DIAGNOSTIC RELAPSE IN BORDERLINE PERSONALITY DISORDER: RISK AND PROTECTIVE FACTORS

A Dissertation

by

BRIAN DAVID QUIGLEY

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2003

Major Subject: Psychology

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Approved as to style and content by:

Leslie C. Morey (Chair of Committee)	Douglas Snyder (Member)
Brian Stagner (Member)	David Lawson (Member)
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ABSTRACT

Diagnostic Relapse in Borderline Personality Disorder: Risk and Protective Factors.

(August 2003)

Brian David Quigley, B.A., University of Michigan-Dearborn;

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Chair of Advisory Committee: Dr. Leslie C. Morey

Borderline Personality Disorder (BPD) is one of the more common personality disorder diagnoses observed in psychiatric inpatients and outpatients. Previous studies have found that individuals with BPD may be expected to experience difficulties throughout their lifetimes and they may repeatedly return for psychological treatment. Whereas previous studies have attempted to identify various factors related to relapse in other chronically recurring disorders such as depression, schizophrenia, and substance abuse, studies examining factors associated with relapse in BPD, and personality disorders in general, are absent from the scientific literature. This exploratory study examined whether specific risk and protective factors (dynamic and/or static) identified from the general relapse literature were associated with diagnostic relapse in BPD. Results revealed that variables related to an increased likelihood for BPD relapse included: substance abuse or Major Depressive Disorder, higher Neuroticism, and lower Conscientiousness. In addition, having a steady work or school status after remission was found to protect against a BPD relapse in the presence of various risk factors.

Although this study has several limitations, these results provide some of the first insights to the processes of relapse and continued remission in BPD patients. Continued research efforts in this area can help to identify individuals who are at a greater risk for BPD relapse and potentially to design effective relapse-prevention strategies for the treatment of BPD.

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I also would like to thank my family for the support and encouragement they have given over the years. Having spent time away from my family during graduate school has provided me with a renewed appreciation for the importance in my life of my mother Arleene; father John; brother John; three sisters Laura, Diane, and Karen; and niece Jeanine. As we have grown older, each of us has achieved in independent ways and I am proud of each one of these individuals. Thank you for being there.

Most importantly I would like to thank my soon to be wife Theresa Frandsen. Words do not possess the necessary characteristics needed to express the profound importance she has in my life nor could they capture the inspiration she has provided me over the years. She has been an oasis of comfort and compassion during the extraordinary challenges of graduate school and her sacrifice and support deserve far more than a mere paragraph on this page could provide. This journey through graduate school and beyond would lack the same meaning and reward without her presence and my accomplishments reflect her strength and courage as much as they reflect my own. At the least, I am beyond fortunate that she has chosen to share her life with me and I am grateful for her love, support, patience, kindness, and consideration.

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INTRODUCTION

Personality disorders generally are considered to be one of the more difficult and costly groups of psychological problems to treat (Fleming & Pretzer, 1990; Young, 1994). In a recent study, Bender et al. (2001) found higher rates of outpatient, inpatient, and psychopharmacological treatment use among patients with personality disorders compared to patients with major depressive disorder. Other studies have demonstrated that the presence of comorbid personality disorder has an adverse impact on the treatment outcomes for Axis I disorders such as depression (Alnaes & Torgensen, 1997; Shea et al., 1990), anxiety disorders (Dreessen & Arntz, 1998), binge eating disorder (Wilfley et al., 2000), substance-abuse disorders (Pettinati et al., 1999), and schizophrenia (Dingemans et al., 1998). Illustrating their prevalence, estimates of personality disorders in the general population have been between 10% and 18% (Maier et al., 1992; Reich, 1989; Weissman, 1993; Zimerman & Coryell, 1989), but they have been reported to occur in almost half of all psychiatric inpatients and outpatients with the most common diagnoses being Antisocial and Borderline Personality Disorder (Gunderson et al., 1989; Kass, Skodol, Charles, Spitzer, & Williams, 1985; Koenigsberg, Kaplan, Gilmore, & Cooper, 1985; Loranger, 1990).

A potential reason for the difficulties associated with treating personality disorders may relate to their longitudinal course. The *Diagnostic and Statistical Manual*

This dissertation follows the style and format of *Journal of Consulting and Clinical Psychology*.

of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 1994) defines personality disorders as being enduring, pervasive, and stable over time. From this perspective, individuals with personality disorders may be expected to experience repeated difficulties throughout their lifetimes and they may repeatedly return for psychological treatment. At first glance, a review of the literature appears to provide support for this notion of enduring stability over one's life course. For instance, Zanarini, Frankenburg, Khera, and Bleichmar (2001) examined the treatment histories of inpatients diagnosed with personality disorders and found that approximately 53% had experienced multiple psychiatric hospitalizations with an average of just over seven hospitalizations among borderline patients alone. Similarly, McGlashan (1986) found that during an average of 169 months after discharge from a psychiatric hospital, borderline patients used psychosocial services during 35% of this period and 46% of patients were in some form of psychiatric treatment at the time of follow-up. Thus, from these studies it appears that even after psychological treatment, improvement may be only transient and individuals with personality disorders continue to experience difficulties over their lifetimes.

However, Shea et al. (1999) conducted a more detailed examination of personality disorder stability by documenting the monthly presence or absence of diagnostic criteria for a period of one year in a sample of 538 personality disorder patients. In general, results revealed that a majority of patients (55%) did not remain at full criteria to meet the diagnostic thresholds of their respective diagnosis throughout the twelve-month follow-up period. In addition, 19% of schizotypals, 31% of borderlines,

30% of avoidants, and 38% of obsessive-compulsives had at least 2 consecutive months with no or minimal (no more than 2 criteria) symptoms present during the 12-month interval. These initial findings suggest that for some individuals the symptomatic course of personality disorders may ameliorate over brief periods of time, whereas the previously mentioned studies indicate that a proportion still will experience repeated problems throughout their lifetimes.

The combination of high remission rates over briefer time spans found in the Shea et al. (1999) study along with the longitudinal findings noted above that personality disorders are enduring may suggest that the course of personality disorders may not be as static as traditionally believed. In fact, taken together these studies suggest that while the clinical course of personality disorders appears more long-term, the difficulties associated with these conditions seems to wax and wane over time. It is possible that the diagnostic features of personality disorders may fluctuate markedly over one's life course and that these fluctuations may correspond to an individual's life experiences and circumstances. Thus, identifying the factors that may predict the improvement and recurrence of personality disorder features would be especially beneficial.

In an effort to understand other recurring psychological difficulties, similar approaches have been taken in the study of psychiatric disorders that are also characterized by a chronic but fluctuating longitudinal course (e.g. schizophrenia, unipolar depression, substance-use disorders). For example, it is generally accepted that individuals with unipolar depression are likely to experience alternating periods of recovery and episodes where depressive symptoms reoccur in varying degrees (Eifert,

Beach, & Wilson, 1998; Judd, 1995; Keller, 1996). A number of studies have demonstrated that these episodes can be predicted by various environmental, interpersonal, and intrapersonal factors (Coryell, Endicott, & Keller, 1991; Gonzales, Lewinsohn, & Clarke, 1985; Keller et al., 1983; Surtees & Wainwright, 1996). In fact, identifying the precipitants of diagnostic relapse is a major goal in the treatment of individuals with chronic psychological problems that vary in severity over one's life course. Similar efforts have been made in identifying predictors of relapse in schizophrenia (Hooley, Orley, & Teasdale, 1986; Linszen et al., 1997; Miklowitz, 1994; Nuechterlein et al., 1994; Robinson et al., 1999; Ventura, Nuechterlein, Hardesty, & Gitlin, 1992; Weiden & Glazer, 1997) and substance use disorders (for a review see Marlatt & Gordon, 1985). In light of the findings that have emerged from these studies, it is noteworthy that in the area of personality disorders very few attempts have been made to delineate factors that precipitate diagnostic relapse or factors that promote the maintenance of remission.

