Borderline Personality Traits Predict Poorer Functioning During Partial Hospitalization: The Mediating Role of Depressive Symptomatology

Stephanie M. Jarvi, Arielle R. Baskin-Sommers, Bridget A. Hearon, Stephanie Gironde & Thröstur Björgvinsson

Springer

Springer

CrossMark

ORIGINAL ARTICLE

Borderline Personality Traits Predict Poorer Functioning During Partial Hospitalization: The Mediating Role of Depressive Symptomatology
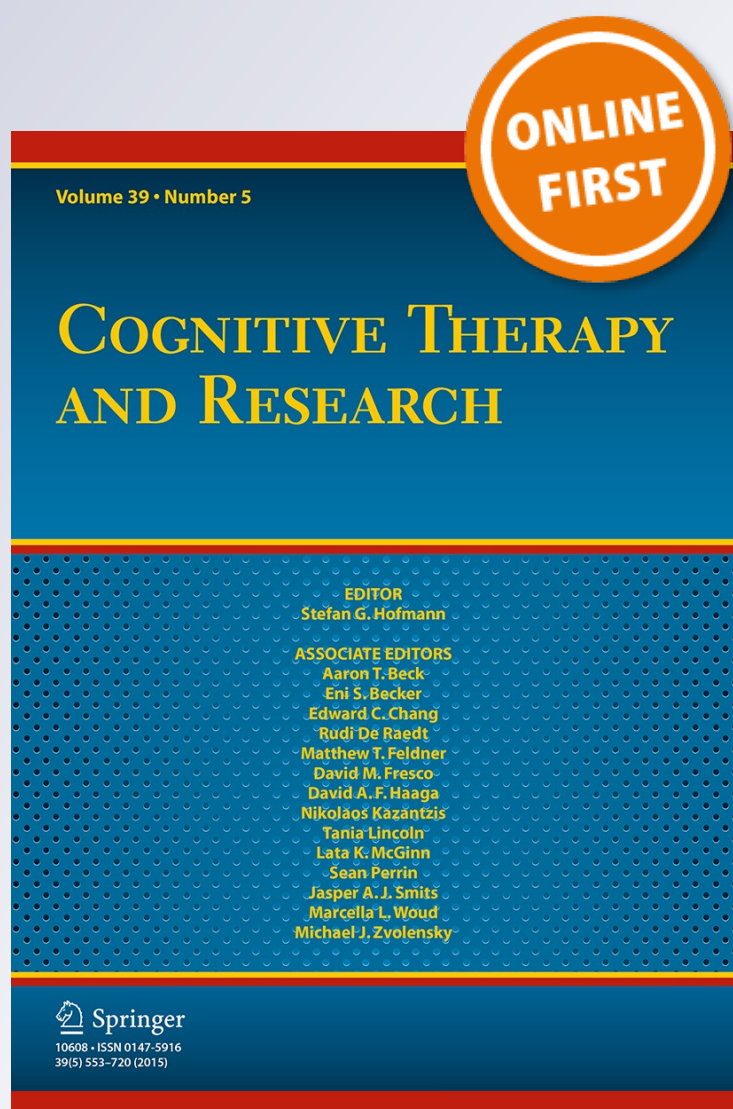
Stephanie M. Jarvi[1] · Arielle R. Baskin-Sommers[2] · Bridget A. Hearon[3] ·
Stephanie Gironde[4] · Thröstur Björgvinsson[4]

Abstract A number of factors contribute to the difficulty providers experience in treating borderline personality disorder (BPD). One complicating factor for treatment effectiveness is the presence of comorbid affective psychopathology (e.g., depression, anxiety). Participants were 176 adults (60 % female; $M_{age} = 32.20$) in a partial hospital program. Using a mediation model, the current study examined the relationship among traits of BPD, affective symptomatology, and general functioning post-treatment. Additional analyses explored whether change in the perception of therapeutic skill implementation moderated the relationship among traits of BPD, affective symptomatology, and general functioning. Little improvement/worsening of depression during partial hospitalization, but not changes in anxiety, mediated the relationship between traits of BPD and poor general functioning. Additionally, regardless of changes in perception of cognitive- or dialectical-behavioral skill implementation, little improvement/worsening depressive symptomatology continued to mediate the negative relationship noted above. This study has important implications for treatment of BPD and suggests that targeting depressive symptoms in short-term settings may be crucial in acute stabilization.

Introduction

Borderline personality disorder (BPD) is a complex, pervasive pathology characterized by extreme and erratic patterns of thoughts, feelings, and behaviors that significantly interfere with an individual's general and social functioning (APA 2013; Levy et al. 2006; Seivewright et al. 2004). Individuals with traits of BPD often display instability in their relationships, negative self-image, impulsive behavior, and suicidal/self-harm behaviors (APA 2000). Further complicating their presentation, individuals with traits of BPD are often diagnosed with other forms of affective psychopathology, such as depression and anxiety (Koenigsberg et al. 2002; Zanarini et al. 1998). Stemming from the characteristic traits and comorbidity of affective pathology, historically, BPD has been conceptualized as a chronic, treatment-resistant disorder (Kraus and Reynolds 2001). However, more recent findings from longitudinal studies of the course of BPD have demonstrated high rates of remission with low rates of relapse (Gunderson et al. 2011). There are a number of factors that contribute to these findings, including the development of more efficacious treatments. Most prominently, promising findings with Cognitive-Behavioral Therapy (CBT) and Dialectical Behavior Therapy (DBT; Linehan 1993) have resulted in

✉ Stephanie M. Jarvi
smjarvi@suffolk.edu

1 Department of Psychology, Suffolk University, 41 Temple Street, Boston, MA 02114, USA

2 Department of Psychology, Yale University, New Haven, CT, USA

3 Department of Psychology, Boston University, Boston, MA, USA

4 Department of Psychiatry, McLean Hospital, Belmont, MA, USA

Springer

decreasing stigma and challenging the previously held notion of the chronic course and nature of BPD.[1]

Based on the notion that BPD is a disorder marked by significant deficits in the application of adaptive coping strategies across various domains, both CBT and DBT were developed based on a skill-deficit model (Beck et al. 2003; Linehan 1993). CBT aims to teach patients useful skills in order to regulate and modify thoughts, feelings, and behaviors. CBT has been shown to effectively reduce common symptoms observed in BPD (e.g., self-harm, interpersonal problems, emotional lability; Björgvinsson et al. 2014) and target safety concerns (e.g., inpatient hospitalizations, emergency room visits) more effectively than treatment-as-usual (Davidson et al. 2006). Alternatively DBT, a subtype of CBT, teaches skills that specifically target BPD-related deficits in emotion regulation, interpersonal conflict, crisis management, and identity disturbance (Linehan 1993). DBT has an expansive literature on its effectiveness for BPD, including evidence for reducing the frequency of negative health-related behaviors common to BPD (e.g., emergency room visits; Williams et al. 2010) and improving general functioning for patients with BPD (Kliem et al. 2010). The majority of research indicates that a substantial and sustainable reduction in symptomatology and improvement in behavioral outcomes for BPD occurs following long-term CBT (Davidson et al. 2006) and DBT treatment (Comtois et al. 2007; Kleindienst et al. 2008; Kliem et al. 2010; Williams et al. 2010), across a variety of treatment settings and levels of care. Moreover, there is some, albeit more limited, evidence that indicates BPD can be effectively treated following short-term CBT interventions (e.g., partial hospitalization; Neuhaus et al. 2007) and DBT interventions (e.g., inpatient hospitalization: Bloom et al. 2012; Bohus et al. 2004; Swenson et al. 2001; partial hospitalization: Simpson et al. 1998). The impact on symptomatology following both CBT and DBT treatment is quite promising and begins to lessen the longstanding pessimism about treating individuals presenting with traits of BPD.

