The Treatment of Co-Occurring PTSD and Substance Use Disorders Using Trauma-Focused Exposure Therapy

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Abstract

Co-morbidity between posttraumatic stress disorder (PTSD) and substance use disorders (SUD) is high and there is a need for empirically validated treatments designed to address PTSD among SUD patients. One effective PTSD treatment that may be useful in treating PTSD-SUD is exposure therapy. This paper reviews the relationship between comorbid PTSD and SUD, the basics of exposure therapy for PTSD, and reviews preliminary work assessing the utility, safety, and tolerability of exposure therapy for PTSD-SUD. Although more research is needed, preliminary studies suggest that exposure therapy for PTSD-SUD is safe and tolerable and shows promise as an efficacious treatment.
Key Words: PTSD, Posttraumatic Stress disorder, Substance Use Disorder, Exposure Therapy, Comorbidity, Alcoholism, Drug Abuse.

Introduction

Substance abuse among individuals with co-occurring mental disorders has been a topic of concern with regards to prevalence, diagnostic considerations, treatment, and relapse. The presence of substance use disorders (SUDs) generally complicates treatment of both the SUD and the comorbid condition, and has been linked to poorer prognosis overall (Grant et al., 2004; O'Brien et al., 2004; Ouimette, Finney, & Moos, 1999). The present paper will focus on one of the most common comorbidities, the co-occurrence of posttraumatic stress disorder (PTSD) and SUDs. This paper will briefly describe the prevalence of PTSD-SUD comorbidity, potential mechanisms that may help explain the high comorbidity, and will present preliminary evidence to support the use of trauma-focused exposure therapy to treat co-occurring PTSD and SUD.

Prevalence

Chilcoat and Menard (2003) summarized the prevalence estimates of trauma exposure, PTSD, and comorbid SUDs from multiple epidemiological studies, including the most widely cited comorbidity studies, the Epidemiologic Catchment Area Study (ECA; Helzer, Robins, & McEvoy, 1987) and the National Comorbidity Study (NCS; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Lifetime prevalence for PTSD across the cross-sectional studies ranged from 1-7.8%. Comorbidity between PTSD and SUD was compared using odds ratios (ORs). ORs ranged from 1.56-8.8 dependent on SUD diagnosis type (across studies, alcohol dependence had lower ORs than other drug dependence diagnoses), indicating substantially increased odds of a SUD among those with a PTSD diagnosis versus those without (Chilcoat & Menard, 2003). This pattern was upheld when comparing SUDs in those with trauma exposure versus no exposure, but was somewhat attenuated in comparison to the PTSD statistics. Results from a large prospective study indicated a substantially increased risk (four times higher) of developing SUDs among those with PTSD versus those without the disorder (Chilcoat & Breslau, 1998).

In clinical samples, a large portion (11-60%) of individuals seeking treatment for SUDs meet diagnostic criteria for PTSD (Brady, 2001; Dansky et al., 1996; Grice, Brady, Dustan, Malcolm, & Kilpatrick, 1995; Jacobsen, Southwick, & Kosten, 2001; Najavits et al., 2003; Triffleman, Marmar, Delucchi, & Ronfeldt, 1995). As with epidemiological studies, methodological differences between studies can contribute to the variability of estimates (Chilcoat & Menard, 2003). Another possible explanation of the wide discrepancy between studies reporting rates of PTSD in SUD samples is the

PTSD symptom changes seen over time in this population. While it has been hypothesized based on clinical observations that PTSD symptoms may worsen during abstinence (e.g., Najavits, 2005), a recent empirical study provides evidence of the opposite (Coffey, Schumacher, Brady, & Dansky Cotton, in press). Individuals with a history of trauma and dependent on cocaine and alcohol were assessed over 28-days of monitored abstinence (n=162). Twenty-eight percent of the sample met current criteria for PTSD. PTSD symptoms declined during the 28-day assessment period irrespective of PTSD status or substance of abuse. These findings are consistent with evidence from other comorbidities (i.e., depression and anxiety; Brown & Schuckit, 1988), including the finding that the majority of symptom reduction occurred during the first two weeks of acute withdrawal. Thus, the time point of the assessment may affect differences in prevalence estimates of comorbidity. Re-assessment of PTSD symptoms may be necessary following an initial period of abstinence, as is the case with other disorders (Coffey, Schumacher, et al., in press; Kranzler & Rosenthal, 2003; Myrick & Brady, 2003).

