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Cognition, functional capacity, and self-reported disability in women with posttraumatic stress disorder: Examining the convergence of performance-based measures and self-reports

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ABSTRACT

Individuals with posttraumatic stress disorder (PTSD) experience cognitive impairments and disability in everyday activities. In other neuropsychiatric disorders, impairments in cognition and functional capacity (i.e., the ability to perform everyday tasks) are associated with impairments in real-world functioning, independent of symptom severity. To date, no studies of functional capacity have been conducted in PTSD. Seventy-three women with moderate to severe PTSD underwent assessment with measures of cognition (MATRICS Consensus Cognitive Battery: MCCB), functional capacity (UCSD Performance-Based Skills Assessment-Brief: UPSA-B), PTSD (Clinician-Administered PTSD Scale and PTSD Symptom Scale—Self-report (PSS-SR)), and depression (Montgomery Asberg Depression Rating Scale). Patients also reported their subjective level of disability (Sheehan Disability Scale). Over-reporting of symptom severity was assessed using six validity items embedded within the PSS-SR. Results indicated that on average PTSD patients manifested mild impairments on the functional capacity measure, performing about 1/3 standard deviation below healthy norms, and similar performance on the MCCB. Both clinician-rated and self-rated PTSD symptom severity correlated with self-reported disability but not with functional capacity. Self-reported disability did not correlate with functional capacity or cognition. Greater self-reported disability, depression, and PTSD symptoms all correlated with higher scores on the PSS-SR validity scale. The divergence between objective and subjective measures of disability suggests that individuals' distress, as indexed by symptom validity measures, may be impacting self-reports of disability. Future studies of disability should incorporate objective measures in order to obtain a broad perspective on functioning.

1. Introduction

Disability in multiple everyday functional domains (e.g., social, vocational, and residential) is common across various neuropsychiatric conditions. People with severe mental illness often show impairments in neurocognition and the ability to perform functional tasks, often referred to as functional capacity (FC). Now recognized as an important predictor of everyday functioning, functional capacity is measured by standardized tests that assess the ability to perform everyday living skills, including simple tasks such as paying bills and making appointments. However, ability variables such as FC or neurocognition do not fully equate to real-world functioning due to the moderating influences of psychiatric symptoms and social and environmental factors (e.g., disability compensation and opportunities). It is now clear that thorough assessment of everyday functioning and its determinants needs to consider not only what one can do, but also what one actually does. Separation of the *capacity* to complete most everyday activities (functional capacity) from actually *performing* those activities

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(real-world functioning) outside of a standardized testing environment allows for more complete quantification of what leads to real-world disability.

Individuals with bipolar disorder and schizophrenia with substantial real-world disability score lower on both neurocognitive tests and FC measures (Depp et al., 2008; Leifker et al., 2009; Martínez-Arán et al., 2004; Simonsen et al., 2008). Strong correlations between neurocognitive and FC scores have been found consistently in both schizophrenia (Bowie et al., 2006; McKibbin et al., 2004; Twamley et al., 2002) and bipolar disorder (Bowie et al., 2010; Depp et al., 2009; Gildengers et al., 2007). Interestingly, however, these performance-based measures of cognition and functional capacity are generally only minimally related to symptom severity and to self-reports of everyday functioning (Bowie et al., 2006, 2010; Depp et al., 2009; Gildengers et al., 2007; Sabbag et al., 2011).

Although intercorrelations of cognition and functional capacity with symptom severity are modest, performance on NP and FC indices and symptom severity (particularly depressive symptoms) independently predict real-world disability measured through informant reports and milestone functional achievements (residential independence and educational/academic achievement; Bowie et al., 2008, 2010; Mausbach et al., 2010). Moreover, self-reports of cognitive ability or disability in schizophrenia (Bowie et al., 2007; McKibbin et al., 2004; Sabbag et al., 2011, 2012), bipolar disorder (Burdick et al., 2005), Multiple Sclerosis (Carone et al., 2005), and Traumatic Brain Injury (TBI; Spikman and van der Naalt, 2010) converge poorly with objective performance. However, the studies that have examined self-reported mood symptoms found that these reports correlated with informant reports of impaired everyday functioning. Thus, while people with neuropsychiatric conditions may estimate their abilities in ways that are unrelated to informant-rated real-world functioning and objective performance data, their subjective mood symptoms appear to be related to objective indices of everyday functioning.