Despite the meaningful advances made in the treatment of BPD, this psychopathology continues to challenge clinicians across various psychiatric settings and levels of care. A number of factors in domains such as cognition (e.g., poor mentalizing: Gullestad et al. 2013), therapeutic engagement (e.g., alliance, therapy interfering behaviors;

Richardson-Vejlgaard et al. 2013; Levy et al. 2006, respectively), and emotion (alexithymia, changes in mood; Joyce et al. 2013; Newton-Howes et al. 2006, respectively) have been identified as contributing to the difficulties in treating BPD. Another factor that tends to interfere with the effective treatment of traits of BPD is the influence of comorbid affective symptoms (e.g., depression and anxiety; Kleindienst et al. 2011; Koenigsberg et al. 2002, respectively). Psychiatric comorbidity often challenges clinicians, but particularly within the treatment of BPD, as the symptoms tend to follow an unstable pattern that results in drastic affective changes over short periods of time, rather than a stable state-like presentation (Koenigsberg et al. 2002). Further evidence suggests that changes in affective symptoms and emotions may be a key factor in poorer treatment outcomes for patients presenting with traits of BPD (Clarkin 1996; Koenigsberg et al. 2002; Newton-Howes et al. 2006). Moreover, it is possible that the co-occurrence of symptomatology like depression and anxiety may offer an explanation for some treatment-interfering behaviors (e.g., missing appointments, inconsistent attendance) and chaotic behavioral patterns (e.g., impulsivity, self-harm; APA 2000) that individuals with traits of BPD often exhibit. That is, comorbidity is typically associated with complexity of pathological behavior (Vaidyanathan et al. 2011; Zanarini et al. 2004) and may pose additional challenges in the treatment of BPD.

The present study aims to explore the relationship among BPD traits, affective symptomatology, and general functioning post-treatment in an adult psychiatric sample attending a partial hospital program. Due to the centrality of affective symptomatology in current conceptualizations of BPD, this study aims to understand the impact of changing (i.e., worsening/improving) affective symptoms on short-term treatment outcomes. Primarily we are interested in the effects of changes in depressive and anxious symptomatology on the relationship between personality traits and general functioning outcomes at discharge. Examination of the impact of these symptoms may be a meaningful construct to explore in understanding how and why BPD is difficult to treat (Koenigsberg et al. 2002), particularly within a short-term care setting (e.g., approximately 10 days). Additionally, existing evidence indicates that the perception of skill (e.g., CBT/DBT) implementation (e.g., Lindenboim et al. 2007; Webb et al. 2013) can positively impact functioning and address comorbid symptoms (e.g., Davidson et al. 2006; Kliem et al. 2010; Neuhaus et al. 2007). Therefore, we conducted supplementary exploratory analyses examining the moderating effect of perception of CBT and DBT skill implementation during course of treatment to identify intervening factors on the relationship between personality dysfunction and general functioning.

---

[1] Our focus on CBT and DBT in the Introduction is based on the treatment models represented in the current partial program and analytic focus presented in the Results section. While other approaches to the treatment of BPD, such as Mentalization-Based Treatment (Bateman and Fonagy 2009), have received substantial support, we are unable to evaluate those approaches in the present study due to the nature of the program.

Methods

Participants

Participants were 176 patients in treatment in a partial hospitalization program. Participant age ranged from 18 to 66 years, with an average age of 32.20 years (SD = 12.97). The sample was 60.80 % female and mostly Caucasian (86.93 %). Most participants (42.61 %) had some college education, 24.00 % completed an undergraduate education, and 26.90 % had postgraduate education. According to the diagnosis on record, assigned by the program psychiatrist after intake, the majority of the sample was diagnosed with Major Depressive Disorder (55.68 %). Other diagnoses included Mood Disorder Not Otherwise Specified (21.59 %) and Bipolar II Disorder (10.23 %). Patients with psychotic disorders (13.30 %) did not complete the full assessment and were excluded from the study. According to scores on the Personality Diagnostic Questionnaire-4 (PDQ-4; Hyler 1994), 46.00 % of the current sample was in the clinical range for BPD, which is comparable to percentages reported in other samples of psychiatric adults (e.g., 44 %; Marinangeli et al. 2000). Consistent with its use in the literature (e.g., Bouvard et al. 2011; Taylor et al. 2008), the PDQ-4 is used as a screening measure to provide clinical information to the patient's treatment team regarding his/her self-reported personality psychopathology and is not used to formally diagnose personality disorders. Prior to admission in the program, 42.61 % had been hospitalized previously for a psychiatric condition in the past 6 months. Table 1 presents sample characteristics and bivariate correlations for key variables.

Treatment Setting

The recruitment site is a partial hospital program offering individual and group CBT skills, DBT skills, and pharmacological treatment to patients presenting with a range of psychological diagnoses. The program focuses on the acquisition of cognitive-behavioral skills, using a flexible and integrative approach to treatment informed by CBT and DBT principles (Neuhaus 2006). The treatment consists of groups provided by staff including psychiatrists, psychologists, social workers, occupational therapists, post-doctoral- and pre-doctoral-level psychology trainees, and bachelors-level community residential counselors. Patients attend five 50-min CBT or DBT skill-focused groups each day, 5 days per week (Monday–Friday). Broadly speaking, the CBT and DBT skills highlighted in the program emphasize the importance of tolerating negative emotions without engaging in problematic mood-dependent behaviors, addressing negative cognitions, managing daily structure, and mood regulation. More specifically, one group per day focuses on behavioral activation, based on a protocol adapted from Martell et al. (2010). A second daily group is focused on identifying and challenging negative automatic thoughts and is guided by a protocol adapted from Beck et al. (1979). The remaining group content includes modules on psychoeducation, self-assessment, communication skills, distress tolerance, emotion regulation, and mindfulness protocols adapted from CBT and DBT manuals (e.g., Beck et al. 1985; Linehan 1993; Segal et al. 2002). While patients in the partial program are exposed to both CBT and DBT skills during their course of treatment, different skills are used and taught in individual groups. Treatment fidelity is

Table 1 Mean, standard deviation, range, and zero-order correlations for key variables