Factors that predict a recurrence of problem behaviors are usually termed "risk factors" whereas factors that serve to increase one's resilience to these risk factors are usually termed "protective factors." More specifically, a risk factor is generally defined as any characteristic of the individual or their environment that when present creates an *increased* risk for a problem's recurrence. Protective factors generally can be defined in two ways. First, a protective factor can be any characteristic of the individual or their environment that when present creates a *decreased* risk for a problem's recurrence. With this definition the opposite of a risk factor may be considered a protective factor.

For example, low self-esteem may be a risk factor for substance abuse relapse, whereas high self-esteem may serve as a protective factor. In the second definition, a protective factor can be any characteristic of the individual or their environment that when present serves to mitigate the effect of existing risk factors. The current study focused on the latter of these two types of protective factors. Risk and protective factors often act in concert with one another; whereby protective factors often serve as safeguards from the likelihood that an individual will experience a recurrence of problem behaviors in the presence of precipitating risk factors.

Several researchers have grouped risk and protective factors into specific categories (e.g., Kraemer et al., 1997; Marlatt, 1985; Rogers, 2000; Shiffman, 1989). One of the more important distinctions has been to differentiate between static (e.g., race, gender) and dynamic (e.g., self-esteem, social relations) risk/protective factors (Rogers, 2000; Shiffman, 1989). Studies that focus on static factors and neglect the examination of possible dynamic factors that may be associated with risk produce an inaccurate picture and they may lead to unwarranted pessimism with regard to considerations of treatability. For example, if static factors, which by definition are not malleable (e.g., gender), are highlighted over dynamic factors (e.g., level of social support), recurring functional impairments may be considered inevitable and prevention treatment as futile. Therefore, future studies must ensure to include both the static and dynamic factors that may be related to declines in psychological functioning or to promotion of maintained or increasing improvements.

As Rogers (2000) noted, studies that have examined predictors of problem recurrences have been too one-sided in emphasizing the role of risk factors; little attention has been given to specific factors that may reduce the probability of adverse outcomes. This is surprising considering that treatment should ideally target both a reduction in risk factors and an increase in protective factors. Empirical studies that examine the process of relapse must consider both risk and protective factors. Furthermore, these studies must utilize an "interactive model," which considers both the types of factors associated with relapse and their interrelationships. Thus, the process associated with fluctuations in diagnostic status may be described by interrelationships between risk and protective factors, which may act to create an interactive or moderating effect where protective factors serve to diminish the effect of risk factors.

The current study sought to examine whether specific risk and protective factors (dynamic and/or static) could be identified as predictors of diagnostic relapse in Borderline Personality Disorder (BPD). As previously noted, BPD is one of the more common personality disorder diagnoses observed in psychiatric inpatients and outpatients. A review of the literature reveals that while a number of studies have examined possible risk factors associated with the etiology of BPD (e.g., Coid, 1999; Dubo, Zanarini, Lewis, & Williams, 1997; Trull, 2001; Zanarini, 1997), this study is novel in that it provides some of the first insights to the factors that may be related to the recurrence of the clinical features of BPD. Furthermore, rather than examining risk factors in isolation (a criticism of previous risk factor studies), this study also attempted to identify factors that may moderate the effect of these risk factors.

Studies that have examined risk or protective factors associated with relapse in BPD, or personality disorders in general, are absent from the scientific literature. However, risk and protective factors have been identified in various studies examining other chronic, recurring disorders such as depression, schizophrenia, and substance abuse. Recognizing the value of using a broader perspective to delineate the factors related to the process of relapse (Brownell, 1992), a logical approach is to integrate the consistent findings from various studies of other psychiatric disorders in an effort to generate a list of risk and protective factors that also may be of relevance in a study of relapse in BPD. This conceptual approach was used in the current study.

For instance, several studies have examined the role of age as a predictor of relapse in depression and schizophrenia (e.g., Coryell et al., 1991; Gonzales et al., 1985; Linszen et al., 1997; Robinson et al., 1999). Coryell et al. (1991) found that depressed individuals under 40 years of age had a significantly higher rate of relapse (44.4%) compared to individuals over 40 years of age (21.4%). Similarly, Gonzales et al. (1985) found younger age to be a significant predictor of relapse in depressed subjects. The current study hypothesized that due to the consistency of these findings across several studies, age also may be a "static" factor related to the recurrence of symptoms in personality disorders.

Various studies also have examined the role of other comorbid psychiatric problems and psychological characteristics in the relapse of chronic psychological problems (Coryell et al., 1991; Keller et al., 1983; Linszen et al, 1997). Depressed mood, a dynamic factor, has been one such problem associated with relapse in

schizophrenia (Kavanagh, 1992) and a number of studies have found that the presence of comorbid psychiatric disorders significantly increases the risk of relapse in depression (Coryell et al., 1991; Keller et al., 1983). Substance abuse is another dynamic factor that has been shown to be a significant predictor of relapse in schizophrenia and depression (Coryell et al., 1991; Linszen et al., 1997; Weiden & Glazer, 1997). Important to the current study, several studies have found that the presence of personality disorders increased the likelihood of relapses in major depression (Torgersen, 1997) and anxiety disorders (Dreessen & Arntz, 1998). However, a question that had not been examined is whether these psychiatric disorders may serve as dynamic factors that increase the likelihood of relapse in personality disorders. Thus, these relationships highlight the importance of examining the role of depression, substance abuse, and comorbid anxiety disorders in the relapse of BPD. Also, because specific personality traits may serve as predisposing factors for the behavioral problems associated with BPD (Morey & Zanarini, 2000), such "static" traits also may constitute risk factors for relapse and should be examined in a study of BPD.

As noted above, published studies of protective factors related to relapse in BPD are absent, which highlights the need for the initial efforts made by the current study. However, examination of protective factors in the general relapse literature is also uncommon (Rogers, 2000). Investigators have primarily focused on the identification of protective factors that may be associated with the *development* of psychopathology. For instance, studies examining the development and maintenance of post-traumatic stress disorder have suggested that characteristics such as the person's socioeconomic status,

childhood environment, level of social support, and coping style may serve as protective factors (Fairbank, Schlenger, Caddell, & Woods, 1993). However, the identification of protective factors in relapse is equally important. As noted by Towl and Crighton (1997), "specifying factors which may serve to increase a specified risk, and factors which may serve to decrease that risk, should allow better focus and thus better prediction; but also offer clearer targets for measuring and monitoring" (p. 190). For these reasons, the current study took a more balanced approach and examined potential protective factors as well as risk factors.

The limited availability of studies examining protective factors in relapse of other chronic, recurring psychological disorders made the identification of factors that may be related to relapse in BPD even more exploratory. However, some guidance still could be found in the relapse literature. For example, although labeled as "determinants of relapse," Buehringer (1995) provided an overview of factors found in the research on substance abuse that were related to relapse. Examination of these "determinants" suggests that a more appropriate label for these factors actually would be protective factors. Buhringer identified a number of factors as having an influence on relapse in substance abuse including: social stability, good family relationships, and a positive work situation, all of which the current study hypothesized as dynamic protective factors relevant to relapse in BPD. By using the information generated from the relapse literature and integrating it with the general knowledge of psychological distress, involvement in religious or spiritual activities was another potential protective factor that was examined in the current study. As noted above, specific personality traits may

constitute risk factors for relapse in BPD, but other traits (e.g., conscientiousness, agreeableness, openness to experience) may serve as protective factors.

