Verbal memory functioning moderates psychotherapy treatment response for PTSD-Related nightmares

J. Cobb Scott a, b, *, Gerlinde Harb a, Janeese A. Brownlow a, b, Jennifer Greene a, b, Ruben C. Gur a, b, Richard J. Ross a, b

a VISN4 Mental Illness Research, Education, and Clinical Center, Corporal Michael J. Crescenz VA Medical Center, 3900 Woodland Ave, Philadelphia, PA 19104, USA
b Department of Psychiatry, Perelman School of Medicine, University of Pennsylvania, 3400 Spruce St, 10 Gates, Philadelphia, PA 19104, USA

Abstract

Posttraumatic stress disorder (PTSD) is associated with cognitive deficits in attention, executive control, and memory, although few studies have investigated the relevance of cognitive difficulties for treatment outcomes. We examined whether cognitive functioning and history of traumatic brain injury (TBI) were associated with response to cognitive-behavioral therapy (CBT) for PTSD-related sleep problems. In a randomized controlled trial of Imagery Rehearsal (IR) added to components of CBT for Insomnia (IR + cCBT-I) compared to cCBT-I alone for PTSD-related recurrent nightmares, 94 U.S. veterans completed a battery of cognitive tests. TBI was assessed via structured clinical interview. Mixed-effects models examined main effects of cognitive functioning and interactions with time on primary sleep and nightmare outcomes. Significant verbal immediate memory by time interactions were found for nightmare distress, nightmare frequency, and sleep quality, even after controlling for overall cognitive performance and depression. TBI exhibited main effects on outcomes but no interactions with time. Findings indicated that individuals with lower verbal memory performance were less likely to respond to treatment across two sleep interventions. Veterans with TBI displayed greater symptoms but no altered trajectories of treatment response. Together with prior literature, findings suggest that verbal memory functioning may be important to consider in PTSD treatment implementation.

1. Introduction

Posttraumatic stress disorder (PTSD) is a psychiatric disorder that can develop after exposure to a traumatic event and affects approximately 8% of the general population (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). A number of psychotherapies, including cognitive processing therapy (CPT), cognitive behavioral therapy (CBT), and prolonged exposure (PE) therapy, have been recommended as efficacious for the treatment of PTSD (Forbes et al., 2010; National Collaborating Centre for Mental Health (UK) (2005)). However, a substantial proportion of individuals still show limited benefit from treatment. This seems especially true for PTSD-related sleep dysfunction, such as recurrent nightmares and insomnia, which frequently show inadequate response with PTSD-focused psychotherapy (Gutner, Casement, Stavitsky Gilbert, & Resick, 2013; Haagen, Smid, Knipscheer, & Kleber, 2015).

Given the hypothesized role of sleep disturbance in both the development and maintenance of PTSD (Gehman et al., 2013), insomnia and nightmares may be critical treatment targets (Brownlow, Harb, & Ross, 2015). Specific psychotherapies have been developed to target sleep symptoms in both PTSD and other mental health disorders, including Cognitive-Behavioral Therapy for Insomnia (CBT-I; Manber et al., 2014) to treat insomnia symptoms and imagery rehearsal (IR; Krakow & Zadra, 2006) to treat post-traumatic nightmares. IR is a cognitive-behavioral treatment that attempts to revise the story line of a nightmare during waking and encourages rehearsal of the new, non-distressing dream script prior to bedtime. Although initial results were promising for IR and CBT-I in the context of trauma (e.g., Krakow et al., 2001), there has been significant heterogeneity in response to such therapies (Harb et al., 2013). In combination with results from PTSD-focused psychotherapy, these results suggest a clear need to identify factors...
that may influence psychotherapy treatment response for individuals with PTSD.

Cognitive dysfunction may be one such factor. Numerous studies have shown that individuals with PTSD exhibit poorer cognitive functioning than individuals without PTSD, including those who experienced similar traumas as well as those without trauma exposure. Neurocognitive domains most commonly affected include episodic memory (Brewin, Kleiner, Vasterling, & Field, 2007), attention (Vasterling et al., 2002; Yehuda, Golier, Halligan, & Harvey, 2004), executive functioning (Aupperle, Melrose, Stein, & Paulus, 2012; Koenen et al., 2001), and speed of information processing (Verfaellie, Lafiache, Spiro, & Bousquet, 2014; Wrocklage et al., 2016), with the largest effects observed in verbal immediate memory and attention/working memory (Scott et al., 2015). These deficits appear to be greater in individuals with PTSD seeking treatment compared to community-based PTSD samples (Scott et al., 2015) and are associated with negative occupational and social outcomes, highlighting their potential clinical relevance (Geuze, Vermetten, de Kloet, Hijman, & Westenberg, 2009; Wrocklage et al., 2016). However, cognitive functioning has rarely been explored as an influential factor in psychotherapy.