Variable	Mean	SD	Range	2	3	4	5	6	7	8
1. BOR (traits)	4.28	2.08	.00–9.00	.38*	.29*	−.03	−.24	.15	−.02	−.13
2. BASIS T1	1.86	0.57	.55–3.11		.50*	−.34*	−.29*	.12	.12	−.003
3. BASIS T2	1.33	0.57	.03–3.09			.44*	.40*	.34*	−.52*	−.02
4. CES-D Δ	−6.59	5.49	−23.00 to 8.00				.60*	−.40*	.53*	.01
5. GAD-7 Δ	−4.39	4.66	−18.00 to 7.00					−.33*	−.45*	.03
6. CBT Δ	11.21	12.09	−14.00 to 49.00						.69*	.07
7. DBT Δ	0.28	0.60	−1.00 to 1.71							.03
8. AGE (years)	32.20	12.97	18.00–66.00							

Values expressed in this Table represent parameter estimates (i.e., B)

BOR = Traits of BPD, BASIS T1 = Measures of General Functioning Time 1, BASIS T2 = Measure of General Functioning Time 2, CES-D Δ = Difference Score in Depression, GAD-7 Δ = Difference Score in Anxiety, CBT Δ = Difference Score in Perception of CBT Skill Implementation, DBT Δ = Difference Score in Perception of DBT Skill Implementation

* Zero-order correlation is significant at the 0.05 level (2 tailed)

emphasized through a focus on adherence to treatment protocols designed for the program. Postdoctoral fellows and staff psychologists periodically observe groups to evaluate adherence to the protocol and to provide feedback to maximize adherence. Based on a recent adherence evaluation conducted in the program, group leaders maintained 83 % consistency with the protocol guidelines. In addition to group therapy, patients also receive two to three weekly individual CBT and/or DBT sessions from graduate-level psychology interns to review material learned in groups. Importantly, the partial program is not strictly a CBT or DBT treatment setting, but rather uses an integrative treatment approach (see Stenhouse and Van Kessel 2002) focused on skills from these therapeutic approaches. The focus on CBT and DBT skills has been shown to be an effective way to manage a variety of forms of psychopathology (e.g., Bell et al. 2013; Dewe and Krawitz 2007).

Upon arrival to the program, patients are assigned to a treatment team based on the referral question and initial presenting problem (e.g., primary psychotic disorder, comorbid mood and personality disorder, bipolar disorder). Each patient is paired with a psychiatrist, clinical team manager, and program therapist. On the day of admission patients complete an assessment battery that collects demographic information and evaluates mood and behavior. Personality functioning is typically assessed within the first 3 days of admission. Participants were excluded from the study if the psychiatrist's primary diagnosis involved a psychotic disorder, if the treatment team deemed that the clinical assessment was not appropriate (e.g., acute disorganization/confusion following electroconvulsive therapy), or if length of stay (i.e., less than 3 days) did not allow for complete assessment (6.27 % of potential participants). Daily progress monitoring, that assesses depressive and anxiety levels and rotates between measures of skill implementation (e.g., CBT skill implementation on Day 4, DBT skill implementation on Day 5, CBT skill implementation on Day 6), is also completed each morning the patient is enrolled in the program. Finally, at discharge, patients complete the mood and behavior measures from admission. Patients are typically enrolled in the program for 7–14 days (Sample Mean: 10.99 days; Sample SD: 3.31 days).

Assessment Measures

Personality Diagnostic Questionnaire-4 (PDQ-4; Hyler 1994). The PDQ-4 is a 99-item true/false, self-report measure that consists of the diagnostic criteria for personality disorders that are listed in the DSM-IV (APA 2000). Questions on the PDQ-4 assess for the presence of different characteristics of personality disorders over the past several years. The PDQ-4 has been used as a screening tool for personality disorders in both clinical (Dubro et al. 1988) and nonclinical samples (Johnson and Bornstein 1992), including the use of the free-standing personality disorder scales extracted from the PDQ (Patrick et al. 1995). In the current study, patients completed PDQ-4 subscales for Cluster B (Borderline, Antisocial, Histrionic, Narcissistic) and Cluster C (Avoidant, Dependent, Obsessive–Compulsive) personality disorders. Given the focus of the present study, scores for BPD traits were calculated as continuous variables representing a range of traits of BPD. Binary items were used as a total count (i.e., number of items endorsed) and no particular item carried more weight than others (i.e., severity on one particular item was not collected and did not impact the overall continuous score). The PDQ-4 BPD score was entered into the model as a continuous variable to capture the range of trait-level presentations of personality pathology in this sample. The PDQ-4 was administered within the first 3 days of the program. Internal consistency (Cronbach's alpha) for the BPD subscale of the PDQ-4 was good at .86.

Behavior and Symptom Identification Scale (BASIS-24; Eisen et al. 2004). The BASIS-24 is a 24-item measure that demonstrated good psychometric properties across inpatient, outpatient, residential, and partial hospital settings as a broad assessment of general psychopathology and functioning. The measure is broken down into six subscales (e.g., Depression/Functioning: 'Managing day-to-day life'; Relationships: 'Feel close to another person'; Psychosis: 'Think you had special powers'; Substance Abuse: 'Urge to drink alcohol or take street drugs'; Self-Harm: 'Think about hurting yourself'; Emotional Lability: 'Have mood swings') and also provides a total score of general functioning. Patients rate each item on a 5-point Likert rating scale from 0 (*none of the time*) to 4 (*all of the time*) with higher scores indicating poorer functioning. Patients complete the BASIS-24 at admission and discharge. BASIS-24 total scores were used in the current analyses due to our interest in the relationship between personality traits and general functioning following partial hospitalization. Internal consistencies (Cronbach's alphas) for the BASIS-24 at admission and discharge were good at .84 and .87, respectively.

Center for the Epidemiological Studies of Depression-10 (CES-D-10; Andresen et al. 1994) The CES-D-10 is a widely used, brief instrument for assessing depressive symptoms (e.g., 'I had trouble keeping my mind on what I was doing'; 'My sleep was restless'). Each item is rated on a 4-point Likert scale indicating symptom frequency, ranging from 0 (*Rarely or none of the time [less than 1 day]*) to 3 (*All of the time [5–7 days]*). The CES-D-10 has strong predictive and discriminant validity and adequate retest reliability (Andresen et al. 1994). The CES-D-10 was administered as a part of the daily progress

monitoring and adapted for this 24-h administration format. Over the average progress monitoring period of this sample (i.e., 10 days) internal consistency was good, ranging from .80 to .85.

Generalized Anxiety Scale-7 (GAD-7; Spitzer et al. 2006). The GAD-7 Scale is a 7-item self-report measure designed to screen for the presence of generalized anxiety disorder (GAD). The GAD-7 was originally used as a screen for GAD, but is now considered as a screen for anxiety disorders more broadly (see Kroenke et al. 2007; Skodal et al. 2014). Items consist of statements about worry (e.g., 'Not being able to stop or control worrying') and general somatic tension (e.g., 'Trouble relaxing'). Each item is rated on a 4-point Likert scale indicating symptom frequency, ranging from 0 (*not at all*) to 3 (*nearly every day*). Higher scores indicate higher levels of GAD symptoms. The GAD-7 has demonstrated good clinical utility and generally strong psychometric properties in primary care settings and the general population (Kroenke et al. 2007; Lowe et al. 2008; Spitzer et al. 2006). In the current study, a 24-h adapted GAD-7 is administered as a part of the daily progress monitoring. Internal consistency was good and ranged from .84 to .88 over the average progress monitoring period.