Post-traumatic stress disorder (PTSD) is associated with substantial everyday disability, which is typically attributed to the influences of PTSD symptoms. Individuals with PTSD are more likely than their trauma-exposed counterparts without PTSD to be unemployed, have physical limitations, and engage in hazardous drinking (Zatzick et al., 1997; McDevitt-Murphy et al., 2010). As such, obtaining information about impairments in functioning is important for the treatment of individuals with PTSD. Such information can be obtained through self-reports, informant reports, and/or performance-based ability measures. However, there is minimal evidence that self-reports of everyday disability across every neuropsychiatric condition studied to date are reliable, as noted above. Thus, performance-based behavioral tests of cognition and functional capacity may be useful alternatives, suggesting that NP and FC tests merit further exploration as predictors of everyday disability in PTSD.

Individuals with PTSD show impairments in NP performance, with deficits in sustained attention, working memory, initial learning and processing speed (Barrett et al., 1996; Twamley et al., 2009; Vasterling et al., 2002; Yehuda et al., 1995). These aspects of cognitive functioning are the components most strongly correlated with disability in severe mental illness (Harvey, 2010) and other neuropsychiatric conditions. For instance, Heaton and Pendleton (1981) found that composite measures of similar cognitive performance domains were the best predictors of real-world disability across multiple neuropsychiatric conditions.

Although hundreds of studies have examined the contribution of NP impairment to disability in schizophrenia and bipolar illness (See Harvey et al., 2010 for a review), only one study has evaluated this association in patients with PTSD, finding that cognitive deficits were associated with poorer social and occupational outcomes (Geuze et al., 2009). However, in studies with severe mental illness, the contribution of cognition to disability is often fully mediated by functional capacity (Bowie et al., 2006, 2008, 2010). Functional capacity may be a more direct indicator of real-world impairments than cognition. However, to our knowledge, no study to date has examined functional capacity in PTSD, despite its potential clinical use. Additionally, no study has examined the correlations of objective measures of neurocognition and functional capacity with self-reported measures of real-world disability. Finally, no study has examined the simultaneous contributions of symptoms, neurocognition, and functional capacity to lifetime estimates of everyday functioning in PTSD patients. Thus, this study has the potential to provide information on the extent to which self-reported everyday functioning in PTSD diverges from objective ability measures that have been previously validated as predictors of real-world functioning in residential and vocational domains. Understanding the relationships between objective data and subjective impressions is likely to be valuable for clinical treatment and disability reduction.

Here we report an initial study of cognition, functional capacity, psychiatric symptoms, and disability in adult women with PTSD. The women were participants in a clinical trial where safety issues with the pharmacological agent precluded the inclusion of male patients. We administered a comprehensive neuropsychological assessment battery and brief measure of functional capacity, assessed lifetime educational and vocational functioning, and collected measures of PTSD and depressive symptoms, and obtained self-reports on the current level of disability. We also administered questions that assessed the validity of self-reports of symptom severity. We then examined the relationships between performance in NP and FC domains, the degree of symptom severity, and self-reported disability in the sample. We hypothesized that NP and FC deficits would correlate with each other but not with measures of symptom severity, as seen in other neuropsychiatric conditions. In a final analysis, we examined the correlation between lifetime vocational attainment and symptomatic, cognitive, and functional capacity variables in order to examine whether cognitive and functional capacity variables were correlated with lifetime functional outcomes.

2. Method

2.1. Participants

Participants ($n = 73$) were women, aged 18–65, in the pre-treatment screening phase of an ongoing phase-II clinical trial of an investigational treatment for PTSD (NCT01018992). All males were excluded from this trial because of safety concerns (i.e., a risk of testicular toxicity discovered during pre-clinical testing of the medication in male rats). They were recruited across three sites: Emory University School of Medicine, Atlanta; Mount Sinai School of Medicine, New York; and Michael E. Debakey VA Medical Center/Baylor College of Medicine, Houston, via local media advertisements, posters, and clinic referrals. Forty-one cases came from Emory University, while 25 came from Mt. Sinai School of Medicine in New York, and 7 from the Baylor School of Medicine. Key inclusion criteria were a diagnosis of chronic PTSD according to the DSM-IV and at least moderately severe symptom severity, indicated by a Clinician-Administered PTSD Scale (CAPS) score ≥ 50. Exclusion criteria included a diagnosis of a psychotic disorder, bipolar disorder, OCD, anorexia nervosa, bulimia, substance abuse or dependence (in the past 90 days), high current suicide risk, being pregnant or nursing, taking psychoactive medication (other than non-benzodiazepine hypnotics), active legal issues related to PTSD