Mechanisms of Action

The high co-occurrence of PTSD-SUD has become more important with the acknowledgement that either of these disorders left untreated will negatively impact the outcomes of the other disorder. This is true regardless of which disorder is left untreated (Stewart, Pihl, Conrod, & Dongier, 1998). Within the general comorbidity literature, the importance of integrated treatment is beginning to gain widespread acceptance (O'Brien et al., 2004). This pattern is seen within the PTSD-SUD area as well. Treatment programs addressing symptoms of both PTSD and SUDs have provided preliminary data demonstrating the ability to reduce symptoms in both disorders (see Brady, Back, & Coffey, 2004) and are becoming the standard of treatment for this population (Ouimette, Brown, & Najavits, 1998).

With robust support for the co-occurrence of PTSD and SUDs, research has turned toward investigating the mechanisms of action between the two disorders. Several hypotheses have been explored including control of arousal symptoms, anxiety sensitivity, and regulation of negative affect [see Conrad & Stewart, 2003 for a thorough review of experimental studies on the functional relationship between PTSD and SUD]. It is likely that several, or all, of these hypotheses are operating to some extent in the development and maintenance of the disorders.

Interestingly, existing models of drug use from the SUD literature have fit well in explaining use in the PTSD-SUD area. Particularly, the conditioning models (Siegel, 1983; Wikler, 1965) have been useful in addressing the negative affect associated with PTSD and how this contributes to drug use. These models view negative affect as conditioned stimuli (CSs) that are capable of eliciting conditioned responses (CRs; i.e., craving). As with any CS, this process develops over repeated exposures of the stimuli and the drug. Thus, repeated use of a drug in the presence of negative affect can lead to negative mood states eliciting craving for the drug. Cue reactivity studies have shown that cues reliably increase craving and physiological reactivity across drug types (Carter & Tiffany, 1999), and negative affect induction produces increases in craving independent of other cue manipulation (e.g., Coony, Litt, Morse, Bauer, & Gaupp, 1997; Payne, Schare, Levis, & Colletti, 1991).

Extensions of affect-based cue reactivity studies have been applied to PTSD-SUD samples. Manipulation of trauma-related negative emotion in individuals with comorbid PTSD-SUD increased substance cravings (Coffey et al., 2002; Saladin et al., 2003), suggesting that addressing trauma-related negative affect may be an important consideration when treating individuals with co-occurring PTSD and SUD. In the following section, treatment approaches will be described that may reduce trauma-related negative affect and improve outcomes for patients with co-occurring PTSD-SUD.

Exposure Therapy

One of the most effective treatments available for PTSD is prolonged exposure therapy (Foa & Rothbaum, 1998). This therapy is based on behavioral principles where the client is exposed to imaginal and/or in vivo cues related to the traumatic event in order for the client to habituate to the cues and thus reduce the fear response elicited by them. Imaginal exposure consists of the client describing the traumatic event in the first person, present tense perspective. The client is encouraged to include as many objective details as possible (sights, sounds, smells, etc.) as well as thoughts and feelings they experienced at the time of the trauma. The clinician helps to keep the client focused on the recall and the processing of trauma related thoughts and emotions. The clinician also assesses the client's level of distress by having the client make a rating on the Subjective Units of Distress Scale (SUDS), a rating of distress that ranges from 0 'no distress' to 100 'extreme distress.' The client is asked to repeat this exposure procedure multiple times during a therapy session. The therapy session is audio recorded and the client is encouraged to listen to the tape in-between sessions. Imaginal exposure is used to target the distressing memories and thoughts associated with the traumatic event.

In vivo exposure consists of the client confronting physical cues of the trauma that elicits trauma-related distress but that are objectively relatively safe (e.g., driving in a car for a motor vehicle accident victim, interacting with men in public for a female rape victim, etc). In session, the clinician helps the client develop a list of physical cues that elicit trauma-related responses. These physical cues can consist of people, objects, or places and should include cues that are typically avoided because of the potential for trauma related distress. The list of generated items are then ranked to form a hierarchy according to the level of distress the client experiences or expects to experience in the situation using the SUDS rating. The exposure exercises begin with items on the list that are rated about 40-50 on SUDS (i.e., moderately distressing). Clients are instructed to confront the feared stimulus and stay in the situation for about 45-50 minutes or until their distress level drops in half. Clients are encouraged to repeat the exposure multiple times over the week. When a particular exposure item consistently elicits low distress ratings, then the client begins the next highest rated item on the hierarchy. For a comprehensive description of imaginal and in vivo trauma-focused exposure therapy, the reader is referred to Foa and Rothbaum (1998).

