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Exploring Gender Differences Between Bipolar Disorder and Borderline Personality Disorder in Responses on the Personality Assessment Inventory (PAI)

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CERTIFICATE OF APPROVAL

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This is to certify that the Clinical Research Project of

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Dedication

This research is dedicated to individuals who have been misdiagnosed with borderline personality disorder.

Acknowledgments

I first want to acknowledge my parents, without their love and continued support I would not be where I am today. Thank you to my mom for encouraging me (and lovingly forcing me) to apply to graduate school because she knew it was what I truly wanted. Thank you both for always making sure I could chase my dreams, no matter how difficult it was.

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Abstract

Bipolar disorder and borderline personality disorder are two diagnoses that are often difficult to differentiate. Current literature supports this challenge and reveals a high rate of misdiagnosis between the two, as well as a high prevalence of borderline personality disorder diagnoses in women. Diagnostic accuracy remains a vital skill for clinicians to effectively address the needs of clients, and diagnostic assessment tools are often used to aid in this endeavor. The focus in this study was to explore gender discrepancies in responses across the main features of borderline personality disorder (i.e., affective instability, identity problems, negative relationships, and self-harm) and the main features of bipolar disorder (i.e., activity level, grandiosity, and irritability), each corresponding with the specific Personality Assessment Inventory Borderline and Mania subscales. This study used archival data from 102 outpatient individuals who completed the PAI at intake. Results showed men scored significantly higher on the Mania Grandiosity subscale and scored within the high elevation range of the Mania scale at a rate of 3.70 times that of women. No statistical differences were found in the remaining subscale mean scores or in the elevations in the three Mania subscales across gender. Further, no significant results were found in comparing the mean scores or elevations of the Borderline scale or its four subscales. The results of the current study may support the use of the PAI in differentiating between bipolar disorder and borderline personality disorder, as well as objectively assessing for borderline personality disorder criteria after controlling for gender bias.

Chapter One: Introduction

The ability to accurately and effectively diagnose patients with the appropriate psychiatric disorder is an essential skill for clinicians in the field of psychology (American Psychiatric Association [APA], 2013). Diagnoses are used in guiding treatment plans, developing medication recommendations, obtaining insurance or other third-party reimbursement for those with coverage, and understanding the patient's presenting problem and symptoms. The diagnoses given to patients can have a great and long-lasting impact on their lives, making accuracy in diagnosing vital.

The use of test measures, particularly objective measures, can provide additional information about a patient's symptoms and behaviors and guide clinicians in choosing a fitting diagnosis. A test of personality and psychopathology, such as Morey's (1991) Personality Assessment Inventory (PAI), is often useful in assisting with the diagnostic decision and differential diagnosis. The focus in this study was to explore gender discrepancies in responses across the four main features of borderline personality disorder (BPD; i.e., affective instability, identity problems, negative relationships, and self-harm) and the three main features of bipolar disorder (BD; i.e., activity level, grandiosity, and irritability), each corresponding with the specific PAI Borderline Features and Mania subscales.

Chapter Two: Literature Review

Diagnostic Overlap Between Bipolar Disorder and Borderline Personality Disorder

According to the most recent version of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM–5*), BD criteria include "at least one manic episode that cannot be better explained by a schizophrenia spectrum or psychotic disorder" (APA, 2013, p. 126). To meet criteria for a manic episode, an individual must display "a distinct period of abnormally and persistently elevated, expansive, or irritable mood and abnormally and persistently increased goal-directed activity or energy" daily for at least 1 week (APA, 2013, p. 124). Symptoms present during this period can include grandiosity, reduced sleep, increased talking, racing thoughts, distractibility, "increase in goal-directed activity or psychomotor agitation," or "excessive involvement in activities that have a high potential for painful consequences" (APA, 2013, p. 124). This period of symptoms must be severe enough to cause social and occupational impairment, hospitalization, or psychotic features, and not be caused by any substance use.

BD is also often characterized by hypomanic and major depressive episodes. Hypomanic episodes refer to "an abnormality of mood resembling mania but of lesser intensity" (APA, 2013, p. 823), meaning they include the same symptoms of a manic episode, but at a lesser degree. According to the *DSM–5* (APA, 2013), a major depressive episode includes a "depressed mood or loss of interest or pleasure" (p. 125) for a 2-week period. Criteria for a diagnosis of a major depressive episode, as defined by the *DSM–5*, include a depressed mood for most of the day, a decrease in interest or pleasure in activities, significant weight change, change in appetite, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue, difficulty with concentration or

indecisiveness, and recurrent thoughts of death or suicide (APA, 2013). The *DSM–5* indicates the 12-month prevalence of bipolar I disorder is 0.6% and the prevalence of bipolar II disorder is 0.3% in the U.S. population, with a slightly higher prevalence in men than women (APA, 2013).

BPD is defined within the *DSM–5* (APA, 2013) as "a pervasive pattern of instability of interpersonal relationships, self-image, and affects, and marked impulsivity" (p. 663) that begins early in adulthood. Symptoms of BPD include "frantic efforts to avoid real or imagined abandonment," unstable patterns of relationships that include "alternating between extremes of idealization and devaluation," unstable self-image, self-damaging impulsivity, recurrent self-harming or suicidal behavior, "affective instability due to a marked reactivity of mood," emptiness, intense anger, and "transient, stress-related paranoid ideation or severe dissociative symptoms" (APA, 2013, p. 663). The *DSM–5* indicates the prevalence of BPD to be between 1.6% and 5.9% in the general U.S. population; it is predominantly diagnosed in women at a rate of approximately three times that of men (APA, 2013, pp. 665–666).

According to the *DSM–5* differential diagnosis guide, BPD can often co-occur with BD (APA, 2013). Though there are several distinct differences between BD and BPD, there also appears to be some overlap between the two diagnoses in terms of criteria and symptoms, such as an overlap in the symptoms of mood lability and impulsivity (APA, 2013). As a result, a BD episode can at times mimic a BPD presentation. The guideline within the *DSM–5* for distinguishing between the two disorders is that for BD there must be a distinct episode present, which is evident by an increase in symptoms compared to a baseline (APA, 2013). The two disorders also

appear to overlap in symptoms of a major depressive episode such as recurrent thoughts of death and feelings of worthlessness; these symptoms may be identified as recurrent suicidal behavior and feelings of emptiness present in BPD (APA, 2013).

The difficulty in differentiating between BD and BPD was established by Gunderson (2001), who noted overlap in phenomenology, such as impulsivity and mood lability, was commonly seen. Gunderson asserted, "BPD is considered one of the bipolar disorders' most indistinct boundaries" (p. 41) and suggested the two disorders should not be considered to be independent of one another. Ruggero et al. (2010) conducted a study to evaluate whether "borderline criteria place patients at risk for being misdiagnosed with bipolar disorder" (p. 406), which supports this difficulty in differential diagnosis. The results of this study showed individuals with BPD were significantly more likely to be misdiagnosed with BD, "with almost 40% of them reporting a previous misdiagnosis compared to only 10% of patients with other disorders" (Ruggero et al., 2010, p. 406). Ruggero et al. attributed these rates of misdiagnosis between the disorders to the overlap of "affective instability, anger, impulsivity, recurrent suicidal behavior, and interpersonal instability" (p. 406).

More recently, Fornaro et al. (2016) conducted a systematic review of BD and BPD based on the *DSM–5* and found "comorbid BPD among people with BD and BD among people with BPD is common" (p. 114). Specifically, "The prevalence of BPD among 5273 people with BD was 21.6%" and "18.5% of people with BPD have a comorbid BD diagnosis" (Fornaro et al., 2016, p. 114). The authors reported approximately one in five people in their study experienced comorbidity between the two disorders. Eich et al. (2014) found similar rates of comorbidity, proposing a 50%

diagnostic overlap among BPD, BD, and ADHD, as "at least half of the members of each disorder met criteria for at least one of the other disorders" (p. 102). In an additional study, Zimmerman and Morgan (2013) examined all personality disorders in patients with BD and found a significantly higher rate of BPD in BP patients in four out of 10 studies conducted, with an overall finding of a 16% rate of frequency of BPD in patients with BD. Zimmerman and Morgan also noted the lack of available research comparing individuals diagnosed with BD and BPD, and stated the available published studies are limited in many ways, such as small sample sizes and a limited number of variables tested.

Fornaro et al. (2016) appeared to find fault with the *DSM*'s ability to direct clinicians to differentiate between the two disorders. Fornaro et al. stated:

> The DSM fails to provide any rule soliciting clinicians or researchers to explore the possibility of a comorbid personality disorder in BD, nor conversely to include or exclude BD as an explanation for the emotional instability (and often overt mood swings) seen in BPD patients. (Henry et al., 2012, as cited in Fornaro et al., 2016, p. 114)

The authors concluded the high rates of comorbidity may influence a clinician's decision-making process with regard to distinguishing between the two diagnoses as well as "influencing the therapeutic choices and outcomes" (Fornaro et al., 2016, p. 115).

Much research has been conducted comparing the affective domains between BD and BPD, such as emotional dysregulation (Bayes et al., 2016), instability and reactivity (Mneimne et al., 2017), and affective lability (Reich et al., 2014). In terms of emotional dysregulation, Bayes et al. (2016) found persons with both BPD and BD diagnoses to

display traits of emotional dysregulation such as failure in the domains of emotional awareness, understanding, and acceptance; the ability to control impulsive behaviors; and the ability to adapt emotionally "in order to meet individual goals and situational demands" (p. 104). The authors specified differences in the quality of affect shifts between the two diagnoses, but indicated the shift is often present in both and at times difficult to differentiate (Bayes et al., 2016). Mneimne et al. (2017) emphasized the overlap in symptoms of instability and reactivity between BD and BPD. Because of this overlap and the comorbidity between the diagnoses, researchers have found it difficult to distinguish between the diagnoses in terms of these characteristics. Reich et al. (2014) identified affective lability as a feature in both BD and BPD, although they were able to identify a higher degree and frequency of affective shifts in individuals with BPD compared to those with BD, particularly with shifts into depression. However, they found the intensity of differences between the two diagnoses to be not significant, creating further difficulty in distinguishing between the two. Their research comparing the affective domains of BD and BPD revealed overlap in several areas. However, though the authors attempted to create distinctions between these areas of overlap, additional research is needed to truly distinguish more precisely between these domains (Reich et al., 2014).

