

THE PENNSYLVANIA STATE UNIVERSITY
SCHREYER HONORS COLLEGE

DEPARTMENT OF PSYCHOLOGY

THE ACHIEVEMENT GAP: THE RELATIONSHIP BETWEEN BORDERLINE
PERSONALITY DISORDER, CHILDHOOD TRAUMA, AND ACADEMIC FUNCTIONING

ANA-SOPHIA M. ROSS
SPRING 2015

A thesis
submitted in partial fulfillment
of the requirements
for baccalaureate degrees
in Psychology and Political Science
with honors in Psychology

Reviewed and approved* by the following:

Kenneth N. Levy
Associate Professor of Psychology
Thesis Supervisor and Honors Adviser

Karen L. Bierman
Distinguished Professor of Psychology
Thesis Reader

* Signatures are on file in the Schreyer Honors College

ABSTRACT

Purpose: The purpose of this study was to examine academic experiences and trauma impact in patients with borderline personality disorder (BPD). **Method:** Ninety participants (age $M = 30.87$, $SD = 7.85$; 96% female) reliably diagnosed with BPD using a structured interview called the International Personality Disorder Examination completed both the Childhood Trauma Questionnaire-Short Form and a demographic questionnaire with questions pertaining to academic functioning. **Results:** Contrary to original hypotheses, partial correlation analyses revealed that BPD dimensional scores were not associated with educational attainment ($\rho = .01$, $p = .93$). However, CTQ-SF total scores and educational attainment were significantly and negatively related ($\rho = -.25$, $p = .02$). Furthermore, physical neglect, physical abuse, and emotional abuse were all negatively related to educational attainment with physical neglect having the largest effect and being the most significant, ($\rho = -.32$, $p < .01$). In addition, an interaction emerged between BPD dimensional scores and physical neglect on predicting highest level of education attained, $F(1,51) = 6.04$, $p = .02$, $\eta^2 = .11$. **Conclusion:** While a lot of the empirical literature focuses on sexual abuse and emotional neglect, it is evident that these are not the only forms of trauma associated with academic dysfunction among those who have BPD.

TABLE OF CONTENTS

LIST OF FIGURES	iii
LIST OF TABLES	iv
ACKNOWLEDGEMENTS	v
Introduction.....	1
Methods.....	5
Participants.....	5
Measures	6
International Personality Disorder Examination.....	6
Demographic questionnaire.....	7
Childhood Trauma Questionnaire-Short Form.....	7
Procedure	8
Statistical Analyses	8
Results.....	9
Descriptive Results for BPD Severity, Education, and Trauma.....	9
Preliminary Analyses	10
Associations Between BPD and Educational Achievement.....	10
Associations Between Trauma and Educational Achievement.....	10
Association Between Trauma and BPD Severity.....	11
Association Between BPD Severity, Educational Achievement, and Trauma	11
Discussion.....	13
Appendix A: Figures.....	19
Appendix B: Tables	21
References.....	23

LIST OF FIGURES

Figure 1.....19
Figure 2.....20

LIST OF TABLES

Table 1.	21
Table 2.	21
Table 3.	22

ACKNOWLEDGEMENTS

I'd like to express my deepest appreciation for Dr. Levy's exceptional mentorship and guidance over the last three years. I vividly remember walking into his office with an emerging interest in psychology, and I now realize that if it weren't for him and the opportunities he has afforded me, I would not be where I am today. Dr. Levy graciously accommodated my emerging interests by proposing an idea that closely matched with my growing passion in education. He advised me from start to finish on how to create a thesis; from helping to develop an outline to providing last minute edits and feedback, Dr. Levy's patience and assistance are valued.

I'd also like to thank Ben Johnson for his guidance and support throughout this process. He clearly went above and beyond in helping me. He spent many hours helping me understand SPSS and data analysis. His patience, ability to simplify complex statistics, and frequent feedback helped make this thesis possible. Ben continuously challenged me, encouraging me to think deeply about my research and my writing, and I have grown immeasurably thanks to his help.

I sincerely thank the professionals at the Personality Disorders Institute, especially Dr. Kernberg, Dr. Clarkin, and Dr. Yeomans who played an integral role in conceptualizing the larger study and collecting data, which made this study possible. I offer my utmost gratitude to the participants for generously sharing about themselves and for giving their time to foster this research.

Thank you to Tracy Clouthier and Wes Scala for their advice along the way and for their quick assistance in helping me find relevant data.

I want to thank Dr. Karen Bierman for her expert and constructive feedback that will be with me well beyond the experience of writing this thesis.

I'd like to thank my family and friends. More specifically, I'd like to thank Julie Meinert for staying positive on all the nights that never seemed to end. Mac, thank you for sacrificing the car so I didn't have to walk home in the wee hours of the morning. Though it goes without saying—I wouldn't be where I am without you mom and dad; thank you for showing me nothing but unconditional love.

I'd be remiss if I did not thank the Schreyer Honors College and all that they have done for me. From making college affordable, to engaging me in rigorous academics, to sending me across the world, my four years here have been nothing short of astounding.

Introduction

Borderline personality disorder (BPD) is a particularly debilitating mental illness characterized by impulsivity, intense instability in emotions, lack of a coherent sense of self, difficulty in interpersonal relationships, self-harm behaviors, and suicidal ideation. Those with BPD are at a 5-400 times greater risk for committing suicide than individuals without BPD (Levy, 2005; McGlashan, 1986; Paris & Zweig-Frank, 2001; Stone, 1990). Prevalence rates for BPD range from 1-6% in the general population (Grant et al., 2008; Lenzenweger, Loranger, Korfine, & Neff, 1997; Torgersen, Kringlen, & Cramer, 2001). Among primary care patients, 6% are diagnosed with BPD (Gross et al., 2002) and the prevalence rate for psychiatric outpatients is around 10% and estimated to be above 20% for psychiatric inpatients (Lenzenweger et al., 1997; Torgersen et al., 2001). In addition, every form of psychosocial treatment, with the exception of self-help groups, is more likely to be sought out by borderline patients than those with major depression (Bender et al., 2014). Despite this remarkable utilization of services and treatment, those with BPD continue to function at lower levels than both those with other personality disorders and those with only Axis I diagnoses (Mehlum et al., 1991; Skodol, 2008). Thus, BPD is a serious and extremely problematic psychological disorder that affects both the individual who has BPD and society on the whole.

A number of cross-sectional as well as short-term and long-term follow up studies have demonstrated poor outcomes across a wide range of domains for those suffering from BPD (McGlashan, 1986; Stone, 1990; Zanarini, Frankenburg, Hennen, Reich, & Silk, 2005).

