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# Improving functional outcomes in women with borderline personality disorder and PTSD by changing PTSD severity and post-traumatic cognitions

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ABSTRACT

Although functional impairment typically improves during evidence-based psychotherapies (EBPs) for borderline personality disorder (BPD), functional levels often remain suboptimal after treatment. The present pilot study evaluated whether and how integrating PTSD treatment into an EBP for BPD would improve functional outcomes. Participants were 26 women with BPD, PTSD, and recent suicidal and/or self-injurious behavior who were randomized to receive one year of Dialectical Behavior Therapy (DBT) or DBT with the DBT Prolonged Exposure (DBT PE) protocol for PTSD. Five domains of functioning were assessed at 4-month intervals during treatment and at 3-months post-treatment. DBT + DBT PE was superior to DBT in improving global social adjustment, health-related quality of life, and achieving good global functioning, but not interpersonal problems or quality of life. Results of time-lagged mixed effects models indicated that, across both treatments, reductions in PTSD severity significantly predicted subsequent improvement in global social adjustment, global functioning, and health-related quality of life, whereas reductions in post-traumatic cognitions significantly predicted later improvement in all functional outcomes except global social adjustment. These findings provide preliminary evidence supporting the role of change in PTSD severity and trauma-related cognitions as active mechanisms in improving functional outcomes among individuals with BPD and PTSD.

## 1. Introduction

Individuals with borderline personality disorder (BPD) display a pervasive pattern of instability reflected in affect, behavior, and relationships (American Psychological American Psychiatric Association, 2013). This instability is often associated with significant impairment in multiple domains of functioning. Among treatment-seeking individuals with BPD, more than 50% report severe impairment in interpersonal relationships, employment, and global social adjustment (e.g., Ansell, Sanislow, McGlashan, & Grilo, 2007; Skodol et al., 2002). Individuals with BPD are also at increased risk of significant physical health conditions (El-Gabalawy, Katz, & Sareen, 2010). These functional impairments are associated with significant hardship and disability; for example, in the United States individuals with BPD make up 25% of those receiving Social Security Insurance and 35% of those receiving Social Security Disability Insurance (U.S. Department of Health and Human Services, 2003).

Naturalistic studies have found that functional impairment may be particularly intractable among individuals with BPD. In a treatment-seeking BPD sample, no significant improvements were found across seven domains of psychosocial functioning over two years of follow-up (Skodol et al., 2005). Subsequent research on this sample found that only 21% had achieved good functioning by the 10-year follow-up (defined as Global Assessment of Functioning (GAF) score > 70) even though more than 85% had achieved diagnostic remission from BPD (Gunderson et al., 2011). Similarly, in a sample of BPD inpatients followed over 16 years post-discharge, the cumulative rate of a two-year diagnostic remission from BPD was 99%, whereas only 60% achieved a two-year recovery (defined as diagnostic remission from BPD plus a GAF score > 60; Zanarini, Frankenburg, Reich, & Fitzmaurice, 2012). These findings indicate that functional impairment is not only chronic in the natural course of BPD, but is also likely to persist even after BPD criterion behaviors improve.

Although evidence-based psychotherapies (EBPs) for BPD generally lead to significant improvements in functioning, functional levels typically remain suboptimal after treatment. For example, Dialectical Behavior Therapy (DBT) results in statistically and clinically significant improvements in global functioning, social adjustment, and interpersonal problems; however, across domains of functioning only 25–55% were considered "recovered" at one-year follow-up (Wilks, Korslund, Harned, & Linehan, 2016). Similarly, both DBT and General Psychiatric Management (GPM) for BPD have been found to

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significantly improve functional outcomes, but two years after treatment health-related quality of life remained below normal, 52% of patients were neither employed nor in school, and 39% were receiving psychiatric disability benefits (McMain, Guimond, Streiner, Cardish, & Links, 2012). Mentalization-Based Treatment (MBT) for BPD has also been found to significantly improve functional outcomes during three years of treatment, and although gains were maintained after treatment, only 46% of patients had good global functioning (GAF > 61) at the 5-year follow-up (Bateman & Fonagy, 2008). These studies suggest a need for adjunctive strategies to improve functional outcomes in EBPs for BPD.

One potential explanation for the suboptimal functional outcomes following EBPs for BPD is that these treatments typically do not include evidence-based treatment for posttraumatic stress disorder (PTSD), a common and often disabling co-occurring disorder. Up to 79% of individuals with BPD have PTSD, and the presence of PTSD is associated with more impaired global functioning (Frías & Palma, 2015). In addition, prospective studies of individuals with BPD have found that PTSD and childhood trauma predict worse global functioning over 2 years (Gunderson et al., 2011) and a longer time-to-recovery over 16 years (diagnostic remission from BPD plus GAF > 60; Zanarini et al., 2014). These findings are consistent with research indicating that PTSD is generally associated with poorer health-related quality of life, occupational and social functioning, and general well-being (e.g., Olatunji, Cisler, & Tolin, 2007; Pagotto et al., 2015) and that EBPs for PTSD lead to significant improvements in these areas (e.g., Foa et al., 1999, 2005, 2013; Monson et al., 2006; Rauch et al., 2009).