The primary aim of the current study was to develop an improved understanding of the processes of relapse and continued remission in personality disorders and more specifically BPD. Similar attempts have been made in the study of other chronic, recurring psychological problems such as depression, substance abuse, and schizophrenia and the results have contributed to a much-improved understanding of the course of these disorders. No published studies to date have examined the role of specific factors in the process of relapse in personality disorders. One possible reason for this is that personality disorders as a group have not been traditionally viewed as "relapsing" disorders. However, the time frame of previous studies may not have been adequate to capture the diagnostic changes that occur in personality disorders. The current study sought to examine the processes of relapse and continued remission in a more comprehensive and longer-term study population.

To accomplish this primary goal, the current study used data from a longitudinal study that represents one of the most extensive studies of BPD conducted to date. In the original study, 290 subjects diagnosed with BPD were followed for a period of six years with follow-up intervals occurring every two years. Of these subjects, a total of 124 were in remission for two consecutive measurement intervals and a total of 12 subjects returned to diagnostic criteria after a period of remission. For the purpose of the study, remission was defined as not meeting diagnostic criteria for BPD for a period of two years, whereas relapse was defined as meeting diagnostic criteria for BPD after meeting

study criteria for remission. The long-term nature of the study makes this a unique sample because it offered an opportunity to examine the process of relapse in personality disorders, which may happen over a longer period of time. The significant demands and resources required to conduct such extensive, longitudinal studies may explain why the process of relapse in personality disorders has not been systematically examined.

The archival data set that was used for the current study (which is described below) has resulted in a large number of published studies. For example, studies have examined the relationship between eating disorder not otherwise specified (and four well-defined subtypes of this disorder) to BPD (Marino & Zanarini, 2001), the treatment histories of borderlines (Zanarini, Frankenburg, Khera, & Bleichmar, 2001), the antecedent, concurrent, and predictive markers of construct validity in patients with personality disorders (Morey & Zanarini, 2000), the severity and quality of dissociative experiences reported by borderlines (Zanarini, Ruser, Frankenburg, & Hennen, 2000), the role of biparental abuse and neglect in the development of BPD (Zanarini et al., 2000), the experiences of adult violence reported by borderline patients (Zanarini et al., 1999), the Axis I comorbidity associated with BPD (Zanarini et al., 1998), and the pathological childhood experiences associated with the development of BPD (Zanarini et al., 1997).

To understand the processes of relapse and continued remission in BPD, this study sought to address several primary questions. First, are there specific static and dynamic *risk factors* related to diagnostic relapse in BPD? A large number of studies have identified risk factors associated with relapse in other recurring psychological

disorders and some of these findings have been consistent across different disorders. The results from these studies were used as a template for this initial examination of risk factors in BPD relapse. Second, are there specific *protective factors* that affect the strength and direction of the relationship between identified risk factors and relapse in BPD? Until more recently, studies of relapse have tended to overemphasize risk factors and neglect the examination of protective factors that may moderate the effects of these risk factors. The current study aimed to provide a more integrated description of the process of relapse in BPD by examining both the factors that may increase one's risk of relapse and the factors that may serve to safeguard one from relapse when these risk factors are present. To examine these two primary questions, the current study was conceptually driven by using the risk and protective factors abstracted from other empirical studies examining relapse in chronic, recurring psychiatric disorders such as depression, schizophrenia, and substance abuse. These factors were examined as predictors of relapse in BPD and are summarized below in Table 1.

Table 1
Risk and Protective Factors Hypothesized to be Associated with Relapse in BPD

Risk Factors	Protective Factors
Age	Steady Work or School Status
Substance Abuse	Involvement in Community Activities
Comorbid Major Depressive Disorder	Involvement in Religious/Spiritual Activities
Comorbid Anxiety Disorder	Positive Relationship with Caretaker
Personality traits	Personality Traits

METHODS

Subjects and Procedures

Data for the current study were from a comprehensive longitudinal study of Borderline Personality Disorder conducted by Mary C. Zanarini, Ed.D. at McLean Hospital in Belmont, Massachusetts. Subjects used for the current study were 136 inpatients at McLean Hospital who were originally admitted between March 1991 and December 1995. In the original study, each patient was initially screened to determine whether he or she a) was between the ages of 18 and 35; b) were of normal or better intelligence; c) had no history or current symptoms of a serious organic condition, schizophrenia, or bipolar I disorder; and d) had been assigned a definite or probable Axis II diagnosis by the admitting physician.

Written informed consent was obtained from each patient. Patients were initially given three different semistructured diagnostic interviews, which are described below, by an interviewer who was unaware of the patient's clinical diagnosis. Subjects were followed for a period of six years with follow-up intervals occurring biennially. Three hundred seventy-eight patients were given the initial diagnostic interviews. Of these participants, a total of 290 met *DSM-III-R* (APA, 1987) criteria for BPD and another 72 subjects met *DSM-III-R* criteria for at least one nonborderline Axis II disorder, which was used as a comparison group in the original study. For the purpose of this study, remission was defined as not meeting diagnostic criteria for BPD for a period of two years (one follow-up interval) and relapse was defined as meeting diagnostic criteria for BPD after meeting study criteria for remission. Of the patients meeting criteria for BPD,

a total of 181 were in remission by the six-year follow-up interval, of which 124 were in remission for two consecutive measurement intervals. During the course of the study, a total of 12 subjects returned to diagnostic criteria after a period of remission. The final sample used in the current study was comprised of the 124 subjects in remission for two consecutive measurement intervals (the Remitted group) and the 12 subjects who had relapsed (the Relapsed group).

Although the comparison group of 12 relapsed subjects is small, these subjects were part of an extensive study of BPD and are conceivably the most representative data currently available for a study of relapse in BPD. As shown in Table 2, the consequence of using a small comparison group of relapsed subjects resulted in limited power for detecting risk factors, which was further reduced for detecting protective factors due to the decreased size of the comparison subgroup of remitted subjects that were matched on relapse factor status. The selection of the remitted comparison subgroups used in the current study is described later in the Methods section. Table 2 also includes the power analyses for the Remitted subgroup that resulted in the smallest sample size when matched on any risk factor (the Substance Abuse subgroup). This limited power necessitates caution in interpreting any negative findings.

Table 2
Results of Power Computations for Risk Factors Using Unequal Sample Sizes of 12 (Relapsed Group) and 124 (Remitted Group), and for Protective Factors Using 12 (Relapsed Group) and 13 (Remitted Subgroup with Any Substance Abuse)

	Risk Factors		Protective Factors	
Effect Size (γ)	δ	Power	δ	Power
.20 ("small")	0.662	≈ .18	0.500	≈ .14
.50 ("medium")	1.654	≈ .52	1.249	≈ .37
.80 ("large")	2.646	≈ .85	1.998	≈ .64

Note. For all power computations, $\alpha = .05$. Power was calculated using equations provided in Welkowitz, J., Ewen, R.B., & Cohen, J. (Eds.) (1982). *Introductory statistics for the behavioral sciences.* New York: Academic Press.

The sample of patients meeting criteria for BPD in the original study was 80.3% female, 13% were nonwhite, 76.2% had never married, and the average age was 26.9 years (*SD* = 5.8). As measured by the Hollingshead-Redlich scale (1 = highest, 5 = lowest; Hollingshead, 1957), the mean socioeconomic status of the sample was 3.4 (*SD* = 1.5). For the final sample of 136 subjects used in the current study, 80.1% were female, 13% were nonwhite, the average age was 25.58 years (*SD* = 5.68), and the mean socioeconomic status was 2.93 (*SD* = 1.46).