Impairments in functioning are evident in both work performance and in social relationships (Skodol et al., 2002). One of the poor long-term outcomes associated with BPD that has received relatively less attention relates to academic functioning. To date, a few studies have shown that college students with BPD symptoms are at greater risk for academic failure (Bagge et al, 2004; Trull, Useda, Conforti, & Doan, 1997). More specifically, these studies have found that BPD symptoms are a predictor of lower academic achievement (measured by GPA), expulsion, probation, and dropout (Bagge et al., 2004; Trull et al., 1997). However, research has not yet examined academic histories for those reliably diagnosed with BPD. Bagge and colleagues (2004) have speculated that the BPD symptoms of impulsivity and affective instability may undermine the academic functioning of individuals with BPD symptoms; however, little more is known about other factors that may contribute to this association.

Though the literature on the developmental psychopathology of BPD is just beginning to gain momentum, Crowell, Beauchaine, and Linehan (2009), posit that impulsivity in childhood is a precursor to BPD in the future. Children displaying difficulties with impulsivity tend to have greater academic troubles (Cantwell & Satterfield, 1978; Holborow & Berry, 1986; Horn & Packard, 1985; Palisin, 1986). With academic attainment acting as a predictor of various life outcomes such as lifestyle, socioeconomic status, physical health, quality of life, and psychopathology (Kessler, Foster, Saunders, Stang, 1995; Lleras-Muney, 2005; Ross & Van Willigen, 1997), it is of paramount importance to better understand the relationship between early developmental risk factors for educational problems in BPD. Due to the lack of current research on the topic, little is known about the academic difficulties those with BPD face.

Whereas Crowell and colleagues (2009) look at the developmental psychopathology of BPD in terms of biosocial models, other researchers suggest that psychosocial risk factors such

as exposure to childhood trauma are key elements in the development of BPD. In the most extreme cases, some researchers have suggested that BPD is a form of chronic PTSD (Herman, & van der Kolk, 1987). While BPD is highly comorbid with mood disorders, anxiety disorders, and eating disorders, the comorbidity between BPD and PTSD is more distinct (Bockian, 2006; Silk, 2010; Skodol et al., 2005; Zanarini et al., 1998), as women with BPD are diagnosed with comorbid PTSD at a significantly greater rate than those with other personality disorders (Zanarini et al., 1998). Although a meta-analysis found only a moderate association between BPD and childhood sexual abuse (Fossatti, Madeddu, & Maffei, 1999), others have found that people with BPD report greater frequencies and severities of childhood trauma in comparison to healthy controls (Horesh, Ratner, Laor, & Toren, 2008) and in comparison to those with other clinical diagnoses (Brown, & Anderson, 1991; Ludolph et al., 1990; Ogata et al., 1990; Paris, Zweig-Frank, & Guzder, 1994; Yen et al., 2002; Zanarini, Ruser, Frankenburg, Hennen, & Gunderson, 2000). Among those with BPD, the literature suggests a positive link between the frequency and severity of traumatic incidents and number of borderline symptoms (Gaher, Hofman, Simons, & Hunsaker, 2013).

Within the general population and independent of borderline symptoms, exposure to trauma has been shown to have broad effects on emotional, cognitive, social, and behavioral functioning, key skills needed for academic success (Hertel & Johnson, 2013). More specifically, exposure to varying types of trauma has been shown to have a negative impact on IQ (Kira, Lewandowski, Somers, Yoon, & Chiodo, 2012). Emotional neglect, for example, described as a caregiver's failure to meet the emotional and psychological needs of a child, can be more detrimental than physical, emotional, or sexual abuse (Bernard, & Newell, 2013; Bernstein et al., 2003) and may confer increased risk for academic problems. Hildyard and Wolfe (2002) found

that students who were emotionally neglected showed cognitive deficits, displayed externalizing and/or internalizing behaviors, anxious tendencies, inattention, and slower learning. Clearly, emotional neglect is an important type of trauma to consider when looking at risk factors for academic failure. Emotional abuse is characterized by threatening, demeaning, or blaming remarks that undermine the rights of a child (Fink, 1993). Students exposed to emotional abuse are also at greater risk for academic failure, low self-confidence, and a lack of motivation (Iwaniec, Larkin, & Higgins, 2006).

Because academic difficulties are reported by those with BPD and because trauma has also been associated with compromised academic performance, it is important to study academic outcomes in relation to both BPD and varying levels of childhood trauma.

The first goal of this study was to document the types and extent of academic problems experienced by those with BPD and the second goal was to examine if these difficulties are independent or related to childhood trauma. Two hypotheses were tested: 1) BPD symptoms and severity of childhood trauma will each have negative associations with academic functioning, and 2) trauma severity will moderate the relationship between BPD and educational outcomes.

Methods

Participants

Participants were 90 individuals reliably diagnosed with BPD according to the International Personality Disorder Examination (IPDE). Participants ranged between the ages of 18 and 51 ($M = 30.87$, $SD = 7.85$). Eighty-four were female. Participants self-identified as Caucasian (67%), African-American (9.9%), Hispanic (8.8%), Asian (5.5%), mixed (3.3%), or other (4.4%).

Participants were recruited between 1999 and 2002 for participation in a randomized controlled trial examining three psychotherapies for BPD (Clarkin, Levy, Lenzenweger, & Kernberg, 2007; Levy et al., 2006). Trained evaluators assessed 207 participants who were referred to the clinic throughout these three years. Participants were assessed with structured interviews for Axis I and Axis II disorders using the Structured Clinical Interview for DSM-IV-Research Version (First, Gibbon, Spitzer, & Williams, 1997) and the International Personality Disorder Examination (Loranger et al., 1994), respectively. The majority of patients who were excluded did not meet the criteria for BPD or the age requirements for the study (see Figure 1). Participants diagnosed with comorbid psychotic disorders (i.e., Schizophrenia Schizoaffective Disorder), bipolar disorder I, cognitive disorders (i.e., dementia, amnesia, delirium), or delusional disorder were not included in the present study. Other reasons for exclusion included substance dependence, IQ less than 80, and scheduling conflicts. After all exclusions, 109

individuals were identified as eligible for participation, of whom 90 agreed to be randomized. (For more information on the larger study see, Clarkin et al. (2007), Critchfield, Levy, & Clarkin (2004), or Levy et al. (2006).)

Measures

International Personality Disorder Examination.

