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Using the Personality Assessment Inventory to Discriminate among Borderline Personality Disorder, Bipolar Disorder, and Post-traumatic Stress Disorder

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To the Graduate Council:

I am submitting herewith a dissertation written by Shannon Dleen Mullen-Magbalon entitled "Using the Personality Assessment Inventory to Discriminate among Borderline Personality Disorder, Bipolar Disorder, and Post-traumatic Stress Disorder." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

Jacob Levy, Major Professor

We have read this dissertation and recommend its acceptance:

Dawn Szymanski, Gina Owens, Suzanne Molnar, Victor Barr

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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BORDERLINE PERSONALITY DISORDER, BIPOLAR
DISORDER, AND POST-TRAUMATIC STRESS
DISORDER

A Dissertation Presented for
The Doctor of Philosophy Degree
The University of Tennessee, Knoxville

Shannon Dleen Mullen-Magbalon, M.A.
August 2008

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Dedication

To my loving husband Michael, thank you.

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ABSTRACT

This study explored the use of the PAI as a tool to help differentiate borderline personality disorder from two other similar and frequently comorbid disorders of bipolar disorder (I & II) and posttraumatic stress disorder. Using discriminant analysis, the PAI profile scale scores of college counseling center clients that had been given one of these three diagnoses were analyzed. The analysis was able to predict group assignment accurately using four particular scores. A discussion of the predictor variables and clinical presentation of these disorders is offered. Support for the use of the PAI as a routine screening tool in college counseling centers also is suggested.

PREFACE

After several years of working in college counseling centers, I have a deep understanding for the challenges in this work. Clinical work in this setting has changed. We cannot turn the clock back to the days of career advising, and supportive therapy for homesick students (if it ever really was only developmental work). Severe pathology is common, and resources are limited. Anything that offers clinicians greater clarity in their work with mentally ill students is a welcome blessing. I see assessment and screening as part of the solution. Greater emphasis must be placed on accurate diagnosis in college counseling centers.

My passion for assessment is only out paced by my passion for the health of my clients. In order to provide them with the best and most appropriate treatment, I have to know what I am treating. Additionally, college counseling centers will need to play a greater role in risk assessment and crisis management, especially in the post Virginia Tech reality. It is my hope that this study and others like it that focus on the needs of college counseling centers, and their unique population, serve to support those that do this important work.

TABLE OF CONTENTS

Chapter	Page
CHAPTER I.....	1
Introduction.....	1
Statement of the Problem.....	1
CHAPTER II.....	4
Literature Review.....	4
Borderline Personality Disorder	4
Differential Diagnosis of BPD.....	6
College Student Mental Health.....	10
BPD in College Students	12
The Use of the PAI in Assessing Personality Disorders.....	13
Overview of Current Study and Research Questions	18
CHAPTER III	20
Materials and Methods.....	20
Participants.....	20
Counseling Center Description.....	22
Instrument	25
CHAPTER IV	27
Results.....	27
Discriminant Analysis.....	27
CHAPTER V	30
Discussion, Conclusions, and Recommendations.....	30
Summary and Integration of Results.....	30
Explanation for Findings.....	34
Implications of Findings	36
Limitations	39
Future Directions	42
REFERENCES	44
Vita.....	58

LIST OF TABLES

Table	Page
Table 1. Standardized Coefficients and Correlations of the Significant PAI Scales with the Two Discriminant Functions.....	55
Table 2. Descriptive Statistics.....	57

CHAPTER I INTRODUCTION

Statement of the Problem

Borderline personality disorder (BPD) is characterized by a pervasive pattern of instability of interpersonal relationships, self-image, moods, and marked impulsivity that begins in early adulthood (American Psychiatric Association [APA], 2000).

Approximately 2% of the general population and 10% of the clinical population meet diagnostic criteria for borderline personality disorder (Swartz, Blazer, George, & Winfield, 1990). Additionally, individuals diagnosed with BPD comprise approximately 20% of psychiatric inpatients (Zanarini et al., 1998). Borderline personality disorder is also the most frequently diagnosed personality disorder in the clinical population (Widiger & Rogers, 1989).

The course of BPD usually includes chronic instability and episodes of serious affective and impulsive dyscontrol (APA, 2000). Because the nature of BPD often includes frequent crisis episodes, self-harm behavior, and suicidal ideations, gestures, and attempts, individuals with this disorder have high utilization rates of mental health services (Ellison, Barsky, & Blum, 1989; Soloff et al., 1994; Stone, 1990; Reich, Bostler, Yates, & Nduaguba, 1989). Approximately 9% of BPD clients commit suicide, indicating the severity of the disorder (Perry, 1993). The chronic course of the disorder and severity of symptoms create challenges during the process of treatment planning (Gunderson & Hoffman, 2005).

Frequent comorbidity of Axis I disorders, as well as symptom overlap of both Axis I and II disorders, offer challenges to clinicians in attempting to arrive at an accurate differential diagnosis of BPD (Gunderson, 2001). High comorbidity or co-occurrence rates of borderline personality disorder with mood disorders (e.g., depression and bipolar disorder) and anxiety disorders (e.g., posttraumatic stress disorder) may make diagnosis difficult (Widiger & Rogers, 1989). The challenge of accurate diagnosis for BPD is equaled only by the importance of such assessment. The prevalence of borderline personality disorder and the increased need for additional mental health services due to self-harm and suicidal behavior suggest a severity in the course of the disorder that warrants proper assessment and diagnosis (Gunderson, 2001).

Psychologists typically use data drawn from psychological testing to generate and test their clinical hypotheses in the course of psychodiagnostic assessment (Spengler, Strohmer, Dixon, & Shivy, 1998). One of the more popular tests for examining broad personality and psychopathology is the Personality Assessment Inventory (Belter & Piotrowski, 2001; Boccaccini & Brodsky, 1999; Piotrowski & Belter, 1999). The Personality Assessment Inventory (PAI; Morey, 1991) is comprised of four Validity scales, 11 Clinical scales, including the Borderline Features Scale (BOR), five Treatment scales, and two Interpersonal scales. The BOR scale is comprised of four subscales which are “designed to measure distinct facets of personality immaturity: Affective instability, Identity problems, Negative relationships, and Self-harm” (Morey, 2003, p. 109). In their study investigating the effectiveness of psychological tests in discriminating between psychiatric inpatients diagnosed with BPD and student controls (not diagnosed with

BPD), Bell-Pringle, Pate, and Brown (1997) found that 82% of the patients and 77% of the students were classified correctly using the PAI BOR scale.

To date, no study has examined possible profile discriminations (including, but not limited to the BOR scale) among clients diagnosed with BPD and other disorders with similar psychological presentations. This study aims to begin to fill that void in the literature by examining PAI profiles of university counseling center clients diagnosed with BPD, Bipolar Disorder, and Post-Traumatic Stress Disorder (PTSD).

The review of the literature covers the following areas: 1) the description and definition of BPD and frequently diagnosed comorbid disorders; 2) personality disorders in the college student population; and 3) assessment and diagnosis of personality disorders. The literature review is followed by an overview of the current research project. In Chapter 3, a description of the method of investigation, including participants and procedures, is provided. In Chapter 4, results of the study are presented. Finally, in Chapter 5, an interpretation of findings in the context of the extant literature is discussed.

