Multimodal examination of distress tolerance and posttraumatic stress disorder symptoms in acute-care psychiatric inpatients

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ABSTRACT

Distress tolerance (DT), the actual or perceived capacity to withstand negative internal states, has received increasing scholarly attention due to its theoretical and clinical relevance to posttraumatic stress disorder (PTSD). Past studies have indicated that lower self-reported – but not behaviorally observed – DT is associated with greater PTSD symptoms; however, studies in racially and socioeconomically diverse clinical samples are lacking. The current study evaluated associations between multiple measures of DT (self-report and behavioral) and PTSD symptoms in an urban, racially and socioeconomically diverse, acute-care psychiatric inpatient sample. It was hypothesized that lower self-reported DT (Distress Tolerance Scale [DTS]), but not behavioral DT (breath-holding task [BH]; mirror-tracing persistence task [MT]), would be associated with greater PTSD symptoms, above and beyond the variance contributed by trauma load, substance use, gender, race/ethnicity, and subjective social status. Participants were 103 (41.7% women, M_{age} = 33.5) acute-care psychiatric inpatients who endorsed exposure to potentially traumatic events consistent with *DSM-5* PTSD Criterion A. Results of hierarchical regression analyses indicated that DTS was negatively associated with PTSD symptom severity (PCL-5 Total) as well as with each of the four *DSM-5* PTSD symptom clusters (p's < 0.001), contributing between 5.0%–11.1% of unique variance in PTSD symptoms across models. BH duration was positively associated with PTSD arousal symptom severity (p < 0.05). Covariates contributed between 21.3%–40.0% of significant variance to the models. Associations between DT and PTSD in this sample of acute-care psychiatric inpatients are largely consistent with those observed in community samples.

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Distress tolerance, defined as the perceived or actual ability to tolerate negative or aversive emotions or physical states (Leyro, Zvolensky, & Bernstein, 2010), is a cognitive-affective factor that has received increasing scholarly attention in the traumatic stress literature due to its potential theoretical and clinical relevance to the etiology, maintenance, and treatment of posttraumatic stress disorder (PTSD; Vujanovic, Bernstein, & Litz, 2011). Distress tolerance can be conceptualized as a risk or resilience factor for PTSD, a maintenance factor for PTSD symptoms, a clinical target for PTSD prevention or early intervention efforts, or as an active ingredient for adjunctive skills-based treatment for established evidence-based interventions for PTSD (Vujanovic, Litz, & Farris, 2015). Broadly, inverse associations between distress tolerance and PTSD symptoms have been documented among community-recruited adults (Fetzner, Peluso, & Asmundson, 2014; Vujanovic, Bonn-Miller, Potter, Marshall, & Zvolensky, 2011), substance dependent adults (Anestis, Tull, Bagge, & Gratz, 2012; Tull, Gratz, Coffey, Weiss, & McDermott, 2013; Vujanovic, Rathnayaka, Amador, & Schmitz, 2016), and military veterans (Banducci, Bujarski, Bonn-Miller, Patel, & Connolly, 2016; Holliday, Pedersen, & Leventhal, 2016). A significant limitation of extant work in this domain has been the predominant focus on either predominantly white community samples or more racially diverse substance dependent samples. This has hampered our understanding of distress tolerance in racially diverse and clinically severe general psychiatric populations, potentially contributing to health disparities in the development of novel targeted interventions for vulnerable groups.

An overarching challenge in the distress tolerance literature is the operationalization and measurement of the construct. Due to the preponderance of self-report and behavioral indices of distress tolerance (Leyro et al., 2010), studies often include certain mea-

sures to the exclusion of others, precluding our ability to generalize and synthesize findings across indices and evaluate the patterns of association between specific facets of distress tolerance and PTSD symptomatology. Distress tolerance measures tend to be characterized by assessment modality (i.e., self-report versus behavioral assessment) and type of distress (i.e., physical versus psychological/emotional). Regardless of type of distress, self-report distress tolerance measures tend to be moderately correlated (Bernstein, Zvolensky, Vujanovic, & Moos, 2009; McHugh et al., 2011; McHugh & Otto, 2012) and behavioral measures tend to be moderately correlated (Marshall-Berenz, Vujanovic, Bonn-Miller, Bernstein, & Zvolensky, 2010; McHugh et al., 2011). However, self-report and behavioral measures are typically not significantly correlated (Anestis et al., 2012; Marshall-Berenz et al., 2010; McHugh et al., 2011). Given that measures of perceived (i.e., self-report) and behavioral distress tolerance are not necessarily assessing a single overarching distress tolerance construct, efforts are needed to better define the nature of these constructs, as well as possible similarities and differences in their relations to PTSD symptomatology.