A second potential explanation for the suboptimal functioning outcomes in EBPs for BPD is that they may not sufficiently change post-traumatic cognitions, including beliefs about the self as bad, others as untrustworthy, and the world as dangerous (Foa, Ehlers, Clark, Tolin, & Orsillo, 1999). Many theoretical models of BPD posit that these types of maladaptive self- and other-focused beliefs stem from early experiences of trauma, neglect, and invalidation and underlie the psychosocial functioning problems common in this disorder (Bender & Skodol, 2007), and some treatments for BPD (e.g., schema-focused therapy; Young, 1994) are based on the assumption that changing these types of pathological cognitions is critical to achieving improvement in BPD. These theories are supported by considerable research indicating that individuals with BPD exhibit negative attributional biases about others and impairments in the ability to accurately infer others' mental states, and these deficits are strongly predicted by a history of childhood trauma and PTSD (Roepke, Vater, Preißler, Heekeren, & Dziobek, 2013). Although we are not aware of studies evaluating the impact of EBPs for BPD on post-traumatic cognitions, EBPs for PTSD have been shown to effectively alter these types of cognitions (Foa & Rauch, 2004; Kliem & Kröger, 2013; Owens, Pike, & Chard, 2001; Zalta et al., 2014) and therefore may help to enhance changes in problematic beliefs about self and others thought to underlie functional problems in BPD.

To date, EBPs for BPD have typically not utilized evidence-based, trauma-focused techniques to treat PTSD. Of the existing EBPs for BPD, only DBT has been evaluated in terms of its impact on co-occurring PTSD, with results indicating a relatively low rate of diagnostic remission of PTSD during one year of DBT and one year of follow-up (35%; Harned et al., 2008). In addition, a 12-week residential adaptation of DBT for PTSD related to childhood sexual abuse found a PTSD remission rate of 41.2% among those participants with BPD (Bohus et al., 2013). The DBT PE protocol was developed specifically to be integrated into standard DBT to facilitate routine and direct targeting of PTSD. The DBT PE protocol is based on Prolonged Exposure therapy (PE; Foa, Hembree, & Rothbaum, 2007), a gold standard trauma-focused EBP for PTSD. Results from a randomized controlled trial (RCT) indicate that BPD patients who completed DBT with the DBT PE protocol were twice as likely as those receiving DBT alone to achieve diagnostic remission from PTSD (80% vs. 40%), while also showing larger improvements in dissociation, depression, anxiety, guilt, shame, and global symptom severity (Harned, Korslund, & Linehan, 2014). Although data from an earlier open trial suggests DBT + DBT PE improves global social adjustment (Harned, Korslund, Foa, & Linehan, 2012), its impact on a broad range of functional outcomes has not been evaluated, particularly using a more rigorous RCT design.

The present study aims to evaluate whether and how integrating the DBT PE protocol into DBT improves functional outcomes in multiple domains, including general and health-related quality of life, interpersonal problems, global social adjustment, and global functioning. The analyses use secondary data from an RCT comparing DBT with and without the DBT PE protocol among acutely suicidal and self-injuring women with BPD and PTSD (Harned et al., 2014). The primary outcome paper did not evaluate changes in functional outcomes. We made the following a priori hypotheses:

(1) DBT + DBT PE would be superior to DBT in improving functional outcomes.
(2) Reductions in PTSD severity and post-traumatic cognitions would be prospectively related to subsequent improvements in functioning in both treatments.

## 2. Method

The design and procedures of the original RCT are described in detail elsewhere (Harned et al., 2014) and will be briefly reviewed here.

### 2.1. Participants

Participants were 26 adult women (ages 18–60) meeting DSM-IV criteria for BPD based on the International Personality Disorder Examination (Loranger, 1995) and PTSD based on the PTSD Symptom Scale-Interview (PSS-I; Foa, Riggs, Dancu, & Rothbaum, 1993). Participants also had recent and recurrent intentional self-injury, which was defined as at least two suicide attempts or non-suicidal self-injury (NSSI) episodes in the last 5 years, with at least one episode in the past 8 weeks. Exclusion criteria were lifetime psychotic or bipolar disorder, IQ less than 70, mandated to treatment, lived outside commuting distance of the clinic, or required primary treatment for another debilitating condition (e.g., life-threatening anorexia nervosa). The sample was an average age of 32.6 years (SD = 12.0) and was primarily Caucasian (80.8%), non-married (84.6%), without a college degree (69.2%), and earned $20,000 or less per year (75.0%). In the year prior to treatment, nearly all participants (96.2%) had engaged in NSSI (*M* acts = 63.3, SD = 99.1) and 57.7% had attempted suicide (*M* attempts = 2.4, SD = 5.5). Participants had experienced an average of 11.4 trauma types with an average age of trauma onset of 6.2 years old (SD = 4.7). The most common self-identified index (most distressing) traumas were childhood sexual abuse (50%), adult rape (15.4%), childhood physical abuse (11.5%), and intimate partner violence (11.5%). Participants met diagnostic criteria for an average of 5.0 current Axis I disorders (SD = 2.2) and 2.0 Axis II disorders (SD = 1.0).

### 2.2. Procedure

Participants were randomly assigned using a 2:1 allocation ratio to receive one year of outpatient DBT + DBT PE ($n$ = 17) or DBT ($n$ = 9) in a university-affiliated clinic. A minimization randomization procedure was used to successfully match participants on five primary prognostic variables: (1) number of past year suicide attempts, (2) number of past year NSSI episodes, (3) PTSD severity, (4) dissociation severity, and (5) current use of SSRI medication. Treatment adherence was monitored for both DBT and DBT PE. Assessments were conducted by blinded independent evaluators at baseline, 4, 8, and 12 months (post), as well as 3 months follow-up. All study procedures were conducted in accord with approval from the University of Washington's IRB.