Participants were assessed and diagnosed with BPD based on the IPDE (Loranger et al., 1994), a semi-structured interview. The IPDE is used to identify the presence of a personality disorder (PD) based on DSM-IV personality disorder criteria for all ten PDs. In total there are six interview sections comprising a total of 99 symptom items with each item receiving a score of 0 (absent), 1 (exaggerated or accentuated), or 2 (meets criteria). The IPDE provides a severity score for each individual PD by calculating a dimensional rating (i.e., the sum of all item scores). Interrater reliability for all personality disorders was good to excellent (Fleiss, Nee, Landis, 1971); for BPD, the kappa was .65 and the intraclass correlation for dimensional criteria ratings was .86. (For more information regarding the credentials of the interviewers and for more information on reliability, see Critchfield, Levy, & Clarkin (2004) or Levy & colleagues (2006).)

Demographic questionnaire.

Participants completed a demographic questionnaire (including information pertaining to employment status, education, achievement, financial status, relationship status, and familial situation). In the present study, education variables of interest included: highest level of education, skip a grade (yes/no), repeat a grade (yes/no), and interfering disability (yes/no). High scores on the highest level of education variable represented greater educational attainment, with a score of 1 indicating an education of less than high school and a score of 6 indicating attainment of a graduate or post-graduate degree.

Childhood Trauma Questionnaire-Short Form.

The Childhood Trauma Questionnaire-Short Form (CTQ-SF; Bernstein et al., 2003) was developed to assess for childhood perceptions of physical abuse, sexual abuse, emotional abuse, physical neglect, and emotional neglect. In addition, the CTQ-SF has items to assess for denial of childhood trauma. The CTQ-SF consists of a 28-item (e.g., “I had to wear dirty clothes”) self-report questionnaire using a “never true” to “very often” 5-point Likert rating scale. Each trauma subscale (i.e., physical abuse, sexual abuse, emotional abuse, physical neglect, and emotional neglect) is represented by five questions with denial being represented by three. The CTQ-SF has been shown to have good internal consistency reliability and good validity (Bernstein et al., 2003; Scher, Stein, Asmundson, McCreary, & Forde, 2001). In addition, ratings on the CTQ-SF are stable across 3-6 month periods of time (Bernstein & Fink, 1998).

Procedure

As noted earlier, participants were recruited for a large randomized controlled trial evaluating different psychotherapies. Prior to beginning treatment, participants completed a battery of questionnaires. Those which are relevant to the present study are the demographic questionnaire and the CTQ-SF. Data assessing for denial were not included in this study since we were only interested in questions that directly asked about trauma.

Statistical Analyses

Descriptive statistics were used to analyze data obtained from variables of greatest interest (BPD dimensional scores, global trauma ratings, highest level of education).

Pearson product-moment correlations were used to investigate the relationship between global trauma ratings and borderline dimensional scores. Spearman rank-order correlation was used to examine associations between academic achievement and both BPD dimensional scores and global trauma severity.

Multiple linear regressions were used to examine the interaction between BPD dimensional scores and global trauma severity on the level of education attained.

Supplementary questions looking at the remaining academic variables with regard to both the IPDE and CTQ-SF were tested using difference of means *t*-tests and one way analysis of variance.

Results

Of the 90 participants who participated in the study, 84 (93.3%) had the data necessary for every analysis. Six participants were missing BPD dimensional scores, though they had complete data for all other measures and were thus included in analyses for which they had data.

Descriptive Results for BPD Severity, Education, and Trauma

The mean number of BPD criteria met was 6.69 ($SD = 1.31$) and the mean BPD dimensional score was 14.48 ($SD = 2.07$). Because the number of criteria and dimensional scores were strongly correlated ($r = .86, p < .001$), we report the findings for all analyses using the dimensional score in an effort to increase variability. All 90 participants completed the education section of the demographic questionnaire. The reported median and mode were 5, corresponding to attainment of a bachelor's degree (see Table 1 for education data). There were 9 participants (10%) who reported skipping a grade and 9 participants (10%) who reported repeating a grade; two of the participants who reported skipping a grade also reported repeating a grade. Table 2 shows the means and standard deviations for the CTQ-SF-total and subscale scores. The means are consistent with other samples of BPD patients (Levy, Clouthier, Ehrental, Rein, & Clarkin, under review).

Preliminary Analyses

A preliminary Pearson product-moment correlation indicated that participant age was significantly positively correlated with emotional abuse ($r = .37, p = .001$). In addition, age was positively associated with educational attainment ($\rho = .28, p = .01$). Thus, age was controlled in all relevant analyses.

Associations Between BPD and Educational Achievement

A Spearman rank correlation was calculated in order to examine the first hypothesis. Contrary to the first hypothesis, the analysis, which controlled for age, did not reveal a significant relationship between BPD dimensional scores and highest level of education ($\rho = .01, p = .93$). Unexpectedly, those with an interfering disability had significantly lower BPD dimensional scores ($M = 12.89, SD = 2.25, t = 2.45, df = 79, p = .02, d = .55$), than those without an interfering disability ($M = 14.60, SD = 1.93$; see Table 3).

Associations Between Trauma and Educational Achievement

A partial correlation Spearman coefficient was calculated to examine the relationship between trauma and educational achievement. As hypothesized, people with lower ratings of global trauma were significantly more likely to have higher levels of academic attainment ($\rho = -.25, p = .02$). When looking specifically at CTQ-SF subscales (Table 2), a significant inverse relationship emerged between levels of academic attainment and emotional abuse ($\rho = -.25, p = .02$), physical neglect ($\rho = -.32, p < .01$), and physical abuse ($\rho = -.25, p = .02$). Independent

samples *t*-tests showed that people who had repeated a grade reported significantly greater levels of total trauma ($M = 71.30$, $SD = 13.60$, $t = -2.49$, $df = 88$, $p = .01$, $d = -.53$), and significantly higher levels of physical neglect ($t = -3.02$, $df = 88$, $p = .001$, $d = -.64$, and $M = 12.22$, $SD = 5.85$) for those who repeated a grade versus for those who did not ($M = 8.35$, $SD = 3.36$). In addition, those who had repeated a grade reported higher levels of emotional abuse than those who did not repeat a grade, $F(1,87) = 7.08$, $p = .01$, $\eta^2 = .08$. There was no statistical difference in mean trauma scores between those who had skipped a grade and those who had not, $t = -1.02$, $p = .31$. Global trauma scores were not a predictor of having an interfering disability, $t = .48$, $p = .63$.