Notably, in the traumatic stress literature, only one published study to date has utilized multimodal indices of distress tolerance and examined corresponding relations with PTSD symptomatology. Marshall-Berenz et al. (2010) conducted a multi-method study of distress tolerance in relation to PTSD symptoms in a community sample of predominantly white adults exposed to potentially traumatic events (PTE; Marshall-Berenz et al., 2010) and implemented two self-report measures of distress tolerance (Distress Tolerance Scale [DTS]: Simons & Gaher, 2005); (Discomfort Intolerance Scale [DIS]: Schmidt, Richey, & Fitzpatrick, 2006) and two behavioral indices (Mirror-Tracing Persistence Task: Quinn, Brandon, & Copeland, 1996; Breath-Holding task: Hajek, Belcher, & Stapleton, 1987). Only the DTS emerged as a significant incremental (inverse) predictor of PTSD symptoms. Notably, the behavioral indices of distress tolerance were not significantly related to PTSD symptoms, and neither was the self-report DIS measure. This study highlighted the particular relevance of *perceived* tolerance of negative emotional states in terms of PTSD symptomatology in this community sample; however, replication and extension of these findings using a comprehensive battery of distress tolerance measures in a diverse clinical sample is needed.

Taken together, several gaps were identified in the literature. First, only one published empirical study to date has conducted a multimodal investigation of the associations between distress tolerance and PTSD symptomatology. This study was based upon a predominantly white, young adult community sample of adults exposed to PTE. Thus, our understanding of the associations among distress tolerance, indexed multimodally, with regard to PTSD symptomatology is significantly limited. Second, no published studies to date have been focused upon general psychiatric inpatients. Most relevant studies have been based upon samples of community adults (Marshall-Berenz et al., 2010; Marshall-Berenz, Vujanovic, & Zvolensky, 2011; Vujanovic, Bonn-Miller et al., 2011; Vujanovic et al., 2013), military veterans (Banducci et al., 2016; Holliday et al., 2016), or substance dependent samples (Anestis et al., 2012; Vujanovic et al., 2016). Yet, acute-care psychiatric inpatients are highly relevant to this domain of study, as such populations, regardless of presenting psychiatric diagnoses, manifest high rates of PTE exposure (Gelkopf, Hasson-Ohayon, Bikman, & Kravetz, 2013) and PTSD symptomatology (Mueser et al., 1998). Indeed, PTSD symptomatology is associated with more severe symptom presentations, functional impairment, greater service utilization, and chronicity of symptoms in general psychiatric inpatient populations (Frueh et al., 2000; Goodman, Rosenberg, Mueser, & Drake, 1997; Mueser et al., 2004). Inpatient populations are thus not only highly relevant in this regard but also particularly likely to benefit from brief distress tolerance interventions.

Third, most of the published literature in this domain has been based upon predominantly white community samples or more racially diverse substance dependent samples, and sociodemographic variables such as race/ethnicity and social status have not been considered in the context of distress tolerance-PTSD relations. This is unfortunate, since our lack of knowledge about these relations in diverse populations limits our ability to inform culturally competent evidence-based services, thus potentially perpetuating documented health disparities in mental health care (Nayback, 2008; Roberts, Gilman, Breslau, Breslau, & Koenen, 2011).

Therefore, the aims of the current study were to build upon the extant literature by examining associations between multiple measures of distress tolerance (self-report and behavioral) and PTSD symptom severity in an urban, racially and socioeconomically diverse, acute-care psychiatric inpatient sample of adults exposed to PTE. It was hypothesized that lower self-reported distress tolerance, but not behavioral indices of distress tolerance, would be associated with (1) greater PTSD symptom severity, and (2) greater severity of each of the four *DSM-5* (American Psychiatric Association, 2013) PTSD symptom clusters, including intrusion, avoidance, negative alteration of cognition/mood, and arousal/reactivity. Effects were expected above and beyond the covariates of trauma load (i.e., number of trauma types endorsed), number of substance classes used (past month), gender, race/ethnicity, and subjective social status. These covariates were selected due to their established associations with PTSD symptom severity (Alcántara, Casement, & Lewis-Fernández, 2013; Brady, Killeen, Brewerton, & Lucerini, 2000; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Kilpatrick et al., 2013; Goldstein, Southwick, & Grant, 2011; Roberts et al., 2011).

1. Method

1.1. Participants

The sample was comprised of 103 psychiatric inpatients (41.7% women; M age = 33.5, SD = 10.9) at a public, university-affiliated, acute-care psychiatric inpatient hospital in a large metropolitan area in the southern United States. See Table 1 for sample characteristics. Individuals 18–65 years of age who reported a history of exposure to PTE consistent with *Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition* (*DSM-5*; APA, 2013) PTSD Criterion A, were eligible. Potential participants were deemed ineligible if they were unable to provide verbal and written informed consent or if they obtained a score below 20 on the Mini Mental Status Examination (see below).

1.2. Measures

1.2.1. Medical records review

Demographic information, including age, sex, race/ethnicity, and psychiatric diagnoses were derived from the electronic medical records. Since patients commonly present for admission in acute distress, intake diagnostic information is often incomplete; thus, discharge diagnostic information is more comprehensive and provides a standardized time-point for extraction of information. Psychiatric diagnoses were determined via non-standardized clinical interviews conducted by unit psychiatrists. Discharge psychiatric diagnoses were used to inform the diagnostic composition of the present sample.

1.2.2. Mini Mental Status Examination (MMSE; Folstein, Folstein, & McHugh, 1975; Tombaugh & McIntyre, 1992)

The MMSE is an 11-item instrument used as an objective screening tool for general mental status. The MMSE provides a brief