The *Expert Consensus Guidelines for the Treatment of PTSD* (Foa, Davidson, & Frances, 1999) consider exposure therapy one of the most effective and rapid treatments for PTSD, particularly for PTSD characterized predominately by intrusive-type symptoms. Exposure-based treatments for PTSD have garnered considerable support in the empirical literature. Exposure therapy has been studied in the treatment of various trauma samples including rape victims (Foa et al., 2005; Foa, Rothbaum, Riggs, & Murdock, 1991), combat veterans (Keane, Fairbank, Caddell, & Zimering, 1989), motor vehicle accident survivors (Blanchard & Hickling, 2004), adult victims of childhood sexual abuse (Cloitre, Koenen, Cohen, & Han, 2002) and various crime related traumas (Marks, Lovell, Noshirvani, Livanou, & Thrasher, 1998; Tarrier et al., 1999).

Exposure Therapy for Comorbid PTSD and Substance Use Disorder

Despite the effectiveness of exposure therapy in treating PTSD, there has been hesitancy in the field to implement this form of therapy in treating clients with co-occurring PTSD and SUD. The major concern reflected in the literature has been that distress elicited by the exposure exercises would lead the client to relapse (Najavits, Weiss, Shaw, & Muenz, 1998; Triffleman, Carroll, & Kellogg, 1999). In laboratory studies, negative affect induced by trauma recall has been shown to increase craving for alcohol and cocaine among alcoholics and cocaine users respectively (Coffey et al., 2002; Saladin et al., 2003). This may give support to the argument that exposure therapy increases the chance for relapse, but it also points to the potential utility exposure therapy may have as a treatment in this population given its usefulness in reducing trauma-related negative affect over the course of treatment and at follow up (e.g.,

Foa et al., 2005; Foa et al., 1991). Furthermore, decreases in PTSD symptomatology have been associated with decreases in cocaine use and increases in PTSD symptomatology have been associated with increases in cocaine use (Back, Brady, Jaanimagi, & Jackson, 2006). In retrospective studies, the provision of PTSD treatment to PTSD-SUD comorbid veterans has been associated with improved SUD treatment outcomes at 5-year follow-up (Ouimette, Moos, & Finney, 2003). These findings suggest that PTSD symptom reduction is important in the treatment of co-occurring substance abuse. However, whether trauma-focused exposure therapy improves PTSD-SUD outcomes in prospective studies is an empirical question that needs to be answered. Within the past few years, researchers have begun to address this question by designing and testing combinations of exposure therapy with empirically validated SUD treatments.

Laboratory-Based Evidence to Support the Use of Exposure to Treat PTSD-SUD.

As stated previously, laboratory-based research has shown that negative affect increases substance craving (see Drummond, Tiffany, Glautier, & Remington, 1995) and trauma memory-elicited negative affect has been shown to increase SUD craving in substance dependent individuals with PTSD (Coffey et al., 2002; Saladin et al., 2003). To follow up on these findings, Coffey and colleagues tested the hypothesis that alcohol craving elicited by a trauma cue might be attenuated if trauma-elicited negative affect was reduced following trauma-focused imaginal exposure (Coffey, Stasiewicz, Hughes, & Brimo, in press). Alcohol dependent (AD) subjects with PTSD listened to a verbal description of their worst traumatic event combined with an in vivo cue (either an alcohol cue or a neutral cue). Alcohol craving, negative and positive emotion, and subjective distress ratings were collected following each image/in vivo cue presentation. Subsequent to this initial cue reactivity session, participants were randomly assigned to either 6 sessions of trauma-focused imaginal exposure or 6 sessions of imagery-based relaxation. Upon completion of the 6 sessions, subjects participated in a second laboratory session. Over the course of the clinical sessions, PTSD symptoms decreased significantly in the exposure condition but not in the relaxation condition. When comparing negative affect and alcohol craving ratings elicited by the trauma-alcohol cue during the two laboratory sessions, neither negative affect nor alcohol craving changed in the relaxation condition. However, both negative affect and alcohol craving decreased significantly from the first laboratory session to the second session in the trauma-focused exposure condition. These data suggest that exposure therapy may be useful in treating co-occurring PTSD-SUD.