Association Between Trauma and BPD Severity

There was no significant association between CTQ-SF total scores and BPD dimensional scores ($r = .09$, $p = .42$). Furthermore, CTQ-SF subscale scores were not related to BPD dimensional scores (Table 2).

Association Between BPD Severity, Educational Achievement, and Trauma

Multiple linear regression was used to examine the relationship between BPD severity, academic achievement, and trauma. Analyses did not reveal a significant interaction between BPD dimensional scores and total trauma on academic attainment ($p = .50$). However, when interactions were explored for CTQ-SF subscales, a significant interaction emerged between BPD dimensional scores and physical neglect on predicting highest level of education attained, $F(1,51) = 6.04$, $p = .02$, $\eta^2 = .11$.

Discussion

The purpose of this study was two-fold: 1) to examine academic achievement as a function of both BPD severity and childhood trauma; 2) to examine if trauma moderates the relationship between BPD and long-term academic attainment.

With regard to the first hypothesis, results revealed, contrary to expectations, that BPD was not related to academic attainment. BPD severity, as measured by the dimensional score for BPD criteria on the IPDE, was unrelated to grade obtained. Additionally, BPD severity was not related to participants' repeating or skipping a grade. Surprisingly, findings revealed that those with an interfering disability had lower BPD dimensional scores. This finding is counter to the hypothesis that disabilities would be positively related to BPD severity. Neither the predicted associations between BPD and academic measures, nor the predicted associations between BPD severity and trauma emerged. As hypothesized, greater total trauma scores were related to participants repeating a grade and (inversely) to highest level of education attained. More specifically, it seems that the CTQ-SF subscales for emotional abuse, physical neglect, and physical abuse accounted for the association between total trauma scores and highest level of education attained. For those who have repeated a grade, it seems this is due to greater rates of physical neglect and emotional abuse.

As indicated earlier, the expected association between BPD severity and academic achievement did not emerge. Previous studies examining BPD traits in college students and young adults have found a negative association between BPD symptom severity and academic success (Bagge et al., 2004; Trull et al., 1997; Winograd, Cohen, & Chen, 2008). In contrast, we

examined academic difficulties in clinical participants reliably diagnosed with BPD. It may be that doing so limited the variance in both BPD symptoms and academic achievement, which attenuated the relationship between these constructs. Future studies should include a wider range of pathology, and academic outcome, and/or a control group.

Although BPD dimensional scores were not related to academic attainment, they were related to the presence of an interfering disability, albeit in the opposite direction than predicted. In this study, BPD patients who reported a disability had lower BPD dimensional scores than BPD patients without a disability, not higher. One possible reason for this finding may be that because these students had disabilities that may have interfered with their school achievement, they may have been more likely to be referred to educational and/or emotional support programs, which over time may have lessened the severity of BPD. Alternatively, we may have found a negative relationship between having an interfering disability and BPD severity because having a disability lowers the threshold for having the kinds of difficulties that result in being referred to the study. Regarding the former, if BPD severity is reduced by early intervention methods, expanding the supports found in school interventions to the general student body may work to facilitate less severe BPD for those who are at-risk for the disorder but do not have an interfering disability necessary for school-based services.

Though not a focal point of the study, the finding that BPD dimensional scores were unrelated to childhood trauma is interesting. The BPD trauma literature suggests a positive relationship between trauma and BPD. Although theorists have not seen trauma as causal for the development of BPD, they have seen it as a risk factor for the diagnosis and related to BPD severity. While many studies have found this relationship, Graybar and Boutilier (2002) note that a small, but significant, subset of BPD patients do not report trauma histories that are starkly

different than those without the disorder. Furthermore, one meta-analysis found only a moderate relationship between BPD and childhood sexual abuse (Fossatti et al., 1999), indicating that the relationship between sexual trauma and BPD may not be as much of a risk factor as some have suggested. This finding deserves further study.

The association between trauma and education suggests that students exposed to traumatic experiences have greater difficulty excelling in the classroom. Ney, Fung, and Wickett (1994) determined that the combination of verbal abuse, physical neglect, and physical abuse, a combination nearly identical to the risk factors we found in our sample, has the most adverse effect on victims' self-concept, subjective well-being, and view for the future. Since non-cognitive traits such as self-efficacy and individuals' ability to make long term goals have demonstrated predictive functioning for GPA (Bandura, 1993; Multon, Brown, & Lent, 1991; Tracey & Sedlacek, 1985), it is plausible that Ney et al.'s finding generalizes to the academic setting.

When considering physical neglect, emotional abuse, and physical abuse in isolation, other studies have found that those exposed to these traumas have academic difficulties. Some have suggested that these academic difficulties are not directly the result of physical neglect, but rather due to factors associated with physical neglect. For example, those who are physically neglected may be chronically stressed or malnourished causing the brain to develop atypically (Bernard & Newell, 2013; De Bellis, 2005), resulting in academic difficulties. Since physical abuse is negatively related to IQ (Rogeness et al., 1986; Westen, Ludolph, Misle, Ruffins, Block, 1990), IQ may mediate the relationship between physical abuse and highest level of education attained. Consistent with the literature, in this study emotional abuse was associated with academic difficulties. This finding aligns with the literature that suggests that students who are

emotionally abused are at greater risk for lower self-efficacy, a lack of motivation and academic difficulties (Iwaniec et al., 2006).

The second hypothesis, which predicted an interaction between BPD dimensional scores and trauma on predicting academic attainment, was supported only for a specific form of trauma—physical neglect. The interaction found that for those who reported high physical neglect, there was a strong negative relationship between BPD dimensional scores and educational attainment that was not found among those who reported low physical neglect. We theorize that those with more severe BPD may be unable to create coherent mental representations of their parents' intentions and therefore may misinterpret unintentional physical neglect. This could result in feelings of anger and resentment towards parents for being unable to provide for the physical needs of the child. In turn, a preoccupation with fulfilling basic needs may preclude an individual from academic success if he or she is physically neglected. Perhaps the interaction between BPD dimensional scores and physical neglect on predicting academic attainment could be viewed through the lens of the diathesis-stress model, which would argue that BPD severity is not related to highest level of education attained unless the stress resulting from high levels of physical neglect is present.

Preliminary analyses found a moderately significant, positive correlation between age and emotional abuse. Although research has found stability of the CTQ across short periods of time (Paivio, 2001), it is still unknown whether or not the CTQ has long-term stability. Therefore, future research should look at the long-term stability of the CTQ.

