diagnoses cannot be assured. Additionally, if a patient with BPD symptoms did not seek medical or psychiatric services after discharge from the index hospitalization, the symptoms would not have been detected. It should be noted that, due to the chronic and complex nature of this disorder; the associated adverse psychological morbidities (e.g., Grant et al., 2008; Lenzenweger et al., 2007), functional impairment (Bagge et al., 2004; Skodol et al., 2002), negative medical consequences (Frankenburg & Zanarini, 2006), and high treatment utilization; and the geographic isolation of the medical center, it is unlikely that a significant number of patients with BPD symptoms did not seek medical or psychiatric services after discharge.

BPD was also not formally assessed prior to the 3-year follow-up. As a result, it is unknown whether these symptoms were present before the index psychiatric hospital admission and, thus, present before the emergence of deliberate self-harm and suicide-

related behaviors. It should be emphasized, however, that a review of the medical and psychiatric records for each patient did not uncover a diagnosis of BPD or BPD traits in any of the patient's medical records prior to the index hospitalization making it unlikely that a significant number of patients exhibited a significant number of BPD traits before the manifestation of deliberate self-harm.

Another limitation of the present study is the reliance on self-report to assess emotion regulation difficulties, maladaptive familial behavior, and peer victimization. Utilizing self-report measures has the potential to lead to scores that do not accurately represent characteristics of responders because of methodological problems such as underreporting, negative recall bias, and social desirability bias. Although self-report measures are considered less robust than direct observation, they have the advantage of collecting information on behavior that cannot be directly observed and capturing behaviors across longer periods of time.

Finally, relatively small sample size may have and limited the power of this study and reduced the ability to detect small effects. As a result, further examination is needed to determine whether a larger sample size would bear similar results. It should be noted, however, that although the majority of the analyses were not statistically significant, our examination of the clinical significance contributes greatly to the existing literature.

Future Research

The conflicting findings with previous research underscore the need for further research in a number of important areas. First, additional longitudinal prospective studies

are needed to gain more understanding into the developmental precursors of BPD. The contradictory evidence, retrospective nature of the majority of past research, and multiple assessment and classification methods warrants further examination into potential variables that may be predictive of BPD.

Additionally, while recent research indicates that effective prevention and early intervention efforts are promising for BPD (Chanen, Jovev, McCutcheon, Jackson, & McGorry, 2008b), future research efforts should be focused on examining those precursors that could be the target of prevention and early intervention programs as well as inform treatment development. In a similar vein, future research should also identify factors that may protect against BPD or lead to a decline in the severity of BPD symptoms.

Finally, given the clinical significance of suicide threats predicting BPD, research is needed to better understand this relationship. Future work along any of these lines could have important conceptualization and etiological implications and contribute substantially to the treatment of this chronic and complex psychiatric disorder.

Conclusion

In summary, this study examined whether deliberate self-harm and suicide-related behaviors could prospectively predict BPD at a 3-year follow-up and 5-year chart review in an at-risk sample of adolescent inpatients who were hospitalized for deliberate self-harm and suicide-related behaviors. Findings indicated that only suicide threat could prospectively predict a medical record diagnosis of BPD at a 5-year chart review. This

research suggests that there may be a benefit to targeting adolescents with a history of threatening suicide for BPD prevention and early intervention efforts. Future studies should continue to examine the role that deliberate self-harm and suicide-related behaviors, especially suicide threats, plays in the development of BPD. Additionally, research should examine whether prevention and early intervention efforts targeting this population would prove fruitful. Assessing suicide threats and other deliberate self-harm and suicide-related behaviors appears to be a promising avenue for understanding the development of BPD and could have important conceptualization and treatment implications.

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APPENDICES

Appendix A

General Demographic and Background Information

General Demographic and Background Information

Demographic Information:

Name: _____ Date of Birth: _____

Gender: _____ Ethnicity/Race _____

Address: _____

Email Address: _____

Cell Phone: _____ Home Phone: _____

Treatment History:

Have you been hospitalized before? Yes / No How many times? _____

When was your last hospitalization? _____

Where was your last hospitalization? _____

Have you been to an emergency room for psychiatric reasons such as depression, suicidal thoughts, or behavior problems? Yes / No How many times? _____

How many of these ED visits have lead to a hospitalization? _____

Have you taken any medications? Yes / No If yes, which ones? _____

Have you seen a therapist? _____

If yes, for how long and how often? _____

What type of treatment? _____

School Progress:

Current grade level: _____ Current GPA: _____

About how many school days have you missed this year? _____

Have you gotten in trouble recently at school? Yes / No If yes, for what? _____

Have you received special services in school? Yes / No

If yes, in what areas? ___ Math ___ Reading

___ Writing ___ Emotional/behavioral disturbance

Legal Issues:

Have you had any contact with the police? Yes / No

If yes, for what happened? ___ Stealing ___ Assault ___ Traffic violation

___ Other _____

Were you arrested? Yes / No

Appendix B

Self-Harm Behavior Questionnaire (SHBQ)

Self-Harm Behavior Questionnaire (SHBQ)

A lot of people do things which are dangerous and might get them hurt. There are many reasons why people take these risks. Often people take risks without thinking about the fact that they might get hurt. Sometimes, however, people hurt themselves on purpose. We are interested in learning more about the ways in which you may have intentionally or unintentionally hurt yourself. We are also interested in trying to understand why people your age may do some of these dangerous things. It is important for you to understand that if you tell us about things you've done which may have been unsafe or make it possible that you may not be able to keep yourself safe, we will encourage you to discuss this with a counselor or other confidant in order to keep you safe in the future. Please circle *YES* or *NO* in response to each question and answer the follow-up questions. For questions where you are asked who you told something, do not give specific names. We only want to know if it was someone such as a parent, teacher, doctor, etc.

Things you may have actually done to yourself on purpose.

1. Have you ever hurt yourself on purpose? Yes No

If no, go on to question #2.

If yes, what have you done to harm yourself? Mark an 'X' to indicate Yes.

<input type="checkbox"/> Cut skin	If yes, where on your body? _____
<input type="checkbox"/> Burned skin	If yes, where on your body? _____
<input type="checkbox"/> Stabbed/punctured skin	If yes, where on your body? _____
<input type="checkbox"/> Rubbing skin to left a mark	If yes, where on your body? _____
<input type="checkbox"/> Hit self/banged head	If yes, where on your body? _____
<input type="checkbox"/> Other _____	_____

- a. Approximately how many times did you do this?

Many times a day	Daily	Weekly
Monthly	Every few months	A few times a year

b. Approximately when did you first do this to yourself? *(write your age and date)*

c. When was the last time you did this to yourself? *(write your age and date)*

d. Have you ever told anyone that you had done these things? Yes No

If yes, who did you tell? _____

e. Have you ever needed to see a doctor after doing these things? Yes No

If yes, what service did you go to?

- | | |
|---|---|
| <input type="checkbox"/> Crisis outreach | <input type="checkbox"/> Mental health professional in person |
| <input type="checkbox"/> Police/wellness check | <input type="checkbox"/> Hospital emergency room |
| <input type="checkbox"/> Paramedics/ambulance | <input type="checkbox"/> Inpatient psychiatric unit |
| <input type="checkbox"/> Hospital medical floor | <input type="checkbox"/> Intensive care |

Times you hurt yourself badly on purpose or tried to kill yourself.

2. Have you ever attempted suicide? Yes No

If no, go on to question #4.