Preliminary Clinical Trials Testing Exposure Therapy for PTSD-SUD

Concurrent Treatment of PTSD and Cocaine Dependence. Concurrent Treatment of PTSD and Cocaine Dependence (CTPCD), developed by Brady and Dansky (Back, Dansky, Carroll, Foa, & Brady, 2001; Brady, Dansky, Back, Foa, & Carroll, 2001), combines Coping Skills Training (CST), a cognitive-behavioral therapy for treating substance dependence (Carroll, 1998; Kadden et al., 1994; Monti, Abrams, Kadden, & Cooney, 1989) with exposure therapy for PTSD (Foa & Rothbaum, 1998). The treatment consists of 16, 90-minute sessions that occur twice a week on an individual basis. The substance use treatment consists of teaching coping skills, relapse prevention skills, and cognitive restructuring to help clients achieve abstinence from cocaine. During the first five sessions of treatment, substance use is the focus of therapy. Beginning with session six, however, exposure therapy begins and is presented during the first 45 minutes of each session. SUD treatment is provided during the second 45 minutes of the 90-minute session so that if substance craving increases in response to the exposure-elicited distress, SUD coping skills can be employed to reduce the craving response. In addition to the substance use and exposure treatment components, clients also learn relaxation skills (i.e., diaphragmatic breathing) and receive a general psychoeducational component that teaches clients the connection between their PTSD symptoms and substance use.

CTPCD has been tested in a small, uncontrolled study of 39 (32 females) patients seeking treatment for PTSD and cocaine dependence (Brady et al., 2001). In this study, patients were considered

to be treatment completers if they completed at least 10 of the 16 sessions, three of which needed to be exposure sessions. Of the 39 patients who started treatment, 15 completed treatment. For treatment completers, both PTSD and drug use were significantly reduced from pre- to post treatment, as well as at 6-month follow-up. PTSD symptoms of intrusion, avoidance, and hyperarousal, as measured by the Clinician Administered PTSD Scale (CAPS; Blake et al., 1995), were significantly reduced as were total scores on the CAPS, Mississippi Scale for PTSD (MISS; Keane, Caddell, & Taylor, 1988), and Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). Significant reductions on the drug, alcohol and psychiatric subscales of the Addiction Severity Index (ASI; McLellan et al., 1992) were found pre- to post-treatment and the significant reductions on the drug and alcohol subscales persisted at the 6-month follow-up.

Importantly, Brady et al (2001) note that the number of non-completers is comparable to that of other drug-treatment studies. Additionally, 75% of non-completers dropped out prior to the start of the exposure sessions suggesting that exposure was not the precipitating cause of treatment termination. This position is supported by data from Coffey, Stasiewicz et al. (in press) who found that while subject retention was poor overall, retention did not differ as a function of experimental condition (i.e., 6 session of trauma-focused exposure therapy versus 6 sessions of relaxation training). Despite the small sample in Brady et al. and the lack of a control condition, this study provides preliminary support for CTPCD and the use of exposure therapy in treating comorbid PTSD and SUD patients.

Substance Dependence PTSD Therapy. Another treatment designed to address co-morbid PTSD and SUDS that incorporates an exposure therapy component is Substance Dependence PTSD Therapy (Triffleman et al., 1999). SDPT is a 20-week treatment that incorporates similar elements of CST as CTPCD to address substance use and employs both Stress Inoculation Training (Foa et al., 1991; Meichenbaum & Cameron, 1983) and in vivo exposure to address PTSD symptoms. The treatment is divided into two phases. The first phase focuses on skills training and the initiation of abstinence and lasts for about 12 weeks. Skills training focuses on topics related to the patients' substance use and PTSD symptoms (i.e. anger management, relaxation training, handling craving and drug triggers, and HIV Risk behaviors). The interaction between substance use and PTSD is emphasized. Transition from phase one to phase two occurs when the patient maintains significantly reduced substance use or abstinence and has adequately learned coping skills, both of which are ascertained via clinical judgment.

The second phase of SDPT directly addresses the PTSD symptoms and lasts about eight weeks. This phase is broken into "Anti-Avoidance I" and "Anti-Avoidance II" components. The Anti-Avoidance I component incorporates SIT to teach the patients skills for approaching and confronting fear situations and dealing with any resultant negative affect. The Anti-Avoidance II component involves in vivo exposure to feared situations in a graduated hierarchical approach. Unlike regular in vivo exposure for PTSD, SDPT has patients leave an exposure situation if intense, negative affect is experienced. If intense, negative affect is experienced, the patient is asked to re-rank the situation and to retry the exposure with a more gradual approach at a later point in time.