There are a number of limitations that deserve mentioning. Chief among them is the lack of a control group. Although a relationship was not found between BPD dimensional scores and academic achievement within the BPD group, it is possible that we may have obtained findings

consistent with our hypotheses when comparing outcomes in the BPD group to a control condition. A second limitation, mentioned earlier, is the possibility of a restricted range on both the BPD and academic outcome variables. The third limitation concerns the sample size. Although our overall sample is large, subsamples of participants were often small. For instance, due to the small sub-sample of participants who reported repeating a grade, skipping a grade, or having an interfering disability ($n = 9$ in each group), it is possible that the findings related to the presence of an interfering disability or having repeated a grade are representative of a type II error. Finally, the use of only a single, ordinal outcome variable to assess for academic achievement was a limitation of the study. In the future, data pertaining to GPA, class rank, and SAT scores would be of interest to include in order to acquire a better understanding of the relationship between BPD and academic success. In addition, other research has shown that school violence, witnessing violence, and separation can adversely impact a person (Burdick-Will, 2013; Paris, Zweig-Frank, & Guzder, 1994; Rohde-Collins, 2013) so a more inclusive assessment for childhood trauma would enhance the results from this study. The Childhood Trauma Inventory (CTI; Fink, 1993), for example, assesses for the frequency, duration, and severity of six different types of trauma (emotional abuse, physical abuse, physical neglect, sexual abuse, witnessing violence, and separation/loss). Furthermore, the CTQ-SF relies on perceptions of childhood trauma whereas the CTI is more objective, scoring for specific instances of trauma. Because of this minor yet important distinction, including both the CTQ-SF and CTI in future studies would be of benefit.

This study aimed to better understand the academic histories and effects of trauma on those with BPD. This study is important because the adverse effects of BPD on educational attainment and functioning are under-studied, especially since academic histories predict a

multitude of life outcomes. We found that the interaction between BPD severity and physical neglect predicted highest level of education. This finding suggests that traumatic experiences for BPD patients may have unique and adverse impacts on education. Future research should explore the possibility that one route to poor outcome in BPD is through poor educational outcomes.

Appendix A: Figures

Figure 1.
Participant Inclusion Requirements

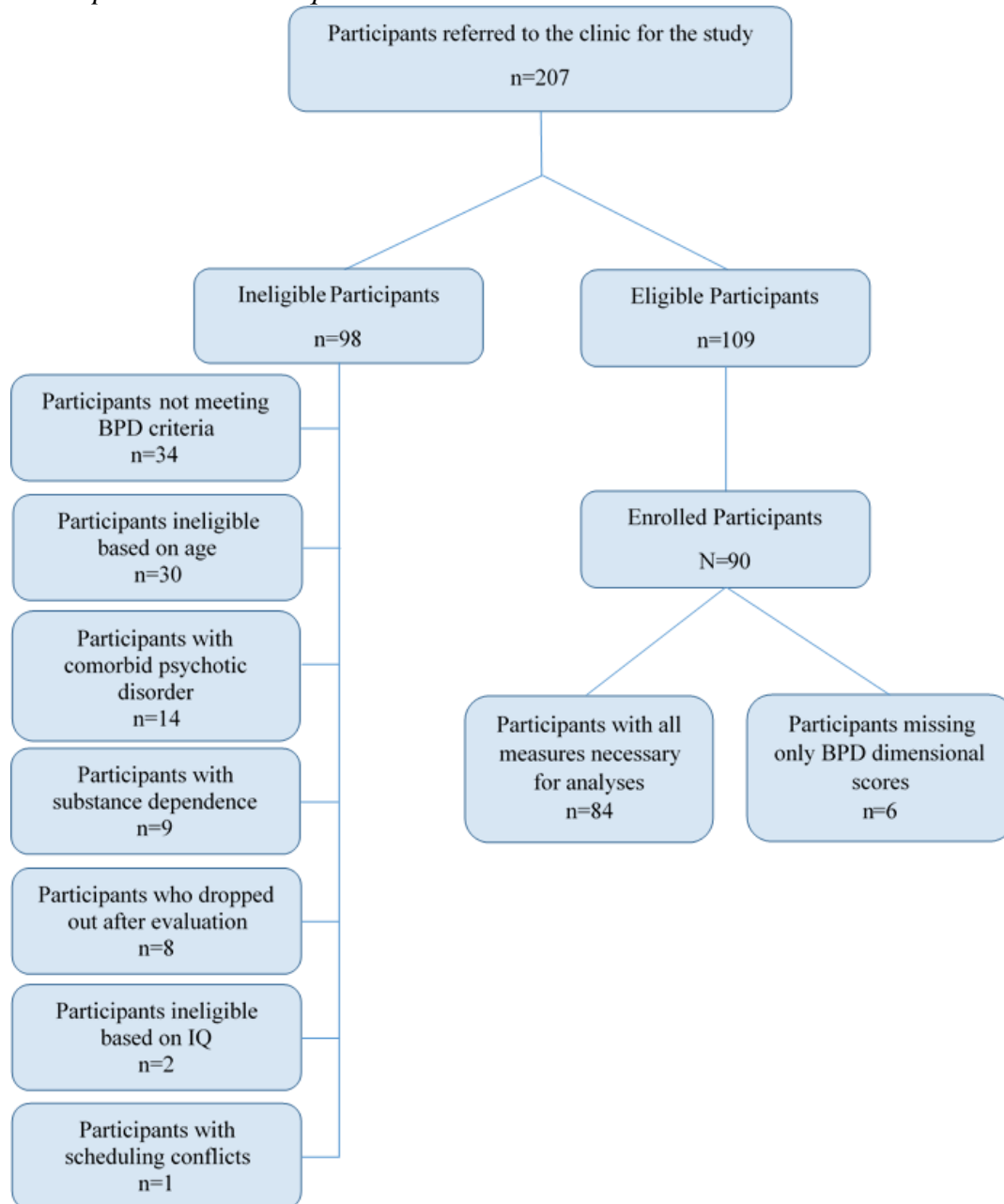
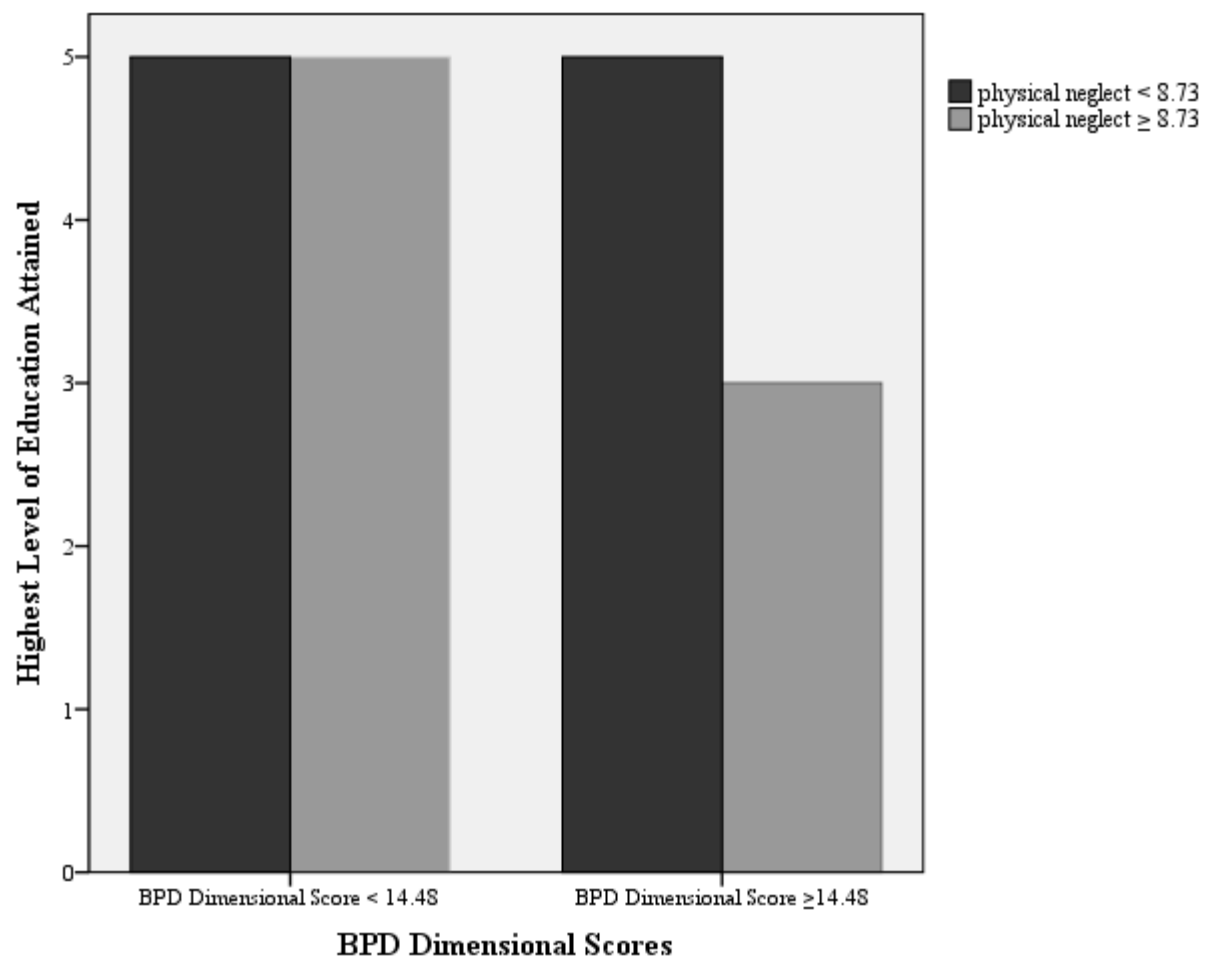