Cognitive dysfunction may interfere with psychotherapy outcomes through both direct and indirect effects. Psychotherapy (especially CBT) relies heavily on neurocognitive skills to achieve treatment gains through cognitive restructuring, updating of associations, and behavioral changes. At a broad level, theoretical frameworks describing the process of change in therapy often invoke neurocognitive mechanisms, such as memory reconsolidation (e.g., Lane, Ryan, Nadel, & Greenberg, 2015) or executive problem solving (e.g., Pascual-Leone & Pascual-Leone, 2015). Thus, cognitive dysfunction may directly interfere with treatment implementation, comprehension, or a patient’s ability to re-contextualize memories or associations. For example, in trauma-focused therapy, deficits in verbal abilities may affect one’s ability to effectively verbalize trauma narratives, while verbal episodic memory dysfunction may affect the encoding and recall of treatment content or one’s ability to re-contextualize memories, resulting in inefficient consolidation of treatment gains. Deficits in executive functioning could also impact a patient’s ability to self-monitor and control attention during therapy. In particular, effective working memory, a core component of executive functioning, requires individuals to monitor incoming information to determine its relevance and update the no longer relevant information with the new, relevant information as appropriate; similar skills are theoretically required in psychotherapy. Working memory has also been associated with the ability to inhibit intrusive thoughts and memories (Brewin & Smart, 2005), which may be linked to PTSD symptom expression, including intrusive trauma thoughts and nightmares. Cognitive impairment may also have indirect effects on treatment outcomes by affecting treatment engagement or by reflecting illness severity. For example, impulsivity and dysfunctional decision-making may lead to decreased compliance with treatment or increased treatment dropout (Patkar et al., 2004). Additionally, those who have greater symptoms may have greater cognitive symptoms and be more treatment resistant.

Two studies in PTSD have examined effects of cognitive functioning on psychotherapy outcomes, specifically focusing on episodic memory. In a small study of civilians undergoing trauma-focused CBT, Wild and Gur (2008) showed that non-responders had worse verbal immediate memory at baseline, and that improvement in PTSD symptoms was positively associated with verbal immediate memory performance. In a recent study of 140 individuals with PTSD, Nijdam, de Vries, Gersons, and Olff (2015) examined whether pre-treatment verbal memory functioning was associated with treatment response across two kinds of trauma-focused psychotherapies. Results showed that short-term memory retrieval was positively associated with PTSD remission and with the degree of change in PTSD severity over 16 weeks of treatment. The contributions of other areas of cognitive functioning to treatment outcomes in PTSD have not been thoroughly examined.

Concerns have also been raised regarding whether veterans with traumatic brain injury (TBI) may have reduced treatment efficacy during psychotherapy. Individuals with mild and moderate TBIs have been shown to evidence cognitive deficits in memory, processing speed, and executive functioning, as well as greater mental health symptom severity, chronic pain, and emotional regulation difficulties; all of these symptoms have the potential to reduce psychotherapy treatment effectiveness (Bryant et al., 2010). Yet few studies have investigated the effects of TBI on treatment outcomes in PTSD. Studies of veterans with PTSD in exposure-based therapies have shown that treatment attendance may be lower in those with mild TBI (Davis, Walter, Chard, Parkinson, & Houston, 2013), although significant reductions in PTSD severity may nonetheless occur (Wolf, Strom, Kehle, & Effekhar, 2012). However, studies to date have been small and used modified versions of the therapies that include cognitive rehabilitation components (Chard, Schum, McElvain, Bailey, & Parkinson, 2011) or increased session length and enhanced structure, such as delivering smartphones, coaching between sessions, or additional support services (Wolf et al., 2015, 2012). Moreover, despite applying cognitive supports during therapy, no studies have examine cognitive functioning in predictive models.

Here, we extend prior literature in a number of ways. First, we examine the influence of cognitive functioning and TBI on treatment outcomes across two short-term treatments for PTSD-related recurrent nightmares, Imagery Rehearsal (IR) therapy and components of CBT for insomnia (cCBT-I). Second, we examine critical follow-up data for up to six months after the end of treatment, as previous studies have only examined outcome data at treatment cessation. Third, we utilize a relatively comprehensive neurocognitive battery, which allows us to examine whether working memory and verbal episodic memory have specific roles in treatment outcomes while controlling for the influence of overall cognitive functioning. Fourth, we explore whether veterans with PTSD and TBI showed treatment benefits equivalent to those with PTSD only. Such analyses take a critical step towards personalized treatment by identifying which individuals may be more or less likely to respond to treatment. Given prior results (Nijdam et al., 2015; Wild & Gur, 2008), estimated effect sizes in PTSD (Scott et al., 2015), and theoretical frameworks described above, we hypothesized that verbal immediate memory and working memory would moderate treatment response (including nightmare distress, nightmare frequency, and sleep quality) across both psychotherapy treatments, such that those with worse cognitive functioning would have worse symptom trajectories. Given previous results and the heterogeneity of TBI symptomatology (Levin & Diaz-Arrastia, 2015), we also hypothesized that TBI status would have a main effect on these treatment outcomes but would not moderate treatment response (i.e., individuals with TBI and PTSD would be more symptomatic at all time points).

2. Methods

2.1. Participants

One-hundred and eight Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn (OEF/OIF/OND) veterans were recruited. All were enrolled in mental health care at the Corporal
دریافت فوری متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات

ISIArticles
مرجع مقالات تخصصی ایران