Attrition rates for the entire sample were low; 340 and 331 patients were reinterviewed at the 2-year and 4-year follow-ups, respectively. Attrition was due to the following factors: suicide (*n* = 10), other death (*n* = 2), discontinued participation (*n* = 15), and unable to locate (*n* = 4). The trace rate for surviving patients at the 2-year follow-up was 96%, and the comparable rate at 4 years was 94%. No significant differences in attrition were noted by diagnostic group. For the 6-year follow-up interval, 264 of the original 290 subjects in the BPD group were reinterviewed.

Measures

BPD Diagnostic Procedures. Patients were diagnosed with BPD using the Revised Diagnostic Interview for Borderlines (DIB-R; Zanarini, Gunderson, Frankenburg, & Chauncey, 1989), which is a semistructured interview that can reliably distinguish clinically diagnosed borderline patients from those with other axis II disorders, and the Diagnostic Interview for *DSM-III-R* Personality Disorders (DIPD-R; Zanarini, Frankenburg, Dubo, et al., 1998), which is a semistructured interview that reliably assesses the presence of the axis II disorders described in the *DSM-III-R*. Patients included in the study were required to meet criteria for BPD on both instruments. All interviewers had been trained in the administration and scoring of the DIB-R and the DIPD-R by Mary C. Zanarini, who is one of the developers of these instruments. Adequate levels of interrater reliability were obtained during this training period (e.g., pairwise kappa values of .85 or higher on the DIB-R and the DIPD-R diagnoses of BPD; Zanarini, Gunderson, et al., 1989).

Personality traits. Personality variables were measured by the NEO-Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992), an abbreviated form of the NEO instrument designed to measure the five personality domains that have emerged from numerous investigations of normal variation in personality. These domains include Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. The 61 items are answered on a 5-point Likert scale. Internal consistency reliabilities for the five scales range from .76 to .93, and the temporal stability of the scales have been demonstrated over periods spanning several years.

Axis I Diagnoses. Indicators of Axis I comorbidity (Major Depressive Disorder and any anxiety disorders) and substance abuse were gathered using the Structured Clinical Interview for *DSM-III-R* Axis I Disorders (Spitzer, Williams, Gibbon, & First, 1990). This semistructured interview is designed to assess the presence and lifetime prevalence of many of the most common Axis I disorders described in the *DSM-III-R*.

Protective Factors. The variables of Steady Work or School Status, Involvement in Community Activities, Involvement in Religious/Spiritual Activities, and Positive Relationship with Caretaker were collected using the Revised Borderline Follow-up Interview (Zanarini, Frankenburg, Khera, & Bleichmar, 2001) at the follow-up intervals. This instrument is a semistructured interview and the median interrater kappa value for follow-up assessments was .94 in a subsample of 48 patients. Items from this instrument allowed for a dichotomous rating (e.g. participation vs. no participation).

Analyses

Data analyses sought to examine the relationship between the dichotomous dependent variable (relapse vs. remittance) and the independent variables (risk and protective factors). A pictorial representation of the sample composition for the performed analyses is presented in Figure 1. As shown in this figure, to examine the hypothesized risk factors, the 12 subjects in the Relapsed group were compared to the 124 subjects in the Remitted group. Pearson's chi-square analyses were performed to examine the relationship between the categorical risk factors (Major Depressive Disorder, any substance abuse disorder, and any anxiety disorder) and relapse.

Additionally, t-tests comparing the Relapsed group to the Remitted group were computed to determine whether NEO personality factors were significantly related to diagnostic relapse in BPD. In order to determine the degree of added risk represented by the hypothesized risk factors, odds ratios were computed comparing the Relapsed group to the Remitted group on each of the risk factors. An odds ratio represents the odds of an event (i.e. relapse) occurring in the treatment group (i.e. subjects with the risk factor present) divided by the odds of the event occurring in the control group (i.e. subjects with the risk factor absent). If the odds ratio is greater than one, then it is more likely that relapse will occur in the presence of that risk factor than when the risk factor is absent.

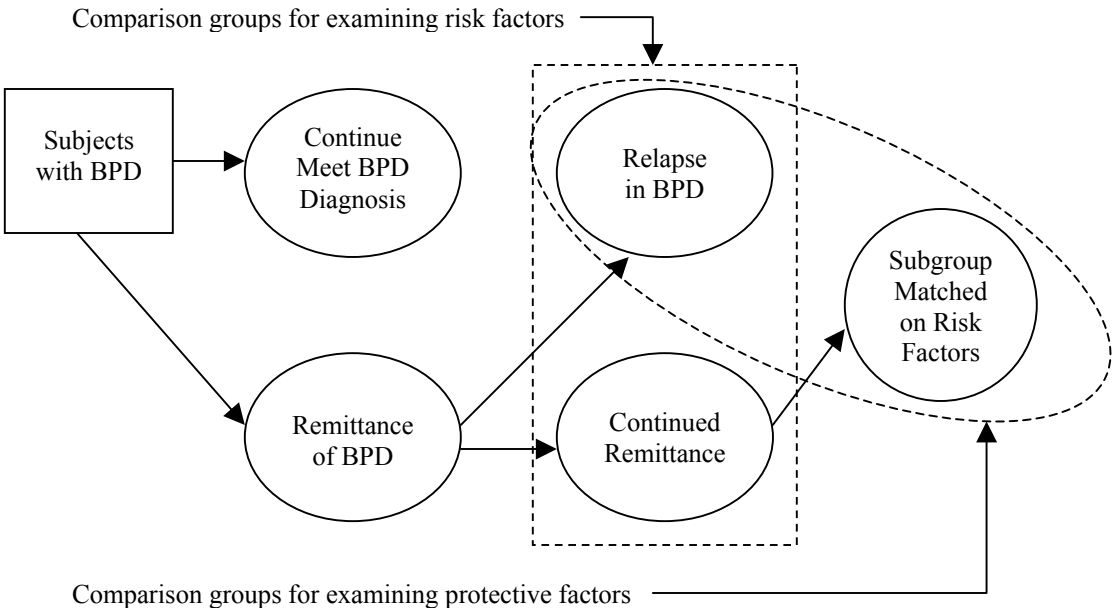

Figure 1. Pictorial representation of the comparison groups for statistical analyses.

As also shown in Figure 1, to examine the hypothesized protective factors, the 12 subjects in the Relapsed group were compared to different subsamples of individuals from the Remitted group who were matched on the identified risk factors. Thus, for each categorical risk factor (any substance abuse disorder, any anxiety disorder, and Major Depressive Disorder), a different comparison subgroup of remitted subjects was identified using subjects who met study criteria for continued remittance and the diagnostic risk factor. This resulted in three separate comparison subgroups of remitted subjects who also met diagnostic criteria for: 1) any substance abuse disorder (n = 13), 2) Major Depressive Disorder (n = 57), and 3) any anxiety disorder (n = 54). Creating separate comparison subgroups for the examination of protective factors was necessary because creating a single comparison subsample using a multivariate match of the risk factors resulted in only two subjects.

For the NEO factors, a comparison subgroup of remitted subjects was created by identifying subjects who scored above or below (depending on the directionality of the risk associated with the continuous variable) the overall sample mean on each personality factor that was found to be associated with an increased risk for relapse. As will be discussed, the current study found that high Neuroticism and low Conscientiousness increased subjects risk for relapse. Therefore, to examine protective factors among subjects with high Neuroticism and among subjects with low Conscientiousness, two separate comparison Remitted subgroups were created. The first comparison group included all remitted subjects who scored above the overall sample mean on Neuroticism (n = 62) and the second included all remitted subjects who scored

below the overall sample mean on Conscientiousness (n = 59). These procedures resulted in comparable comparison groups: the mean Neuroticism scores of the Relapsed group (34.08, SD = 7.46) and of the "high Neuroticism" Remitted subgroup (31.87, SD = 5.16) were not statistically different ($t(72) = 0.21$), and the difference between the mean Conscientiousness scores of the Relapsed group (29.08, SD = 6.54) and the "low Conscientiousness" Remitted subgroup (27.54, SD = 4.79) also was not significant ($t(69) = 0.34$). Similar to the examination of risk factors, a combination of t-tests for the NEO personality factors and Pearson's chi-square analyses for the Axis I diagnostic categories were used to examine the relationship between the protective factors and relapse. In addition, for each comparison group, odds ratios were computed comparing the Relapsed group to the Remitted subgroup to determine the likelihood of relapsing when a protective factor was present in addition to a risk factor.