If yes, how? _____

(Note: If you took pills, what kind? _____;

How many? _____; Over how long a period of time did you take them? _____)

a. How many times have you attempted suicide? _____

- b. When was the most recent attempt? (*write your age*) _____
- c. Did you tell anyone about the attempt? Yes No

If yes, who did you tell? _____

- d. Did you require medical attention after the attempt? Yes No

If yes, were you hospitalized overnight or longer? Yes No

How long were you hospitalized? _____

- e. Did you talk to a counselor or someone else after your attempt? Yes No

Who
? _____

3. If you attempted suicide, please answer the following:

- a. What other things were going on in your life around the time that you tried to kill yourself? _____

- b. Did you actually want to die? Yes No

- c. Were you hoping for a specific reaction to your attempt? Yes No

If yes, what was the reaction you were looking for? _____

- d. Did you get the reaction you wanted? Yes No

If you didn't, what type of reaction was there to your attempt? _____

- e. Who knew about your attempt? _____

Times you threatened to hurt yourself badly or try to kill yourself.

4. Have you ever threatened to commit suicide? Yes No

If no, go on to question #5.

If yes, what did you threaten to do? _____

a. Approximately how many times did you do this? _____

b. Approximately when did you first do this? (*write your age*) _____

c. When was the last time you did this? (*write your age*) _____

d. Who did you make the threats to? (e.g., mom, dad) _____

e. What other things were going on in your life during the time that you were threatening to kill yourself? _____

f. Did you actually want to die? Yes No

g. Were you hoping for a specific reaction to your threat? Yes No

If yes, what was the reaction you were looking for? _____

h. Did you get the reaction you wanted? Yes No

If you didn't, what type of reaction was there to your attempt? _____

Times you talked or thought seriously about attempting suicide.

5. Have you ever talked or thought about:

Wanting to die: Yes No

Committing suicide: Yes No

a. What did you talk about doing? _____

b. With whom did you discuss this? _____

c. What made you feel like doing that? _____

d. Did you have a specific plan for how you would try to kill yourself? Yes No

If yes, what plan did you have? _____

e. In looking back, how did you imagine people would react to your attempt?

f. Did you think about how people would react if you did succeed in killing yourself? Yes No

If yes, how did you think they would react? _____

g. Did you ever take steps to prepare for this plan? Yes No

If yes, what did you do to prepare? _____

Appendix C

Family Environment Scale—Third Edition (FES-3)

Family Environment Scale–Third Edition (FES–3)

There are 27 statements on this scale. They are statements about families. You are to decide which of these statements are true of your family and which are false. If you think the statement is TRUE or mostly TRUE of your family, make an X on the line labeled TRUE. If you think the statement is FALSE or mostly FALSE of your family, make an X on the line labeled FALSE. Remember, we would like to know what your family seems like to you.

- | | TRUE | FALSE | |
|-----|-------|-------|--|
| 1. | _____ | _____ | Family member really help and support one another. |
| 2. | _____ | _____ | Family members often keep their feelings to themselves. |
| 3. | _____ | _____ | We fight a lot in our family. |
| 4. | _____ | _____ | We often seem to be killing time at home. |
| 5. | _____ | _____ | We say anything we want to around home. |
| 6. | _____ | _____ | Family members rarely become openly angry. |
| 7. | _____ | _____ | We put a lot of energy into what we do at home. |
| 8. | _____ | _____ | It's hard to "blow off steam" at home without upsetting somebody. |
| 9. | _____ | _____ | Family members sometimes get so angry they throw things. |
| 10. | _____ | _____ | There is a feeling of togetherness in our family. |
| 11. | _____ | _____ | We tell each other about our personal problems. |
| 12. | _____ | _____ | Family members hardly ever lose their temper. |
| 13. | _____ | _____ | We rarely volunteer when something has to be done at home. |
| 14. | _____ | _____ | If we feel like doing something on the spur of the moment, we often just pick up and go. |
| 15. | _____ | _____ | Family members often criticize each other. |

- | | TRUE | FALSE | |
|-----|-------|-------|--|
| 16. | _____ | _____ | Family members really back each other up. |
| 17. | _____ | _____ | Someone usually gets upset if you complain in our family. |
| 18. | _____ | _____ | Family members sometimes hit each other. |
| 19. | _____ | _____ | There is little group spirit in our family. |
| 20. | _____ | _____ | Money and paying bills are openly discussed in our family. |
| 21. | _____ | _____ | If there's a disagreement in our family, we try hard to smooth things over and keep peace. |
| 22. | _____ | _____ | We really get along well with each other. |
| 23. | _____ | _____ | We are usually careful about what we say to each other. |
| 24. | _____ | _____ | Family members often try to one-up or out-do each other. |
| 25. | _____ | _____ | There is plenty of time and attention for everyone in our family. |
| 26. | _____ | _____ | There are a lot of spontaneous discussions in our family. |
| 27. | _____ | _____ | In our family, we believe you don't ever get anywhere by raising your voice. |

Appendix D

Social Experiences Questionnaire–Self-Report (SEQ–S)

Appendix E

Emotion Expression Scale for Children (EESC)

Emotion Expression Scale for Children (EESC)

Instructions: Please circle a number from 1 to 5 that describes how often you do or think the action or thought described in the sentence.

	1 = Not At All True	2 = A Little True	3 = Somewhat True	4 = Very True	5 = Extremely True
1. I prefer to keep my feelings to myself.					1 2 3 4 5
2. I do not like to talk about how I feel.					1 2 3 4 5
3. When something bad happens, I feel like exploding.					1 2 3 4 5
4. I don't show how I really feel in order not to hurt others' feelings.					1 2 3 4 5
5. I have feelings I can't figure out.					1 2 3 4 5
6. I usually do not talk to people until they talk to me first.					1 2 3 4 5
7. When I get upset, I am afraid to show it.					1 2 3 4 5
8. When I feel upset, I do not know how to talk about it.					1 2 3 4 5
9. I often do not know how I am feeling.					1 2 3 4 5
10. People tell me I should talk about my feelings more often.					1 2 3 4 5
11. Sometimes I just don't have words to describe how I feel.					1 2 3 4 5
12. When I'm sad, I try not to show it.					1 2 3 4 5
13. Other people don't like it when you show how you really feel.					1 2 3 4 5
14. I know I should show my feelings, but it is too hard.					1 2 3 4 5
15. I often do not know why I am angry.					1 2 3 4 5
16. It is hard for me to show how I feel about somebody.					1 2 3 4 5

Appendix F

Structured Clinical Interview for DSM-IV Axis II Personality
Disorders Personality Questionnaire (SCID-II-PQ)

Structured Clinical Interview for DSM-IV Axis II
Personality Disorders Personality Questionnaire (SCID-II-PQ)

These questions are about the kind of person you generally, that is, how you have usually felt or behavior over the past several years. Circle “YES” if the question completely or mostly applies to you, or circle “NO” if it does not apply to you. If you do not understand the question or are not sure of your answer, leave it blank.

- | | |
|--|--------|
| 1. Have you often become frantic when you thought that someone you really cared about was going to leave you? | No Yes |
| 2. Do your relationships with people you really care about have lots of extreme ups and downs? | No Yes |
| 3. Have you all of a sudden changed your sense of who you are and where you are headed? | No Yes |
| 4. Does your sense of who you are often change dramatically? | No Yes |
| 5. Are you different with different people or in different situations so that you sometimes don't know who you really are? | No Yes |
| 6. Have there been lots of sudden changes in your goals, career plans, and so on? | No Yes |
| 7. Have you done things impulsively? | No Yes |
| 8. Have you tried to hurt or kill yourself or threatened to do so? | No Yes |
| 9. Have you ever cut, burned, or scratched yourself on purpose? | No Yes |
| 10. Do you have a lot of sudden mood changes? | No Yes |
| 11. Do you often feel empty inside? | No Yes |
| 12. Do you often have temper outbursts or get so angry that you lose control? | No Yes |
| 13. Do you hit people or throw things when you get angry? | No Yes |
| 14. Do even little things get you very angry? | No Yes |
| 15. When you are under a lot of stress, do you get suspicious of other people or feel especially spaced out? | No Yes |

Appendix G

Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II)

Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II)

The ratings are of items, not answers to questions. Frequently a subject to answer “yes” to a question, but the interviewer’s clinical judgment (after further inquiry) will be that the item should be coded “1” or “2.” A rating of “3” is warranted only if the subject has provided a convincing elaboration or example, or if there is clear evidence from behavior during the interview or from other sources that the item meets the threshold requirements for a “3” rating. Facilitate the differentiation of a rating of subthreshold from the rating threshold, each item includes the specific guidelines for making a “3” rating.