Figure 2.
Moderation of Physical Neglect on the Relationship Between BPD and Educational Attainment



Appendix B: Tables

Table 1.
Number of Respondents on Education Variables

	N(%)
Distribution of highest level of education attained	
Less than high school	3 (3.3)
High school/GED	7 (7.8)
Some college	28 (31.1)
Associate degree	6 (6.7)
Bachelor degree	29 (32.2)
Graduate/post graduate work	17 (18.9)
Other educational information	
Skipped a grade	9 (10.0)
Repeated a grade	9 (10.0)
Interfering disability	9 (10.0)

Table 2.
Associations Between Trauma Subscales and Both BPD Dimensional Ratings and Educational Attainment

	IPDE-BPD Dimensional†	Educational Attainment‡	<i>M (SD)</i>
	<i>r</i>	<i>p</i>	
CTQ-SF Total†	.09	-.25*	63.30(10.48)
Physical Abuse	.09	-.25*	9.41(4.72)
Sexual Abuse	.07	-.16	9.53(6.12)
Emotional Abuse	.09 ^a	-.25*	16.06(5.43)
Physical Neglect	.09	-.32**	8.73(3.82)
Emotional Neglect	.00	-.11	14.01(3.34)

Note. Data were generated using Pearson product-moment correlation analyses and Spearman rank-order correlations.

^aPartial correlation coefficient controlling for age.

† n= 84

‡ n= 90

; Partial correlation coefficients controlling for age.

* Significant at the .05-level, two-sided test.

**Significant at the .01-level, two-sided test.

Table 3.

Relationships Between Academic Characteristics, the CTQ-SF, and BPD

	Skip Grade			Repeat Grade			Interfering Disability		
	Yes† Mean (SD)	No‡ Mean (SD)	t(p)	Yes† Mean (SD)	No‡ Mean (SD)	t(p)	Yes† Mean (SD)	No‡ Mean (SD)	t(p)
CTQ-SF	66.67 (9.57)	62.93 (10.56)	-1.02 (0.31)	71.30 (13.60)	62.41 (9.78)	-2.49 (.01)*	64.78 (12.79)	63.99 (10.41)	0.48 (.63)
IPDE-BPD Dimensional	15.50 (2.14)	14.37 (2.05)	-1.48 (.14)	15.22 (2.22)	14.39 (2.05)	-1.14 (.26)	12.89 (2.26)	14.60 (1.93)	2.45 (.02)*

Note. Data were generated using independent samples t-test.

† n= 9

‡ n=81

*Significant at the 0.05-level, two-sided test.

References

- Bagge, C., Nickell, A., Stepp, S., Durrett, C., Jackson, K., & Trull, T. J. (2004). Borderline personality disorder features predict negative outcomes 2 years later. *Journal of Abnormal Psychology, 113*(2), 279.
- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist, 28*(2), 117-148.
- Bender, D. S., Dolan, R. T., Skodol, A. E., Sanislow, C. A., Dyck, I. R., McGlashan, T. H., ... & Gunderson, J. G. (2014). Treatment utilization by patients with personality disorders. *American Journal of Psychiatry, 158*(2), 295-302.
- Bernard, M., & Newell, E. P. (2013). Students affected by neglect. In E. Rossen & R. Hull, *Supporting and educating traumatized students* (203-218). New York: Oxford University Press.
- Bernstein, D. P., & Fink, L. (1998). *Childhood trauma questionnaire: A retrospective self-report: Manual*. Psychological Corporation.
- Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., ... & Zule, W. (2003). Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child abuse & neglect, 27*(2), 169-190.
- Bockian, N. R. (2006). *Personality-guided therapy for depression*. American Psychological Association.
- Brown, G. R., & Anderson, B. (1991). Psychiatric morbidity in adult inpatients with childhood histories of sexual and physical abuse. *American Journal of Psychiatry, 148*, 55-61.