The data used in the analyses refers to several "measurement periods," which are illustrated in Figure 2 along with a listing of the study variables gathered at each period. The first measurement period (*Baseline*) includes baseline data gathered from subjects meeting study criteria for BPD at study entry. The second period of measurement (*Point of Remission*) was the two-year follow-up interval at which subjects no longer met study criteria for BPD. The third measurement period (*Period after Remission*) represents any observations occurring within the course of the two-year remission period following the point of remission. Finally, the fourth measurement period (*Point of Relapse or Continued Remission*) represents data that were collected after the two-year remission

period on subjects who either returned to study criteria for BPD or who remained in remission.

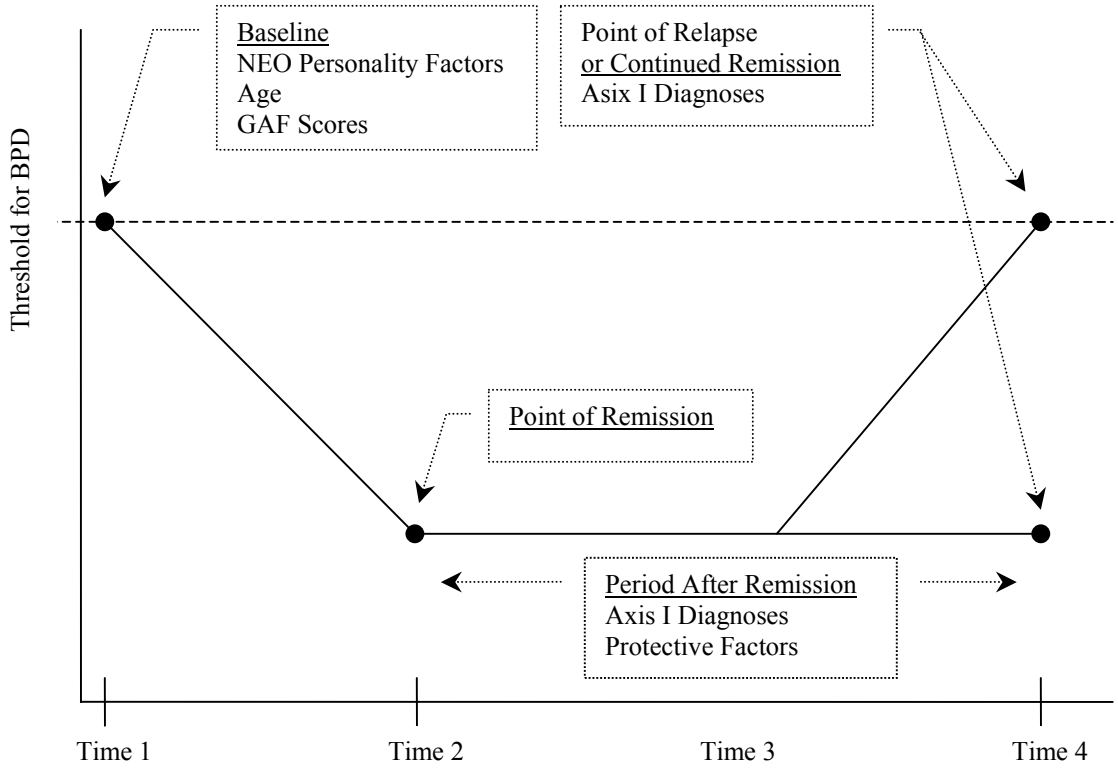

Figure 2. Defined measurement periods used for statistical analyses.

RESULTS

Table 3 presents the descriptive statistics for the sample as a whole, the Remitted group, and the Relapsed group. The average age for the entire sample was 25.58 (*SD* = 5.22), 25.66 (*SD* = 5.64) for the remitted subjects, and 24.75 (*SD* = 6.34) for the relapsed subjects. As shown by their average GAF scores at baseline, the level of functional impairment at baseline was not significantly different between the Remitted group (*M* = 40.98, *SD* = 7.05) and Relapsed group (*M* = 37.25, *SD* = 6.14). Compared to the community norms provided by Costa & McCrae (1992), the mean scores for the entire sample on the five personality factors of the NEO-FFI all were within one standard deviation with Neuroticism showing the highest elevation (*M* = 25.89, *SD* = 8.73). The community norms for the NEO-FFI are as follows: Neuroticism (*M* = 19.07, *SD* = 7.68), Extraversion (*M* = 27.69, *SD* = 5.85), Openness (*M* = 27.03, *SD* = 5.84), Agreeableness (*M* = 32.84, *SD* = 4.97), and Conscientiousness (*M* = 34.57, *SD* = 5.88).

Risk Factors for BPD Relapse

Tables 4 and 5 summarize the analyses of the study's hypothesized risk factors for a diagnostic relapse of BPD. Of the diagnostic risk factors shown in Table 4, the presence of any substance abuse disorder during the period after remission was associated with an increased likelihood of a relapse of BPD (*chi-square*(1) = 5.22, $p < .05$), whereas the presence of a Major Depressive Disorder or any anxiety disorder during the period after remission were not associated with a relapse in BPD. Odds ratios ranged from 1.65 (Major Depressive Disorder) to 4.27 (any substance abuse); subjects with any substance abuse diagnosis during the period after remission were more than

Table 3
Sample Characteristics

	Full Sample (*n* = 136)		Remitters (*n* = 124)		Relapsers (*n* = 12)		Comparison t-test (remitters vs. relapsers)	
	M	*SD*	*M*	*SD*	*M*	*SD*	*t*	*p*
Age	25.58	5.22	25.66	5.64	24.75	6.34	0.53	*ns*
GAF	40.65	7.03	40.98	7.05	37.25	6.14	1.77	*ns*
Neuroticism	25.89	8.73	25.1	8.46	34.08	7.46	3.54	< .001
Extraversion	25.61	7.68	25.92	7.43	22.42	9.78	1.51	*ns*
Openness	30.21	6.89	30.11	6.96	31.17	6.31	0.51	*ns*
Agreeableness	33.94	5.22	34.15	5.19	31.75	5.15	1.53	*ns*
Conscientiousness	32.73	6.68	33.08	6.62	29.08	6.54	2.00	< .05

Table 4
Risk Factors for BPD Relapse Using Chi-squares and Odds Ratios

Risk Factor	BPD Relapse *n*	Continued Remittance *n*	Odds Ratio	X^2	*p*
Major Depressive Disorder				0.67	*ns*
Yes	7	57	1.65		
No	5	67			
Any Anxiety Disorder				2.36	*ns*
Yes	8	54	2.59		
No	4	70			
Any Substance Abuse Disorder				5.22	<.05
Yes	4	13	4.27		
No	8	111			

Table 5
Group Means, Standard Deviations, and Significance Tests for Age and NEO Personality Traits as Risk Factors for BPD Relapse

	Relapsers		Remitters		Comparison t-test	
	M	*SD*	*M*	*SD*	*t*	*p*
Age	25.66	5.64	24.75	6.34	0.53	*ns*
Neroticism	34.08	7.46	25.1	8.46	3.55	<.001
Extraversion	22.42	9.78	25.92	7.43	-1.52	*ns*
Openness	31.17	6.31	30.11	6.96	0.51	*ns*
Agreeableness	31.75	5.15	34.15	5.19	-1.53	*ns*
Conscientiousness	29.08	6.54	33.08	6.62	-2.00	<.05

four times as likely to have relapsed. However, when the risk factors were examined at the point of relapse rather than for the entire two-year follow-up period after remission, the presence of a concurrent Major Depressive Disorder significantly increased the likelihood of having met the study criteria for a diagnostic relapse (*chi-square*(1) = 12.59, $p < .001$). The likelihood of having relapsed was nearly sixteen times greater if subjects had a Major Depressive Disorder at the point of relapse (*odds ratio* = 15.96).