1. You’ve said that you have [Have you] often become frantic when you thought that someone you really cared about was going to leave you. ? 1 2 3

What have you done?

(Have you threatened or pleaded with him/her?)

2. You’ve said that [Do] your relationships with people you really care about have lots of extreme ups and downs. ? 1 2 3

Tell me about them.

(Were there times when you thought they were everything you wanted and other times when you thought they were terrible? How many relationships were like this?)

3. You’ve said that you have [Have you] all of a sudden changed your sense of who you are and where you are headed.

Can you give me some examples of this?

4. You’ve said that your sense of who you are often changes [Does your sense of who you are often change] dramatically.

Tell me more about that.

5. You’ve said that you are [Are you] different with different people or in different situations so that you sometimes you don’t know who you really are.

Give me some examples of this.

(Do you feel this way a lot?)

6. You've said that there have been [Have there been] lots of sudden changes in your goals, career plans, religious beliefs, and so on.

Tell me more about that.

7. You've said that you've [Have you] often done things impulsively. ? 1 2 3

What kinds of things?

(How about...

...buying things you really couldn't afford?

...having sex with people you hardly know, or "unsafe sex"?

...drinking too much or taking drugs?

...driving recklessly?

...uncontrollable eating?

If yes to any of the above: Tell me about that. How often does it happen? What kinds of problems has it caused?

8. You've said that you have [Have you] tried to hurt or kill yourself or threatened to do so. ? 1 2 3

9. You've said that you have [Have you ever] cut, burned, or scratched yourself on purpose.

Tell me about that.

10. You've said that [Do] you have a lot of sudden mood changes. ? 1 2 3

Tell me about that.

(How long do your "bad" moods last? How often do these mood changes happen? How suddenly do your moods change?)

11. You've said that [Do] you often feel empty inside. ? 1 2 3

Tell me more about this.

12. You've said that [Do] you often have temper outbursts or get so angry that you lose control. ? 1 2 3

Tell me about this.

13. You've said that [Do] you hit people or throw things when you get angry.

Tell me about this.

(Does this happen often?)

14. You've said that [Do] even little things get you very angry.

When does this happen?

(Does this happen often?)

15. You've said that when you are under a lot of stress, you [When you are under a lot of stress, do you] get suspicious of other people or feel especially spaced out. ? 1 2 3

Tell me about when that.

Appendix H
Parent Consent Form

Parent Consent Form

1. General Information About This Research Study

A. Study Eligibility and Purpose: You are being asked to take part in this research study because you have a teenager who has been hospitalized on the child psychiatry unit at Mayo Clinic, Rochester. This study is interested in understanding why some adolescents who have been hospitalized harm themselves. As you read this form describing the study, ask any questions you have. Take your time to decide. Feel free to discuss the study with your family, friends, and healthcare provider before you decide. You may stop participating at any time during the study. You may decide not to participate. If so, none of your current benefits or normal health care will be affected in any way. When you feel comfortable that all your questions have been answered, and you wish to take part in this study, sign this form in order to begin your participation. If you are agreeing for someone else, you need to sign this form. Your signature means you have been told about the study and what the risks are. Your signature on this form also means that you want yourself, or your child/relative/principal/ward to take part in this study. If you do not understand any part of this consent form, please ask until you feel you understand.

B. Number of Participants: The plan is to have 150 people take part in this study at Mayo Clinic.

2. What Will Happen To You While You Are In This Research Study?

If you agree to be in the study, you will be asked to participate in the following:

1. During your child's hospital stay, you will complete five pencil and paper questionnaires asking about different experiences. These questionnaires will take approximately 25 minutes to complete.
2. One year and three years after discharge you will be contacted by a research assistant to complete the questionnaires again. These questionnaires will take approximately 25 minutes to complete.
3. At that time you will have the option of completing these questionnaires on a secured internet site, by phone, by mail, or at Mayo Clinic.
4. There are no right or wrong answers to the questions on the questionnaires. The questionnaires will pertain to different topics.
 - One of the questionnaires asks about your current demographic information including address, marital status and child's date of birth.
 - One of the questionnaires is about how your child has been feeling and acting

lately and will ask you to rate how true the following questions are “my child argues a lot,” “my child fails to finish things before he/she starts,” “my child clings to adults or is too dependent.”

- One of the questionnaires is about family conflict, communication, and problem solving. These questionnaires will ask you to respond to statements such as “family members really help and support one another,” “planning family activities is difficult because we misunderstand each other,” and “we get a long well with each other.”

- Two of the questionnaires are about how you deal with feelings and will ask you how you help your child cope with different feelings. These questionnaires will ask you to respond to questions such as “my son/daughter is a cheerful child,” and “when my child has been angry, I showed my child I did not like him/her being angry.”

3. How Long Will You Be in This Research Study?

You will be in the study for 3 years.

4. Why You Might Want To Take Part In This Research Study

This study will not make you or your child’s health better. It is for the benefit of research.

5. What Are the Risks Of This Research Study?

A. Possible Special Circumstances: Some questions you will be asked to answer in the study questionnaire(s) may make you feel uncomfortable. You may choose not to answer any questions that are uncomfortable to you.

B. Pregnancy and Birth Control: Will women of child-bearing-potential (able to become pregnant) be allowed to participate in this study? Yes, women who are pregnant, and/or nursing may take part in this study because the risk to an unborn or nursing child appears very small. Do you need to have a pregnancy test done to be part of the study? No, the risk to an unborn child appears very small. Pregnant women are eligible to take part in this study. Will men who are able to father a child be allowed to participate in this study? Yes, men who are able to father a child are allowed to take part in this study.

C. Risk summary: The risks of this research study are minimal, which means that we do not believe that they will be any different than what you would experience at a routine clinical visit or during your daily life.

6. What Other Choices Do You Have If You Don't Take Part In This Research Study?

This study is only being done to gather information. You may choose not to take part in this study.

7. Are There Reasons You Might Leave This Research Study Early?

Taking part in this research study is your decision. You may decide to stop at any time. You should tell the researcher if you decide to stop and you will be advised whether any additional tests may need to be done for your safety. In addition, the researchers, or Mayo Clinic may stop you from taking part in this study at any time if it is in your best interest, you do not follow the study rules, or the study is stopped.

8. Will You Need To Pay For Any Of The Tests And Procedures?

You will not need to pay for tests and procedures which are done just for this research study. However, you and/or your health plan will need to pay for all other tests and procedures that you would normally have as part of your regular clinical care. If you have study related questions regarding billing, insurance or reimbursement, stop by or call: Admission and Business Services office, or call Patient Account Services at (507) 287-1819.

9. Will You Be Paid For Participating In This Research Study?

If you finish the study, you will receive \$30 (parent/child combined). This money is for the time you and your child spend in this study. If you start the study but stop before finishing the study, you will receive part of this money.

10. What Happens If You Are Injured Or Ill Because You Were In This Research Study?

If you have side effects from taking part in this study, you need to report them to the researcher and your regular physician, and you will be treated as needed. Mayo Clinic will give medical services for treatment for any bad side effects from taking part in this study. Such services will be free if not covered by a health plan or insurance. No additional money will be offered.

11. What Are Your Rights If You Are In This Research Study?

Taking part in this research study will not change your rights and benefits. Taking part in

this research study does not give you any special privileges. If you decide to not participate in this study, or stop in the middle of the study, no benefits are taken away from you. Specifically, you do not have to be in this research study to receive or continue to receive medical care from Mayo Clinic. You will be told of important new findings or any changes in the study or procedures that may affect you or your willingness to continue in the study.