CHAPTER II LITERATURE REVIEW

Borderline Personality Disorder

The American Psychiatric Association (APA) lists eleven personality disorders in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition – Text Revision (DSM-IV-TR; APA, 2000)* including paranoid, schizoid, schizotypal, antisocial, borderline, histrionic, narcissistic, avoidant, dependent, obsessive-compulsive, and personality disorder NOS. Personality disorders are defined as “inflexible and maladaptive and cause either significant impairment in social functioning or subjective distress” (p. 685). Borderline personality disorder (BPD) is defined by the *DSM-IV-TR* as:

A pervasive pattern of instability of interpersonal relationships, self-image, and affects, and marked impulsivity beginning by early adulthood and present in a variety of contexts, as indicated by five (or more) of the following:

1. Frantic efforts to avoid real or imagined abandonment. Note: Do not include suicidal or self-mutilating behavior covered in Criterion 5.
2. A pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of idealization and devaluation.
3. Identity disturbance: markedly and persistently unstable self-image or sense of self.
4. Impulsivity in at least two areas that are potentially self-damaging (e.g., spending, sex, substance abuse, reckless driving, binge eating). Note: Do not include suicidal or self-mutilating behavior covered in Criterion 5.
5. Recurrent suicidal behavior, gestures, or threats, or self-mutilating behavior.
6. Affective instability due to a marked reactivity of mood (e.g., intense episodic dysphoria, irritability, or anxiety usually lasting a few hours and only rarely more than a few days).
7. Chronic feelings of emptiness.

8. Inappropriate, intense anger or difficulty controlling anger (e.g., frequent displays of temper, constant anger, recurrent physical fights)
9. Transient, stress-related paranoid ideation or severe dissociative symptoms.
(p. 710)

BPD was once thought to be the “border-line” between neurosis and psychosis (Kernberg, 1967), and is more common than Axis I disorders such as bipolar disorder and schizophrenia, which are often better known in the general population than borderline personality disorder (Swartz et al., 1990). Clinicians estimate that BPD affects about 2% of adults in the general population and about 10% of the individuals seen in clinical settings, making up a large segment of the clinical population (Swartz et al., 1990).

The course of BPD is characterized by chronic instability, and episodes of serious affective dysregulation and impulsivity (APA, 2000). There is a high incidence of self-injury including suicide attempts within this population (Soloff et al., 1994; Stone, 1990). Due to frequent crisis episodes, self-harm behavior, high-risk behavior, and suicidal threats/attempts, clients with BPD place a high level of demand on mental health services (Ellison, Barsky, & Blum, 1989; Reich et al., 1989.) Impairment from the disorder and the risk of suicide are greatest during the young-adult years (APA, 2000). Such risk taking behavior and instability of mood makes treatment planning difficult especially during the most active years of the disorder, young-adulthood (Gunderson & Hoffman, 2005).

Gunderson (2001) reports that the age of onset for BPD may be as early as 13 years of age, but 50% of the initial onset of symptoms occurs during the ages of 18-25 years old. Lenzenweger (1999) conducted a four year longitudinal study of nonclinical

college students and found strong evidence of stability for features of personality disorders as measured by both self-report and clinical interview. Personality disorder features measured at late adolescence (collegiate) remained stable four years later, suggesting that diagnosis of personality disorders during college years is appropriate.

Differential Diagnosis of BPD

Widiger and colleagues (Widiger & Rogers, 1989; Widiger & Trull, 1993) found that the most prevalent personality disorder diagnosis is BPD, both in inpatient and outpatient settings. Additionally, they reported high comorbidity rates for BPD and mood disorders. Statistics regarding high comorbidity rates of BPD with other Axis I (non personality) disorders allude to the challenge of differential diagnosis for clients with BPD. Widiger and Shea (1991) stated that it is often difficult to differentiate some Axis I from Axis II disorders. The assessment of personality disorders is important as personality traits affect the treatment outcome of an Axis I disorder (Widiger & Rogers, 1989).

Depression is common among borderline patients, with some estimates reaching 74% for major depression, 20% for bipolar disorder, and 14% for dysthymia (Docherty, Fiester, & Shea, 1986). Axis I symptomology resembling or overlapping personality disorder symptomology is particularly problematic with BPD (Gunderson, 2001). Clients with BPD experience frequent affect dysregulation, which is often the result of perceived abandonment or rejection (APA, 2000). It is not uncommon for BPD clients to present with unipolar depression as a result of poor affect regulation, chronic feelings of emptiness, and diffusion of identity associated with relational anxiety (fear of rejection)

(Rippetoe, Alarcon, & Walter-Ryan, 1986). Additionally, Rippetoe et al. (1986) found that borderline characteristics were significantly more frequent in BPD patients who were also depressed. Perhaps depression is symptomatic of further decompensation and the increased use of dysfunctional coping mechanisms of splitting and suicide attempts. This kind of comorbid presentation was explored in a study identifying symptoms associated with BPD. Lloyd, McLaughlin, and Overall (1983) found that psychiatric patients with BPD had significant positive correlations with somatization, depression, and psychotic distortions. Such overlap in diagnostic presentation and frequency of comorbidity of mood and other disorders make accurate diagnosis of BPD particularly challenging (Gunderson, 2001).

Similarly, clients with bipolar disorder often present with mood disruptions and impulsivity that is also characteristic of clients with BPD, leading many to suggest that the borderline presentation is a variant of mood disorders (Akiskal, 1994; Akiskal et al., 1985; Blacker & Tsuang, 1992; McGlashan, 1983). A study by Atre-Vaidya and Hussain (1999) explored the question of whether BPD and bipolar mood disorder exist on a continuum. Their findings suggest that borderline patients can be differentiated from bipolar mood disorder based on character deviation and temperament. Others go further and suggest that these disorders should not be considered as two independent disorders (Gunderson et al., 1999; Kopacz & Janicak, 1996). The findings that mood stabilizers, which are an effective treatment for bipolar mood disorder, are also an effective treatment for behavioral dyscontrol in borderline personality disorder leads researchers to posit a common organic or genetic mechanism (Akiskal, 1981; Gardner & Crowdry, 1985;

Gunderson et al., 1999; Hollander et al., 2001; Links et al., 1990; Silverman et al., 1991). Unfortunately, as Gunderson (2001) observes, there are few studies examining the overlap in the diagnoses of bipolar and BPD.

Posttraumatic stress disorder (PTSD) is also frequently comorbid with BPD (Widiger & Rogers, 1989), and some researchers express concern about whether PTSD is a separate disorder from BPD (Gunderson, 2001). Gunderson and Sabo (1993) offer a thorough discussion of the strong relationship and overlap of BPD and posttraumatic stress disorder. While many individuals with PTSD do not have co-morbid BPD, posttraumatic stress disorder co-occurs in about 40% of patients with BPD (Zanarini et al., 1998b). Stiver (1991) argues that patients with BPD often are conceptualized better as trauma victims. Research into the etiology of BPD highlights frequent reports of histories of abuse, neglect, or separation from caretakers as young children (Zanarini & Frankenburg, 1997). BPD has a documented association with childhood trauma, including sexual abuse (Briere & Zaidi, 1989; Herman, Perry, & van der Kolk, 1989). The incidence of sexual abuse reported by individuals with BPD ranges from 40 to 71% (Zanarini, 2000). A cluster analysis using the MMPI profile of psychiatric female patients who had been sexually abused (Carlin & Ward, 1992) found that the women with a BPD profile also had experienced more invasive forms of abuse than the other cluster groups without a borderline profile. These statistics highlight the kinds of trauma that often lead to the affect and behavior of patients with BPD. Such interpersonal violation in the form of abuse and neglect contributes to the relational instability that is characteristic of clients with BPD. Additionally, Allen, Huntoon, and Evans (1999) cite

significant elevation of borderline personality scores for their cluster profiles of inpatient women with PTSD. These studies underscore the severity of personality pathology in posttraumatic stress disorder, and highlight the need for proper diagnosis of trauma-related pathology beyond the focus of borderline pathology. Significant overlap in the presentation and etiology of PTSD and BPD drive the need for greater diagnostic clarification.