Cognitive Behavior Therapy Skills Questionnaire (CBTSQ-16; Jacob et al. 2011). The CBTSQ-16 is a 16-item measure designed to assess the individual's perception of their cognitive-behavioral skill implementation. Items (e.g., 'Plan activities for the weekend'; 'Challenge my thoughts') are rated on a 0 (*I don't do this*) to 4 (*I always do this*) Likert scale. This measure is administered in random sequence every third day in the program as part of the daily progress monitoring assessment. Internal consistency was excellent and ranged from .90 to .93 over the average progress monitoring period.

The Dialectical Behavior Therapy Ways of Coping Checklist (Neacsiu et al. 2010) is a 38-item DBT-informed treatment measure of the individual's perception of their skill implementation that has been used in a variety of contexts. Items (e.g., 'Tried to get centered before taking any action'; 'Did something to feel a totally different emotion [like gone to a funny movie]') are rated based on participant perception of how often they have used a particular coping method from 0 (*never used*) to 3 (*regularly used*). It has demonstrated good to excellent psychometric properties and can differentiate between patients who have received DBT skills training and those who have not. This measure is administered in random sequence every third day in the program as part of the daily progress monitoring assessment to assess for individual perception of DBT skill use and application. Over the average progress monitoring period of this sample, internal consistency was excellent and ranged from .93 to .96.

Procedure

The Institutional Review Board granted approval for the study and all participants included in this analysis provided informed consent. Data were collected on site in the partial hospitalization program. Patients completed the assessment battery (i.e., admission, progress monitoring, or discharge) in the morning of the treatment day. Study personnel provided instructions indicating the participant's freedom to withdraw from the research study at any point or decline to respond to any items.

Data Analysis

The three goals of this study were to (1) examine the impact of traits of BPD on general functioning following treatment in a brief partial hospital setting, (2) identify intervening factors (e.g., changes in depression and anxiety symptomatology) that may affect the relationship between personality dysfunction and general functioning, and (3) explore the impact of change in perception of skill implementation on traits of BPD and general functioning. All analyses were conducted using SPSS macros designed to implement simultaneous multiple mediator bootstrapping models (Preacher and Hayes 2004; 2008). Compared with the commonly used Baron and Kenny (1986) method, that of Preacher and Hayes has several advantages in that it tests all paths of the model at the same time rather than through a series of separate regression analyses, does not require a normal sampling distribution of the indirect effect, and decreases the likelihood of Type I error (Preacher and Hayes 2004). This technique uses sampling with replacement (5000 samples were used in the present study) to estimate the indirect effect and produce a 95 % confidence interval (CI) for the indirect effect. If the confidence interval does not include 0, then the conclusion is that the indirect effect is significant at $p < .05$.

First, to address goals (1) and (2) a mediation model was used, whereby the BASIS-24 Total score at discharge was entered as the dependent variable, a BPD traits score was entered as the continuous independent variable (i.e., number of endorsed traits on the BPD scale), and difference scores for each progress monitoring measure (i.e., CES-D-10, GAD-7) were entered as mediators. Changes in CES-D-10 and GAD-7 scores were entered as simultaneous mediators. For the affective symptomatology mediators, difference scores were calculated by subtracting each patient's first day (i.e., intake) score from their last day (i.e., discharge) score for self-reported symptomatology. Larger positive difference scores indicate worsening (i.e., higher symptomatology) in self-reported symptoms during the patient's stay in the program and larger negative scores indicate improvement (i.e., lower symptomatology) in self-

reported symptoms at discharge. Finally, each model controlled for gender, age, and baseline general functioning (BASIS-24 Total score at admission).

Second, to address our exploratory goal (3) we used a multiple mediator and moderator bootstrapping model (Preacher and Hayes 2008; model #14: moderates the M to DV path only, and not the IV to M path). For the skill implementation mediators, difference scores between the patient's last day in the program and their first day in the program self-reported skill implementation were calculated for each patient. Larger difference scores indicate greater changes (i.e., worsening or improvement) in self-reported skill implementation during the patient's stay in the program and positive scores indicate improvement in level of skills use at discharge. Conceptually, BPD traits are linked to affective symptomatology (Linehan 1993; Tragesser et al. 2007), but it is possible that the perception of skill use can impact the effects of the trait-symptomatology relationship on general functioning. Thus, CBT and DBT skills were entered into separate models as a moderator of the traits-affect relationship on general functioning and to examine the independent effects of these perception variables, particularly given that CBT and DBT skills were taught in different groups and patients were exposed to a variety of these skills during their time in the program.

Results

Descriptive Statistics and Bivariate Correlations

Table 1 provides descriptive statistics and bivariate correlations. Briefly, significant, positive associations were found for the PDQ-4 (i.e., borderline pathology) and BASIS (i.e., general functioning) at both intake and discharge (see Table 1). Intake BASIS scores were significantly, positively associated with discharge BASIS scores and significantly, negatively associated with CES-D-10 change (i.e., depression) and GAD-7 change (i.e., anxiety) scores. Discharge BASIS scores were significantly, positively associated with CES-D-10 change scores, GAD-7 change scores, and change in CBT skill use scores, and significantly, negatively associated with change in DBT skill use scores. CES-D-10 change scores were significantly, positively associated with GAD-7 change scores and change in DBT skill use scores, and significantly, negatively associated with change in CBT skill use scores. GAD-7 change scores were significantly, negatively associated with change in both CBT and DBT skill use scores. Lastly, change in CBT and DBT skill use scores were significantly, positively associated.

Impact on Affective Symptomatology

First, there was a significant relationship between traits of BPD and BASIS-24 Total score (total effect, c path; see Fig. 1), such that those with higher traits of BPD reported poorer general functioning at discharge ($B = .05$, $SE_B = .02$, $t = 2.25$, $p = .03$). Second, traits of BPD were associated with little improvement/worsening in CES-D-10 change scores ($B = .39$, $SE_B = .20$, $t = 2.75$, $p < .01$), but not GAD-7 change scores ($p = .26$) (a paths). Third, significant effects (b paths) of little improvement/worsening in CES-D-10 change scores ($B = .05$, $SE_B = .01$, $t = 8.30$, $p < .01$) and GAD-7 change scores ($B = .03$, $SE_B = .07$, $t = 4.13$, $p < .01$) on BASIS-24 score at discharge were apparent. Fourth, the direct effect (c' path) of traits of BPD on BASIS-24 was not significant ($B = .02$, $SE_B = .01$, $t = 1.42$, $p = .16$) (see Fig. 1). Finally, the indirect effect of traits of BPD on BASIS-24 through little improvement/worsening scores for depression (i.e., CES-D-10 change scores) was significant (i.e., confidence interval does not contain zero (Preacher and Hayes 2004); Effect$_{ab}$ = .02, Confidence Interval: .01–.04), whereas the indirect effect through anxiety scores (i.e., GAD-7 change scores) was not significant (Effect$_{ab}$ = .00, Confidence Interval: −.04 to .02)[2,3]. Together, this pattern of results indicates mediation when considering the impact of little improvement/worsening of depressive symptomatology over the course of the program on the association between traits of BPD and general functioning at discharge from a partial hospital program.