The findings that the risk of relapse increased in the presence of a Major Depressive Disorder when assessed at the point of relapse but not for when MDD was present during the two year period after remission raises two possibilities. First, it may suggest that these two disorders are simply co-occurring for these individuals. In other words, the presence of one disorder does not necessarily reflect a preexisting risk for the other disorder, but that these two disorders arise simultaneously. The difficulties associated with a major depressive episode (e.g., feelings of worthlessness, feeling sad or empty) simply may occur simultaneously with difficulties related to BPD (e.g., unstable sense of self, affective instability). A second possibility is that these findings may indicate that the chronicity of the Major Depressive episode may serve as a risk for BPD relapse. In other words, subjects who met diagnostic criteria for MDD for only a part of the 2-year follow-up period after remission may have had a briefer course of depression compared to those that continued to meet diagnostic criteria for MDD at the measurement interval it was determined the subject had relapsed (i.e. point of relapse). The subjects with a briefer course of depression may have been less likely to have experienced a BPD relapse compared to subjects with a more persistent form of MDD.

Unfortunately, the nature of the data used in the current study does not allow for adequate testing of these hypotheses.

As shown in Table 5, personality factors measured at baseline that were related to a relapse in BPD included scores on Neuroticism ($t(134) = 3.55$, $p < .001$) and Conscientiousness ($t(134) = -2.00$, $p < .05$). These findings indicated that both higher scores on Neuroticism and lower scores on Conscientiousness at baseline resulted in an increased likelihood for a diagnostic relapse in BPD. Also, the difference in average age between the Remitted group and Relapsed group at baseline was not significant ($t(134) = 0.53$), which indicated that age was not associated with an increased likelihood of BPD relapse.

Protective Factors for BPD Relapse

Tables 6 and 7 summarize the analyses of the study's hypothesized protective factors against a diagnostic relapse of BPD. As shown in Table 6, results of the chi-square analyses revealed that of the hypothesized protective factors, only having a steady work/school status for the two-year period after remission was found to be significantly associated with a decreased likelihood of relapse among only two of the comparison groups. However, it is important to note that although there were few statistically significant results among the protective factor analyses, the findings that were not statistically significant still should be considered inconclusive. The significance tests for the analyses in the current study are limited because of low power and the calculated odds ratios can be used to suggest more promising factors for future studies of BPD relapse. In other words, the lack of statistically significant findings is not necessarily

Table 6
Protective Factors for BPD Relapse Using Chi-squares and Odds Ratios

Protective Factor	BPD Relapse *n*	Continued Remittance *n*	Odds Ratio	X^2	*p*
Comparison Group = Any Substance Abuse Diagnosis					
Steady work/school history				2.14	*ns*
Yes	7	11			
No	5	2	3.93		
Community Activities				0.48	*ns*
Yes	2	1			
No	10	12	0.42		
Religious/Spiritual Activities				0.16	*ns*
Yes	2	3			
No	10	10	1.5		
Positive Caretaker Relationship				0.19	*ns*
Yes	8	9			
No	4	4	1.13		
Comparison Group = Major Depressive Disorder Diagnosis					
Steady work/school history				2.79	<.10
Yes	7	46			
No	5	11	2.99		
Community Activities				0.68	*ns*
Yes	2	5			
No	10	52	0.48		
Religious/Spiritual Activities				0.35	*ns*
Yes	2	14			
No	10	43	1.63		
Positive Caretaker Relationship				0.25	*ns*
Yes	8	42			
No	4	15	1.4		
Comparison Group = Any Anxiety Disorder Diagnosis					
Steady work/school history				2.43	*ns*
Yes	7	43			
No	5	11	2.79		
Community Activities				0.03	*ns*
Yes	2	8			
No	10	46	0.87		
Religious/Spiritual Activities				0.46	*ns*
Yes	2	14			
No	10	40	1.75		
Positive Caretaker Relationship				0.06	*ns*
Yes	8	34			
No	4	20	0.85		

Table 6 (continued)

Protective Factor	BPD Relapse *n*	Continued Remittance *n*	Odds Ratio	X^2	*p*
Comparison Group = High Neuroticism (> or = sample mean of 25)					
Steady work/school history				2.34	*ns*
Yes	7	49			
No	5	13	2.69		
Community Activities				0.51	*ns*
Yes	2	6			
No	10	56	0.54		
Religious/Spiritual Activities				0.21	*ns*
Yes	2	14			
No	10	48	1.46		
Positive Caretaker Relationship				0.03	*ns*
Yes	8	43			
No	4	19	1.13		
Comparison Group = Low Conscientiousness (< or = sample mean of 33)					
Steady work/school history				5.27	<.05
Yes	7	51			
No	5	8	4.55		
Community Activities				0.21	*ns*
Yes	2	7			
No	10	52	0.67		
Religious/Spiritual Activities				0.29	*ns*
Yes	2	14			
No	10	45	1.56		
Positive Caretaker Relationship				0.32	*ns*
Yes	8	44			
No	4	15	1.47		

Table 7
Group Means, Standard Deviations, and Significance Tests for NEO Personality Traits as Protective Factors for BPD Relapse

	Relapsers		Remitters		Comparison t-test	
	M	*SD*	*M*	*SD*	*t*	*p*
Comparison Group = Any Substance Abuse Diagnosis						
Extraversion	22.42	9.78	26.92	7.94	1.27	*ns*
Openness	31.17	6.31	32.92	7.32	0.64	*ns*
Agreeableness	31.75	5.15	32.77	7.64	0.39	*ns*
Comparison Group = Major Depressive Disorder Diagnosis						
Extraversion	22.42	9.78	23.95	7.27	0.62	*ns*
Openness	31.17	6.31	31.12	7.12	-0.02	*ns*
Agreeableness	31.75	5.15	33.89	5.07	1.33	*ns*
Comparison Group = Any Anxiety Disorder Diagnosis						
Extraversion	22.42	9.78	25.2	7.72	1.08	*ns*
Openness	31.17	6.31	29.59	7.32	-0.69	*ns*
Agreeableness	31.75	5.15	33.85	5.27	1.26	*ns*
Comparison Group = High Neuroticism (> or = sample mean of 25)						
Extraversion	22.42	9.78	23.61	7.99	-0.46	*ns*
Openness	31.17	6.31	29.18	7.00	0.91	*ns*
Agreeableness	31.75	5.15	33.44	5.82	-0.93	*ns*
Comparison Group = Low Conscientiousness (< or = sample mean of 33)						
Extraversion	22.42	9.78	25.47	6.67	-1.33	*ns*
Openness	31.17	6.31	30.92	6.69	0.12	*ns*
Agreeableness	31.75	5.15	33.46	5.18	-1.04	*ns*

because there were no effects of the protective factors on reducing the risk of BPD relapse. Instead, the ability of the current study to identify actual effects among the protective factors was often hampered by having limited power among these analyses.