Another challenge in the diagnosis of BPD is shared traits with other Axis II personality disorders (Zanarini, Gunderson, Frankenburg, & Chauncey, 1990). BPD clients often present with paranoia associated with the relational anxiety of feared and perceived abandonment by others (APA, 2000). The suspicion of other people is related to the expectation of rejection by others. Paranoia is also characteristic of other personality disorders like paranoid, schizotypal, antisocial, and narcissistic personality disorders (Karakashian, 1988). Narcissistic features and statements also are common in BPD (Ronningstam & Gunderson, 1991). Clients with BPD often swing from episodes of low self-esteem and emptiness to defensive false self-esteem, in protection of a fragile ego or sense of self (Masterson, 1988). These statements of defensive high self-esteem may appear so disconnected from reality and self-aggrandizing that they seem consistent with narcissistic personality disorder (Ronningstam & Gunderson, 1991). Intense and inappropriate anger, especially when it is accompanied by physical violence, and/or the destruction of property, can be similar to an antisocial personality disorder presentation, adding to difficulties with diagnosis (Holdwick, Hilsenroth, Castlebury, & Blais, 1998). The significant relational focus of BPD and the attempt to avoid real or imagined

abandonment can seem consistent with symptoms of dependent personality disorder and the attention seeking of histrionic personality disorder (Zanarini et al., 1990).

College Student Mental Health

College counseling centers also struggle with the challenge of differential diagnosis for clients with BPD and other related disorders. Kitzrow (2003) examined the mental health needs of today's college students and found an increase in the need for university counseling centers, as well as an increase in student utilization of services and in the severity of presenting problems. Several studies report the same increase in the level of psychopathology and symptom severity within the college counseling center population (Benton, Robertson, Tseng, Newton, & Benton, 2003; Gallagher, Gill, & Sysco, 2000; O'Malley, Wheeler, Murphy, O'Connell, & Waldo, 1990; Robbins, May, & Corazzini, 1985). Benton et al. (2003) explored client problems across a 13 year period and found that college counseling centers reported an increase in more complex problems including personality disorders, depression, suicidal ideation, and students reporting sexual assault. Long gone are the days of the university counseling center that worked with students on strictly developmental issues. Greater access to higher education in the form of increased enrollment and the availability of financial assistance for school as well as the availability and accessibility of psychotropic medication has increased the kinds and levels of pathology presented at counseling centers (Kitzrow, 2003). New medication for the treatment and maintenance of mood and anxiety related disorders (as well as for some psychotic disorders) has made it possible for young adults to live away

from home and manage both their mental illness and college level course work (Gallagher et al., 2000).

College students often seek mental health services following a decrease in functioning, crisis events, or the emergence and onset of mental illness (like bipolar disorder, depression, and schizophrenia that often have an initial onset of symptoms during late adolescence and early adulthood) (Kitzrow, 2003). Some students with a previous diagnosis proactively present for the continuation of services for the maintenance of functioning (Kitzrow, 2003). As Kitzrow (2003) explains, the majority of students are seeking services for the first time, and do not seek treatment prior to a crisis or a significant event that impairs functioning. For these reasons, the university counseling center has moved from a predominantly developmental and preventative model of mental health services to one that includes frequent crisis management while struggling to keep up with the significant demand for services which often outpaces the resources available.

Benton et al. (2003) recommend an increased focus on assessment and diagnosis in counseling centers in order to make clinical decisions (treatment planning), as well as decisions regarding resources (personnel and programming). They maintain that students who present for counseling must be assessed and screened in order to properly diagnose client symptoms. This screening process can assist counseling center personnel in decisions regarding services (refer out to the community, medication evaluation, priority/triage status, client/counselor assignment, level of treatment required, treatment modality, etc.) and treatment planning (selection of treatment interventions, therapeutic

goals, salience of client safety and self-harm behaviors to be addressed, etc.). To date, no published studies exist regarding BPD within the clinical population of a university counseling center. However, several studies have investigated BPD among the *nonclinical* college population. A careful review of these studies follows.

BPD in College Students

Trull (1995) used the PAI Borderline Features Scale (PAI-BOR) to screen and select collegiate nonclinical participants. Participants who indicated significant borderline features were compared to those who indicated very few borderline features. It was found that participants from the nonclinical population that reported high BPD features also indicated more significant general psychopathology symptoms including mood disorders, anxiety disorders, negative coping style, and interpersonal distress. Most prevalent among the high BPD features group in the collegiate sample were intense and inappropriate anger, impulsivity, and affective instability. Similarly, Helfritz and Stanford (2006) found that impulsive aggression (a common feature of BPD) in a nonclinical college sample was particularly variable. Students high on impulsive aggression scored significantly higher than controls on almost every scale on the PAI, indicating a general elevation of psychopathology related to impulsive aggression. Trull, Useda, Conforti, and Doan's (1997) two year longitudinal study of nonclinical young adults who displayed significant BPD features found that these individuals were more likely to have academic difficulties, meet criteria for a mood disorder, and have greater interpersonal dysfunction than their peer group. BPD features are assumed to be associated with poorer long-term outcomes even in a nonclinical population (Trull et al.,

1997). Although these investigators examined BPD features among a collegiate sample, they did not assess a clinical collegiate sample with a personality disorder diagnosis.

The Use of the PAI in Assessing Personality Disorders

There are many assessment tools to choose from to aid in the assessment of personality disorders, including the Millon Clinical Multiaxial Inventory (MCMI, now in its third edition--MCMI-III; Millon, Millon, & Davis 1994); the Rorschach Inkblot Method, with the most popular interpretation coming from Exner's Comprehensive System (Exner, 2000), the Schedule for Nonadaptive and Adaptive Personality (SNAP; Clark, 1993), among others. With regard to broad-based self-report measures of psychopathology, the Minnesota Multiphasic Personality Inventory (MMPI; and its most recent edition MMPI-2; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) and the PAI (Morey, 1991) are two of the most popular. The development of the PAI was in large part a reaction to limitations of the MMPI-2 identified by Morey. Because the PAI was designed to assess many of the same symptoms of psychopathology as the MMPI-2, the PAI frequently has been compared to the MMPI-2 in validity studies. Many of these comparisons are described in the following literature review related to the PAI.

Prior to the development of the PAI (Morey, 1991), Morey, Waugh, & Blashfield (1985) developed the non-overlapping MMPI scales for the DSM-III Personality Disorders; MMPI-PD. They had comparable validity to those achieved by Wiggins (1966) in the creation of the MMPI content scales. Morey's emphasis on non-

overlapping scales would be the impetus for the creation of the PAI. In fact, one of the major criticisms of the MMPI-2 is the overlapping scales (Morey, 1991).

The PAI (Morey, 1991) is a self-report measure of psychopathology. Its development emphasizes construct-validation with both rational and quantitative methods of scale development. Also emphasized are scale homogeneity and the use of multiple discriminative criteria for item selection. Holden and Fekken (1990) advocated for scale development under the rational-quantitative model, reporting that this model often has reliability and validity scores that exceed those of scales developed by empirical or factor-analytic models.

There is much research related to the PAI's profile validity. Several studies compared the PAI to similar instruments of psychopathology to determine the strength of the instrument's validity scales and indexes, as well as the content validity of the PAI. One particular study looking at self-report measures and personality disorders by Kurtz, Morey, and Tomarken (1993) found support for the concurrent validity of PAI, MMPI-PD, and the Bell Object Relations Inventory (Bell, Billington, & Becker, 1986). Peebles and Moore (1998) assessed the efficacy of the PAI validity scales, and found that the PAI measures of socially desirable response styles outperformed the Balanced Inventory of Desirable Responding (BIDR) (Paulhus, 1984) scales when students were instructed to fake good. In another instrument comparison, Bagby, Nicholson, Bacchioni, Ryder, and Bury (2002) assessed the efficacy of the MMPI-2 and the PAI to detect malingering. The Rogers Discriminant Function (RDF) scale (a measure of malingering) of the PAI was found to have predictive advantages over the MMPI-2 F scales. Finally, Blanchard,

McGrath, Pogge, and Khadivi (2003) compared the PAI and MMPI-2 as predictors of faking bad in the college student population. The PAI scales consistently displayed a significant level of incremental validity over the MMPI-2 indicators.