Impact of Skill Implementation

We ran an exploratory moderation-mediation model to test whether change in the perception of implementation of CBT and DBT skills over the course of the program moderated the impact of depressive symptoms on BASIS-24 outcome. Improvement in CBT skill implementation over the course of the program predicted lower (i.e., better)

---

[2] Given the overlap in problems with impulse control and emotion regulation, Narcissistic, Histrionic, and Antisocial Personality Disorder, along with Borderline Personality Disorder, are referred to as Cluster B disorders. Using a mediation model that controlled for Narcissistic, Histrionic, and Antisocial traits, Borderline personality traits still emerged as a predictor of poorer functioning at discharge mediated by depressive symptoms (indirect effect Confidence Interval: .02–.06).

[3] In light of the recent debate regarding dimensional versus categorical conceptualizations of psychiatric disorders and the statistical power gained in using a continuous measure, we opted to use continuous measure of traits of BPD in our primary analysis. However, using a categorical measure of BPD (cut of 5 or more endorsed traits), the mediation model remains statistically significant, Indirect Effect Confidence Interval: .04–.14.

Fig. 1 Mediation models tested for self-reported depressive and anxious symptomatology
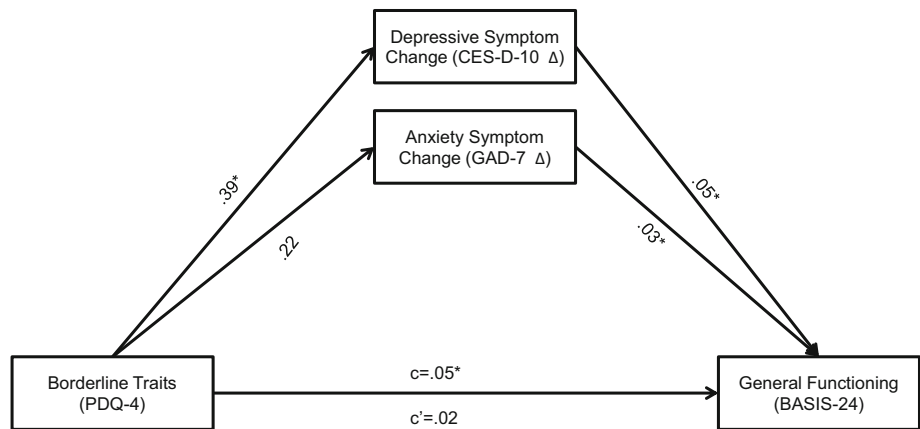
BASIS-24 Total scores at discharge ($B = -.01$, $SE_B = .004$, $t = -2.28$, $p = .02$). Similarly, improvement in perception of implementation of DBT skills over the course of treatment predicted lower (i.e., better) BASIS-24 Total scores at discharge ($B = -.28$, $SE_B = .12$, $t = 2.28$, $p = .03$). Additionally, there was no evidence that change in perception of improvement in CBT (CES-D-10, $p = .70$, all CIs contained zero; GAD-7, $p = .69$, all CIs contained zero) or DBT (CES-D-10, $p = .32$, all CIs contained zero; GAD-7, $p = .50$, all CIs contained zero) skill implementation moderated the mediation effect. That is, regardless of whether a patient reported change in their improved perception of implementation of CBT or DBT skills throughout the course of the program, the impact of little improvement/worsening of depressive symptomatology (i.e., affective instability) continued to mediate the relationship between traits of BPD and BASIS-24 Total score at discharge.

Discussion

Borderline personality disorder poses a number of significant challenges in treatment, particularly due to the predictably unpredictable nature of patients with regard to their mood and affect, communication styles, and ability to tolerate distress (Comtois and Carmel 2014). Results indicate that little improvement/worsening of depressive symptoms mediates the relationship between traits of BPD and poorer functioning. That is, those with higher borderline pathology discharged with worse BASIS (i.e., general clinical functioning) scores. PDQ-4 (i.e., borderline pathology) scores were associated with little improvement/worsening CES-D-10 (i.e., change in self-reported depression) scores at discharge. Little improvement/worsening CES-D-10 change scores at discharge were associated with higher BASIS scores, indicating worse functioning. The mediation results suggest that higher

borderline traits are linked (i.e., positive correlation) to depressive symptoms that show little improvement/worsen, which in turn leads to worse general functioning. Interestingly, change in participant perception of implementation of CBT and DBT skills during the program did not affect (i.e., lessen) the relationship between BPD traits and little improvement/worsening of depressive symptoms on poor functioning. In sum, even in a short-term treatment setting, affective symptoms can worsen substantially enough to impact clinical functioning, and that seems to be particularly problematic for individuals high on BPD traits. Therefore, little improvement/worsening of mood symptoms throughout the course of treatment may be the underlying explanation for these inconsistent patterns of emotion and behavior in the BPD presentation and thus a critical target in treatment through CBT and DBT skill training and application (Björgvinsson et al. 2014; Neuhaus et al. 2007).

Notably, only little improvement/worsening of self-reported depressive symptoms impacted the BPD-functioning relationship while self-reported anxiety did not mediate the relationship between traits of BPD and functioning. Depression and BPD are highly comorbid and are phenotypically associated (Gunderson et al. 2014; Sjastad et al. 2012). However, there is also evidence that anxiety disorders, specifically generalized anxiety, and BPD are also comorbid (Zanarini et al. 2004). Prior work suggests that the relationship between generalized anxiety and BPD affects treatment response due to lack of continued improvement during the follow-up period at 3- and 9-months (Gratz et al. 2014). One explanation for this difference in the current study may be methodological. Specifically, while the current sample reports clinically significant anxiety symptoms, the level of reported comorbidity between BPD traits and change in symptomatology was less for anxiety than depression (see "Methods"; Table 1). Additionally, given that patients remained in the program for a brief period (e.g.,

approximately 10 days), the impact of anxiety pathology may not have emerged as quickly as depressive pathology, especially given the close theoretical and empirical association between mood diagnoses and mood instability in BPD. Though further work is needed to examine the effects of anxiety on traits of BPD and related treatment outcomes, depressive symptomatology appears to negatively impact treatment response in individuals presenting with traits of BPD, leading to overall poorer outcomes in patients who are commonly vulnerable to low thresholds for distress tolerance and have a limited repertoire of and/or access to adaptive coping skills.