Berrocal et al. (2008) attempted to explore the differences and similarities between mood phenomenology in BD and BPD. The researchers found no significant differences in depressive symptoms between BD and BPD patients, and found small differences between patients in terms of their Mood Spectrum Self-Report (MOODS-SR) scores, which reflect lifetime mood phenomenology (Berrocal et al., 2008). Results of

their study showed BPD patients, even those not meeting mood disorder criteria, “present subthreshold fluctuations of mood, energy levels and cognition both on the depressive and the manic/hypomanic side of the mood spectrum continuum” (Berrocal et al., 2008, p. 305), supporting the presence of similarity in mood phenomenology between BPD and BD.

Some researchers have even gone so far as to suggest BD and BPD should lie together on a spectrum (Perugi et al., 2003; Smith et al., 2004). Smith et al. (2004) identified affective instability as a central characteristic for both diagnoses, which they felt may often lead to misdiagnosing the two disorders. Specifically, they stated BD patients with hypomania periods consisting of dysphoria and irritability are often misdiagnosed with BPD, and BPD patients often display “restlessness, tensions, and irritability punctuated by explosive anger” (Smith et al., 2004, p. 135), which can be confused for BD. The authors concluded:

> These vivid descriptions of disturbed affective regulation in borderline patients and the similarity of these descriptions to less typical presentations of bipolar disorder support the argument that many of the observed behaviors of borderline patients, such as impulsive self-harm and explosive outbursts of anger, stem from a fundamental pathology of mood regulation. (Smith et al., 2004, p. 135)

Smith et al. also highlighted the overlap in effective drugs used to treat both BD and BPD, which is likely related to the overlap in the symptomology being treated for both diagnoses.

Perugi et al. (2003) supported the concept of mood lability, as well as interpersonal sensitivity, as having overlap between BD and BPD, as these symptoms

"underlie the complex pattern of anxiety, mood and impulsive disorders" (p. 87) that are present in BD and BPD patients. Both Smith et al. (2004) and Perugi et al. (2003) suggested that because of the similarities between the two disorders, it may be beneficial diagnostically and conceptually to understand BD and BPD as existing on a continuum. Perugi et al. (2003) asserted this way of thinking can be beneficial for clients with these diagnoses, explaining that "conceptualizing these constructs as being related will make patients in this realm more accessible to pharmacological and psychological interventions geared to their common temperamental attributes" (p. 87). It should be noted that the works of both Smith et al. (2004) and Perugi et al. (2003) were published prior to the release of the *DSM–5* in 2013.

More recently, Ghaemi and Barroilhet (2015) conducted a study in which they focused on differentiating between the diagnoses of BD and BPD based on the overlap in symptomology. Ghaemi and Barroilhet confirmed the overlap between the two disorders, indicating most individuals with BD, particularly those with severe symptoms, can often be described using the *DSM–5* definition for BPD. Results of their study further highlighted the ease of a person with BPD meeting BD diagnostic criteria based on the "standard, long-proven, well-accepted characteristics of the symptoms or consequences of bipolar illness" (Ghaemi & Barroilhet, 2015, p. 281), as the *DSM* qualifies BPD as requiring five of the specified criteria to be met. Criteria for BPD that can be met by an individual with BD include "'affective instability', 'unstable interpersonal relationships', anger, impulsivity (especially around sex and spending) and suicidal behavior" (Ghaemi & Barroilhet, 2015, p. 281). Ghaemi and Barroilhet suggested these five criteria can be easily met by someone with BD "based on the symptoms or consequences of repeated

manic/hypomanic and depressive episodes" as well as the "mood temperaments of cyclothymia or hyperthymia" (Ghaemi & Barroilhet, 2015, p. 281). Ghaemi and Barroilhet suggested the two disorders can easily become confused, particularly with severe symptoms of BD. Further, in an earlier study conducted by Ghaemi et al. (2014), no distinction was found between the symptoms of mood lability and impulsivity between persons diagnosed with BD and BPD. However, Ghaemi et al. suggested several clear distinctions between the two disorders, such as genetics and treatment response, asserting there are clear differences between the two diagnoses based on the specific differences in the identified features. Specifically, the authors identified BD to be almost exclusively caused by genetic factors and BPD to be primarily environmental in terms of causation. Compared with BD, BPD involves double the risk of parasuicidal self-harm behaviors as well as double the rate of sexual abuse histories. In terms of treatment response, the authors concluded that treatment of BD is most effective with medication as the central form of treatment, as psychotherapy alone is not sufficient, yet the opposite is true for BPD (Ghaemi et al., 2014). Though Ghaemi et al. described the differences between BD and BPD in detail, they asserted "symptom features do not differentiate between these conditions as clearly as the above genetic, course, and treatment validators" (p. 104), highlighting the diagnostic overlap and differentiation complications previously discussed.

Gender Differences in Diagnosing Borderline Personality Disorder

According to the *DSM–5*, women are diagnosed with BPD approximately three times more often than are men (APA, 2013). Some research indicates the higher rate of BPD diagnoses in women can be explained by women seeking treatment at higher rates

than men, which may result in women with BPD seeking treatment at higher rates than men with BPD, rather than BPD being truly more prevalent in women (Busch et al., 2016; Skodol & Bender, 2003). Skodol and Bender (2003) reviewed five empirical studies that focused on gender differences between personality disorders, and only one study found that the rate of BPD differed by gender, finding it to actually occur more often in men. Skodol and Bender asserted that biased sampling, which refers to "the possibility that the perception of a higher rate of a disorder among women in a clinical setting may simply reflect a higher rate of women receiving treatment in that setting," may be the cause for this large disproportion in BPD diagnoses across gender, as "women are more likely than men to seek help for psychological problems" (Skodol & Bender, 2003, p. 351). Research further supports that potentially the only way to obtain accurate rates of BPD diagnoses between men and women is to sample the general population, rather than a clinical population as much of the current research uses, which is likely not generalizable (Busch et al., 2016; Skodol & Bender, 2003).

However, other research shows women are more likely to be diagnosed with BPD than men even with the same presenting symptoms, reflecting a gender bias in the process of clinicians diagnosing. Morey and Benson (2016) suggested "Borderline PD has continued to be misdiagnosed as a function of certain patient demographic and symptomatic variables" (p. 137) and further identified gender to be a predictor of overdiagnosis of BPD in women and underdiagnosis of BPD in men. Even more concerning were the findings that the correlation between a BPD diagnosis and gender was greater than that of a BPD diagnosis and the presence of certain BPD criteria from the *DSM-IV*, as they found clinicians "tend to assign the Borderline PD diagnosis to

women who (by their own observations) fail to meet *DSM* criteria, and tend not to assign the diagnosis to men who (by their own observations) do meet such criteria" (Morey & Benson, 2016, p. 141). This research was a recreation of their previous research on the same topic in 1989 using the *DSM-III*, and they found rates of misdiagnosis have become significantly more pronounced in the 27 years between studies. The researchers went on to suggest that the *DSM*'s note regarding higher prevalence rates of BPD in women may be an influencing factor in a clinician's diagnostic decision making and continued overdiagnosis of this disorder in women (Morey & Benson, 2016).

Another study showed men perceived to be gay or bisexual, and perceived as having more feminine characteristics, are more likely to be diagnosed with BPD than men with the same criteria who are perceived to be heterosexual and display more masculine characteristics (Eubanks-Carter & Goldfried, 2006). Specifically, the researchers found that across men with the same criteria, 61% of men perceived to be gay, bisexual, or feminine were diagnosed with BPD and only 36% of men perceived to be heterosexual were diagnosed with BPD, whereas the perception of female clients' sexual orientation who met the same criteria was not a factor that influenced the therapists' diagnoses of BPD (Eubanks-Carter & Goldfried, 2006). This research supports that the gender bias in BPD diagnoses is specific to that of feminine characteristics, even when found in men.

Additional researchers have attempted to explain this gender bias by asserting that women are more likely to be pathologized for their anger, whereas men's anger is seen as normal. In 1996, Sprock conducted a study of the effect of gender on the perceived abnormality of criteria for various personality disorders. Results showed intense and

inappropriate anger was rated to be more abnormal in women participants than men, and that men in particular rated women more abnormal than men with the same criteria (Sprock, 1996). Based on these findings, Sprock asserted that "behaviors consistent with one's gender role may be seen as less pathological, at least for men," and because of this discrepancy, men may not be diagnosed with BPD even when they meet criteria, "resulting in underdiagnosis of the disorder in men" (p. 316). More recently, Tadić et al. (2009) found gender discrepancies between the BPD diagnostic criteria, asserting "men more often displayed 'intensive anger' (74 vs. 49%), whereas women more frequently showed 'affective instability' (94 vs. 82%)" (p. 257). When considering Sprock's (1996) findings that intense anger is more pathologized for women and less for men, the Tadić et al. (2009) findings may aid in understanding why men are less frequently diagnosed with BPD if their higher rates of intensive anger, which is an aspect of BPD criteria, are dismissed as normal. This idea that women are more likely to meet BPD criteria had been earlier hypothesized by Skodol and Bender (2003) who suggested "labeling of certain behaviors as pathological only when they occur in women may contribute to an increased rate of BPD in women" (p. 352). Research indicates this over pathologizing anger in women and under-pathologizing anger in men may have something to do with how men and women are socialized in society (Skodol & Bender, 2003).