Two additional studies explored the issue of defensive responding. Cashel, Rogers, Sewell, and Martin-Cannici (1995) assessed the PAI's ability to detect defensiveness, and found that the PAI significantly predicted honest and feigning conditions. Additionally, Baer and Wetter (1997) evaluated the PAI validity scales for underreporting of symptoms on the PAI in a college student population. This study found that underreporting scales on the PAI were effective in differentiating standard profiles from those of uncoached underreporting students.

In a comprehensive study of the validity scales for the PAI, Morey and Lanier (1998) assessed the characteristics of the six response distortion indicators for the PAI. In this study, college students took the PAI under positive impression management, malingering, and honest responding conditions. All six scale indicators were found to distinguish between actual and feigned responding. The RDF, which distinguishes real patients from those attempting to simulate symptoms, was particularly effective in capturing malingering.

The PAI scales for the assessment of BPD include the main BOR scale as well as four subscales including: BOR-A (affective stability), BOR-I (identity problems), BOR-N (negative relationships), BOR-S (self-harm) (Morey, 2003). As Morey explained, the BOR scale assesses elements of personality pathology related to the borderline syndrome. Morey admitted that many of those elements are common to several other disorders.

Consequently, elevations in the BOR scale can be related to other disorders with similar overlapping pathology. Due to the diffuse nature of this disorder, and shared elements of psychopathology with other disorders, the BOR scale is the only scale on the PAI with four subscales. In fact, the only other personality scale on the PAI is the ANT or anti-social personality disorder scale which has three subscales: ANT-A (antisocial behavior), ANT-E (egocentricity), ANT-S (stimulus-seeking). Morey suggested that careful attention should be paid to the elevations of the four BOR subscales in order to determine whether the BOR elevation is related to BPD, or another associated disorder. Morey reiterated that even with a BOR elevation above 70t (clinical significance), other similar disorders maybe the cause, especially in the absence of prominent elevations on the four subscales.

The first subscale of BOR-A, or affective instability, measures the suddenness of mood or affective change. When trying to differentiate BPD from bipolar disorders, this scale is particularly useful in identifying the rapid mood shifting that is more characteristic of BPD and less like the cyclical mood shifts of bipolar disorders (Morey, 2003). Identity problems, as assessed by the BOR-I subscale are associated with BPD as well as features of dependent personality disorder. Essentially, this scale measures the amount of “identity diffusion” as first suggested by Kernberg (1975; as cited in Morey, 2003). The failure to establish an autonomous identity and the need to use others to create a sense of self that is constantly shifting is central to the sense of emptiness experienced by most BPD clients. The BOR-I score of 70t or above is indicative of a serious lack of identity establishment regardless of age (Morey). The BOR-N, or

negative relationships scale, measures an individual's involvement in very intense and chaotic relationships (Morey). This kind interpersonal dysfunction is a prominent feature in BPD. Morey also notes the high rates of childhood physical and sexual abuse reported in BPD patients (Zanarini, 2000). The BOR-N subscale does not identify the source of the relationship dysfunction, only the presence of chaotic relationships, consequences related to such unstable relationships, and a sense of betrayal and distrust. Significant elevation on this scale warrants careful assessment of a trauma history and the consideration of PTSD as a comorbid disorder, or its differentiation from BPD. The final subscale is the BOR-S, or self-harm scale. This scale is better understood as a measure of impulsivity and self-destructive behavior (Morey). Examples of such impulsivity and recklessness include excessive spending, sex, and substance abuse (Morey). It is unclear how well this scale differentiates between the kind of unstable affective, interpersonal, and behavioral presentation of BPD, and the reckless and impulsive behavior of someone in a manic or hypomanic episode as in bipolar I and II disorder. Follow-up clinical interviewing is required in order to make this important distinction.

Bell-Pringle et al. (1997) compared the assessment of BPD using the MMPI-2 and the PAI. This study found that the PAI-BOR (PAI borderline features scale) was more accurate in identifying patients diagnosed with BPD than the MMPI-2 profile configurations. However, they did not include the other PAI scales in their analysis, nor did they attempt to discriminate BPD from other diagnoses.

Overview of Current Study and Research Questions

This study used discriminant analysis to determine if PAI profile scales can differentiate student diagnosis (predict group assignment), as well as which PAI scales, if any, are predictive of the diagnostic groups. The three diagnostic groups under consideration are BPD, bipolar, and PTSD. The PAI profiles of university counseling center students with a diagnosis of BPD as well as bipolar I and II and PTSD were used in the analysis. Mean T-scores of predictive scales were compared between diagnoses in order to further clarify the phenomenological differences of these frequently comorbid and overlapping disorders. Findings from such a comparison aid in the challenge of differential diagnosis between BPD and bipolar and posttraumatic stress disorder, two of the most challenging disorders to differentiate from BPD (Gunderson, 2001). This investigation adds to the body of knowledge regarding the population of college students with a diagnosis of BPD in a university counseling center. This study sought to answer the following research questions:

The main research question is:

Can clients diagnosed with BPD, bipolar, and PTSD be correctly classified into these categories based on their scores on the PAI scales and subscales?

The following research questions were based on the assumption of positive group prediction by the discriminant analysis, as well as research by Morey (2003) and others regarding the phenomena measured by the PAI scales, and the clinical presentation

related to each disorder. Once the model's ability to predict group assignment was determined, the following relevant questions regarding the predictor scales were explored:

1. *Will the mania (MAN) scale or subscales help to distinguish bipolar disorder from BPD and PTSD?*
2. *Will the anxiety related disorders trauma (ARD-T) subscale help to distinguish PTSD from Bipolar disorder and BPD?*
3. *Will the borderline syndrome (BOR) scale or subscales help to distinguish BPD from Bipolar disorder and PTSD (Morey (2003) admits, many of the individual elements of BPD are common to several other disorders)?*
4. *Similarly, will the ARD-T and BOR scale and/or subscales, like BOR-A, BOR-N, BOR-S, in particular, be predictive of all three groups? The literature's findings regarding the prevalence of trauma in BPD patients (Zanarini, 2000), as well as affect dysregulation, and self-harm behaviors found in trauma survivors (Stiver, 1991) and bipolar disorder (Akiskal, 1994; Akiskal et al., 1985; Blacker & Tsuang, 1992) seem to make this likely.*
5. *Will certain scales be relevant to group prediction for all three groups, but at different levels (T-scores)?*

CHAPTER III MATERIALS AND METHODS

Participants

Participants for this study were drawn from an archival data set of a university counseling center at a large Southeastern university. Participants were students receiving psychological services in that university counseling center who consented to have their records made available for archival research. The participants were men and women 18 years of age or older, and from various cultural, economic, and educational backgrounds. For this study, 49 participants with a diagnosis of BPD, 46 participants with bipolar I or II disorder, and 43 participants with PTSD were included. The average age of all participants at the time they took the PAI was 23.6 years of age. The ages ranged from 17 to 59 years of age with a standard deviation of 7 years. Each diagnostic group also averaged about 23.6 years of age. Data regarding participant age was only available for 130 of the 138 total eligible participants. Additionally, each diagnostic group included predominantly female participants, 8 males and 41 females in the BPD group, 13 males and 33 females in the bipolar disorder group, and 9 males and 34 females in the PTSD group. The disproportionate sample of female participants is consistent with the statistic for the counseling center used in the study and the national trend of women seeking mental health services at greater numbers than men. The Association for University and College Counseling Center Directors Annual Survey reported that the in 2006/2007

academic year, the percentage of female clients presenting for services was 63.5% (Rando, Barr, & Aros, 2008).

Since it is an archival study, the university Institutional Review Board (IRB) certified this project as Exempt from human subjects review. A report of counseling center clients who have agreed to the use of their records in archival data with a diagnosis of BPD, bipolar mood disorders (I & II), and posttraumatic stress disorder was created using the Titanium reports system. The report included the client identification number that matches their recorded PAI report. This identification number ensures the anonymity and confidentiality of records. Client PAI profiles eligible for inclusion in the sample that did not consent to archival data research was about 29% for the entire sample. Each diagnostic group had a similar nonconsent percentage; BPD 22%, bipolar disorder 36%, and PTSD 28%.