12. What About Your Privacy?

Authorization To Use And Disclose Protected Health Information: Your privacy is important to us, and we want to protect it as much as possible. By signing this form, you authorize Mayo Clinic and the investigators to use and disclose any information created or collected in the course of your participation in this research protocol. This information might be in different places, including your original medical record, but we will only disclose information that is related to this research protocol for the purposes listed below.

This information will be given out for the proper monitoring of the study, checking the accuracy of study data, analyzing the study data, and other purposes necessary for the proper conduct and reporting of this study. If some of the information is reported in published medical journals or scientific discussions, it will be done in a way that does not directly identify you.

This authorization lasts until the end of the study. The study does not end until all data has been collected, checked (or audited) and analyzed. Sometimes this can be years after your study visits have ended. For example, this could happen if the results of the study are filed with a regulatory agency like the Food and Drug Administration.

You may stop this authorization at any time by writing to the following address:

Mayo Clinic
Office for Human Research Protection
ATTN: Notice of Revocation of Authorization
200 1st Street SW
Rochester, MN 55905

If you stop authorization, Mayo Clinic may continue to use your information already collected as part of this study, but will not collect any new information.

13. What Will Happen to Your Samples?

No biological samples will be collected as part of this research study.

14. What Is The Institutional Review Board (IRB) And How Does It Protect You?

The Mayo Clinic IRB is made up of:

- Physicians and Scientists
- IRB Specialists
- Allied Health Employees
- Local Community Members
- Visitors (Lawyers, Compliance, Administration, and others)

The IRB reviews human research studies. It protects the rights and welfare of the people taking part in those studies. You may contact the IRB if you have questions about your rights as a participant or if you think you have been treated unfairly.

15. Who Can Answer Your Questions?

<i>You can call...</i>	<i>At...</i>	<i>If you have questions/concerns about...</i>
Principal Investigator: Leslie Sim, Ph.D.	507-284-2088	- Questions about the study tests and procedures - Research-related injuries or emergencies - Any research-related concerns or complaints
IRB Administrator: Marcia Andresen-Reid	507-266-4000	- Rights of a research subject - Use of protected health information - Any research-related concerns or complaints
Research Billing	507-287-1819	- Billing/Insurance Questions

16. Summary and Enrollment Signatures

You have been asked to take part in a clinical trial, also called a research study, at Mayo Clinic. The information about this study has been provided to you to inform you about the nature of this IRB approved study.

- I have read the whole consent form, and all of my questions have been answered to my satisfaction.
- I know that joining the study is voluntary and I agree to join the study.
- I know enough about the purpose, methods, risks, and possible benefits of the study to decide that I want to join.
- I know that I can call the investigator and research staff at any time with any new questions or to tell them about side effects.
- I understand that a copy of this form will be put in my medical records and that I

will be given a copy of this completed form.

- I understand that I may withdraw from the study at any time.

Please sign and date to show that you have read and understand all of the above guidelines. Please do not sign unless you have read the entire packet of information. If you do not want to sign, you do not have to, but if you do not sign you cannot participate in this research study.

Date

Printed Name of Participant

Date

Signature of Participant

Date

Printed Name of Individual Obtaining Consent

Date

Signature of Individual Obtaining Consent

Appendix I
Adolescent Assent Form

Adolescent Assent Form

1. General Information About This Research Study

A. Study Eligibility and Purpose: You are being asked to take part in this research study because you are a teenager who has been hospitalized on the child psychiatry unit at Mayo Clinic and this study is interested in understanding why some adolescents who have been hospitalized harm themselves. As you read this form describing the study, ask any questions you have. Take your time to decide. Feel free to discuss the study with your family, friends, and healthcare provider before you decide. You may stop participating at any time during the study. You may decide not to participate. If so, none of your current benefits or normal health care will be affected in any way. When you feel comfortable that all your questions have been answered, and you wish to take part in this study, sign this form in order to begin your participation. If you are agreeing for someone else, you need to sign this form. Your signature means you have been told about the study and what the risks are. Your signature on this form also means that you want yourself, or your child/relative/principal/ ward to take part in this study. If you do not understand any part of this consent form, please ask until you feel you understand.

B. Number of Participants: The plan is to have 150 people take part in this study at Mayo Clinic.

2. What Will Happen To You While You Are In This Research Study?

If you agree to be in the study, you will be asked to participate in the following:

1. During your hospital stay, you will complete 10 pencil and paper questionnaires asking about different experiences. These questionnaires will take approximately 40 minutes to complete.
2. You will also be asked to select a good or best friend that we could ask to participate in the project. If your friend and their parent agreed, we would ask them about your friendship and how your friend has been feeling and acting recently.
3. One year and three years after discharge you will be contacted by a research assistant to complete the questionnaires again. These questionnaires will take approximately 40 minutes to complete.
4. At that time you will have the option of completing these questionnaires on a secured internet site, by mail, or at Mayo Clinic.
5. There are no right or wrong answers to the questions on the questionnaires. The

questionnaires will pertain to different topics.

- One of the questionnaires will ask about prior hospitalizations, school progress, and treatments you have received for emotional and behavioral problems.
- Three of the questionnaires are about how you deal with feelings and will ask you how you cope with different feelings. These questionnaires will ask you to respond to questions such as “I am clear about my feelings,” “I prefer to keep my feelings to myself,” and “when I feel sad, I try to get my mind off of it.”
- Three of the questionnaires are about social experiences with peers and friends and will contain questions such as “how much does your friend help you figure out or fix things?,” “how often do you get help from another kid when you need it?,” and “when one of us has a problem, we talk to each other about it for a long time.”
- One of the questionnaires is about family conflict, communication, and problem solving. These questionnaires will ask you to respond to statements such as “family members really help and support one another,” “planning family activities is difficult because we misunderstand each other,” and “we get along well with each other.”
- One of the questionnaires is about harming yourself and will ask you respond to questions such as “how you ever harmed yourself on purpose?,” and “how often do you harm yourself?”
- One of the questionnaires is about how you have been feeling and acting lately and will ask you to respond to questions like “I am afraid that I might think or do something bad,” “I get teased a lot,” and “I act too young for my age.”

3. How Long Will You Be in This Research Study?

You will be in the study for 3 years.

4. Why You Might Want To Take Part In This Research Study

This study will not make your health better. It is for the benefit of research.

5. What Are the Risks Of This Research Study?

A. Possible Special Circumstances: Some questions you will be asked to answer in the study questionnaire(s) may make you feel uncomfortable. You may choose not to answer any questions that are uncomfortable to you.

B. Pregnancy and Birth Control: Will women of child-bearing-potential (able to become pregnant) be allowed to participate in this study? Yes, women who are pregnant, and/or nursing may take part in this study because the risk to an unborn or nursing child appears

very small. Do you need to have a pregnancy test done to be part of the study? No, the risk to an unborn child appears very small. Pregnant women are eligible to take part in this study. Will men who are able to father a child be allowed to participate in this study? Yes, men who are able to father a child are allowed to take part in this study.

C. Risk summary: The risks of this research study are minimal, which means that we do not believe that they will be any different than what you would experience at a routine clinical visit or during your daily life.

6. What Other Choices Do You Have If You Don't Take Part In This Research Study?

This study is only being done to gather information. You may choose not to take part in this study.

7. Are There Reasons You Might Leave This Research Study Early?

Taking part in this research study is your decision. You may decide to stop at any time. You should tell the researcher if you decide to stop and you will be advised whether any additional tests may need to be done for your safety. In addition, the researchers, or Mayo Clinic may stop you from taking part in this study at any time if it is in your best interest, you do not follow the study rules, or the study is stopped.

8. Will You Need To Pay For Any Of The Tests And Procedures?

You will not need to pay for tests and procedures which are done just for this research study. However, you and/or your health plan will need to pay for all other tests and procedures that you would normally have as part of your regular clinical care. If you have study related questions regarding billing, insurance or reimbursement, stop by or call: Admission and Business Services office, or call Patient Account Services at (507) 287-1819.