The Personality Assessment Inventory (PAI)

The PAI is known to be frequently used with forensic populations. However, studies have also shown the PAI to be among the most frequently used instruments for objective personality testing in both practice and clinical training (Piotrowski, 2000). In a later study, Piotrowski (2017) suggested the PAI received a "modest" welcome when first

released in 1991, but the use of the PAI by mental health practitioners has since increased. Further, Piotrowski's findings support the utility of the PAI for diagnostic use, as "The current findings confirm that the PAI is well-regarded and embraced in contemporary clinical psychology, highlighting this test's central role in diagnostic, mental health evaluation" (p. 85).

The PAI has been described by its creator, Leslie Morey (2003), as "a self-administered, objective test of personality and psychopathology designed to provide information on critical client variables in professional settings" (p. 1). The PAI is a 344-item test consisting of four scale sets, including validity scales, clinical scales, treatment scales, and interpersonal scales (Morey, 2003). The validity scales include scales of Inconsistency (ICN), Infrequency (INF), Negative Impression (NIM), and Positive Impression (PIM), which are used in detecting distortions in responses in order to determine the validity of a particular profile. There are 11 clinical scales, including Somatic Complaints (SOM), Anxiety (ANX), Anxiety-Related Disorders (ARD), Depression (DEP), Mania (MAN), Paranoia (PAR), Schizophrenia (SCZ), Borderline Features (BOR), Antisocial Features (ANT), Alcohol Problems (ALC), and Drug Problems (DRG). These clinical scales are used to "measure the major facets of a particular clinical construct" (Morey, 2003, p. 33) and each contains three subscales specific to that feature, with the exception of BOR, which contains four subscales, and ALC and DRG, which do not contain any subscales. The subscales are used "as an aid in isolating the core elements of the different clinical constructs that the test measures" (Morey, 2003, p. 33). The treatment scales, consisting of Aggression (AGG), Suicidal Ideation (SUI), Stress (STR), Nonsupport (NON), and Treatment Rejection (RXR),

measure “fundamental affects and behaviors” (p. 33) that are not specific to one *DSM* diagnostic category, but rather are involved in a number of categories (Morey, 2003). Finally, the two interpersonal scales, Dominance (DOM) and Warmth (WRM), are included based on the belief that “an individual’s interpersonal style constitutes a significant portion of his or her personality” (Morey, 2003, p. 144).

Development of the PAI was a complex process that used expert diagnosticians and placed particular attention on construct validity, predominantly discriminant and content validity, to ensure the PAI measures what it was intended to measure. In an attempt to maximize discriminant validity, or how specific a test construct measure is to the intended construct, each item was written with great care and item overlap was avoided, instead creating distinct items with characteristics specific to their construct, even across constructs with similar behaviors or symptoms. Content validity, or how well “scales provide a balanced sampling of the most important elements of the constructs being measured” (Morey, 2007, p. 101), was attended to by creating subscales that cover the “most important theoretical facets” (Morey, 2007, p. 101), as well as the differences in intensity or severity of a particular characteristic, including both breadth and depth of the construct (Morey, 2007). The PAI also includes four validity scales within the test “designed to assess potential limitations to the accuracy of the information provided by the respondent” (Morey, 2007, p. 106), such as carelessness, random responding, or the tendency to portray oneself in an overly positive or negative manner.

The selection and development of items and scales within the PAI was a two-stage process. The first stage was used to evaluate the concepts through item ratings completed by a research team, revisions of potentially biased items determined by a

diverse panel of judges, and a sorting of items into scales by a team of experts. This stage resulted in an 89.8% overall agreement across all preliminary items, indicating the "content of PAI items can be reliably related to the relevant constructs by leading experts in the field" (Morey, 2007, p. 121). The second stage, empirical evaluation, involved administering the first version of the PAI (alpha) to "normal" individuals to find and remove items that were problematic in terms of "examining item distributions, item social desirability, [and] possible gender effects" (Morey, 2007, p. 123). These considerations were used in creating the second version of the PAI (beta), which was administered to "both patients and normal individuals" in order to "examine the internal consistency, specificity, and internal validity of items" and assess for "possible biasing influences due to age, gender, or race/ethnicity" (Morey, 2007, p. 123). Following adjustments from each of these steps, the scale obtained alpha coefficients ranging from .80–.93 for the clinical, treatment, and interpersonal scales, suggesting the items within the scales relate to a specific content domain, and reasonable internal consistency with a mean alpha value of .76 for subscales. The reliability of the PAI was then assessed, finding the average internal consistency of both scales and subscales to range from .70–.80, and clinical scale test–retest reliability ranging from .75–.81 (Morey, 2007). Subsequent validation studies have been conducted supporting the validity of this instrument.

For the purpose of the current study, the Mania (MAN) and Borderline Features (BOR) scales are of particular importance. The MAN clinical scale was created to evaluate "prototypical signs of a manic episode;" because of the wide variety of symptoms included in a manic episode, this scale "focuses on affective, cognitive, and

behavioral symptoms of mania and hypomania" (Morey, 2003, p. 90). The MAN scale was used specifically in this study as an indicator of BD, as the primary characteristic of BD and necessary symptom in order to meet criteria for BD is a manic or hypomanic episode. According to the *DSM–5* (APA, 2013), additional symptoms of BD, such as depression, are not present in all individuals with BD and are not necessary for a diagnosis of BD to be made. The MAN scale consists of three subscales: Activity Level (MAN-A), Grandiosity (MAN-G), and Irritability (MAN-I). The MAN-A subscale "focuses on overinvolvement in a wide variety of activities in a somewhat disorganized manner and the experience of accelerated thought processes and behavior" (Morey, 2003, p. 92), as individuals experiencing a manic episode have a heightened level of ideational and behavioral activity. The MAN-G subscale "focuses on inflated self-esteem, expansiveness, and the belief that one has special and unique skills or talents" (Morey, 2003, p. 92), as manic episodes characteristically involve over evaluating one's self-image. Finally, the MAN-I subscale "focuses on the presence of strained relationships due to the respondent's frustration with the inability or unwillingness of others to keep up with their plans, demands, and possibly unrealistic ideas" (Morey, 2003, p. 92), as manic episodes are typically characterized by mood volatility.

Interpretation of elevated scores on the content scales depends on the magnitude of the elevations. On the MAN clinical scale, t-scores ranging from 65–75 are associated with individuals who have "increasing restlessness, impulsivity and high energy levels" and are often seen by others as "unsympathetic, moody, and hot-headed" (Morey, 2003, p. 91). Markedly elevated MAN t-scores of above 75 are typically indicative of mania, hypomania, or cyclothymia, characterized by impulsivity, low ability to delay

gratification, lack of judgment, flight of ideas, and grandiosity, often leading to low levels of empathy and interpersonal difficulties. Individuals with markedly elevated MAN t-scores often "take on more they can handle" (Morey, 2003, p. 91) and become angry when a reduction in activities is suggested.

The development of the MAN scale and accompanying subscales was guided by a comprehensive review of literature describing the main features of mania conducted by Goodwin and Jamison in 1990, who identified four categories in which manic symptoms exist, "mood, cognitive, activity and behavior, and psychotic symptoms" (as cited by Morey, 2007, p. 110), and then found the symptoms present within each of the categories and calculated the weight of each symptom. The most commonly observed symptoms include irritability, depression, and euphoria in the mood category; grandiosity, racing thoughts, and poor concentration in the cognitive symptoms; and hyperactivity, pressured speech, and decreased sleep in behavior symptoms. These categories, and the symptoms within categories, were used in creating the three MAN subscales and items within each subscale. The most common psychotic symptoms included delusions and hallucinations; however, these symptoms were much less frequently observed and weighted less in the final MAN scale (Morey, 2007).

The BOR clinical scale "focuses on attributes indicative of a borderline level of personality functioning, including unstable and fluctuating interpersonal relations, impulsivity, affective lability and instability, and uncontrolled anger" (Morey, 2003, p. 3). Though the elements assessed in this scale are elements of BPD, Morey (2003) acknowledged that "individually they are also common to numerous other disorders" (p. 107). Because of the complex nature of BPD, the BOR clinical scale is made up of four

subscales: Affective Instability (BOR-A), Identity Problems (BOR-I), Negative Relationships (BOR-N), and Self-Harm (BOR-S; Morey, 2003). The BOR-A subscale "focuses on emotional responsiveness, rapid mood changes, and poor emotional control" (Morey, 2003, p. 109), reflecting the frequent fluctuations in emotions seen in BPD. The BOR-I subscale "focuses on uncertainty about major life issues and feelings of emptiness, lack of fulfillment, and an absence of purpose" (Morey, 2003, p. 109), encompassing the issues of identity that are central to BPD. The BOR-N subscale "focuses on a history of ambivalent, intense relationships in which one has felt exploited and betrayed," as individuals with BPD tend to engage in "very intense and chaotic" relationships (Morey, 2003, pp. 109 & 111). Last, the BOR-S subscale "focuses on impulsivity in areas that have high potential for negative consequences" (Morey, 2003, p. 109), as individuals with BPD display impulsive tendencies without consideration of the consequences.