In addition to the association between comorbid affective symptomatology and traits of BPD, we were interested in the association between change in perception of skill implementation and treatment outcome in this sample. Importantly, the present study found that not only was there limited evidence of improved perception of skill implementation over the course of the program, particularly for DBT skills, but that even with improved perception of skill implementation, the impact of depressive symptoms on the BPD-functioning relationship was unchanged. The present finding does not mean that CBT and DBT skills are ineffective treatments within a partial hospitalization program (see Björgvinsson et al. 2014; Neuhaus et al. 2007), but it does suggest that time of treatment and little improvement/worsening of mood during treatment are two factors that may affect treatment outcome. As noted above, there is stronger evidence for improvements in overall functioning for patients with BPD in longer-term treatment (Gunderson et al. 2011). For example, skill use among women with BPD increased threefold in a year-long DBT program from baseline to end of treatment and mediated decreases in suicide attempts, non-suicidal self-injury, and depression (Neacsiu et al. 2010; see also Stepp et al. 2008 in an adult outpatient sample). Additionally, CBT plus treatment-as-usual for BPD was superior to treatment-as-usual alone over 2 years for suicidal acts, inpatient hospitalizations, and emergency room contact (Davidson et al. 2006), suggesting a longer-term course of treatment may be most beneficial. Clearly, the use and application of the coping skills taught in CBT and DBT are crucial factors to assess in understanding treatment efficacy, however, the present study suggests that other factors, like little improvement/worsening of mood symptoms, may undermine the potential for impact. Future work in this area should examine the impact of skill implementation (e.g., daily and consistent use of CBT and/or DBT skills) during treatment and post-treatment, as well as the moderating effects of little improvement/worsening mood symptoms on the efficacy of skill use.

While the findings from the present study are intriguing, several limitations should be mentioned. First, with regard to the sample, given that the study was conducted in the context of an intensive partial hospitalization program, the acute nature of the sample may limit generalizability to other, less symptomatic psychiatric samples. Second, the naturalistic treatment setting (i.e., lack of randomization) and lack of follow-up evaluation post-treatment also limit these findings. Moreover, this naturalistic setting does not allow for control of all potential variables at play (e.g., treatment compliance, medication changes) potentially contributing to depression and anxiety symptoms. Nonetheless, study results are consistent with previous research regarding affective correlates of BPD (e.g., depression and anxiety; Kleindienst et al. 2011; Koenigsberg et al. 2002, respectively). Results highlight the importance of assessing and targeting comorbid depressive symptoms in the short-term treatment of patients presenting with BPD traits. Alleviation of acute depressive symptoms may allow for the stabilization of this patient population, which is often one of the primary treatment goals of short-term care. Third, length of stay in the present partial hospitalization program averages 10 days and may not allow for observations of improvement in skill implementation (e.g., change in perception of skill use was assessed via self-report, clinician perception of skill use/ understanding was not collected, lack of homework to code and evaluate) or functioning on a more global level. As mentioned, short-term treatment of BPD (<0.4 years) has been associated with poor treatment outcomes (Kvarstein and Karterud 2013), suggesting that while partial hospitalization may be appropriate for acute stabilization (e.g., to manage suicidal behaviors; Kvarstein et al. 2004), longer-term care may be necessary to address significant changes in global functioning and quality of life (Gratz et al. 2006). Thus, length of treatment may also be a critical indicator of increases in skill implementation and practice over time (Lindenboim et al. 2007). Finally, the self-report format for symptom assessment and cross-sectional study design limit conclusions about the direction of the relationships among the primary constructs of interest.

Behavioral, skill-based treatments have significantly impacted treatment outcomes for patients presenting with traits of BPD. However, BPD continues to pose challenges in treatment, affecting social and general functioning (Levy et al. 2006; Seivewright et al. 2004). The basic clinical presentation associated with BPD presents a multitude of difficulties (e.g., suicidality, impulsivity; APA 2000) and is often compounded by psychiatric comorbidity (Koenigsberg et al. 2002; Zanarini et al. 1998). Results from the current study suggest that little improvement/worsening of depressive symptomatology is important to directly monitor. Without attention to this particular feature of BPD, effective treatments like CBT and DBT may be less useful and accessible to patients due to persistent difficulties with

emotional dysregulation, leading to discouragement, decreased motivation for treatment, and poorer quality of life.

Compliance with Ethical Standards

Conflict of Interest Stephanie M. Jarvi, Arielle R. Baskin-Sommers, Bridget A. Hearon, Stephanie Gironde and Thröstur Björgvinsson declare that they have no conflict of interest.

Research Involving Human Participants/Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Animal Rights This article does not contain any studies with animals performed by any of the authors.

References

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., Text Revision). Washington, DC: Author.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Andresen, E. M., Malmgren, J. A., Carter, W. B., & Patrick, D. L. (1994). Screening for depression in well older adults: Evaluation of a short form of the CES-D. *American Journal of Preventive Medicine, 10*, 77–84.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182. doi:10.1037/0022-3514.51.6.1173.

Bateman, A., & Fonagy, P. (2009). Randomized controlled trial of outpatient mentalization-based treatment versus structured clinical management for borderline personality disorder. *The American Journal of Psychiatry, 166*, 1355–1364. doi:10.1176/appi.ajp.2009.09040539.

Beck, A. T., Emery, G., & Greenberg, R. L. (1985). *Anxiety disorders and phobias: A cognitive perspective*. New York, NY: Basic Books.

Beck, A. T., Freeman, A., & Davis, D. D. (2003). *Cognitive therapy of personality disorders* (2nd ed.). New York, NY: The Guilford Press.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York, NY: The Guilford Press.

Bell, E. C., Marcus, D. K., & Goodlad, J. K. (2013). Are the parts as good as the whole? A meta-analysis of component treatment studies. *Journal of Consulting and Clinical Psychology, 81*, 722–736. doi:10.1037/a0033004.

Björgvinsson, T., Kertz, S. J., Bigda-Peyton, J. S., Rosmarin, D. H., Aderka, I. M., & Neuhaus, E. C. (2014). Effectiveness of cognitive behavior therapy for severe mood disorders in an acute psychiatric naturalistic setting: A benchmarking study. *Cognitive Behaviour Therapy, 43*, 209–220. doi:10.1080/16506073.2014.901988.

Bloom, J. M., Woodward, E. N., Susmaras, T., & Pantalone, D. W. (2012). Use of dialectical behavior therapy in inpatient treatment of borderline personality disorder: A systematic review. *Psychiatric Services, 63*, 881–888. doi:10.1176/appi.ps.201100311.

Bohus, M., Haaf, B., Simms, T., Limberger, M. F., Schmahl, C., & Linehan, M. (2004). Effectiveness of inpatient dialectical behavioral therapy for borderline personality disorder: A controlled trial. *Behaviour Research and Therapy, 42*, 487–499. doi:10.1016/S0005-7967(03)00174-8.

Bouvard, M., Vuachet, M., & Marchand, C. (2011). Examination of the screening properties of the Personality Diagnostic Questionnaire—4+ (PDQ-4+) in a non-clinical sample. *Clinical Neuropsychiatry: Journal of Treatment Evaluation, 8*, 151–158.