DSM-IV-TR (APA, 2000) diagnoses were recorded in the data archive after the first, fifth, and termination sessions. The most recently documented diagnostic information was used (except for PTSD), under the assumption of increased accuracy following additional client contact. The nature of PTSD suggests a discrete onset, and with treatment, a remission of symptoms rendering the client no longer able to meet the criteria for the disorder; for this reason, a diagnosis of PTSD was accepted at any interval. Also, diagnosis qualifiers were reviewed. Only diagnoses with the qualifiers of “principle” and “provisional” were included in the sample. Diagnosis qualifiers of “traits of” or “rule out” were not included in the study because of the tentative nature of the diagnosis. Any diagnostic discrepancies (frequently related to data entry problems in the

electronic record) were clarified with the center director for the greatest possible accuracy in diagnostic coding. Clients found with a dual diagnosis of any of the disorders (BPD, bipolar I or II, and/or PTSD) were not included in the sample. Only 12 client files were found to have a dual diagnosis entry with 10 consenting to research. None of these 12 PAI profiles were included in the data set. Only clients with just one of the disorders under investigation were included in order to best study the differentiation of these disorders.

Following the selection of participants that met the above outlined criteria, the identification number of each client was matched to their PAI profile scores (also part of the client record). Prior to the statistical analysis, client description information including the sex, and age of the client was recorded in an SPSS file along with T-scores of the PAI full scales and subscales from the PAI report. No identifying information, (i.e., name, social security number, area major, etc.) was included in this study. Careful attention was paid to ensuring the privacy and confidentiality of client identity and treatment records. Participants are described as a group, and no individual subjects are singled out for description or analysis.

Counseling Center Description

The college counseling center used in this study has nine licensed senior staff psychologists, four pre-doctoral interns, three graduate/doctoral student assistants and anywhere from five to twelve practicum level doctoral students. All doctoral trainees or

students work under the license of one or more senior staff psychologists and receive weekly or biweekly supervision. All assessments and documentation (notes and reports) are reviewed and signed off by a licensed staff psychologist. Doctoral students working at beginning levels of training or skills are assigned clients following a brief screening in an attempt to match skill level with level of training. Clients with the disorders of BPD, bipolar disorder and PTSD are, according to the training policy, assigned only to senior staff, pre-doctoral interns, doctoral graduate assistants, and advanced doctoral students only. Due to the training policies of this center, most if not all clients included in this sample have been assessed by advanced doctoral therapist (working under licensed supervision) and/or licensed senior staff psychologists. Clinicians functioning at this level have completed the required coursework and training in assessment necessary to achieve proficiency in DSM-IV TR diagnosis and general assessment.

The assessment process in this college counseling center includes an initial brief clinical interview which reviews client presenting symptoms, history (individual, family, treatment, trauma), assessment of current/past functioning (risk taking behavior, drug/alcohol use, suicidal ideation etc.), and an analysis of intake screening paperwork. Intake paperwork may include referral information, and a review of a wide variety of symptoms in a self-report checklist. Collateral data from other clinicians, previous treatment records, and referral sources (dean of student's office, police department, student health center/medical doctor or psychiatrist, faculty or academic department) is also reviewed. Finally, clients may undergo additionally formal assessment that usually

includes a full clinical interview and the use of multiple standardized assessment instruments.

The first diagnostic entry is not made until after the first session with the assigned counselor. No diagnosis is entered at the time of intake. Although the client may take the PAI soon after their initial intake session, the PAI profile is often not available until after the first session and first diagnostic entry. Although the PAI profile and report may be available by the fifth session (which is frequently the second diagnostic entry), clinicians in this center have been trained to take all available assessment data (clinical interview, collateral data, clinician impression, client report, brief screening tools, interpersonal responses and projections, as well as standardized assessments) into consideration when solidifying client diagnosis. In fact, assessment based solely on one standardized instrument would be unethical and outside the standards of the practice for psychologists trained in assessment.

Ultimately, for this study there is no way to tell the extent to which the PAI was used in the determination of client diagnosis. Although the PAI may have been available at various points in the assessment process, it is impossible to determine the individual clinician's reliance on the profile results. The standard of assessment set by the field of psychology suggests that assessment instruments would be limited in their influence by the training of psychologists to consider multiple sources of data in the assessment process.

Instrument

The PAI (Morey, 1991) is a self-report, objective measure of personality and psychopathology. It includes independent scales measuring test-taking behaviors, DSM symptomology, treatment considerations, and interpersonal style. There are twenty two PAI full scales, including four validity scales (inconsistency, infrequency, negative impression management, and positive impression management), eleven clinical scales (somatic complaints, anxiety, anxiety-related disorders, depression management, mania, paranoia, schizophrenia, borderline features, antisocial features, alcohol problems, and drug problems), five treatment scales (aggression, suicidal ideation, stress, nonsupport, and treatment rejection), and two interpersonal scales (dominance and warmth). There are also thirty one subscales under ten full scale categories. The subscales include somatic complaints (conversion, somatization, and health concerns), anxiety (cognitive, affective and physiological), anxiety-related disorders (obsessive-compulsive, phobias, and traumatic stress), depression (cognitive, affective, and physiological), mania (activity level, grandiosity, and irritability), paranoia (hyper-vigilance, persecution, and resentment), schizophrenia (psychotic experiences, social detachment, and thought disorder), borderline features (affective instability, identity problems, negative relationships, and self-harm), antisocial features (antisocial behaviors, egocentricity, and stimulus seeking), and aggression (aggressive attitude, verbal aggression, and physical aggression).

The PAI was developed with a construct-validation framework emphasizing rational and quantitative methods of scale development. A special emphasis was placed

on scale homogeneity and the use of multiple discriminative criteria in item selection. Scale stability and external correlates also were emphasized. As discussed earlier, Holden and Fekken (1990) advocated for scale development under the rational-quantitative model, reporting that this model often has reliability and validity scores that exceed those of scales developed by empirical or factor-analytic models. Morey (1991) reported test-retest reliability alphas of 0.79 to 0.92. The PAI correlates well with similar measures of personality and psychopathology (Morey, 1991).

CHAPTER IV RESULTS

Discriminant Analysis

A discriminant analysis was conducted to determine whether PAI profile (based on standardized scale and subscale scores) could predict group assignment or diagnosis given to clients diagnosed with BPD, Bipolar Disorder, and PTSD. The overall Wilks's Lambda was significant, $\Lambda = .57$, $\chi^2(8, N=138) = 75.03$, $p < .01$, indicating that overall the predictors differentiated among the three diagnostic groups. In addition, the residual Wilks's lambda was significant, $\Lambda = .86$, $\chi^2(3, N=138) = 20.92$, $p < .01$. This test indicated that the predictors differentiated significantly among the three diagnostic groups after partialling out the effects of the first discriminant function. Because these tests were significant, it was decided to interpret both discriminant functions.

Diagnostic category was discriminantly predicted by four PAI scales and subscales: PIM, BOR, ARDT, and MANA. Within-group correlations between the predictors and the discriminant functions are presented in Table 1 in the appendix. Based on these coefficients, ARD-T, or anxiety related disorders (trauma), scores demonstrated the strongest relationship with the first discriminant function, while demonstrating a negative relationship with the second discriminant function. PIM, or positive impression management, demonstrates a moderate relationship with both the first and second discriminant functions. BOR, or the borderline scale, shows a negative relationship with the first discriminant function, and a strong positive relationship with the second

discriminant function. The MAN-A, or mania activity scale, showed a mild negative relationship with the first discriminant function and a strong negative relationship with the second discriminant function. On the basis of the results, the first and second discriminant functions are labeled pathology with discrete origin and pathology with endogenous/diffuse origin, respectively.