On the BOR clinical scale, t-scores ranging from 60–70 are associated with individuals who are "seen as moody, sensitive, and having some uncertainty about life goals" (Morey, 2003, p. 108). Respondents with elevated BOR t-scores of above 70 tend to be impulsive, emotionally labile, and feel others do not understand them. They also tend to have difficulty in sustaining close relationships, as they "tend to be angry and suspicious while at the same time being anxious and needy, making them ambivalent about interactions with others" (Morey, 2003, p. 109). As discussed previously, elements of the BOR are common in other disorders as well; therefore, an examination of the individual BOR subscales is vital in determining whether a diagnosis of BPD is warranted with these elevations. However, markedly elevated BOR t-scores of above 90

are typically indicative of a "personality functioning within the borderline range" (Morey, 2003, p. 109). Elevations in this range are associated with a state of crisis, difficulties with relationships, hostility and anger, feelings of betrayal, depression or anxiety, and impulsive behaviors that may be self-destructive (Morey, 2003).

The development of the BOR scale and subscales was guided by a previous study conducted by Morey in 1988 in which the characteristics of BPD were examined and five factors associated were found to be "deficits in self-other individuation, interpersonal distrust, self-destructiveness, poor control over affect, and behavioral inconsistency" (as cited by Morey, 2007, p. 112), which was similar to two prior identified studies. Because of the complex nature of BPD, the BOR scale is the only scale within the PAI to consist of four subscales, which reflect the common factors described above.

Several researchers have examined the accuracy of the PAI in assessing for BPD and have found the PAI BOR clinical scale to be useful in assessing BPD (Stein et al., 2007; Trull, 1995). In a similar study, Bell-Pringle et al. (1997) went as far as to suggest the PAI BOR scale to be more useful than the Minnesota Multiphasic Personality Inventory–2 (MMPI–2) profile configurations in evaluating BPD in a patient population.

A study completed by Mullen-Magbalon (2008) as her doctoral dissertation used discriminant analysis in order to examine whether the PAI can "predict group assignment or diagnosis" (p. 27) and ultimately differentiate between BPD, BD, and posttraumatic stress disorder (PTSD). Mullen-Magbalon found that "overall the predictors differentiated among the three diagnostic groups" (p. 27), suggesting the PAI to be useful in differentiating between the three disorders. However, the author further discussed that among the three mania subscales, only MAN-A (mania activity) was found to be

predictive of group assignment and useful in differentiating between BP, BPD, and PTSD, as it measures "the activity level present during a manic or hypomanic episode," which is "unique to bipolar disorder and is not found in BPD or PTSD" (Mullen-Magbalon, 2008, p. 32). The other two mania subscales, grandiosity and irritability, and the MAN scale overall were not found to be predictive, suggesting "many of the symptoms of mania overlap with the presentation of the other two disorders" (Mullen-Magbalon, 2008, p. 32). On the other hand, the BOR scale was not found to be predictive of group assignment, as "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" (Mullen-Magbalon, 2008, p. 33). The author suggested "looking next at the MAN-A subscale might help to distinguish between BPD and bipolar disorder" (Mullen-Magbalon, 2008, p. 37).

Though no one item on the PAI is used across multiple scales, an intentional choice made in an attempt to maximize discriminant validity, there are items with clear similarities between the MAN and BOR scales. Morey (2007) acknowledged these similarities, recognizing the similarities in symptoms and behaviors between constructs and diagnoses as explanation for these similarities. Morey attempted to address these overlaps by forming items that measure similar symptoms or behaviors in a way that is more specific to the particular construct they represent. However, in looking at specific items, the similarities appear to be great and the distinctions appear to be minor. Examples of some items that appear similar include MAN-A item 287 "I hardly ever buy things on impulse" and BOR-S item 343 "I'm careful about how I spend my money" (Morey, 1991). Another example is between MAN-I item 276 "At times I am very touchy

and easily annoyed" and BOR-A item 54 "My mood gets quite intense" (Morey, 1991). It is possible that the specificity of similar, but distinct, items is not noticeable enough to the client during testing to distinguish between the two constructs. Preliminary research was conducted to examine the discriminant and convergent validity between BD and BPD by using archival PAI data. This research revealed a high correlation of affective-related pairs between the MAN and BOR items (Wang & Green, 2017).

Rationale for Present Study

Justification for the specific focus of BD and BPD was based on the presenting data illuminating the diagnostic overlap in criteria and presentation, as well as rates of comorbidity between the two disorders. In evaluating the *DSM–5* alone, some overlap is present between BD and BPD in terms of criteria and symptoms (APA, 2013). Specifically, an overlap exists in the symptoms of mood lability and impulsivity, and the differential diagnosis suggests a possible overlap in terms of some depressive symptoms. Many of the studies cited above support the comorbidity between the two disorders as well as the difficulty in differential diagnosis. Determining a diagnosis can at times be a difficult task, as many considerations must be made to guide the determination. This task of diagnosing an individual becomes even more difficult when differences between diagnoses or symptoms are unclear. Using objective assessment measures to provide additional information is often helpful in guiding diagnostic decisions. Additionally, both BP and BPD have been found to have high mortality rates due to suicide compared to the general population. Research shows "23–26% of people with bipolar disorder attempt suicide, with higher rates in clinical samples" (Schaffer et al., 2015, p. 785), and for BPD patients, "completed suicide occurs in 8%–10% of individuals with this disorder, a rate

that is approximately 50 times higher than in the general population" (APA, 2001, p. 42). These high mortality rates highlight the importance of accurate diagnosis of both BD and BPD in order to ensure proper treatment and awareness of high risk.

A discrepancy is also apparent in the diagnostic prevalence of BD and BPD between men and women. The *DSM–5* reports a slightly higher prevalence of men diagnosed with BD than women, and approximately three times more women diagnosed with BPD than men (APA, 2013). Some researchers believe women are more likely to be diagnosed with BPD than are men, even with similar presenting symptoms, suggesting a gender bias in diagnosing this disorder. In a study conducted by Becker and Lamb (1994), clinicians were asked to rate how likely they believed a client to have each of fourteen identified disorders after reading a vignette of an individual who met criteria for both BPD and PTSD equally, the only differing factor being gender. Results showed women were more likely to be diagnosed with BPD than men, suggesting "female cases were seen as more 'borderline' than male cases, which lends credence to the notion that sex bias is responsible for the much greater frequency with which this diagnosis is assigned to women than to men" (Becker & Lamb, 1994, p. 58). Strengthening the diagnostic tools clinicians use may be a vital step in avoiding gender bias and improving differential diagnoses between the two disorders.

The PAI is a highly used assessment and diagnostic tool that was constructed with the use of extensive research, experts, multiple stages of development, and a central focus on construct validity, and has additional research supporting its validity (Morey, 2007). However, it should be noted that the development of the PAI began in 1987 and it was published in 1991, when the *DSM-III-R* was in use (Morey, 2003). Despite the update to

the *DSM-IV* in 1994, *DSM-IV-TR* in 2000, and *DSM–5* in 2013, the PAI has not been updated to incorporate or reflect any of the changes in diagnostic criteria. In reviewing the diagnostic criteria for BD and BPD between the *DSM-III-R*, the version the PAI was constructed under, and the current *DSM–5*, several changes are evident. For example, the changes in diagnostic criteria for BPD from the *DSM-III-R* to *DSM–5* include the removal of the identity disturbance conditions of "gender-identity, long-term goals or career choice, friendship patterns, values and loyalties," and language shifted from "intolerance of being alone" with efforts to avoid being alone, to "frantic efforts to avoid real or imagined abandonment" in the *DSM–5* (APA, 1987, p. 323; APA, 2013, p. 663). The *DSM–5* also excludes the symptom of boredom in the feelings of emptiness criteria, and includes an additional criterion of "transient, stress-related paranoid ideation or severe dissociative symptoms" (APA, 2013, p. 663).

The changes in diagnostic criteria for a manic episode necessary for a diagnosis of BD include a specification of increased activities that are goal-directed in the *DSM–5* that the *DSM-III-R* does not include, and a removal of the stipulation that the risky activities characteristic of a manic episode be unrecognized by the individual (APA, 1987, 2013). Additionally, the *DSM-III-R* includes a condition that during an absence of a manic episode, "preoccupation with a mood-incongruent delusion or hallucination" or "bizarre behavior" must not "dominate the clinical picture," which is not present in the updated *DSM–5* (APA, 1987, p. 209; APA, 2013). Though these changes may not seem drastic, it is possible these nuances were used in constructing the PAI items to be as construct specific as possible. The *PAI Professional Manual* (Morey, 2007), however, was updated in 2007, but the update was completed while the *DSM-IV-TR* was in use. The second

edition of the *PAI Professional Manual* also largely contains original data and research from the first edition of the manual (Morey, 2007).

Many methods are used in determining a diagnosis, such as clinician judgment, objective and projective measures, and diversity consideration. Though it can be reasonably assumed that PAI results will never be the sole source of information used in establishing an individual's diagnosis, it is impossible to know the extent to which the results of this objective personality measure are used in the decision-making process. The PAI results may have significant effects on clinicians' diagnostic judgment. Additionally, the PAI is widely used in clinical training and can influence future clinicians' judgment (Piotrowski, 2000). Thus, the degree to which PAI scores shape clinical judgment regarding diagnosis merits investigation.

Aims and Hypotheses

The current study was designed to explore gender discrepancies in responses across the four main features of borderline personality disorder (i.e., affective instability, identity problems, negative relationships, and self-harm) and the three main features of bipolar disorder (i.e., activity level, grandiosity, and irritability), each corresponding with the specific PAI Borderline Features and Mania subscales. Because of the diagnostic overlap in criteria and presentation between BP and BPD, the rates of comorbidity between the two disorders, and the concern of overdiagnosis of BPD in women, the overall BD and BPD scales were explored across gender.