Clarkin, J. F. (1996). Treatment of personality disorders. *British Journal of Clinical Psychology, 35*, 641–642. doi:10.1111/j.2044-8260.1996.tb01222.x.

Comtois, K. A., & Carmel, A. (2014). Borderline personality disorder and high utilization of inpatient psychiatric hospitalization: Concordance between research and clinical diagnosis. *The Journal of Behavioral Health Services & Research,* 1–9. doi:10.1007/s11414-014-9416-9.

Comtois, K. A., Elwood, L., Holdcraft, L. C., Smith, W. R., & Simpson, T. L. (2007). Effectiveness of dialectical behavior therapy in a community mental health center. *Cognitive and Behavioral Practice, 14*, 406–414. doi:10.1016/j.cbpra.2006.04.023.

Davidson, K., Norrie, J., Tyrer, P., Gumley, A., Tata, P., Murray, H., & Palmer, S. (2006). The effectiveness of cognitive behavior therapy for borderline personality disorder: Results from the borderline personality disorder study of cognitive therapy (BOSCOT) trial. *Journal of Personality Disorders, 20*, 450–465. doi:10.1521/pedi.2006.20.5.450.

Dewe, C., & Krawitz, R. (2007). Component analysis of dialectical behavior therapy skills training. *Australasian Psychiatry, 15*, 222–225. doi:10.1080/10398560701320345.

Dubro, A. F., Wetzler, S., & Kahn, M. W. (1988). A comparison of three self-report questionnaires for the diagnosis of DSM-III personality disorders. *Journal of Personality Disorders, 2*, 256–266.

Eisen, S. V., Normand, S. L., Belanger, A. J., Spiro, A., & Esch, D. (2004). The revised Behavior and Symptom Identification Scale (BASIS-R): Reliability and validity. *Medical Care, 42*, 1230–1241. doi:10.1097/00005650-200412000-00010.

Gratz, K. L., Dixon-Gordon, K. L., & Tull, M. T. (2014). Predictors of treatment response to an adjunctive emotion regulation group therapy for deliberate self-harm among women with borderline personality disorder. *Personality Disorders: Theory, Research, and Treatment, 5*, 97–107. doi:10.1037/per0000062.

Gratz, K. L., Lacroce, D. M., & Gunderson, J. G. (2006). Measuring changes in symptoms relevant to borderline personality disorder following short-term treatment across partial hospital and intensive outpatient levels of care. *Journal of Psychiatric Practice, 12*, 153–159. doi:10.1097/00131746-200605000-00004.

Gullestad, F. S., Johansen, M. S., Hoglend, P., Karterud, S., & Wilberg, T. (2013). Mentalization as a moderator of treatment effects: Findings from a randomized clinical trial for personality disorders. *Psychotherapy Research, 23*, 674–689. doi:10.1080/10503307.2012.684103.

Gunderson, J. G., Stout, R. L., McGlashan, T. H., Shea, M. T., Morey, L. C., & Skodal, A. E. (2011). Ten-year course of borderline personality disorder. *Archives of General Psychiatry, 68*, 827–837. doi:10.1001/archgenpsychiatry.2011.37.

Gunderson, J. G., Stout, R. L., Shea, M. T., Grilo, C. M., Markowitz, J. C. et al. (2014). Interactions of borderline personality disorder

and mood disorders over 10 years. *Journal of Clinical Psychiatry*. Advance online publication. http://www.psychiatrist.com/

Hyler, S. E. (1994). *Personality Diagnostic Questionnaire-4 (PDQ-4)*. New York, NY: New York State Psychiatric Institute.

Jacob, K. L., Christopher, M. S., & Neuhaus, E. C. (2011). Development and validation of the Cognitive-Behavioral Therapy Skills Questionnaire. *Behavior Modification, 35*, 595–618. doi:10.1177/0145445511419254.

Johnson, J. G., & Bornstein, R. F. (1992). Utility of the Personality Diagnostic Questionnaire-Revised in a nonclinical sample. *Journal of Personality Disorders, 6*, 450–457.

Joyce, A. S., Fujwara, E., Cristall, M., Ruddy, C., & Ogrodniczuk, J. S. (2013). Clinical correlates of alexithymia among patients with personality disorder. *Psychotherapy Research, 23*, 690–704. doi:10.1080/10503307.2013.803628.

Kleindienst, N., Limberger, M. F., Ebner-Priemer, U. W., Keibel-Mauchnik, J., Dyer, A., & Bohus, M. (2011). Dissociation predicts poor response to dialectical behavioral therapy in female patients with borderline personality disorder. *Journal of Personality Disorders, 25*, 432–447. doi:10.1521/pedi.2011.25.4.432.

Kleindienst, N., Limberger, M. F., Schmahl, C., Steil, R., Ebner-Priemer, U. W., & Bohus, M. (2008). Do improvements after inpatient dialectical behavioral therapy persist in the long term?: A naturalistic follow-up in patients with borderline personality disorder. *Journal of Nervous and Mental Disease, 196*, 847–851. doi:10.1097/NMD.0b013e31818b481d.

Kliem, S., Kroger, C., & Kosfelder, J. (2010). Dialectical behavior therapy for borderline personality disorder: A meta-analysis using mixed-effects modeling. *Journal of Consulting and Clinical Psychology, 78*, 936–951. doi:10.1037/a0021015.

Koenigsberg, H. W., Harvey, P. D., Mitropoulou, V., Schmeidler, J., New, A. S., & Siever, L. J. (2002). Characterizing affective instability in borderline personality disorder. *The American Journal of Psychiatry, 159*, 784–788.

Kraus, G., & Reynolds, D. J. (2001). The 'A-B-C's' of the Cluster B's: Identifying, understanding, and treatment Cluster B personality disorders. *Clinical Psychology Review, 21*, 345–373. doi:10.1016/S0272-7358(99)00052-5.

Kroenke, K., Spitzer, R. L., Williams, J. B., Monahan, P. O., & Lowe, B. (2007). Anxiety disorders in primary care: Prevalence, impairment, comorbidity, and detection. *Annals of Internal Medicine, 146*, 317–325.

Kvarstein, E. H., & Karterud, S. (2013). Large variation of severity and longitudinal change of symptom distress among patients with personality disorders. *Personality and Mental Health, 7*, 265–276. doi:10.1002/pmh.1226.

Kvarstein, E., Karterud, S., & Pedersen, G. (2004). Severely disturbed borderline patients need more than short-term day hospital treatment. *Therapeutic Communities, 25*, 120–130.

Levy, K. N., Clarkin, J. F., Yeomans, F. E., Scott, L. N., Wasserman, R. H., & Kernberg, O. F. (2006). The mechanisms of change in the treatment of borderline personality disorder with transference focused psychotherapy. *Journal of Clinical Psychology, 62*, 481–501. doi:10.1002/jclp.20239.

Lindenboim, N., Comtois, K. A., & Linehan, M. M. (2007). Skills practice in dialectical behavior therapy for suicidal women meeting criteria for borderline personality disorder. *Cognitive and Behavioral Practice, 14*, 147–156. doi:10.1016/j.cbpra.2006.10.004.