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If you finish the study, you will receive \$30 (parent/child combined). This money is for the time you and your child spend in this study. If you start the study but stop before finishing the study, you will receive part of this money.

10. What Happens If You Are Injured Or Ill Because You Were In This Research Study?

If you have side effects from taking part in this study, you need to report them to the

researcher and your regular physician, and you will be treated as needed. Mayo Clinic will give medical services for treatment for any bad side effects from taking part in this study. Such services will be free if not covered by a health plan or insurance. No additional money will be offered.

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Taking part in this research study will not change your rights and benefits. Taking part in this research study does not give you any special privileges. If you decide to not participate in this study, or stop in the middle of the study, no benefits are taken away from you. Specifically, you do not have to be in this research study to receive or continue to receive medical care from Mayo Clinic. You will be told of important new findings or any changes in the study or procedures that may affect you or your willingness to continue in the study.

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This information will be given out for the proper monitoring of the study, checking the accuracy of study data, analyzing the study data, and other purposes necessary for the proper conduct and reporting of this study. If some of the information is reported in published medical journals or scientific discussions, it will be done in a way that does not directly identify you.

This authorization lasts until the end of the study. The study does not end until all data has been collected, checked (or audited) and analyzed. Sometimes this can be years after your study visits have ended. For example, this could happen if the results of the study are filed with a regulatory agency like the Food and Drug Administration.

You may stop this authorization at any time by writing to the following address:

Mayo Clinic
Office for Human Research Protection
ATTN: Notice of Revocation of Authorization
200 1st Street SW
Rochester, MN 55905

If you stop authorization, Mayo Clinic may continue to use your information already collected as part of this study, but will not collect any new information.

13. What Will Happen to Your Samples?

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14. What Is The Institutional Review Board (IRB) And How Does It Protect You?

The Mayo Clinic IRB is made up of:

- Physicians and Scientists
- IRB Specialists
- Allied Health Employees
- Local Community Members
- Visitors (Lawyers, Compliance, Administration, and others)

The IRB reviews human research studies. It protects the rights and welfare of the people taking part in those studies. You may contact the IRB if you have questions about your rights as a participant or if you think you have been treated unfairly.

15. Who Can Answer Your Questions?

<i>You can call...</i>	<i>At...</i>	<i>If you have questions/concerns about...</i>
Principal Investigator: Leslie Sim, Ph.D.	507-284-2088	- Questions about the study tests and procedures - Research-related injuries or emergencies - Any research-related concerns or complaints
IRB Administrator: Marcia Andresen-Reid	507-266-4000	- Rights of a research subject - Use of protected health information - Any research-related concerns or complaints
Research Billing	507-287-1819	- Billing/Insurance Questions

16. Summary and Enrollment Signatures

You have been asked to take part in a clinical trial, also called a research study, at Mayo Clinic. The information about this study has been provided to you to inform you about the nature of this IRB approved study.

- I have read the whole consent form, and all of my questions have been answered to my satisfaction.
- I know that joining the study is voluntary and I agree to join the study.
- I know enough about the purpose, methods, risks, and possible benefits of the study to decide that I want to join.
- I know that I can call the investigator and research staff at any time with any new questions or to tell them about side effects.
- I understand that a copy of this form will be put in my medical records and that I will be given a copy of this completed form.
- I understand that I may withdraw from the study at any time.

Please sign and date to show that you have read and understand all of the above guidelines. Please do not sign unless you have read the entire packet of information. If you do not want to sign, you do not have to, but if you do not sign you cannot participate in this research study.

Date

Printed Name of Participant

Date

Signature of Participant

Date

Printed Name of Individual Obtaining Consent

Date

Signature of Individual Obtaining Consent

CURRICULUM VITAE

KENDRA J. HOMAN

Utah State University
 Department of Psychology
 2810 Old Main Hill
 Logan, UT 84322
 kendrajoyh@yahoo.com
 (712) 540-2181

Education

- Ph.D. Utah State University, Logan, Utah
 (Anticipated 8/15) Combined Clinical/Counseling/School Psychology (APA Accredited)
 Dissertation: *Five-year prospective evaluation of the development of borderline symptoms in psychiatrically hospitalized adolescents who engage in deliberate self-harm and suicide-related behaviors.*
 Chair: Michael P. Twohig, Ph.D.
- M.A. Minnesota State University, Mankato, Minnesota
 2009 Clinical Psychology
 Thesis: *Cultural differences in the levels of rewards among adolescents from America, Australia, Tanzania, Denmark, Honduras, Korea, and Spain.*
 Chair: Daniel D. Houlihan, Ph.D.
- B.A. Briar Cliff University, Sioux City, Iowa
 2007 Psychology – with Honors

Clinical Experience

- 08/14- *Predoctoral Psychology Intern*
 Present University of North Carolina at Charlotte Counseling Center (APA Accredited)
 Responsible for providing counseling services to university students including crisis consultations, intake assessments, individual psychotherapy, group psychotherapy, LGBT support group, outreach services to the university campus, and psychoeducation. Attend regular case conferences, staff meetings, and professional development seminars. Client presenting problems include anxiety/mood disorders; identity and sexual orientation concerns; and substance abuse.
Supervisors: Terri Rhodes, Ph.D., Susan Funk, Psy.D., & Aaron Brink, Psy.D.
Direct Clinical Hours: 110; Total Hours: 320
- 06/14 *Graduate Assistant Therapist*
 Veterinary Leadership Experience, Pullman, Washington
 Provided counseling services to graduate veterinary students as they participated in the one-week long Veterinary Leadership Experience

- Supervisors:* Chris Chapman, Ph.D.
Direct Clinical Hours: 30; Total Hours: 80
- 08/13-5/14 *Graduate Assistant Therapist*
Utah State University Counseling and Psychological Services, Logan, Utah
- Provided counseling services to university students including crisis consultations, intake assessments, individual psychotherapy, group psychotherapy, Dialectical Behavior Therapy skills groups, outreach services to the School of Veterinary Medicine and the university campus, mental health screenings, clinical case presentations, psychoeducation, and supervision for undergraduate peer mentors. Attended regular case conferences, staff meetings, and professional development seminars. Client presenting problems included anxiety/mood disorders; eating disorders; body image concerns; identity and sexual orientation concerns; and unwanted sexual urges and behaviors.
- Supervisors:* Mark Nafziger, Ph.D., LuAnn Helms, Ph.D., & Chris Chapman, Ph.D.
Direct Clinical Hours: 241; Total Hours: 620
- 05/13-12/13 *Practicum Student Therapist*
Practicum in Clinical Child Psychology
Avalon Hills Residential Eating Disorders Program, Petersboro, Utah
- Provided psychotherapy services for adolescent patients in a residential setting with primary eating disorder diagnoses including psychodiagnostic assessment, individual psychotherapy, Acceptance and Commitment Therapy and process groups, integrated report writing, and multidisciplinary consultation.
- Supervisor:* Tera Lensegrav-Benson, Ph.D.
Direct Clinical Hours: 112; Total Hours: 287
- 05/12-5/13 *Practicum Student Therapist*
Practicum in Counseling/Clinical Psychology
Utah State University Health and Wellness Center, Logan, Utah
- Provided behavioral health services to adults within an integrated primary care setting including intake assessments, ADHD evaluations, individual psychotherapy, psychoeducation, consultation services, and collaboration with primary care providers. Client presenting problems included anxiety/mood disorders, eating disorders, substance abuse, and ADHD.
- Supervisor:* M. Scott DeBerard, Ph.D.
Direct Clinical Hours: 271; Total Hours: 716
- 08/11-8/14 *Graduate Clinical Research Assistant*
Center for Clinical Research, Utah State University, Logan, Utah
- Responsible for intake assessment, individual psychotherapy, follow-up assessment, training therapists as part of treatment outcome program of research using Acceptance and Commitment Therapy to treat trichotillomania in adult and adolescent populations.
- Supervisor:* Michael P. Twohig, Ph.D.