For example, the presence of any substance abuse diagnosis during the period after remission was previously found to be associated with an increased likelihood of relapse. Chi-square analyses revealed that none of the hypothesized protective factors were found to decrease the likelihood of a relapse in the presence of this risk factor. In one specific instance, statistical significance was not found for the analysis examining steady work/school status for the period after remission as a protective factor against BPD relapse among subjects with a substance abuse diagnosis. However, examination of the odds ratio does indicate that subjects with a substance abuse diagnosis who did not have a steady work/school status during the period after remission were nearly four times as likely (*odds ratio* = 3.93) to have experienced a relapse in BPD. Concluding that a steady work/school status during the period after remission does not protect against a BPD relapse could be misleading if it were based solely on the results of significance testing because the power of the chi-square analysis was only 0.30 (P_1 = 0.39, P_2 = 0.71, n = 10.08; the harmonic mean for unequal sample sizes was used). To decrease the likelihood of Type II errors, results of the chi-square analyses should not be interpreted in isolation of the odds ratios.

As noted above, lower scores on Conscientiousness at baseline were associated with an increased likelihood for relapse. However, having a steady work/school status during the two-year period after remission significantly lowered this risk (*chi-square*(1)

= 5.27, $p < .05$). Examination of the odds ratio indicates that subjects with lower scores on Conscientiousness (< or = to the overall sample mean) but without a steady work/school status during the period after remission were more than four and one half times more likely to have relapsed compared to those with a steady work/school status (*odds ratio* = 4.55). In addition, noted as a trend toward statistical significance, having a steady work/school status during the period after remission also lowered the risk of relapse among individuals diagnosed with Major Depressive Disorder (*chi-square*(1) = 2.79, $p < .10$). Subjects with a Major Depressive Disorder and without a steady work/school status during the period after remission were nearly three times as likely to have relapsed (*odds ratio* = 2.99). Other findings that did not reach statistical significance, but that indicated subjects were at least one and one half times as likely to have a BPD relapse when the protective factor was not present included: having a steady work/school status after remission protected against relapse for subjects with higher baseline Neuroticism scores (*odds ratio* = 2.69); involvement in religious/spiritual activities after remission protected against relapse for subjects with a substance abuse disorder during the period after remission (*odds ratio* = 1.50) and also for subjects with lower scores on Conscientiousness at baseline (*odds ratio* = 1.56).

Examination of the odds ratios indicates that, in general, when any of the hypothesized risk factors were present, subjects without the protective factor of having a steady work/school status during the period after remission were usually more than two times as likely to have had a BPD relapse. In fact, having a steady work/school status was the only protective factor found in the current study with an odds ratio above the

value of 2.00. Although not found in the current study to be risk factors, odds ratios for the other comparisons groups that indicated subjects were more than one and one half times as likely to have experienced a relapse in BPD when the protective factor was not present for the two-year period after remission included: involvement in religious/spiritual activities protected against BPD relapse for subjects with a Major Depressive Disorder (*odds ratio* = 1.63) or any anxiety disorder (*odds ratio* = 1.75) and having a steady work/school status protected against relapse for subjects with any anxiety disorder (*odds ratio* = 2.79). Finally, as seen in Table 7, none of the NEO personality factors measured at baseline demonstrated statistical significance when examined as protective factors against BPD relapse.

DISCUSSION AND CONCLUSIONS

The current study was aimed at taking an initial step in the direction of delineating the factors that may be related to the processes of relapse and *continued* remission in BPD. In general, the results of this study showed that a number of factors can increase an individual's risk for diagnostic relapse in BPD, but that other factors can serve to protect against, or minimize, this risk. With regard to the hypothesized risk factors, subjects were more likely to have relapsed if they had been diagnosed with a substance abuse disorder within the two years after remission or if they had a comorbid Major Depressive Disorder. Among personality factors, higher scores on Neuroticism and lower scores on Conscientiousness both served to increase an individual's risk for BPD relapse.

The findings concerning risk factors are somewhat analogous to findings from studies of relapse in other recurring psychiatric conditions such as major depression and anxiety disorders that have shown an increased risk of relapse when an Axis II diagnosis is present (e.g., Dreessen & Arntz, 1998; Torgensen, 1997). However, the current study's findings suggest that the presence of various Axis I conditions can increase the risk of relapse in BPD. Taken together these findings indicate that the issue of diagnostic comorbidity is a problem that can have a serious impact on the clinical course and prognosis of both Axis I and II psychiatric conditions.

Substance abuse problems appear to be a common risk factor related to the process of relapse in other recurring psychiatric conditions such as schizophrenia and depression (Coryell et al., 1991; Linszen et al., 1997; Weiden & Glazer, 1997). The

current study also found an increased risk of relapse in BPD for patients with a recent history of substance abuse. These findings provide further support for the problematic relationship that has been found in other studies between substance abuse and the maintenance of remission in a variety of psychiatric problems; a problem that does not appear to be exclusive to Axis I disorders. As will be discussed, the prominent role that substance abuse problems play as a predictor of relapse in various psychiatric conditions including BPD has important treatment implications.

The findings that Neuroticism and Conscientiousness significantly increased subjects' risk for BPD relapse are also of specific interest. Recent studies examining whether the diagnostic features of personality disorders can be translated using the Five-Factor Model of Personality have found that BPD (and personality disorders in general) are described by significantly higher scores on Neuroticism compared to the general population and below average Conscientiousness, Extraversion, and Agreeableness (Morey et al, 2000; Morey et al, 2002). Whereas scores on each of these factors appears to differentiate BPD from the general population, scores particularly on Neuroticism and Conscientiousness may provide additional information with regard to an individual's risk for BPD relapse. To some degree, extreme scores on these two personality factors may serve to identify those patients whose symptomatic course of BPD may be more recurrent and thus guide more effective treatment strategies such as increased emphasis on the relapse prevention components of treatment with these patients. Neuroticism is a general measure of maladjustment and higher scorers tend to be individuals who are less able to control their impulses and who cope poorly with stress (Costa & McCrae, 1992);

qualities that would have a significant impact on one's ability to maintain the remission of BPD features. In addition, the finding that Conscientiousness was related to an increased likelihood of relapse makes intuitive sense when considering the characteristics of this personality trait. Costa and McCrae (1992) describe the factor Conscientiousness as being related to self-control. Individuals high in Conscientiousness are considered more organized, reliable, determined, and goal-directed. It would seem that low scorers on this trait may experience greater difficulty in maintaining the gains made in treatment and steadfastly engaging in the necessary means to avoid a recurrence of BPD features during moments of adversity. When these traits are viewed in combination, it can be seen how an individual who has a tendency to cope poorly with stress (i.e. higher Neuroticism) and is deficient in characteristics related to perseverance and self-discipline (i.e. lower Conscientiousness) could be at an increased risk for BPD relapse. In summary, the presence of a substance abuse disorder, Major Depressive Disorder, higher scores on Neuroticism, and lower scores on Conscientiousness all were found in the current study to be risk factors related to an increased likelihood of relapse in BPD.

In addition to identifying potential risk factors for BPD relapse, another aspect of the current study was to identify a number of potential factors that may serve to protect against the risk of relapse when these risk factors are present. Among the hypothesized protective factors, the stability of subjects' work or school environments seemed to be the most promising factor that protected against the likelihood of relapse in the presence of a risk factor. More specifically, results demonstrated that having a steady work or

school status was found to protect against a BPD relapse among individuals who had lower scores on Conscientiousness and may serve to protect against relapse if an individual has a comorbid Major Depressive Disorder, although the latter finding only approached statistical significance. These initial findings are noteworthy in that the therapeutic benefits of the structure provided by stable employment have been highlighted by a number of other authors (Lennon & Rosenfield, 1992; Warr, 1998). With the exception of the caretaker relationship variable, the lack of significant findings among the other protective factors may have been a consequence of the small number of subjects who engaged in other hypothesized protective factors such as community activities and religious/spiritual activities. The small sample size of these protective factor groups may have made it difficult to detect significant results among the hypothesized protective factors.