Understanding the gender discrepancies across both scales and subscales may shed light on the characteristics of each disorder that have higher rates of endorsement across gender, whether there is a significant difference in response rates of men and

women across subscales for each diagnosis, and whether this is evidence of a gender bias in the PAI test construction, consistent with the gender bias found by previous research in the diagnosing of BPD. The results could assist clinicians in using PAI data in a more effective way when making decisions regarding the assignment of BP and BPD diagnoses. The current study was designed to test the following hypotheses:

1. Male identified participants will report significantly higher levels of elevated PAI scores on the MAN scale and subscales (MAN-A, MAN-G, MAN-I) than female identified participants.
2. Female identified participants will report significantly higher levels of elevated PAI scores on the BOR scale and subscales (BOR-A, BOR-I, BOR-N, BOR-S) than male identified participants.

Chapter Three: Methodology

Participants

This study involved an analysis of archival data obtained from a college counseling center available to students at a private higher education university in a large, midwestern city, as well as another nearby educational institute. The archival data used were gathered at the time of intake from 111 outpatient individuals over the age of 18 who received services between the years 2009 and 2018. Participants consented at the time of intake to the future use of their de-identified data for research purposes. Nine participants were removed from the dataset because they were either missing data or their validity scales were elevated, meeting the exclusion criteria explained below, which brought the sample size to 102.

Measures

The PAI is an objective, self-report measure of personality and psychopathology developed by Leslie Morey (1991). The PAI contains 344 items among four validity scales, 11 clinical scales, five treatment scales, and two interpersonal scales, many of which are further broken down into subscales. As detailed in the literature review, the PAI has good internal consistency with alpha coefficients ranging from .80–.93 for the clinical, treatment, and interpersonal scales, and a mean alpha value of .76 for the subscales. Clinical scale test–retest reliability was measured to range from .75–.81. The Mania (MAN) and Borderline Features (BOR) scales in particular were used for the purposes of this study.

Procedure

This study used archival datasets from outpatient college counseling center individuals' PAI self-report measures taken at the time of intake. Each individual within the sample provided permission at the start of service for their data to be used for future research purposes. Each dataset was de-identified prior to the use of the data. Exclusion criteria included datasets with elevated validity scores, specifically an Inconsistency (INC) scale score of above 73T, an Infrequency (INF scale) score of above 74T, a Negative Impression (NIM) scale score of above 92T, or a Positive Impression (PIM) scale score of above 68T. Reasons validity scales may be elevated include respondents with intellectual disabilities, neurocognitive disorders, psychosis, random responding, and malingering. The data were not analyzed until certification was received following the proposal approval by the Argosy University Institutional Review Board (IRB), and later the National Louis University IRB.

Data Analysis

Data analysis was conducted using SPSS Statistics (version 24). Descriptive statistics were conducted first to describe the sample in terms of gender, age, education level, and race. For Hypothesis 1, an independent samples *t* test was used to assess for statistical significance in the differences of means for the Mania scale and the three Mania subscale scores between two groups, male and female. An ordinal logistic regression was then used to assess the relationship between the outcome variable of Mania scale and three subscale (MAN-A, MAN-G, MAN-I) score elevations (coded as 1 = low, 2 = elevated, and 3 = markedly elevated) with indicator variables of gender, age, and education. Gender, age, and education level were all controlled for. The regression

measured how much variance in Mania scale and subscale elevations could be explained by the independent variables. For Hypothesis 2, an independent samples *t* test was again used to assess for a significant difference in the means for the Borderline Features scale and the four Borderline Features subscale scores between male and female groups. An ordinal logistic regression was again used to assess the relationship between the outcome variable of Borderline Features scale and four subscale (BOR-A, BOR-I, BOR-N, BOR-S) score elevations (coded as 1 = low, 2 = elevated, and 3 = markedly elevated) with indicator variables of gender, age, and education, while controlling for gender, age, and education level. Assumptions of ordinal regressions include a dependent variable measured at the ordinal level, the independent variables being continuous or categorical, no multicollinearity, and the assumption of proportional odds being met.

Ethical Safeguards

Various steps were taken to ensure the protection of the identity of each individual in the sample. This study used archival data from individuals who had previously given their permission for their data to be used for research purposes. Access to the data did not occur until CRP committee approval and IRB certification had been obtained. The de-identified data were obtained from the director of the college counseling center where the data are stored and kept secure by the use of password-protected documents and computers. This researcher's copy of the data has been maintained on a password-protected personal computer and will be deleted 3 years after the conclusion of the study. The only other persons who had access to the data were the researcher's CRP committee members and a university statistician. No individual data are presented in the research findings; only group data are presented and discussed.

Chapter Four: Results

Demographic Data

This study used data from 111 outpatient individuals from an archival dataset obtained from a college counseling center. Each participant was at or above the age of 18 years at the time of assessment, and each completed the PAI as a part of their intake procedure. The sample included individuals who received services between the years of 2009 and 2018. Exclusion criteria included datasets with elevated validity scores, specifically an INC score above 73T, an INF score above 74T, a NIM score above 92T, or a PIM score above 68T. Nine participants were excluded from the dataset, as two participants were missing subscale data and seven participants had one or more elevated validity scale scores, bringing the final to 102 participants.

In looking at the demographic makeup of the sample of 102 participants, 52 identified as female (51%) and 50 identified as male (49%), as depicted in Figure 1. Participants ranged in age from 18 to 61 years, with a mean age of 28.4 years and a standard deviation of 9.89 years. Figure 1 depicts the distribution of participant ages across the sample and indicates the majority of the sample (58.8%) fell in the age range of 19–26 years. In comparing the age range of the sample by gender, the mean age of female identified participants was 28.63 years and the mean age of male identified participants was 28.16 years. The mean age by gender was not statistically significantly different. Figure 2 depicts the distribution of ages across the sample by gender.

Figure 1

Demographic Data: Gender and Age

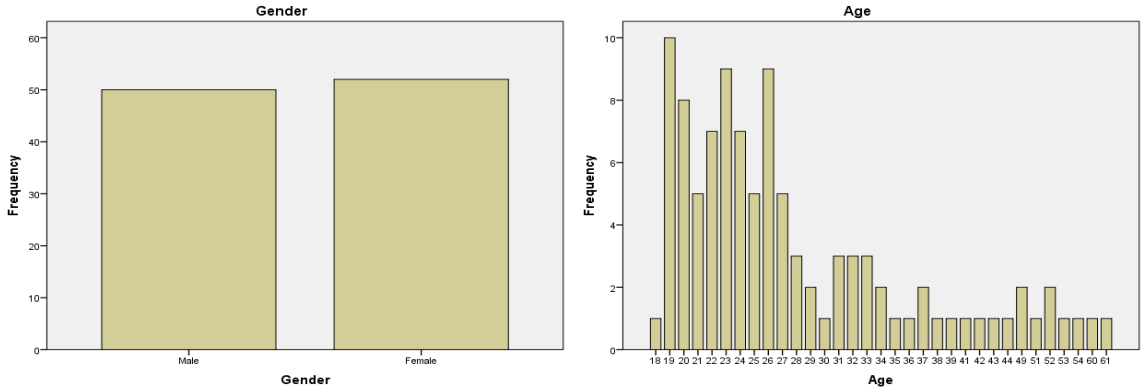
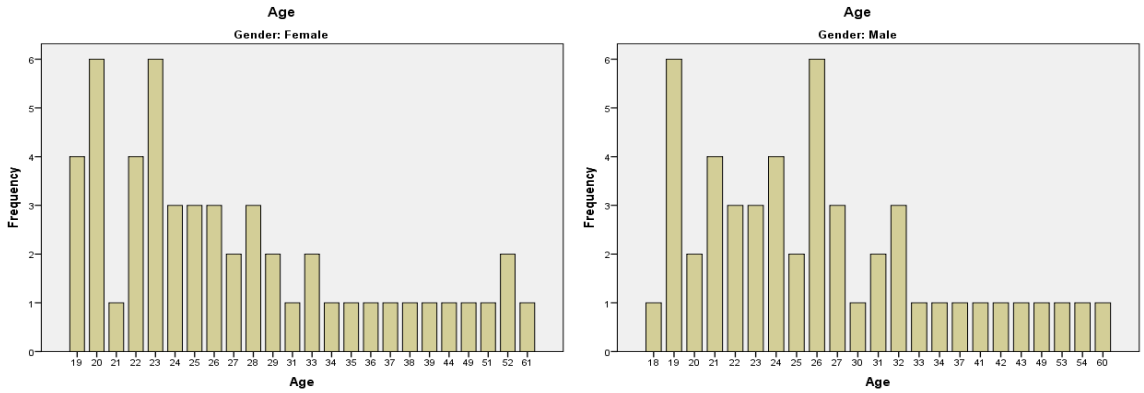


Figure 2

Demographic Data: Age by Gender



Participants were also asked to report their level of education; however, six participants chose not to disclose this information. Participants' education levels ranged from 8 years to 31 years, with 12 years designating a high school degree. Of the 96 participants who provided their education level, the mean was 13.82 years with a standard deviation of 2.23 years. Figure 3 displays the distribution of education levels, which shows the majority of the participants (69.6%) reported an education level of 13 or 14 years, which coincides with the completion of the first or second year of an

undergraduate degree program. In comparing the range of education levels of the sample by gender, the mean education level of female identified participants was 14.15 years and the mean education level of male identified participants was 13.5 years. The majority of participants, both female identified (63.4%) and male identified (76%), remained in the 13 and 14 years of education levels. Figure 4 depicts the distribution of education levels across the sample by gender.