Direct Clinical Hours: 194; Total Hours: 339.5

08/11-5/12

Practicum Student Therapist

Integrative Practicum with Adults, Adolescents, and Children

Utah State University Psychology Community Clinic, Logan, Utah

Provided community based adult, adolescent, and child psychotherapy services including intake assessments, individual psychotherapy, psychoeducation, functional behavioral assessment, LD and ADHD evaluations, parent-training, and clinical case presentations. Client presenting problems included mood disorders; anxiety disorders including PTSD, OCD, and social anxiety; eating disorders; chronic pain; conduct disorder; and parent-child problems.

Supervisors: Susan L. Crowley, Ph.D., ABPP, Kyle M. Hancock, Ph.D., & Gretchen Peacock-Gimpel, Ph.D.

Direct Clinical Hours: 129; Total Hours: 591.5

Research Experience

8/10 – Present *Graduate Research Assistant*

Utah State University, Logan, Utah

Responsible for the design and implementation of research on Acceptance and Commitment Therapy including attending weekly research meetings, mentoring undergraduate students, recruitment of study participants, data collection and analysis, and dissemination in professional venues. Planned and facilitated the 2012 and 2013 annual Acceptance and Commitment Therapy workshop series for professionals seeking CE credits.

Supervisor: Michael P. Twohig, Ph.D.

8/10 – 3/12 *Graduate Research Assistant*

Utah State University, Logan, Utah

Responsible for the design and implementation of research on eating disorders and sports participation, emotion regulation, and social comparison including attending weekly research meetings, mentoring undergraduate students, creation of testing materials, recruitment of study participants, data collection and analysis, and dissemination in professional venues.

Supervisor: David M. Stein, Ph.D.

8/10 – 5/11 *Graduate Research Assistant*

Utah State University, Logan, Utah

Responsible for the implementation of research on the role of environmental factors in health disparities, quality of life, and psychological distress including weekly attending research meetings, compiling neuropsychological testing material, and data collection and analysis.

Supervisor: Gayle Morse, Ph.D.

- 6/08 – 5/10 *Graduate Research Assistant*
Mayo Clinic, Rochester, Minnesota
- Responsible for the design and implementation of research on eating disorders, non-suicidal self-injurious behavior, and emotion regulation including the creation of questionnaires and fMRI testing slides, recruitment of study participants, data collection and analysis, and dissemination in professional venues.
- Supervisor:* Leslie A. Sim, Ph.D., ABPP
- 6/08 – 5/09 *Graduate Research Assistant*
Mayo Clinic, Rochester, Minnesota
- Responsible for the design and implementation of research on childhood disintegrative disorder, attention-deficit hyperactivity disorder and high IQ, and psychiatric illness in mothers of children with attention-deficit hyperactivity disorder including the abstraction of data from medical and psychological histories, data collection and analysis, and dissemination in professional venues.
- Supervisor:* Michael Mellon, Ph.D., ABPP
- 9/07 – 5/09 *Graduate Research Assistant*
Minnesota State University, Mankato, Minnesota
- Responsible for the design and implementation of research on cultural differences in the reinforcement preference, the planning fallacy, and behavioral momentum including attending weekly meetings, creating culturally appropriate questionnaires, recruitment of study participants, data collection and analysis, and dissemination in professional venues.
- Supervisor:* Daniel Houlihan, Ph.D.
- 5/06 – 7/06 *Undergraduate Research Intern*
Kansas State University, Manhattan, Kansas
- Responsible for the design and implementation of research on performance in dynamic decision making tasks and the effects of violent video game play.
- Supervisors:* James Shanteau, Ph.D. & Amelia Asperin, Ph.D.
- 9/04 – 5/07 *Undergraduate Research Assistant*
Briar Cliff University, Sioux City, Iowa
- Responsible for the implementation of research on the decision-making processes of jurors and motivation in collegiate athletes.
- Supervisors:* John Raacke, Ph.D., Jennifer Bonds-Raacke, Ph.D., & Todd Knealing, Ph.D.

Publications

- Bluett, E. J., **Homan, K. J.**, Morrison, K. L., Levin, M. E., & Twohig, M. P. (2014). Acceptance and commitment therapy for anxiety and OCD spectrum disorders: An empirical review. *Journal of Anxiety Disorders*, 28, 612-624.

- Stein, D. M., Deberard, S., & **Homan, K. J.** (2013). Predicting success and failure in juvenile drug treatment court: A meta-analytic review. *Journal of Substance Abuse Treatment, 44*, 159-168.
- Guthmiller, M., Houlihan, D., Klein, L. A., **Homan, K. J.**, & Jollie-Trottier, T. J. (2012). Reward differences between adolescents from a Native American community and adolescents from a Non-Native American community. *Journal of Indigenous Research, 1 Special Issue*, 1-12.
- Homan, K. J.**, Houlihan, D., Ek, K., & Wanzek, J. (2012). Cultural differences in the levels of rewards between adolescents from America, Australia, Tanzania, Denmark, Honduras, Korea, and Spain. *International Journal of Psychological Studies, 4*, 264-272.
- Heston, K., Houlihan, D., & **Homan, K. J.** (2012). Assessment of estimated versus actual caloric expenditure. *Athletic Insight, 4*, 237-249.
- Wanzak, J., Houlihan, D., & **Homan, K. J.** (2012). An examination of behavioral momentum in girl's high school volleyball. *Journal of Sport Behavior, 35*, 94-107.
- Homan, K. J.**, Mellon, M. W., Houlihan, D., & Katusic, M. Z. (2011). Childhood disintegrative disorder: A brief examination of eight case studies. *Journal of Autism and Developmental Disorders, 41*, 497-504.
- Katusic, M. Z., Voigt, R. G., Colligan, R. C., Weaver, A. L., **Homan, K. J.**, & Barbaresi, W. J. (2011). Author reply: Attention deficit/hyperactivity disorder and high intelligence quotient. *Journal of Developmental and Behavioral Pediatrics, 32*, 438.
- Katusic, M., Voigt, R. G., Colligan, R. C., Weaver, A. L., **Homan, K. J.**, & Barbaresi, W. J. (2011). Attention deficit/hyperactivity disorder in children with high intelligence quotient: Results from a population-based study. *Journal of Developmental and Behavioral Pediatrics, 32*, 103-109.
- Adrian, M., Zeman, J., Erdley, C., Lisa, L., **Homan, K. J.**, & Sim, L. A. (2009). Social contextual links to emotion regulation in an adolescent psychiatric inpatient population: Do gender and symptomatology matter? *Journal of Child Psychology and Psychiatry, 50*, 1428-1436.

Publications In Progress

- Homan, K. J.**, Barbaresi, W. J., Colligan, R. C., Mellon, M. W., Weaver, A. L., Killian, J., & Katusic, S. K. (Submitted). Psychiatric disorders in mothers of children with attention-deficit hyperactivity disorder: A population-based perspective. *Journal of Attention Disorders*.
- Homan, K. J.**, Sim, L. A., & Lebow, J. R. (Manuscript in Progress). *The influence of non-body-related social comparisons on disordered eating*.
- Homan, K. J.**, & Sim, L. A. (Manuscript in Progress). *The influence of motivation for sports participation on eating disorder symptoms among female collegiate athletes*.
- Twohig, M. P., **Homan, K. J.**, Morrison, K., Crosby, J. M., & Mitchell, P. R. (Data Collection). *Acceptance and Commitment Therapy for the treatment of trichotillomania: A randomized clinical trial*.