The findings of the current study did not support the hypothesis that specific personality traits may serve as protective factors against BPD relapse. Although Neuroticism and Conscientiousness were found to increase the risk of relapse, the remaining NEO factors of Extraversion, Openness to Experience, and Agreeableness were not found to moderate the risk of BPD relapse. However, the lack of significant findings for these personality factors may have been expected due to the fact that normatively high scores on these traits are atypical of personality disorder patients. As previously mentioned, studies have characterized BPD subjects as having below average scores on Extraversion and Agreeableness (Morey et al, 2000; Morey et al, 2002). The range of these scores varies around this lower mean score and few BPD individuals tend

to reflect scores that are above the community mean on these traits. Whereas possessing the sociable tendencies of higher Extraversion and the sympathetic/altruistic interpersonal tendencies of higher Agreeableness may serve to enhance a person's level of social support and thereby hypothetically provide some level of protection against relapse, these same personality traits appear to be uncommon among individuals with BPD, which makes these traits unlikely to serve as protective factors among this clinical population. Future studies of relapse in other psychiatric conditions should not assume that the findings from this study can be generalized to other psychiatric conditions and should continue to examine the ability of higher scores on these personality traits to serve as protective factors against relapse.

The findings from the current study have a number of potential clinical implications for the treatment of BPD. Most relevantly, these findings have important implications for treatment strategies focused toward relapse prevention. A number of promising developments have taken place in an effort to improve the likelihood of continued remission in other "long-term" psychological conditions such as depression and substance abuse. In general, these efforts have been aimed at reducing the risk of relapse through a variety of psychological treatments usually labeled relapse prevention strategies. Relapse prevention is based on the assumption that the risk of relapse is minimized or prevented by first identifying the elements that make specific situations a "high risk" to the individual's maintenance process.

The most influential model of relapse prevention that has been applied to the treatment of recurrent, chronic problems has been Marlatt and Gordon's (1985) relapse

prevention model. This model employs various psychosocial interventions aimed at assisting one to recognize the high-risk situations associated with relapse and implementing adaptive responses to prevent the process of relapse from occurring. Quigley (2001) proposed an adaptation of Marlatt and Gordon's model that may have promise for understanding the course of some personality disorders and for targeting treatment efforts when working with personality disorder patients. Borrowing from Marlatt and Gordon's model, relapse prevention approaches could be included in the primary treatment program, either concurrently or as a separate component, that teaches individuals with BPD various coping strategies to implement during periods when they are at increased risk for relapse. Other authors have also highlighted the importance of incorporating relapse prevention methods in the treatment of BPD patients (e.g. Linehan,1993; Strosahl, 1991).

In terms of relapse prevention, the current study serves as an important initial step in detecting the "warning signs" associated with individuals who may be at an increased risk for experiencing *post-treatment* recurrences of BPD features and also when these individuals are at the greatest risk. The factors associated with relapse may be static or dynamic, which have different implications for relapse prevention treatment. For example, findings from the current study suggest that employing effective coping strategies after a life stressor would be especially important for BPD patients who have extremely high baseline Neuroticism and/or lower baseline Conscientiousness scores. Static risk factors such as these provide information about *who* is likely to relapse and typically are not directly amenable with treatment. Additionally, because comorbid

major depression and substance abuse problems were found to be risk factors, monitoring dynamic factors such as patients' level of depressed mood or level of substance use could provide information about *when* patients are at a greater risk for relapse.

Another clinical use of findings from the current study can be to direct clinical interventions toward appropriate targets of treatment in an effort to minimize one's risk of future BPD relapse. Previous studies have examined the role of risk factors in isolation of protective factors on relapse of other recurring psychiatric problems such as schizophrenia. However, both decreasing risk factors and increasing protective factors may be an important feature of psychotherapy with BPD (and other psychiatric) patients. For example, because a stable work or school environment serves to reduce the risk of relapse among BPD patients with lower scores on Conscientiousness, effective treatment for these patients not only would be to address the symptomatic features of BPD, but also to facilitate the establishment of a stable work or school environment in an effort to enhance the patient's resilience to precipitants of relapse (e.g., depressed mood). Another possible explanation is that patients with lower scores on Conscientiousness, in other words patients who are more disorganized and less goal-directed, have an increased need for more structure, predictability, and organization in their lives to maintain the gains made in treatment. The structure imposed by a steady work routine can serve to prevent problems from reemerging for these patients who have an increased risk for relapse due to lower Conscientiousness. In essence, the environmentally imposed structure and demands of a steady work or school routine can serve to

compensate for the lack of personality-driven organization resulting from the phenotypic expression of low Conscientiousness.

With regard to targeting the risk factors for relapse prevention efforts, because substance abuse problems are associated with an increased risk for BPD relapse, effective treatment should thoroughly address substance use/abuse along with the symptomatic features of BPD. In fact, incorporating relapse prevention approaches that primarily target patients' substance abuse problems can have a two-fold effect: clinical interventions designed to reduce the likelihood of relapse for substance abuse also may indirectly reduce the likelihood of relapse in BPD.

There are a number of limitations to the current study including the small number of subjects in the Relapsed group and associated difficulties with power for detecting risk and protective factors, measurement of the protective factors, and the duration of the follow-up intervals. As noted above, the small number of individuals who returned to BPD diagnostic status after a period of remission resulted in limited power for detecting risk factors, which was further reduced for detecting protective factors due to the decreased size of the protective factor comparison subgroups matched on risk factor status. As a result, the limited power in the current study necessitates caution when interpreting any negative findings. It is also difficult to generalize these findings to a greater population from such a small study sample of relapsed patients.

Another limitation is that very few subjects in both the Relapsed and Remitted groups reported participation in some of the hypothesized protective factors. The limited number of subjects may have affected the likelihood of finding significant results. Also,

the current study examined participation in activities hypothesized to be protective factors against relapse that were dichotomized (i.e. participation vs. no participation). Future studies could take a more precise approach and examine whether the quantity or frequency of subjects participation in these activities has an impact on reducing the risk for BPD relapse.

A potential methodological limitation of the current study is that the data was gathered every two years. As a result, it is difficult to precisely determine the temporal relationship of the risk and protective factors to the processes of relapse and remission. Future studies may consider briefer follow-up intervals as a potential way of more precisely determining the nature of the relationship between risk/protective factors and BPD relapse.

Despite these limitations, it is important to point out that these subjects are part of an extensive study of BPD and are conceivably the most representative data currently available for a study of relapse in BPD. The longitudinal nature of the data is unique because it provides an opportunity to examine the clinical course of a disorder where the processes of relapse and remission may not be acute and frequent, but possibly long and gradual. The longitudinal nature of the current study has an advantage over previous studies that have employed shorter designs because these other studies may have been too brief for capturing the elements of diagnostic relapse in personality disorders. Results from this study will need to be replicated, but they offer some of the first insights of the process of relapse in BPD. To better understand the process of relapse in personality disorders, future studies may need to employ even longer designs with more

frequent follow-up measurement intervals. However, the exploratory findings from the current study can be used as a guide for future studies examining risk and protective factors of relapse in BPD

The current study attempted to provide some of the first insights with regard to the various factors that could be related to the recurrence of clinical features of BPD after a period of remission. An extensive literature search produced no published studies to date examining risk and/or protective factors related to BPD relapse. Furthermore, a strength of the current study was that risk factors and their interaction with protective factors were examined, which is an improvement over many relapse studies that examine only risk factors (Rogers, 2000). The lack of empirical studies examining the processes of relapse and remission in BPD may be due in part to personality disorders not having been traditionally viewed as "relapsing" disorders. Our findings suggest some BPD patients do return to diagnostic criteria after a period of remission and that specific factors related to increased or decreased likelihoods of relapsing can, in fact, be identified.

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