Figure 3

Demographic Data: Education Level and Race

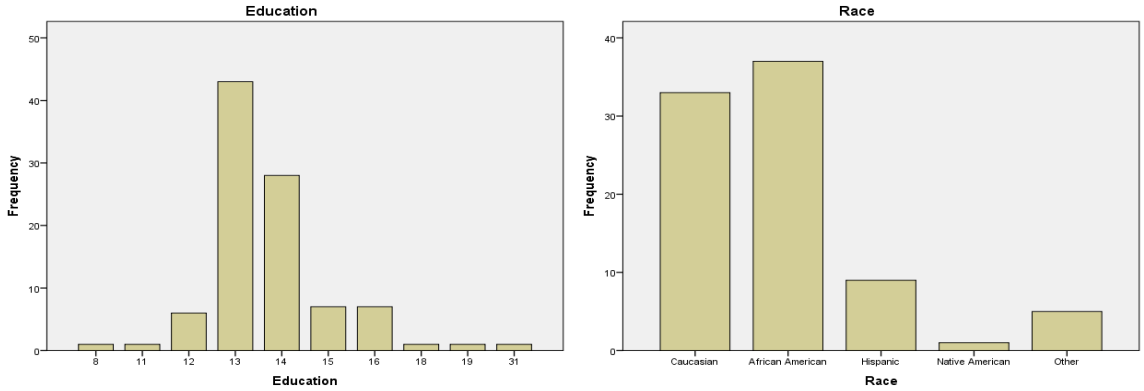
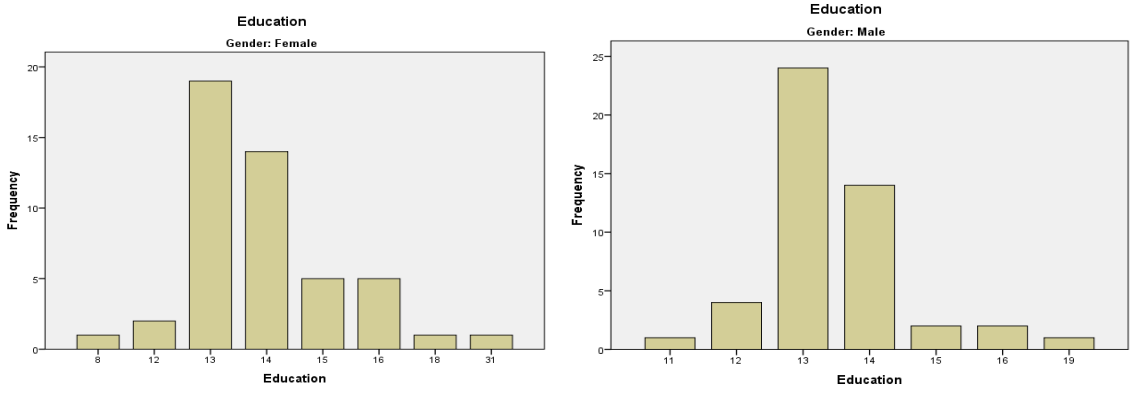


Figure 4

Demographic Data: Education Level by Gender



Finally, participants were asked to report their race; however, 17 participants (16.7%) chose not to disclose this information, leaving this option blank. The racial makeup of those who chose to disclose this information was as follows: 37 identified as African American (36.3%), 33 identified as Caucasian (32.4%), nine identified as Hispanic (8.8%), five identified as other (4.9%), and one identified as Native American (1%). Because of the large number of missing values for race, this variable was not controlled for in the analyses.

Hypothesis 1

It was hypothesized that male identified participants would report significantly higher levels of elevated PAI scores on the MAN scale and subscales (MAN-A, MAN-G, MAN-I) than female identified participants.

Independent Samples t Test

The first hypothesis was first tested using an independent samples *t* test (see Table 2) to compare the means of both overall Mania scale t-scores and the three Mania subscale t-scores between two groups, male and female identified participants. There was no significant difference in t-scores for the overall Mania scale depicted in Table 1 for male ($M = 59.64$, $SD = 1.84$) and female participants ($M = 56.37$, $SD = 1.37$); $t(91.38) = 1.42$, $p = 0.16$. This indicates there was no difference in overall Mania scores between men and women.

The independent samples *t* test (see Table 2) was repeated for each of the three Mania subscales: Activity Level (MAN-A), Grandiosity (MAN-G), and Irritability (MAN-I). There was a significant difference in t-scores for the Grandiosity (MAN-G) subscale between male ($M = 59.24$, $SD = 12.95$) and female participants ($M = 54.35$, *SD*

= 11.88; see Table 1); $t(98.45) = 1.99$, $p = 0.05$ (see Table 2), indicating men's mean Grandiosity t-scores were significantly higher than the mean of women's Grandiosity t-scores. As depicted in Table 1 and Table 2, there was no significant difference in t-scores for the Activity Level (MAN-A) subscale between male ($M = 59.24$, $SD = 11.72$) and female participants ($M = 55.42$, $SD = 13.5$); $t(98.99) = 1.53$, $p = 0.13$, suggesting no difference in the Activity Level subscale t-scores between genders. Finally, there was no significant difference in t-scores for the Irritability (MAN-I) subscale between male ($M = 55.96$, $SD = 14.19$) and female participants ($M = 55.33$, $SD = 11.66$; see Table 1); $t(94.86) = 0.25$, $p = 0.81$ (see Table 2), suggesting no difference in the Irritability subscale scores between genders.

Table 1

Mania Mean Scores

Scale	Gender	*N*	*M*	*SD*	Std. Error Mean
MAN	Male	50	59.64	13.029	1.843
	Female	52	56.37	9.890	1.371
MAN-A	Male	50	59.24	11.720	1.658
	Female	52	55.42	13.500	1.872
MAN-G	Male	50	59.24	12.947	1.831
	Female	52	54.35	11.875	1.647
MAN-I	Male	50	55.96	14.192	2.007
	Female	52	55.33	11.663	1.617

Table 2

Independent t Test Across Mania Scale and Subscales

	t test for Equality of Means		
	t	*df*	Sig. (2-tailed)
MAN	1.43	91.38	0.16
MAN-A	1.53	98.99	0.13
MAN-G	1.99	98.45	0.05
MAN-I	0.25	94.87	0.81

Ordinal Logistic Regression

The first hypothesis was then tested using an ordinal logistic regression to assess the relationship between the outcome variable of Mania scale and three subscale (MAN-A, MAN-G, MAN-I) t-score elevations (coded as 1 = low, 2 = elevated, and 3 = markedly elevated) across the variables of gender, age, and education, with each of these variables being controlled for. An ordinal regression was chosen rather than a binary regression because the outcome level had more than two levels. The regression measured how much variance in Mania scale and subscale elevations was explained by the independent variables.

The first step of this analysis was to complete the ordinal logistic regression for the overall Mania scale across gender, age, and education. As shown in Table 3, the odds of men having MAN t-scores within the high elevation range was 3.70 (95% CI, 1.38 to 9.94) times that of women, a statistically significant effect, Wald $\chi^2(1) = 6.73$, $p = .009$. For a 1-unit increase in gender (going from female to male), the odds of a high elevation MAN score versus the combined elevated and normative categories was 3.70 times

greater, given that all of the other variables in the model were held constant. The test of parallel lines (see Appendix A) indicated this analysis has not violated the proportional odds assumption, $p = 0.26$. As the proportional odds assumption was supported, the same increase of 3.70 was found between the normative category and combined elevated and markedly elevated categories when increasing from female to male. Therefore, the first part of Hypothesis 1, that male identified participants would report significantly higher levels of elevated PAI scores on the MAN scale than female identified participants, was supported (See Tables A1–A3 in Appendix A for model fitting, goodness of fit, and test of parallel lines information).

The second step of the analysis was to complete the ordinal logistic regression for each of the three Mania subscales across the variables of gender, age, and education. However, no statistically significant results were found for any of the three Mania subscales, as shown in Table 3. This can be understood as there being no statistically significant difference between men and women on subscale elevations for the Activity Level (MAN-A), Grandiosity (MAN-G), and Irritability (MAN-I) subscales when controlling for the variables of gender, age, and education. Therefore, the second part of Hypothesis 1, that male identified participants would report significantly higher levels of elevated PAI scores on the three mania subscales (MAN-A, MAN-G, MAN-I) than female identified participants, was not supported.

Table 3

Ordinal Regression Across Mania Scale and Subscales

					95% CI				
		Estimate	SE	Sig.	LL	UL	Exp_B	LL	UL
MAN	Gender	1.31	0.50	0.01	0.32	2.30	3.70	1.38	9.94
	Age	-0.03	0.03	0.31	-0.08	0.02	0.97	0.93	1.03
	Education	0.10	0.10	0.28	-0.08	0.29	1.11	0.92	1.34
MAN-A	Gender	0.67	0.49	0.17	-0.28	1.62	1.95	0.75	5.07
	Age	-0.07	0.03	0.05	-0.14	0.00	0.93	0.87	1.00
	Education	-0.04	0.13	0.74	-0.29	0.21	0.96	0.75	1.23
MAN-G	Gender	0.52	0.46	0.26	-0.39	1.43	1.69	0.68	4.19
	Age	-0.02	0.02	0.45	-0.07	0.03	0.98	0.94	1.03
	Education	0.10	0.09	0.29	-0.08	0.28	1.10	0.92	1.32
MAN-I	Gender	0.29	0.55	0.60	-0.79	1.38	1.34	0.45	3.98
	Age	0.01	0.03	0.59	-0.04	0.07	1.01	0.96	1.07
	Education	-0.07	0.17	0.66	-0.41	0.26	0.93	0.67	1.29

Hypothesis 2

It was hypothesized that female identified participants would report significantly higher levels of elevated PAI scores on the BOR scale and subscales (BOR-A, BOR-I, BOR-N, BOR-S) than male identified participants.

Independent Samples t Test

The second hypothesis was first tested using an independent samples *t* test (see Table 2) to compare the means of both the overall Borderline Features scale and the four Borderline Features subscale scores between two groups, male and female identified participants (see Table 1). There was no significant difference in scores for the overall Borderline Features scale for male (M = 61.64, SD = 13.13) and female participants (M = 60.83, SD = 12.25; see Table 1); $t(98.84) = 0.32$, $p = 0.75$ (see Table 2). This indicates

there was no difference in overall Borderline Features scores between men and women in the present study.