The means on the discriminant functions are consistent with this interpretation. The PTSD group ($M = 1.00$) had the highest mean on the pathology with discrete origin dimension (the first discriminant function), while the Borderline ($M = -.22$) and Bipolar ($M = -.69$) groups had lower means. On the other hand, the Borderline group ($M = .53$) had the highest mean on the pathology with endogenous/diffuse origin, the PTSD group ($M = -.17$) the next highest mean, and the Bipolar group ($M = -.41$) had the lowest mean scores.

When attempting to predict group membership, classification was successful in 53.1% of the Borderline PD sample, 54.3% of the Bipolar Disorder sample, and 79.1% of the PTSD sample. Of the original grouped cases, 61.6% were correctly classified. The Stepwise method of discriminant analysis was crossvalidated and determined to be a better fit. Overtraining, or over predicting by using variables that are unnecessary to predict the group assignment was prevented with the stepwise method. A jackknife procedure was performed to validate the appropriateness of a stepwise method. When all variables were entered simultaneously in the model the accuracy of group classification was 40.82% (Borderline), 50% (Bipolar), and 58.14% (PTSD). The stepwise method was selected due to the accuracy and validity of the method. Additionally, a principle

components analysis was performed and yielded poor classification results. The failure of the principle components analysis further indicated the appropriateness of the step-wise procedure.

The analysis yielded the following mean T-scores for the Borderline PD category: PIM, 36; ARD-T, 67; MAN-A, 56; BOR, 73; the Bipolar Disorder category: PIM, 33; ARD-T, 64; MAN-A, 64; BOR, 71; and the PTSD category: PIM, 43; ARD-T, 76; MAN-A, 55; BOR, 65, as presented in Table 2. For the Borderline PD diagnosis, the full BOR scale had an average of 73 as a T-score. Among the three diagnostic categories, the BOR scale had the highest mean T-score for the Borderline personality disorder group. For the Bipolar Disorder category, the MAN-A, or mania-activity scale had a mean T-score of 64. The MAN-A scale T-score mean was the highest for the Bipolar Disorder group as compared to the other two diagnostic categories. The highest predictor variable mean for the PTSD group was ARD-T or anxiety-related trauma, at an average T-score of 76. The PTSD category reported the highest ARD-T scale t-score means of all three categories. Additionally, the PIM, or positive impression management scale was found to be lowest at 33 in the Bipolar disorder group, second highest in the Borderline PD group at 36, and highest in the PTSD group with a mean T-score of 43. See Table 2.

CHAPTER V

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Summary and Integration of Results

Four PAI scales were found to be significant predictors of diagnostic group assignment. The positive impression management scale (PIM), the anxiety related disorders-trauma subscale (ARD-T), the mania-activity subscale (MAN-A), and the borderline full scale (BOR) were found to be strong predictors of diagnostic group. Using these four scales, the PAI was able to predict the diagnosis given.

The borderline personality disorder group was characterized by a high average T-score for the main BOR scale. The BOR scale was the highest average score of the four predictive scales for this diagnostic group. The second highest average scale was the ARD-T scale, followed by the MAN-A and then the PIM mean T-scores. The BOR average scaled score was the only one that reached a clinically significant mean level among the four predictors. Although the ARD-T mean score almost reached clinically significant levels, the MAN-A and PIM did not, and were within normal limits. This suggests the importance of the report of trauma (ARD-T) for those with the diagnosis of BPD. However, for this study's sample, trauma appeared to be a secondary experience to the self-report/endorsement of BPD criteria.

The bipolar disorder group also included a clinically significant BOR average scale score as its most significant predictor. The mean BOR score was found to be slightly lower than the BPD group; however, the mean still remained at the clinically significant level. The ARD-T and MAN-A scale had moderately high average scaled scores. The MAN-A was significantly higher than the MAN-A average for the BPD group. The PIM average scaled score was a bit lower than the BPD group, but both were well within normal limits. A higher MAN-A mean score for the bipolar group as compared to the BPD group is consistent with the differences in clinical presentations. Bipolar disorder is characterized by significant changes in activity level to a degree and duration that is considerably greater than with BPD.

The PTSD group reported the ARD-T average scaled score to be the highest of the four predictive scales for this group, and the most clinically significant average of any mean score in all three groups. The BOR average scaled score was the next highest average and almost reached the clinically significant level. The MAN-A and PIM mean scaled scores were slightly elevated but within normal limits. The PIM average while remaining non-significant was much greater than the PIM for the other diagnostic groups. The nature of trauma and the subsequent reaction/response may make it more difficult to report poor coping and dysfunction, thus resulting in a slightly higher level of positive impression management on the PAI.

The first research question related to whether or not clients diagnosed with BPD, bipolar, and PTSD could be correctly classified into these categories based on their scores on the PAI scales and subscales. Using only four PAI scales, the discriminant analysis

was able to accurately predict group assignment. This finding verifies the usefulness of the PAI in the differential diagnosis of BPD, bipolar disorder, and PTSD.

The next research question asks whether the mania (MAN) scale or subscales would help to distinguish bipolar disorder from the other disorders. This study found the mania subscale of MAN-A (mania activity) was predictive of group assignment. As MAN-A was highest among the bipolar group, it differentiated between the activity level present during a manic or hypomanic episode, which is unique to bipolar disorder and is not found in BPD or PTSD. The failure of the other two mania subscales (MAN-G, grandiosity, and MAN-I, irritability), as well as the full MAN scale to be predictive suggests that many of the symptoms of mania overlap the presentation of the other two disorders under investigation except for the significant increase in activity, unique to bipolar disorder.

It was also hypothesized that the anxiety related disorders trauma (ARD-T) subscale might help to distinguish PTSD from the others. As the ARD-T subscale is the only scale directly assessing the experience of trauma and the client's continued experience of distress (Morey, 2003), it was the main measure under consideration when trying to differentiate PTSD from the other disorders. The ARD-T score was much higher in the PTSD group, and was particularly helpful in differentiating PTSD from the other disorders; however, it remained a salient elevation for the other disorders, especially the BPD group, although, not at the same level.

Finally, this study explored whether the borderline syndrome (BOR) scale or subscales would help to distinguish BPD from bipolar disorder and PTSD. Research

suggested that the BOR scale would not be predictive of group assignment, because as Morey (2003) admits, many of the individual elements of BPD are common to several other disorders. Consequently, elevations in the BOR scale can be related to other disorders with similar overlapping pathology, like bipolar disorder and PTSD. As Morey (2003) warned, BOR elevations were found to be associated with all three diagnostic categories at significant (BPD, 72.887t, and bipolar, 70.85t) or near significant (PTSD 64.77t) levels. As the average T-score for the BOR scale increased, the likelihood of a BPD diagnosis increased as well (Morey, 2003).

Another research question asked if the ARD-T and BOR scale and/or subscales, like BOR-A, BOR-N, BOR-S, in particular, would be predictive of all three groups. Prior research regarding the prevalence of trauma in BPD patients (Zanarini, 2000), as well as affect dysregulation, and self-harm behaviors found in trauma survivors (Stiver, 1991) and bipolar disorder (Akiskal, 1994; Akiskal et al., 1985; Blacker & Tsuang, 1992) seem to make this likely. Although it was expected that, as Morey (2003) suggested, the BOR subscale elevations would be most useful in helping to differentiate BPD from other similar disorders, the BOR subscales were not found to be predictive of group assignment. The main BOR scale did however demonstrate predictive ability at various levels of clinical significance.

Finally, would certain scales be relevant to group prediction for all three groups, but at different levels (T-scores)? This last research question highlights the overlap in clinical presentation for these three disorders, as well as the unique formulation and severity of the elements collectively found in these disorders. As expected the BOR scale

was predictive at different average levels for all three disorders. Additionally, The ARD-T scale was relevant for all three disorders. The MAN-A scale was more specifically useful in the prediction of the bipolar group, with larger disparities in the average t-scores for the bipolar group as compared to the other two groups. Also, the PIM or positive impression management scale, which was not assumed to play an important role in the prediction of group assignment, was in fact found to be predictive of group assignment especially between the PTSD group and the other two diagnostic groups.