Presentations at National and International Meetings

- Bluett, E. J., **Homan, K. J.**, Morrison, K. L., Levin, M. E., & Twohig, M. P. (November 2014). *Psychological flexibility and anxiety disorders: A meta-analysis*. Poster accepted for presentation Association for Behavioral and Cognitive Therapies Annual Meeting. Philadelphia, PA.
- Homan, K. J.**, Morrison, K., Crosby, J. M., & Twohig, M. P. (June 2014). *Acceptance and commitment therapy for adolescent trichotillomania*. In C. Stromberg (Chair), OCD and similar disorders: Evaluating theoretical and empirical support for the use of acceptance and commitment therapy symposium presented at the Association for Contextual Behavioral Science World Conference. Minneapolis, MN.
- Homan, K. J.**, Sim, L. A., Adrian, M. A., Zeman, J., Erdley, C. A., Veeder, M. A., & Twohig, M. P. (November 2013). *Three-year prospective evaluation of non-suicidal self-injury in the development of borderline symptoms in adolescent psychiatric inpatients*. Poster presented at the Association for Behavioral and Cognitive Therapies Annual Meeting. Nashville, TN.
- Homan, K. J.**, Sim, L. A., Stein, D. M., Potts, S. A., Sachse, C. N., Bernhisel, A. E., Pope, S. E., & Heslop, K. E. (May 2012). *Social comparison, anxiety, and eating disorder risk in college age women*. Poster presented at the International Conference on Eating Disorders Annual Meeting. Austin, TX.
- Potts, S. A., **Homan, K. J.**, Stein, D. M., Sim, L. A., Stevens, S., Hoglach, E., Wicker, R., & Evans, H. (May 2012). *Facets of emotion regulation in eating disorders*. Poster presented at the International Conference on Eating Disorders Annual Meeting. Austin, TX.
- Homan, K. J.**, Sim, L. A., Stein, D. M., Potts, S. A., Pope, S. E., Heslop, K. E., Sachse, C. N., & Bernhisel, A. (May 2012). *Level of physical activity moderates the relationship between eating disorder risk and emotion regulation in female college athletes*. Poster presented at the International Conference on Eating Disorders Annual Meeting. Austin, TX.
- Adrian, M. A., Sim, L. A., **Homan, K. J.**, Ames, M., & Zeman, J. (March 2012). *The role of co-rumination and emotion regulation in non-suicidal self-injury: A longitudinal investigation*. Poster presented at the Society for Research on Adolescence Biennial Meeting. Vancouver, BC.
- Homan, K. J.**, Sim, L. A., & Matthews, A. (November 2010). *The influence of motivation for sports participation: Eating disorder symptoms among female collegiate athletes*. Poster presented at the Association for Behavioral and Cognitive Therapies Annual Meeting. San Francisco, CA.
- Heston, K. J., Houlihan, D., & **Homan, K. J.** (November 2010). *Exercise and the planning fallacy*. Poster presented at the Association for Behavioral and Cognitive Therapies Annual Meeting. San Francisco, CA.
- Homan, K. J.**, Sim, L. A., Lisy, L., Adrian, M. A., & Zeman, J. (May 2010). *Emotion regulation mediates the relationship between family expressiveness and internalizing symptoms in female psychiatric inpatients*. Poster presented at the Pediatric Academic Societies Annual Meeting. Vancouver, BC.
- Homan, K. J.**, Barbaresi, W. J., Colligan, R. C., Mellon, M. W., Killian, J., Katusic, S. K. (May 2010). *Socioeconomic risk factors for psychiatric disorders among mothers of attention-deficit hyperactivity disorder (ADHD) cases and controls: A population-based study*. Poster presented at the Pediatric Academic Societies Annual Meeting. Vancouver, BC.
- Sim, L. A., Lisy, L., Adrian, M. A., **Homan, K. J.**, & Zeman, J. (November 2009). *Emotion regulation mediates the relationship between family expressiveness and internalizing symptoms in female psychiatric inpatients*. In L. Halpern & J. Fox (Chairs), Emotion

regulation: A mediator of youth's vulnerability to emotional and behavioral problems symposium presented at the Association for Behavioral and Cognitive Therapies Annual Meeting. New York City, NY.

- Homan, K. J.**, Katusic, S. K., Barbaresi, W. J., Colligan, R. C., Mellon, M. W., Weaver, A. L., & Killian, J. (October 2009). *Increased rates of psychiatric illness in mothers of children with attention-deficit hyperactivity disorder (ADHD): A population-based study*. Poster presented at the Society for Developmental and Behavioral Pediatrics Annual Meeting. Portland, OR.
- Homan, K. J.**, Mellon, M. W., Houlihan, D., & Katusic, M. (October 2009). *Retrospective case studies on childhood disintegrative disorder: A report of the diagnostic features and treatment methods*. Poster presented at the Society for Developmental and Behavioral Pediatrics Annual Meeting. Portland, OR.
- Katusic, M., Voigt, R. G., Colligan, R. C., **Homan, K. J.**, Weaver, A. L., & Barbaresi, W. J. (October 2009). *Characteristics of children with attention-deficit hyperactivity disorder (ADHD) and high IQ: Results from a population-based study*. Poster presented at the Society for Developmental and Behavioral Pediatrics Annual Meeting. Portland, OR.
- Lisya, L., Sim, L. A., Swintak, C., **Homan, K. J.**, Adrian, M. A., Zeman, J., & Wall, C. (October 2009). *Does emotion regulation mediate the relationship between family emotional expression and internalizing symptoms in adolescent girls?* Poster presented at the American Academy of Child and Adolescent Psychiatry Annual Meeting. Honolulu, HI.
- Homan, K. J.**, Barbaresi, W. J., Colligan, R. C., Mellon, M. W., Weaver, A. L., Killian, J., & Katusic, S. K. (May 2009). *Psychiatric illness in mothers of children with attention-deficit hyperactivity disorder (ADHD): Population-based cohort*. Paper presented at the Pediatric Academic Societies Annual Meeting Special Session Neurodevelopmental Disabilities: Neonatal Neurology. Baltimore, MD.
- Katusic, M., Voigt, R. G., Colligan, R. C., **Homan, K. J.**, Weaver, A. L., & Barbaresi, W. J. (May 2009). *Diagnosing attention-deficit hyperactivity disorder (ADHD) in children with high IQ*. Poster presented at the Pediatric Academic Societies Annual Meeting. Baltimore, MD.
- Homan, K. J.**, & Raacke, J. D. (May 2005). *Eating disorders in female collegiate athletes*. Poster presented at the American Psychological Association Annual Convention. Los Angeles, CA.
- Raacke, J. D., & **Homan, K. J.** (May 2005). *Jury decision-making*. Poster presented at the American Psychological Association Annual Convention. Los Angeles, CA.
- Bauerly, T. M., **Homan, K. J.**, Meister, J., Brija, M., & Bonds-Raacke, J. M. (May 2005). *Where to live: The effects of residency on college satisfaction*. Poster presented at the American Psychological Association Annual Convention. Los Angeles, CA.
- Duchene, M., Rouillard, J., Guzman, M., **Homan, K. J.**, Bauerly, T. M., & Bonds-Raacke, J. M. (May 2005). *Measuring the effectiveness of the D.A.R.E. program*. Poster presented at the American Psychological Association Annual Convention. Los Angeles, CA.

Presentations at Regional Meetings

- Homan, K. J.**, Sim, L. A., Adrian, M. A., Zeman, J., Erdley, C. A., Veeder, M. A., & Twohig, M. P. (October 2013). *An evaluation of borderline symptoms in adolescent psychiatric inpatients who were hospitalized for suicide attempts or deliberate self-harm*. Poster accepted for presentation at the Utah University & College Counseling Centers Conference. Park City, UT.