The independent samples *t* test (see Table 2) was repeated for each of the four Borderline Features subscales: Affective Instability (BOR-A), Identity Problems (BOR-I), Negative Relationships (BOR-N), and Self-Harm (BOR-S). There was no significant difference in scores for the Affective Instability (BOR-A) subscale between male (M = 59.56, SD = 13.15) and female participants (M = 57.63, SD = 11.55; see Table 1); $t(97.25) = 0.78$, $p = 0.44$ (see Table 2), indicating no difference in the Affective Instability subscale scores between genders in the present study. There was no significant difference in scores for the Identity Problems (BOR-I) subscale between male (M = 58.76, SD = 11.99) and female participants (M = 60.42, SD = 12.35); $t(99.99) = -0.07$, p = 0.49, indicating no difference in the Identity Problems subscale scores between genders in the present study. There was no significant difference in scores for the Negative Relationships (BOR-N) subscale between male (M = 59.40, SD = 12.71) and female participants (M = 61.65, SD = 11.28); $t(97.57) = -0.94$, $p = 0.35$, indicating no difference in the Negative Relationships subscale scores between genders in the present study. Finally, there was no significant difference in scores for the Self-Harm (BOR-S) subscale between male (M = 57.98, SD = 13.45) and female participants (M = 53.79, SD = 12.27); $t(98.30) = 1.64$, $p = 0.10$, indicating no difference in the Self-Harm subscale scores between genders in the present study. The means and standard deviations of the Borderline Features scale and subscales are depicted in Table 1, and the *t* test scores are depicted in Table 2.

Table 4

Borderline Features Mean Scores

Scale	Gender	*N*	*M*	*SD*	Std. Error Mean
BOR	Male	50	61.64	13.127	1.856
	Female	52	60.83	12.253	1.699
BOR-A	Male	50	59.56	13.149	1.860
	Female	52	57.63	11.552	1.602
BOR-I	Male	50	58.76	11.987	1.695
	Female	52	60.42	12.352	1.713
BOR-N	Male	50	59.40	12.707	1.797
	Female	52	61.65	11.282	1.565
BOR-S	Male	50	57.98	13.454	1.903
	Female	52	53.79	12.266	1.701

Table 5

Independent t Test Across Borderline Features Scale and Subscales

	t test for Equality of Means		
	t	*df*	Sig. (2-tailed)
BOR	0.32	98.84	0.75
BOR-A	0.78	97.25	0.43
BOR-I	-0.69	99.99	0.49
BOR-N	-0.95	97.57	0.35
BOR-S	1.64	98.30	0.10

Ordinal Logistic Regression

The second hypothesis was then tested by using an ordinal logistic regression to assess the relationship between the outcome variable of Borderline Features scale and

four subscale (BOR-A, BOR-I, BOR-N, BOR-S) score elevations (coded as 1 = low, 2 = elevated, and 3 = markedly elevated) across the variables of gender, age, and education, with each of these variables being controlled for. An ordinal regression was chosen rather than a binary regression because the outcome level had more than two levels. The regression measured how much variance in Borderline Features scale and subscale elevations was explained by the independent variables.

The first step of this analysis was to complete the ordinal logistic regression for the overall Borderline Features scale across gender, age, and education. As shown in Table 6, gender was not found to have a statistically significant effect on overall Borderline Features scale scores, Wald $\chi^2(1) = 0.04$, $p = 0.84$. Therefore, the first part of Hypothesis 2, that female identified participants would report significantly higher levels of elevated PAI scores on the BOR scale than male identified participants, was not supported.

The second step of the analysis was to complete the ordinal logistic regression for each of the four Borderline Features subscales across the variables of gender, age, and education. However, no statistically significant results were found for any of the four Borderline Features subscales (see Table 6). This can be understood as there being no statistically significant difference between men and women on subscale elevations for the Affective Instability (BOR-A), Identity Problems (BOR-I), Negative Relationships (BOR-N), and Self-Harm (BOR-S) subscales when controlling for the variables of gender, age, and education, and gender was not found to be a predictor of Borderline Features subscale elevations. Therefore, the second part of Hypothesis 2, that female identified participants would report significantly higher levels of elevated PAI scores on

the four Borderline Features subscales (BOR-A, BOR-I, BOR-N, BOR-S) than male identified participants, was not supported (See Tables A1–A3 in Appendix A for model fitting, goodness of fit, and test of parallel lines information). Additionally, the syntax used in SPSS for the Ordinal Logistic Regression is included in Appendix B for the purposes of any future recreation of this study.

Table 6

Ordinal Regression Across Borderline Features Scale and Subscales

					95% CI				
		Estimate	SE	Sig.	LL	UL	Exp_B	LL	UL
BOR	Gender	0.08	0.39	0.84	-0.69	0.84	1.08	0.50	2.32
	Age	0.00	0.02	0.96	-0.04	0.04	1.00	0.96	1.04
	Education	-0.06	0.10	0.52	-0.26	0.13	0.94	0.77	1.14
BOR-A	Gender	0.54	0.40	0.17	-0.24	1.32	1.72	0.79	3.74
	Age	-0.01	0.02	0.47	-0.05	0.03	0.99	0.95	1.03
	Education	-0.09	0.11	0.41	-0.30	0.12	0.91	0.74	1.13
BOR-I	Gender	-0.05	0.40	0.91	-0.83	0.74	0.96	0.44	2.10
	Age	0.01	0.02	0.57	-0.03	0.05	1.01	0.97	1.05
	Education	-0.09	0.11	0.44	-0.31	0.13	0.92	0.74	1.14
BOR-N	Gender	-0.33	0.39	0.40	-1.10	0.43	0.72	0.33	1.55
	Age	0.01	0.02	0.72	-0.03	0.04	1.01	0.97	1.05
	Education	0.01	0.09	0.94	-0.16	0.18	1.01	0.85	1.19
BOR-S	Gender	0.38	0.45	0.39	-0.49	1.26	1.47	0.61	3.52
	Age	-0.08	0.03	0.02	-0.14	-0.01	0.93	0.87	0.99
	Education	-0.02	0.10	0.83	-0.22	0.18	0.98	0.80	1.20

Chapter Five: Discussion

The ability to accurately diagnose clients continues to be of the utmost importance for clinicians, as diagnoses direct the path of treatment, determine the use of psychiatric medications, and provide a deeper understanding of the client experience. Psychological assessment is often used for diagnostic clarity, with the PAI being one of the most commonly used personality tools (Morey, 2003). BD and BPD are two disorders with several overlapping qualities and it can often be difficult to differentiate between the two. This study involved exploring gender discrepancies in responses across the four main features of BPD (i.e., affective instability, identity problems, negative relationships, and self-harm) and the three main features of BD (i.e., activity level, grandiosity, and irritability), each corresponding with the specific PAI Borderline Features and Mania subscales.

Previous researchers identified BD and BPD to be highly comorbid, with one in five people in the Fornaro et al. (2016) study experiencing comorbidity between the two disorders. There has been reported difficulty in differential diagnosis between the two disorders, with Ruggero et al. (2010) finding a high rate of misdiagnosis between BD and BPD. Researchers have also identified overlap between the two disorders, indicating most individuals with BD can also be described using the *DSM–5* definition for BPD (Ghaemi & Barroilhet, 2015). Further research showed there is a gender bias in diagnosing BPD, with a higher correlation between a BPD diagnosis and gender than with the presence of certain BPD criteria, which may explain the higher prevalence of BPD among women (Morey & Benson, 2016). Therefore, understanding gender discrepancies across both scales and subscales may provide information on whether there

is a significant difference in the response rates of men and women across subscales for each diagnosis and whether this is evidence of a gender bias in the PAI test construction, consistent with the gender bias often present in the diagnosing of BPD.

This study used archival data from 102 outpatient individuals from a college counseling center. Participants completed the PAI at intake and consented for their data to be used for future research purposes. For the purpose of this study, the client demographic variables of gender, age, and years of education, as well as their PAI validity, Mania, and Borderline Features scales and subscales, were used for analysis. Data on the racial makeup of the sample were incomplete. Thus, this demographic variable was not included in the analyses.

Hypothesis 1

It was hypothesized that male identified participants would report significantly higher levels of elevated PAI scores on the Mania scale and subscales (Activity Level, Grandiosity, and Irritability) than female identified participants. The initial analysis of an independent samples *t* test did not result in significant mean differences in t-scores between men and women on the overall Mania scale, or on the Activity Level and Irritability subscales. This indicates men and women did not differ significantly on their self-report of these symptoms and experiences. However, the analysis revealed a significant difference in t-scores for the Grandiosity (MAN-G) subscale between male and female participants, as men's mean Grandiosity t-scores were significantly higher than the mean of women's Grandiosity t-scores. This indicates men may have higher rates of self-reported symptoms of grandiosity. Future research is needed to further validate this finding with respect to generalizability.

The second analysis of an ordinal regression, used to further assess the differences in scores across gender by looking specifically at ranges of elevation while controlling for gender, age, and education, revealed a significant difference in elevations between men and women on the Mania scale. Specifically, men were within the high elevation range at a rate of 3.69 times that of women. However, no statistically significant results were found for any of the three Mania subscales.

Therefore, with men being more likely to score in the elevated range on the Mania scale and have higher Grandiosity scores than women, this study partially supports Hypothesis 1. This can be understood as the men in this sample met criteria for mania and potentially criteria for a BD diagnosis, as the Mania scale on the PAI is a representation of the core qualities of the diagnostic criteria for BD, at a significantly higher rate than women. These results can be seen as consistent with the *DSM–5* report of BD having a slightly higher prevalence in men than women (APA, 2013).