- Burdick-Will, J. (2013). School violent crime and academic achievement in Chicago. *Sociology of Education*, 8(4), 343-361.
- Cantwell, D. P., & Satterfield, J. H. (1978). The prevalence of academic underachievement in hyperactive children. *Journal of Pediatric Psychology*, 3(4), 168-171.
- Clarkin, J., Levy, K., Lenzenweger, M., & Kernberg, O. (2007). Evaluating three treatments for borderline personality disorder: A multiwave study. *American Journal of Psychiatry*, 164(6), 922-928.
- Critchfield, K. L., Levy, K. N., & Clarkin, J. F. (2004). The Personality Disorders Institute/Borderline Disorder Research Foundation randomized control trial for borderline personality disorder: Axis I and II diagnoses. *Psychiatric Quarterly*.
- Crowell, S. E., Beauchaine, T. P., & Linehan, M. M. A Biosocial Developmental Model of Borderline Personality: Elaborating and Extending Linehan's Theory. *Psychological Bulletin*, 135(3), 495-510.
- De Bellis, M. D. (2005). The psychobiology of neglect. *Child Maltreatment*, 10(2), 150-172.
- Fink, L. A. (1993) Childhood trauma interview: Manual for administration and scoring: *Manual*.
- First, M. B., Gibbon, M., Spitzer, R. L., & Williams, J. B. W. (1997). *Structured clinical interview for Axis I DSM-IV disorders (SCID-I), clinical version*. New York: Biometrics Research Department, New York State Psychiatric Institute.
- Fleiss, J. L., Nee, J. C., & Landis, J. R. (1979). Large sample variance of kappa in the case of different sets of raters. *Psychological Bulletin*, 86(5), 974.
- Fossati, A., Madeddu, F., & Maffei, C. (1999). Borderline personality disorder and childhood sexual abuse: a meta-analytic study. *Journal of Personality Disorders*, 13(3), 268-280.

- Gaher, R. M., Hofman, N. L., Simons, J. S., & Hunsaker, R. (2013). Emotion regulation deficits as mediators between trauma exposure and borderline symptoms. *Cognitive Therapy and Research, 37*(3), 466-475.
- Grant, B. F., Chou, S. P., Goldstein, R. B., Huang, B., Stinson, F. S., Saha, T. D., . . . , & Ruan, W. J. (2008). Prevalence, correlates, disability, and comorbidity of DSM-IV borderline personality disorder: Results from the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Clinical Psychiatry, 69*(4), 533-545.
- Graybar, S. R., & Boutilier, L. R. (2002). Nontraumatic pathways to borderline personality disorder. *Psychotherapy: Theory, Research, Practice, Training, 39*(2), 152.
- Gross, R., Olfson, M., Gameroff, M., Shea, S., Feder, A., Fuentes, M., ... & Weissman, M. M. (2002). Borderline personality disorder in primary care. *Archives of Internal Medicine, 162*(1), 53-60.
- Herman, J. L., & van der Kolk, B. A. (1987). Traumatic antecedents of borderline personality disorder. *Psychological Trauma, 1*, 111-126.
- Hertel, R., & Johnson, M. M., (2013). How the traumatic experiences of students manifest in school settings. In E. Rossen & R. Hull, *Supporting and educating traumatized students* (23-47). New York: Oxford University Press.
- Hildyard, K. L., & Wolfe, D. A. (2002). Child neglect: Developmental issues and outcomes. *Child Abuse and Neglect, 26*, 679-695.
- Holborow, P. L., & Berry, P. S. (1986). Hyperactivity and learning difficulties. *Journal of Learning Disabilities, 19*(7), 426-431.

- Horesh, N., Ratner, S., Laor, N., & Toren, P. (2008). A comparison of life events in adolescents with major depression, borderline personality disorder and matched controls: A pilot study. *Psychopathology, 41*, 300–306.
- Horn, W. F., & Packard, T. (1985). Early identification of learning problems: A meta-analysis. *Journal of Educational Psychology, 77*(5), 597.
- Iwaniec, D., Larkin, E., & Higgins, S. (2006). Research review: Risk and resilience in cases of emotional abuse. *Child & Family Social Work, 11*(1), 73-82.
- Kessler, R. C., Foster, C. L., Saunders, W. B., & Stang, P. E. (1995). Social consequences of psychiatric disorders, I: Educational attainment. *American journal of psychiatry, 152*(7), 1026-1032.
- Kira, I., Lewandowski, L., Somers, C. L., Yoon, J. S., & Chiodo, L. (2012). The effects of trauma types, cumulative trauma, and PTSD on IQ in two highly traumatized adolescent groups. *Psychological Trauma: Theory, Research, Practice, and Policy, 4*(1), 128.
- Lenzenweger, M. F., Loranger, A. W., Korfine, L., & Neff, C. (1997). Detecting personality disorders in a nonclinical population: Application of a 2-stage procedure for case identification. *Archives of General Psychiatry, 54*(4), 345-351.
- Levy, K. N. (2005). The implications of attachment theory and research for understanding borderline personality disorder. *Development and Psychopathology, 17*(4), 959-986.
- Levy, K. N., Clarkin, J. F., Yeomans, F. E., Scott, L. N., Wasserman, R. H., & Kernberg, O. F. (2006). Mechanisms of change in the treatment of borderline personality disorder with transference focused psychotherapy. *Journal of Clinical Psychology, 62*, 481-501.
- Lleras-Muney, A. (2005). The relationship between education and adult mortality in the United States. *The Review of Economic Studies, 72*(1), 189-221.