Linehan, M. M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. New York, NY: The Guilford Press.

Lowe, B., Spitzer, R. L., Williams, J. B. W., Mussell, M., Schelberg, D., & Kroenke, K. (2008). Depression, anxiety and somatization in primary care: Syndrome overlap and functional impairment.

General Hospital Psychiatry, 30, 191–199. doi:10.1016/j.genhosppsych.2008.01.001.

Marinangeli, M. G., Butti, G., Scinto, A., Di Cicco, L., Petruzzi, C., Daneluzzo, E., & Rossi, A. (2000). Patterns of comorbidity among DSM-III-R personality disorders. *Psychopathology, 33*, 69–74. doi:10.1159/000029123.

Martell, C. R., Dimidjian, S., & Herman-Dunn, R. (2010). *Behavioral activation for depression: A clinician's guide*. New York, NY: Guilford Press.

Neacsiu, A. D., Rizvi, S. L., & Linehan, M. M. (2010a). Dialectical behavior therapy skills use as a mediator and outcome of treatment for borderline personality disorder. *Behaviour Research and Therapy, 48*, 832–839. doi:10.1016/j.brat.2010.05.017.

Neacsiu, A. D., Rizvi, S. L., Vitaliano, P. P., Lynch, T. R., & Linehan, M. M. (2010b). The dialectical behavior therapy ways of coping checklist: development and psychometric properties. *Journal of Clinical Psychology, 66*, 563–582.

Neuhaus, E. C. (2006). Fixed values and a flexible partial hospital program model. *Harvard Review of Psychiatry, 14*, 1–14. doi:10.1080/10673220500519706.

Neuhaus, E. C., Christopher, M., Jacob, K., Guillaumot, J., & Burns, J. P. (2007). Short-term cognitive behavioral partial hospital treatment: A pilot study. *Journal of Psychiatric Practice, 13*, 298–307. doi:10.1097/01.pra.0000290668.10107.f3.

Newton-Howes, G., Tyrer, P., & Johnson, T. (2006). Personality disorder and the outcome of depression: Meta-analysis of published studies. *The British Journal of Psychiatry, 188*, 13–20. doi:10.1192/bjp.188.1.13.

Patrick, J., Links, P., Van Reekum, R., & Mitton, J. E. (1995). Using the PDQ-R BPD scale as a brief screening measure in the differential diagnosis of personality disorder. *Journal of Personality Disorders, 9*, 266–274. doi:10.1521/pedi.1995.9.3.266.

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments & Computers, 36*, 717–731. doi:10.3758/BF03206553.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*, 879–891. doi:10.3758/BRM.40.3.879.

Richardson-Vejlgaard, R., Broudy, C., Brodsky, B., Fertuck, E., & Stanley, B. (2013). Predictors of psychotherapy alliance in borderline personality disorder. *Psychotherapy Research, 23*, 539–546. doi:10.1080/10503307.2013.801001.

Segal, Z. V., Williams, M. G. J., & Teasdale, J. D. (2002). *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse*. New York, NY: Guilford Press.

Seivewright, H., Tyrer, P., & Johnson, T. (2004). Persistent social dysfunction in anxious and depressed patients with personality disorder. *Acta Psychiatrica Scandinavica, 109*, 104–109. doi:10.1046/j.1600-0447.2003.00241.x.

Simpson, E. B., Pistorello, J., Begin, A., Costello, E., Levinson, J., & Stevens, M. (1998). Use of dialectical behavior therapy in a partial hospital program for women with borderline personality disorder. *Psychiatric Services, 49*, 669–673.

Sjastad, H. N., Grawe, R. W., & Egeland, J. (2012). Affective disorders among patients with borderline personality disorder. *PLoS One, 7*, 1–8. doi:10.1371/journal.pone.0050930.

Skodal, A. E., Geier, T., Grant, B. F., & Hasin, D. S. (2014). Personality disorders and the persistence of anxiety disorders in a nationally representative sample. *Depression and Anxiety,*. doi:10.1002/da.22287.

Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Lowe, B. (2006). A brief measure for assessing generalized anxiety disorder.

Archives of Internal Medicine, 166, 1092–1097. doi:10.1001/archinte.166.10.1092.

Stenhouse, L., & Van Kessel, K. (2002). Cognitive therapy and dialectical behaviour therapy: An integrative approach to the conceptualization of borderline personality disorder. *New Zealand Journal of Psychology, 31*, 87–92.

Stepp, S. D., Epler, A. J., Jahng, S., & Tull, T. J. (2008). The effect of dialectical behavior therapy skills use on borderline personality disorder features. *Journal of Personality Disorders, 22*, 549–563. doi:10.1521/pedi.2008.22.6.549.

Swenson, C. R., Sanderson, C., Dulit, R. A., & Linehan, M. M. (2001). The application of dialectical behavior therapy for patients with borderline personality disorder on inpatient units. *Psychiatric Quarterly, 72*, 307–324. doi:10.1023/A:1010337231127.

Taylor, J., James, L. M., Bobadilla, L., & Reeves, M. D. (2008). Screening for disinhibited disorder cases in a college population: Performance of the SMAST, DAST, SCID-II-Q, and PDQ-4. *Psychological Assessment, 20*, 351–360. doi:10.1037/a0013452.

Tragesser, S. L., Solhan, M., Schwartz-Mette, R., & Trull, T. J. (2007). The role of affective instability and impulsivity in predicting future BPD features. *Journal of Personality Disorders, 21*, 603–614. doi:10.1521/pedi.2007.21.6.603.

Vaidyanathan, U., Patrick, C. J., & Iacono, W. G. (2011). Patterns of comorbidity among mental disorders: A person-centered approach. *Comprehensive Psychiatry, 52*, 527–535. doi:10.1016/j.comppsych.2010.10.006.

Webb, C. A., Kertz, S. J., Bigda-Peyton, J. S., & Björgvinsson, T. (2013). The role of pretreatment outcome expectancies and cognitive-behavioral skills in symptom improvement in an acute psychiatric setting. *Journal of Affective Disorders, 149*, 375–382. doi:10.1016/j.jad.2013.02.016.

Williams, S. E., Hartstone, M. D., & Denson, L. A. (2010). Dialectical behavioural therapy and borderline personality disorder: Effects on service utilisation and self-report symptoms. *Behaviour Change, 27*, 251–264. doi:10.1375/bech.27.4.251.

Zanarini, M. C., Frankenburg, F. R., Dubo, E. D., Sickel, A. E., Trikha, A., Levin, A., & Reynolds, V. (1998). Axis I comorbidity of borderline personality disorder. *The American Journal of Psychiatry, 155*, 1733–1739.

Zanarini, M. C., Frankenburg, F. R., Hennen, J., Reich, D. B., & Silk, K. R. (2004). Axis I comorbidity in patients with borderline personality disorder: 6-year follow-up and prediction of time to remission. *American Journal of Insanity, 161*, 2108–2114. doi:10.1176/appi.ajp.161.11.2108.