Men's significantly higher Grandiosity scores indicate the men in this sample had higher rates of inflated self-esteem and over evaluation of their self-image; however, the ordinal regression did not show this subscale to be in the markedly elevated range at a significant rate higher than women. This may indicate men are more likely to exhibit grandiose characteristics than are women but are not more likely to have these characteristics meet clinical levels. It may also be understood as women having significantly lower grandiose traits compared to men, which may be further understood through studying the differences in socialization between men and women, as suggested by Skodol and Bender (2003), although existing research on this topic is limited. Results

further showed men and women scored similarly on the Activity Level and Irritability subscales, and these qualities may be understood as universal across gender.

Hypothesis 2

It was hypothesized that female identified participants would report significantly higher levels of elevated PAI scores on the Borderline Features scale and subscales (Affective Instability, Identity Problems, Negative Relationships, and Self-Harm) than male identified participants. The initial analysis of an independent samples *t* test did not result in significant mean differences in t-scores between men and women on the overall Borderline Features scale or the four subscales. This indicates men and women in the present study did not significantly differ in scores for any of the features of BPD and may be understood as men and women exhibiting similar rates of BPD characteristics.

An ordinal regression was then used to further assess the differences in scores across gender by assessing ranges of elevation rather than means while controlling for gender, age, and education. This analysis did not result in a significant difference in elevations between men and women on the Borderline Features scale or its four subscales. Therefore, the combined results of both analyses did not support Hypothesis 2. The justification for Hypothesis 2 was based on the significantly higher prevalence rates of BPD diagnoses for women and the research pointing to evidence of a gender bias in diagnosing that exposes women to higher rates of BPD diagnoses (APA, 2013; Morey & Benson, 2016). The failure to find support for Hypothesis 2 may be explained as the PAI acting as an effective tool in objectively assessing for the presence of BPD features in men and women, without the presence of a gender bias. If this is the case, it may be beneficial for clinicians to use the PAI not only in differential diagnosis between BD and

BPD, but in the overall diagnosis of BPD as a way of mitigating the tendency of clinicians to diagnose women with BPD at higher rates than men even with identical presentations (Morey & Benson, 2016). This may also support that although the PAI can be considered somewhat outdated, as it was published in 1991 based on *DSM-III-R* diagnostic criteria and the assessment itself has yet to be updated since its creation, it may be considered a useful and objective tool in differential diagnosis between BD and BPD.

Limitations

Limitations to the current study include the sample size. The sample size was rather small (N = 102), and therefore cannot be considered an adequate representation of the overall population. This small sample size may have also contributed to the lack of significant results. The sample was a college student population who were voluntarily seeking counseling services, which may not be generalizable to the greater population. The sample was also limited in terms of demographic variables, as the majority of the sample were in a traditional college age range and had similar levels of education. As individuals who attend college tend to be higher functioning, this sample may not have been the most fruitful source of information regarding diagnoses such as BD and BPD.

Another major limitation to this study was the limited information regarding race and ethnic identities. Because of the high number of missing variables for the clients' racial identities, as many clients chose not to disclose this information, this researcher was unable to assess for any differences in PAI scores based on this identity factor and was unable to control for race or ethnicity in the regression analysis.

Possibly the greatest limitation of this study was the loss of access to the original data, which were planned to be used in this study, as a result of the abrupt closure of

Argosy University in March of 2019. The original aim of this study was to use factor analysis to analyze patterns in responses on the PAI MAN and BOR scale items to better understand similarities and dissimilarities in responding. The study was originally designed to be exploratory in nature and the researcher had proposed to explore the correlations between responses on the PAI's MAN and BOR scale items specifically to identify how closely the meaning of the items overlap with one another. With the abrupt closure of Argosy University and loss of archival data of the PAI item scores, factor analysis was no longer a possibility. This study was subsequently redesigned to use the remaining data relevant to gender differences in PAI responses in a way that remained meaningful to the original aim of the study.

Chapter Six: Conclusions and Suggestions for Future Research

Results showed there was a significant difference in the elevations between men and women on the Mania scale as men scored within the high elevation range at a rate of 3.70 times that of women. This study also showed men to have significantly higher Grandiosity scores compared to women. However, no statistical differences were found in the means of overall Mania scores or the Activity Level and Irritability subscale scores across gender. Additionally, no statistical differences were found in elevations in the three Mania subscales across gender when controlled across gender, age, and education. Further, no significant results were found in comparing the mean scores or elevations of the Borderline Features scale or its four subscales.

The results of the current study may support the use of the PAI in differentiating between the diagnoses of BD and BPD. The use of the PAI as a differential diagnosis tool may be helpful in reducing the rates of misdiagnosis between the two disorders and contribute to accurate diagnosing. Results also indicate the PAI is able to objectively assess for BPD criteria without the gender bias often present in clinical decision making. This research may be used to encourage clinicians to use the PAI in the diagnosis of BPD to reduce the gender bias that often leads to an overdiagnosis of BPD in women and underdiagnosis in men. An improvement in accurate diagnoses between the two disorders may lead to further benefits of accurate treatment planning, psychiatric medication, and a deeper understanding of the client experience.

Future research would benefit from obtaining a larger sample size and a sample that is more generalizable to the greater population. Future research may also benefit from the use of exploratory factor analysis to explore the correlations between responses

on the PAI's MAN and BOR scale items in order to identify how closely the meaning of the items overlap with one another. This research may provide further information on how accurately the PAI is able to differentiate between the two disorders, as BD and BPD have several overlapping qualities. Finally, future research should focus on additional ways to address the gender bias in BPD diagnoses to make clinicians aware of this common bias and encourage them to provide a BPD diagnosis in an objective manner.

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Appendix A: Regression Tables

Table A1

Ordinal Regression Model Fitting Information

	Model	-2 Log Likelihood	Chi-Square	*df*	Sig.
MAN	Intercept Only	128.18			
	Final	119.44	8.75	3.00	0.03
MAN-A	Intercept Only	120.57			
	Final	112.48	8.08	3.00	0.04
MAN-G	Intercept Only	129.00			
	Final	126.77	2.23	3.00	0.53
MAN-I	Intercept Only	96.35			
	Final	95.54	0.81	3.00	0.85
BOR	Intercept Only	173.67			
	Final	173.14	0.53	3.00	0.91
BOR-A	Intercept Only	165.23			
	Final	161.30	3.92	3.00	0.27
BOR-I	Intercept Only	160.01			
	Final	159.11	0.90	3.00	0.83
BOR-N	Intercept Only	175.62			
	Final	174.67	0.94	3.00	0.81
BOR-S	Intercept Only	136.72			
	Final	127.46	9.26	3.00	0.03

Table A2

Ordinal Regression Goodness of Fit

		Chi-Square	*df*	Sig.
	Pearson	161.49	137.00	0.08
MAN	Deviance	105.55	137.00	0.98
	Pearson	147.48	137.00	0.26
MAN-A	Deviance	94.20	137.00	1.00
	Pearson	156.91	137.00	0.12
MAN-G	Deviance	113.11	137.00	0.93
	Pearson	142.73	137.00	0.35
MAN-I	Deviance	86.55	137.00	1.00
	Pearson	143.12	137.00	0.34
BOR	Deviance	154.29	137.00	0.15
	Pearson	138.04	137.00	0.46
BOR-A	Deviance	141.29	137.00	0.38
	Pearson	135.33	137.00	0.52
BOR-I	Deviance	137.82	137.00	0.46
	Pearson	144.39	137.00	0.32
BOR-N	Deviance	156.39	137.00	0.12
	Pearson	114.10	137.00	0.92
BOR-S	Deviance	106.06	137.00	0.98

Table A3

Ordinal Regression Test of Parallel Lines

	Model	-2 Log Likelihood	Chi-Square	*df*	Sig.
	Null Hypothesis	119.44			
MAN	General	117.72	1.72	3.00	0.63
	Null Hypothesis	112.48			
MAN-A	General	114.986[a]	.[b]	3.00	
	Null Hypothesis	126.77			
MAN-G	General	123.15	3.62	3.00	0.31
	Null Hypothesis	95.54			
MAN-I	General	95.693[a]	.[b]	3.00	
	Null Hypothesis	173.14			
BOR	General	171.40	1.75	3.00	0.63
	Null Hypothesis	161.30			
BOR-A	General	161.04	0.27	3.00	0.97
	Null Hypothesis	159.11			
BOR-I	General	156.614[a]	2.493[b]	3.00	0.48
	Null Hypothesis	174.67			
BOR-N	General	171.83	2.84	3.00	0.42
	Null Hypothesis	127.46			
BOR-S	General	125.94	1.52	3.00	0.68

[a] The log-likelihood value cannot be further increased after maximum number of step-halving.
[b] The log-likelihood value of the general model is smaller than that of the null model. This is because convergence cannot be attained or ascertained in estimating the general model. Therefore, the test of parallel lines cannot be performed.

Appendix B: SPSS Ordinal Regression Syntax

```
DATASET ACTIVATE DataSet1.
COMPUTE Female=2-Gender.
VARIABLE LABELS Female 'Gender'.
EXECUTE.

plum MANTc with Female Education Age
/link = logit
/print = parameter summary.

plum MANATc with Female Education Age
/link = logit
/print = parameter summary.

plum MANGTc with Female Education Age
/link = logit
/print = parameter summary.

plum MANITc with Female Education Age
/link = logit
/print = parameter summary.

plum BORTc with Female Education Age
/link = logit
/print = parameter summary.

plum BORATc with Female Education Age
/link = logit
/print = parameter summary.

plum BORITc with Female Education Age
/link = logit
/print = parameter summary.

plum BORNTc with Female Education Age
/link = logit
/print = parameter summary.

plum BORSTc with Female Education Age
/link = logit
/print = parameter summary.
```