Explanations for Findings

Justification for this study and the inclusion of the three selected disorder groups of BPD, bipolar disorders, and PTSD were based on the literature's support of the comorbidity and diagnostic overlap in presentation and criteria of these disorders (Gunderson, 2001). The resulting four predictive scales highlight the overlap in self report and presentations for these symptomatically related disorders. Each diagnostic group uses similar scales to define and predict its assignment.

The mean BOR scores for each of the three groups were the highest for the BPD and bipolar disorder groups and the second highest, with a near clinically significant mean, for the PTSD group. Following the discussion by Gunderson (2001), the clinical presentation of emotional lability, interpersonal anxiety, paranoia, relational anxiety, irritability, and mood/anxiety symptoms are common experiences for all three disorders. Clinical symptoms commonly experienced in BPD are notoriously challenging to tease apart from the presentations of other disorders like PTSD and Bipolar disorder (Widiger

& Rogers, 1989). Bipolar disorder frequently presents with unexpected mood shifts, irritability, depressive symptoms, as well as paranoia (most commonly during manic, hypomanic, or mixed episodes) (DSM-IV-TR; APA, 2000). The presentation of PTSD often includes depressive symptoms, interpersonal anxiety and paranoia, irritability, and emotional lability (especially around sensory triggers associated with the trauma) (DSM-IV-TR; APA, 2000). The literature highlights the prevalence of trauma in BPD patients (Zanarini, 2000), as well as affect dysregulation, and self-harm behaviors found in trauma survivors (Stiver, 1991) and bipolar disorder (Akiskal, 1994; Akiskal et al., 1985; Blacker & Tsuang, 1992).

The clinically significant mean T-score for the ARD-T scale of the PTSD group is consistent with the disorder. The near clinically significant mean scaled scores for the BPD and bipolar disorder group are also important. Trauma can be a cause of the disorder as in PTSD (some authors suggest BPD (Zanarini, 2000; Masterson & Rinsley, 1975)) as well as a byproduct or consequence of the disorder as is frequently the case in bipolar disorder and BPD (Gunderson, 2001). For individuals with bipolar disorder the course of the disorder is unpredictable. Bipolar disorder often takes longer to diagnose and is more difficult to treat effectively and establish a commitment to treatment (medication compliance especially). Individuals with bipolar disorder often have several severe episodes of risk taking behavior (sex, drugs, reckless driving or spending, suicide attempts, psychotic behavior, ruined relationships, etc.) before effective treatment and mood management is achieved. The consequences of the behavior during a manic, hypomanic, mixed, or depressive episode can create the necessary conditions for an

experience of trauma. Similarly, with BPD, the lack of boundaries, frequent relationship chaos, and impulsive behavior, and mood disruption can provide the fundamental conditions that lead to a lack of personal safety, and significant negative/traumatic consequences. Additionally, there is great emphasis placed on the role of an unsafe and unpredictable childhood environment creating the trauma that results in the disorder of BPD (Gunderson, 2001; Masterson & Rinsley, 1975). Alternatively, does the organic condition of BPD create the subsequent trauma experience? Clinicians might argue that both play a role (Gunderson, 2001).

Implications of Findings

Due to increases in utilization of services and increased severity of pathology (Benton et al., 2003; Gallagher et al., 2000; Kitzrow, 2003; O'Malley et al., 1990; Robbins et al., 1985), an increased focus on assessment and diagnosis in counseling centers in order to make clinical decisions (treatment planning) as well as decisions regarding resources (personnel and programming) is recommended (Benton et al., 2003; Widiger & Rogers, 1989). The current study offers additional support for the PAI's accuracy in diagnostic differentiation and usefulness as a screening tool in such settings. The PAI's demonstrated ability to significantly identify group assignment with minimal scales that are easily predicted and interpreted, make it a strong choice for use in counseling centers.

This study highlights the similarities between these diagnostic groups, and clarifies the level of criteria overlap present in client self-report. More importantly, this

study offers a description of how the PAI can be used to differentiate between these groups. Clinicians using the PAI to assist in assessment and diagnosis are still encouraged to interpret all PAI results as suggested by the instrument's creator. However, clinicians working with the PAI and considering any of the three diagnoses included in this study can be encouraged by this research to pay special attention to the main BOR scale, the MAN-A subscale, the ARD-T subscale, and the PIM validity scale.

Looking first at the BOR main scale, the clinician should determine the level of elevation. A BOR score of less than 70t should be viewed with an eye toward other diagnoses of similar presentation to BPD, since these results do not strongly indicate that BPD is the likely diagnosis. A BOR score above 70t should encourage the clinician to explore the possibility of a BPD diagnosis. Since elevations on the BOR scale were common to all three diagnostic groups, the following additional steps may aid in diagnostic differentiation.

Although the possibility of a dual diagnosis exists, looking next at the MAN-A subscale might help to distinguish between BPD and bipolar disorder. Significant elevations (even in the 60-70 range) on the MAN-A scale indicate the possibility of a bipolar disorder, even with an elevation on the BOR scale. BOR scores closer to 70t or below and elevations on MAN-A should prompt additional exploration of manic or hypomanic symptoms. Clients with BPD will have higher average BOR t-scores than those with bipolar disorder; also, clients with BPD will not likely have even near significant t-scores on MAN-A.

PAI profiles for clients with PTSD (no dual diagnosis) had clearly elevated t-scores on the trauma scale (ARD-T) without significant average elevations of the other predictor scales. An ARD-T elevation in isolation may point directly to a PTSD diagnosis without a BPD or bipolar diagnosis. The average ARD-T t-score, for PTSD profiles, was well above the clinically significant level (average of 76t). Any elevations on this scale call for a careful assessment for trauma. Mildly elevated BOR t-scores (60t-70t) may still be present with a PTSD profile. When assessing for PTSD even with elevations on BPD or bipolar scales, the clinician should note any elevations on the ARD-T scales and assess for trauma. Whether as a primary diagnosis or as a comorbid event, PTSD should be considered as part of the diagnostic presentation with a significant ARD-T elevation.

Finally, the PIM scale should be considered in the task of diagnostic differentiation. Although average PIM t-scores were well within normal limits for each group there were some subtle differences. PIM was found to be quite low for the BPD and bipolar groups. The PTSD group had a slightly higher average. These findings might encourage the clinician to better attend to response style. Client's who are reported primarily trauma may be struggling to admit to symptoms and decreases in functioning. Client's struggling with BPD symptoms and/or bipolar disorder are either more motivated to report symptoms in a help-seeking fashion (as in BPD) or because their symptoms have created significant impairment in functioning.

These findings and suggestions will hopefully lead to greater accuracy in the diagnosis of these three disorders, Additionally, a clearer more accurate diagnosis can

leave the clinician free to attend more closely to the rest of the profile for support in treatment planning, and decisions regarding available services. Finally, the task accurate assessment and diagnosis should be performed in the service of the client. Once a diagnosis is determined, the clinician and client can collaboratively approach the treatment plan in good faith and with informed consent.

Limitations

Limitations for this study include a small sample size for each diagnostic group. This study included only the PAI profiles for clients who had received the diagnosis of BPD, Bipolar disorder, and/or PTSD with a principle or provisional diagnostic specifier. Additionally, all dual-diagnosis cases (two or more of the three diagnoses being considered) were removed to more accurately discriminate between the three diagnoses. These very specific exclusion criteria, as well as the limited size of the overall population (single counseling center, two year period, clients who consented to participate in research, clients who took the PAI), led to a smaller than desired sample size. A replication of this study using multiple counseling center sites with several years of data might yield a larger sample size. Such a study could add support for the accuracy of these findings and the generalizability to other counseling centers.