- Homan, K. J.**, Tauber, P. G., & Houlihan, D. (April 2011). *Cultural differences in the reinforcement preference among students from America, Denmark, Korea, Australia, and Spain*. Poster presented at the Rocky Mountain Psychological Association Annual Meeting. Salt Lake City, UT.
- Homan, K. J.**, Sim, L. A., & Stein, D. (March 2011). *Motivational differences for sport participation among female collegiate athletes and eating disorder risk*. Poster presented at the Utah State University Intermountain Graduate Research Symposium. Logan, UT. *First Place Presentation Award
- Homan, K. J.**, Katusic, S. K., Barbaresi, W. J., Colligan, R. C., Mellon, M. W., Weaver, A. L., & Killian, J. (April 2009). *Depression and anxiety disorders in mothers of children with attention-deficit hyperactivity disorder (ADHD): A population-based study*. Poster presented at the Minnesota State University Annual Graduate Research Conference. Mankato, MN. *Outstanding Presentation Award
- Homan, K. J.**, Houlihan, D., Mellon, M. W., & Katusic, M. (March 2009). *Case reports of childhood disintegrative disorder*. Paper presented at the Annual Midwestern Conference on Professional Psychology. Mankato, MN.
- Homan, K. J.**, Shanteau, J., Barlett, C., Woller, M., & Park, A. (May 2007). *Investigating the impact of context on performance in dynamic decision-making*. Poster presented at the Midwestern Psychological Association Annual Meeting. Chicago, IL.
- Reuer, S., **Homan, K. J.**, & Oestreich, A. (May 2007). *The effects of personality and physical appearance on ratings of attractiveness*. Poster presented at the Midwestern Psychological Association Annual Meeting. Chicago, IL.
- Homan, K. J.**, Shanteau, J., & Buckley, K. (March 2007). *Individual performance in dynamic decision-making tasks using video games*. Poster presented at the Great Plains Students' Annual Psychology Convention. Wichita, KS.
- Bonds-Raacke, J. M. & **Homan, K. J.** (May 2006). *Motivating athletes: How well can coaches predict athletes' emotional states?* Poster presented at the Midwestern Psychological Association Annual Meeting. Chicago, IL.
- Homan, K. J.**, Oestreich, A., Hobson, K., & Bonds-Raacke, J. M. (May 2006). *Using course websites: Will learning be improved?* Poster presented at the Midwestern Psychological Association Annual Meeting. Chicago, IL.
- Homan, K. J.**, Simpson, J., Raacke, J. D., & Bonds-Raacke, J. M. (March 2005). *Body size and eating disorder risk: A comparison of high school and college females*. Poster presented at the Great Plains Students' Annual Psychology Convention. Omaha, NE. *First Place Presentation Award

Grants Submitted

- Treating adolescent trichotillomania with Acceptance and Commitment Therapy*. \$20,000 (Not Funded). Trichotillomania Learning Center Research Grant Program, Michael P. Twohig, Principle Investigator, and **Kendra J. Homan**, Co-Investigator. Submitted March 2013.
- Cumulative risk model of non-suicidal self-injury*. \$9,000 (Funded). Mayo Clinic College of Medicine Small Grant Award, Leslie A. Sim, Principle Investigator, and Molly Adrian, Janice Zeman, and **Kendra J. Homan**, Co-Investigators. Submitted May 2007.

Workshop Experience

Twohig, M. P. (September, 2013). *Experiential Workshop of Acceptance and Commitment Therapy*. Co-facilitators: **Kendra J. Homan** & Kate L. Morrison. Co-led one day of the 2nd Annual ACT Workshop Series in Logan, UT.

Teaching Experience

- 1/14-5/14 *Co-Instructor – Utah State University, Logan, Utah*
Veterinarian Medicine 7596.3: Pet Loss and Human Bereavement Training (Spring 2014)
- 5/12-6/12 & 5/13-6/13 *Instructor – Utah State University, Logan, Utah*
Psychology 1010: General Psychology (Summer 2012, Summer 2013)
- 8/12-5/13 *Teaching Assistant – Utah State University, Logan, Utah*
Psychology 7350: Integrative Practicum with Adults, Adolescents, and Children (Fall 2012, Spring 2013). Presented to first year practicum students on topics related to service provision including an introduction to Acceptance and Commitment Therapy; risk assessment with suicidal clients; deep breathing, progressive muscle relaxation, and imagery; psychotropic medication; and behavioral activation.
- 8/11-5/12 *Teaching Assistant – Utah State University, Logan, Utah*
Psychology 3500: Research Methods (Fall 2011, Spring 2012). Lectured on topics related to retrospective and epidemiological research and ethical guidelines for conducting research.
- 8/08-5/09 *Instructor – Minnesota State University, Mankato, Minnesota*
Psychology 240: Personal Adjustment (Fall 2008, Spring 2009)

Professional Development Training

- 3/14 *Trauma and the Brain: Understanding and Treatment of Psychological Trauma*
Bessel A. van der Kolk, M.D.
Utah State University Counseling and Psychological Services Annual Conference, Logan, UT.
- 12/13 *Evolution of Psychotherapy Conference*
Anaheim, CA.
- 10/13 *Utah State University Allies on Campus Training - Campus-wide alliance of students and professionals in support of gay, lesbian, bisexual, transgender, and queer members of the university community*
Access and Diversity Center, Utah State University, Logan, Utah
- 1/13 *Cultural Competence Training*
Melanie Domenech Rodríguez, Ph.D. & Michael P. Twohig, Ph.D.
Utah State University, Logan, Utah

- 9/12 *Introduction to Acceptance and Commitment Therapy and Experiential Workshop of Acceptance and Commitment Therapy*
Michael P. Twohig, Ph.D.
Utah State University, Logan, Utah
- 5/12 *Eating Disorders and the Brain: Clinical Teaching Day*
Bryan Lask, M.D. & Ian Frampton, M.D.
International Conference on Eating Disorders Annual Meeting, Austin, TX.
- 3/11 *Psychopharmacology and Neurobiology: New Developments*
John Preston, Psy.D.
Utah Psychological Association, Salt Lake City, Utah

Awards & Honors

- 2013 Philanthropic Educational Organization (P.E.O.) International Scholar Award Nominee
- 2012 Walter R. Borg Research and Productivity Award (\$3,500), Utah State University, Logan, UT
- 2007 Women of Excellence Award Nominee, Women Aware, Sioux City, IA
- 2007 Outstanding Psychology Student Award Recipient, Briar Cliff University, Sioux City, IA
- 2006 Student Heart of the University Award Recipient, Briar Cliff University, Sioux City, IA
- 2006 Outstanding Psychology Student Award Recipient, Briar Cliff University, Sioux City, IA
- 2006 Dr. Walker Regional Character Award Recipient, National Association of Intercollegiate Athletics
- 2006 Dr. Walker Area Character Award Recipient, National Association of Intercollegiate Athlet

Professional Affiliations

- 2010-Present Academy for Eating Disorders, Student Affiliate
- 2009-Present Association for Contextual and Behavioral Sciences, Student Affiliate
- 2009-Present Utah Psychological Association, Student Affiliate
- 2008-Present American Psychological Association, Student Affiliate
- 2008-Present Golden Key International Honour Society
- 2004-Present Psi Chi, The National Honor Society in Psychology

Service Activities

- 1/07 – 8/10 *Director of Development and Team Member*
Siouxland Tanzania Educational and Medical Services (STEMM), Sioux City, Iowa

Responsible for leading and managing all aspects of the development and growth of STEMM, a ministry dedicated to serving the medical, educational, and orphan needs of the people of Tanzania. During my time in Tanzania (summer 2007 and summer 2009), I worked in aids orphanages and malnutrition centers, participated in education programming to provide accurate information on the transmission and acquisition of HIV/Aids, and worked to eradicate female genital mutilation.

3/04 – 5/07 *Mission Honduras Briar Cliff Founder and Team Member*
Briar Cliff University, Sioux City, Iowa

Approached and received support from Briar Cliff University to send a group of students and faculty on the first service trip out of the county for Briar Cliff and has since become an annual event. Responsible for holding informational meetings, planning fundraisers, meeting with prospective donors, and organizing the itinerary during the service trip. During my time in Honduras (spring 2003, fall 2005, and fall 2006), I worked in orphanages and malnutrition centers, dug trenches and laid piping to bring water to a village for the first time, and helped to build a church and repair homes in poverty-stricken villages.