- Loranger, A. W., Sartorius, N., Andreoli, A., Berger, P., Buchheim, P., Channabasavanna, S. M., ... & Regier, D. A. (1994). The international personality disorder examination: The World Health Organization/Alcohol, Drug Abuse, and Mental Health Administration international pilot study of personality disorders. *Archives of General Psychiatry*, *51*(3), 215-224.
- Ludolph, P. S., Westen, D., Mislis, B., Jackson, A., Wixom, J., & Wiss, F. C. (1990). The borderline diagnosis in adolescents: Symptoms and developmental history. *American Journal of Psychiatry*, *147*, 470-476.
- McGlashan, T. H. (1986). The Chestnut Lodge follow-up study: III. Long-term outcome of borderline personalities. *Archives of General Psychiatry*, *43*, 20-30.
- Mehlum, L., Friis, S., Irion, T., Johns, S., Karterud, S., Vaglum, P., & Vaglum, S. (1991). Personality disorders 2-5 years after treatment: a prospective follow-up study. *Acta Psychiatrica Scandinavica*, *84*(1), 72-77.
- Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology*, *38*(1), 30.
- Ney, P. G., Fung, T., & Wickett, A. R. (1994). The worst combinations of child abuse and neglect. *Child Abuse & Neglect*, *18*(9), 705-714.
- Ogata, S. N., Silk, K. R., Goodrich, S., Lohr, N. E., Westen, D., & Hill, E. M. (1990). Childhood sexual and physical abuse in adult patients with borderline personality disorder. *American Journal of Psychiatry*, *147*, 1008-1013.
- Paivio, S. C. (2001). Stability of retrospective self-reports of child abuse and neglect before and after therapy for child abuse issues. *Child Abuse & Neglect*, *25*(8), 1053-1068.

- Palisin, H. (1986). Preschool temperament and performance on achievement tests. *Developmental Psychology, 22*(6), 766.
- Paris, J., Brown, R., & Nowlis, D. (1987). Long-term follow-up of borderline patients in a general hospital. *Comprehensive Psychiatry, 28*(6), 530-535.
- Paris, J., & Zweig-Frank, H. (2001). A 27-year follow-up of patients with borderline personality disorder. *Comprehensive Psychiatry, 42*(6), 482-487.
- Paris, J., Zweig-Frank, H., & Guzder, J. (1994). Risk factors for borderline personality in male outpatients. *Journal of Nervous and Mental Disease, 182*, 375–380.
- Rogeness, G. A., Amrung, S. A., Macedo, C. A., Harris, W. R., & Fisher, C. (1986). Psychopathology in abused or neglected children. *Journal of the American Academy of Child Psychiatry, 25*(5), 659-665.
- Rohde-Collins, D., (2013). Students exposed to community violence. In E. Rossen & R. Hull, *Supporting and educating traumatized students* (93-104). New York: Oxford University Press.
- Ross, C. E., & Van Willigen, M. (1997). Education and the subjective quality of life. *Journal of Health and Social Behavior, 275-297*.
- Scher, C. D., Stein, M. B., Asmundson, G. J., McCreary, D. R., & Forde, D. R. (2001). The childhood trauma questionnaire in a community sample: psychometric properties and normative data. *Journal of Traumatic Stress, 14*(4), 843-857.
- Silk, K. R. (2010). The quality of depression in borderline personality disorder and the diagnostic process. *Journal of Personality Disorders, 24*(1), 25-37.
- Skodol, A. E. (2008). Longitudinal course and outcome of personality disorders. *Psychiatric Clinics of North America, 31*(3), 495-503.

- Skodol, A. E., Gunderson, J. G., Livesley, W. J., Pfohl, B., Siever, L. J., & Widiger, T. A. (2002). The borderline diagnosis from the perspectives of psychopathology, comorbidity, personality structure, biology, genetics, and course. *Biological Psychiatry*, 51, 936–950.
- Skodol, A. E., Gunderson, J. G., Shea, M. T., McGlashan, T. H., Morey, L. C., Sanislow, C. A., ... & Stout, R. L. (2005). The collaborative longitudinal personality disorders study (CLPS): Overview and implications. *Journal of Personality Disorders*, 19(5), 487.
- Stone, M. H. (1990). *The fate of borderline patients: Successful outcome and psychiatric practice*. New York, NY: Guilford.
- Torgersen, S., Kringlen, E., & Cramer, V. (2001). The prevalence of personality disorders in a community sample. *Archives of General Psychiatry*, 58(6), 590-596.
- Tracey, T. J., & Sedlacek, W. E. (1985). The relationship of noncognitive variables to academic success: A longitudinal comparison by race. *Journal of College Student Personnel*, 26(5), 405-410.
- Trull, T. J., Useda, D., Conforti, K., & Doan, B. (1997). Borderline personality disorder features in nonclinical young adults: 2. two-year outcome. *Journal of Abnormal Psychology*, 106(2), 307-314. doi:<http://dx.doi.org/10.1037/0021-843X.106.2.307>.
- Westen, D., Ludolph, P., Mislé, B., Ruffins, S., & Block, J. (1990). Physical and sexual abuse in adolescent girls with borderline personality disorder. *American Journal of Orthopsychiatry*, 60(1), 55.
- Winograd, G., Cohen, P., & Chen, H. (2008). Adolescent borderline symptoms in the community: prognosis for functioning over 20 years. *Journal of Child Psychology and Psychiatry*, 49(9), 933-941.

- Yen, S., Shea, M. T., Battle, C. L., Johnson, D. M., Zlotnick, C., Dolan-Sewell, R., ... & McGlashan, T. H. (2002). Traumatic exposure and posttraumatic stress disorder in borderline, schizotypal, avoidant, and obsessive–compulsive personality disorders: findings from the collaborative longitudinal personality disorders study. *Journal of Nervous and Mental Disease, 190*, 510–518.
- Zanarini, M. C., Frankenburg, F. R., Dubo, E. D., Sickel, A. E., Trikha, A., Levin, A., & Reynolds, V. (1998). Axis I comorbidity of borderline personality disorder. *American Journal of Psychiatry, 155*(12), 1733-1739.
- Zanarini, M. C., Frankenburg, F. R., Hennen, J., Reich, D. B., & Silk, K. R. (2005). Psychosocial functioning of borderline patients and axis II comparison subjects followed prospectively for six years. *Journal of Personality Disorders, 19*(1), 19-29.
- Zanarini, M. C., Ruser, T. F., Frankenburg, F. R., Hennen, J., & Gunderson, J. G. (2000). Risk factors associated with the dissociative experiences of borderline patients. *Journal of Nervous and Mental Disease, 188*, 26–30.
- Zweig-Frank, H., Paris, J., & Guzder, J. (1994). Psychological risk factors for dissociation and self-mutilation in female patients with borderline personality disorder. *Canadian Journal of Psychiatry, 39*, 259–264.