The external validity of this study is limited. This study used the data from a single counseling center in the Southeast. Although counseling centers across the U.S. are reporting an increase in client pathology (Benton et al., 2003; Gallagher et al., 2000; Kitrow, 2003; O'Malley et al., 1990; Robbins et al., 1985;) it cannot be determined if

the outcomes shown in this study are unique to this site. Factors such as clinician diagnostic training, culture and philosophy of diagnosis (i.e. biopsychosocial vs. developmental approaches), and services offered may alter the probable identification of certain diagnoses as well as the need for diagnostic clarification and treatment planning. It is likely that a replication of this study at a demographically similar college counseling center that performs routine diagnostics would yield similar results. Further investigation using multiple counseling center sites across the U.S. would strengthen the generalizability of these results for other college counseling centers.

Additionally, the inclusion of provisional diagnoses may have increased the sample size while compromising the internal validity of the diagnostic groups. Greater clarity regarding the clinician's intentions for and interpretation of the provisional diagnostic specifier might highlight the appropriateness of including such provisional cases. Most provisional diagnoses in the sample became principle diagnoses at later diagnostic entries; However, several cases, especially those with shorter durations for treatment, retained a provisional diagnosis at or near termination. A replication of this study that includes only principle diagnoses would be helpful in clarifying the importance of this distinction, and the appropriateness of including provisional diagnoses in the sample.

Finally, diagnoses of clients in this sample were made, in part, based on the PAI profile results provided to the treating therapist. The extent to which the results of the PAI profiles influenced the diagnosis given is not known. Diagnoses, however, were not made solely based on the PAI results as clinicians at the sample site are trained to

approach assessment broadly, and to incorporate multiple sources of data. Also, it is unclear if clinicians had PAI data at the time the diagnosis was entered into the record. In fact, clinicians did not have access to scaled scores until about half way through the almost three year PAI research program. Additionally, certain findings of this study would not have been easily predicted as indicators of a disorder (the significance of PIM and MAN-A) and therefore they would be unlikely to have influenced a clinician's diagnosis.

Additionally, in the entire sample of 1222 PAI profiles completed by counseling center clients, the following frequencies of significant elevations were noted; for the BOR scale $326 \geq 70t$, $194 \geq 75t$, $98 \geq 80t$, for the MAN scale, $94 \geq 70t$, for the MAN-A subscale $171 \geq 67t$, $123 \geq 70t$, for the ADRT subscale $305 \geq 70t$, $222 \geq 75t$, $136 \geq 80t$. Even including the number of diagnosed profiles not consenting to research, the frequency of significant elevations would predict a larger sample size for each diagnostic group if clinicians were predominantly basing their diagnosis on PAI results. In fact one interpretation of the above frequency counts for significant elevations is that PAI profiles may be underutilized in the assessment process.

Finally, the limitations of nonlaboratory research include the ethics and practicality of withholding assessment information in order to achieve a more perfect study design. Assessment data could not ethically be withheld from the treating professional who along with the client might benefit from the availability of this information early in the treatment process. Because of this, alternative study designs would likely not have avoided this limitation.

Future Directions

Future directions for this area of study include a program of research that includes a comparison of various kinds of treatment settings. Would a discriminant analysis of the PAI profiles of these disorders vary among college counseling centers, inpatient settings, private practice, and VA hospitals? Do the functions and scales that helped to predict group assignment remain consistent among settings and patient populations? Such data would add support for the use of the PAI in multiple settings. As accurate diagnosis, treatment planning, and service delivery questions are important in all treatment settings, having an easy to understand, user-friendly, highly accurate, and cost effective instrument is an invaluable asset.

Additionally, replication of this study using other commonly dually diagnosed or comorbid disorders might aid in differential diagnosis beyond the three disorders studied here. A discriminant analysis for various anxiety disorders might help to highlight the differences in PAI profiles. For example an analysis of panic disorder vs. PTSD vs. generalized anxiety disorder could be very useful. Another example could be social phobia vs. avoidant PD.

Finally, as the focus of this study was to offer college counseling centers helpful diagnostic information about their unique population, greater efforts should be made to perform research in this area. As the demand for services continues to grow in college counseling centers across the U.S., we must give greater attention to research in this setting. Clinicians are looking for information to assist with service delivery, and

treatment decisions for their campus community. Limitations in resources (funding and staff) and the need to mitigate and assess risk, necessitate additional research on screening tools as well as psychopathology in campus populations. Any program of research that helps college counseling centers achieve these ends would be a welcome addition to this area of research.

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Appendix

Table 1
Standardized Coefficients and Correlations of the Significant PAI scales with the Two Discriminant Functions.

Predictor	Correlation coefficients with discriminant function		Standardized coefficients for discriminant function	
	Function 1	Function 2	Function 1	Function 2
PIM	.590*	.067	.54	.51
BOR	-.367	.371*	-.39	1.25
ARD-T	.468*	-.059	.91	-.36
MAN-A	-.376	-.553*	-.30	-.89
AGGa	-.168*	.035		
AGGAa	-.370*	.262		
AGGPa	-.305*	.274		
AGGVa	-.237*	.026		
ALCa	-.089	.196*		
ANTa	-.276*	.048		
ANTAa	-.185*	.079		
ANTEa	-.195*	-.079		
ANTSa	-.274*	.073		
ANXa	-.031	.041*		
ANXAa	.017	.092*		
ANXCa	-.042*	.019		
ANXPa	-.066*	-.005		
ARDa	.255*	-.060		
ARDOa	.035	-.143*		
ARDPa	-.114*	.113		
BORa	-.457*	.298		
BORa	-.255	.315*		
BORNa	-.153	.268*		
BORSa	-.281*	.273		
DEPa	-.117	.150*		
DEPAa	-.105	.206*		
DEPCa	-.190	.231*		
DEPPa	.002	-.076*		
DOMa	-.036	-.158*		
DRGa	-.357*	.215		
ICNa	.061	.240*		
INFa	-.038	.064*		
MANa	-.339*	-.106		

Table 1, continued.

MANa	-.329	-.346*
MANGa	-.074	-.211*
NIMa	-.084	.097*
NONa	-.208*	.075
PARa	-.132*	.052
PARHa	-.139*	.034
PARPa	-.078*	.070
PARRa	-.119*	.031
RXRa	.048*	-.019
SCZa	-.238*	.021
SCZPa	-.241*	.018
SCZSa	-.118	.163*
SCZTa	-.162*	-.116
SOMa	-.023	-.066*
SOMCa	-.012	-.022*
SOMHa	.070	-.127*
SOMSa	-.121*	-.006
STRa	-.121*	-.012
SUIa	-.138	.239*
WRMa	.149	-.191*

— *. Largest absolute correlation between each variable and any discriminant function Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions

Variables ordered by absolute size of correlation within function.

a. This variable not used in the analysis.

Table 2
Descriptive Statistics

Code		N	Minimum	Maximum	Mean	Std. Deviation
Borderline PD	PIM	49	15.0	59.0	36.122	9.1210
	ARD-T	49	41.0	99.0	66.653	16.5297
	MAN-A	49	32.0	85.0	55.653	12.2126
	BOR	49	46.0	95.0	72.878	11.6273
	Valid N (listwise)	49				
Bipolar Disorder	PIM	46	15.0	59.0	32.848	11.1155
	ARD-T	46	41.0	96.0	64.174	14.9284
	MAN-A	46	38.0	95.0	64.239	12.6160
	BOR	46	49.0	91.0	70.848	11.7151
	Valid N (listwise)	46				
PTSD	PIM	43	25.0	57.0	42.605	8.3670
	ARD-T	43	45.0	99.0	75.953	13.6886
	MAN-A	43	29.0	85.0	54.767	12.0155
	BOR	43	40.0	85.0	64.767	10.9193
	Valid N (listwise)	43				

VITA

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