SDPT has been tested in a small (n= 19, 10 female) controlled clinical pilot study (Triffleman, 2000). A Twelve Step Facilitation (TSF) group was used as a control treatment condition. This control treatment utilized Twelve Step concepts to address issues related to substance dependence while explicitly not addressing PTSD symptoms. At one-month follow-up patients in both groups showed a reduction in PTSD symptomatology as measured by the CAPS and a reduction in substance use related problems as measured by the ASI drug composite score. The author points out that the small sample size limits the statistical comparisons of differences between groups and that a larger clinical trial is currently being conducted. The author also states that SDPT and TSF may share common elements that lead to the improvement of PTSD symptoms and substance dependence. Moreover, it is important to point out that

patients in the SDPT group were able to tolerate the exposure exercises and that their reduction in drug use was similar to that of the TSF group.

Seeking Safety Plus Exposure. With the initial success of CTPCD and SDPT in using exposure therapy to treat PTSD in SUD patients, Najavits and colleagues (Najavits, Schmitz, Gotthardt, & Weiss, 2005) tested the addition of an exposure component to their Seeking Safety treatment. Seeking Safety (Najavits et al., 1998) is a treatment for patients with co-occurring PTSD and SUD which consists of 25 coping skill oriented topics. The topics are categorized into cognitive, behavioral, and interpersonal content areas and are designed to teach a coping skill related to both PTSD and SUD such as anger management and relationship boundary setting. The aim of Seeking Safety is for patients to achieve abstinence from substance use and reduce PTSD symptoms in the context of developing a safe environment.

The added exposure component is a revised version of Foa and Rothbaum's (1998) exposure therapy for PTSD. The revisions are aimed at making exposure therapy more acceptable and appropriate for use within a substance using population. These modifications were based on clinical experience rather than empirical data since no data exists, to date, to suggest that modifications of exposure therapy are necessary for PTSD-SUD patients. Examples of the modifications include that patients are allowed to process multiple traumas during a single exposure session as opposed to the repeated processing of a single traumatic event as recommended by Foa and Rothbaum. Also, patients are encouraged to process both trauma and painful substance use related memories. Additionally, the patients are required to have a written safety contract made with the therapist outlining safety precautions such as therapist availability by pager, scheduled voice-mail check-ins, emergency procedures, and agreement on how substance use will be handled. Patients are only required to complete one informational session on exposure therapy and the inclusion of additional exposure sessions is decided by the patient and therapist together.

In a small uncontrolled pilot study (n = 5) of men with PTSD and SUD, Najavits and colleagues (Najavits et al., 2005) assessed the inclusion of exposure therapy with the Seeking Safety treatment. All five participants attended 30 sessions, with a mean of 21 Seeking Safety sessions and 8.8 exposure sessions. Improvement was found for both PTSD symptoms and substance use. Total scores on the Trauma Checklist-40 (Elliott & Briere, 1992), a measure of PTSD related symptoms, significantly decreased pre- to post-treatment with specific decreases on subscales related to anxiety, dissociation, and sexual abuse trauma. The drug use and the family/social functioning composite scores on the Addiction Severity Index were significantly reduced pre- to post-treatment indicating improvement in SUD symptoms. Patient satisfaction data was also collected and indicated that patients found the exposure sessions to be very helpful and that they would recommend the exposure component to others. These satisfaction findings are interesting given that prior to treatment the patients rated the appeal and willingness to engage in exposure much lower than the Seeking Safety component alone. The findings of this small study highlight the potential exposure therapy holds for the treatment of comorbid PTSD and SUD and also highlight the acceptability and tolerability of exposure treatment by patients with SUD. For a description of an integrated exposure-based PTSD-SUD treatment program in a large inner-city community mental health center, (see Coffey, Schumacher, Brimo, & Brady, 2005).

Summary and Future Directions

Exposure therapy is a validated, effective treatment for PTSD. However, the use of exposure therapy to treat comorbid PTSD-SUD has been subject to debate in the literature, particularly because of concerns about safety and tolerability of this treatment. The initial treatment and laboratory studies described above suggest that exposure therapy, presented in various forms, can safely be used in this population and show the potential of exposure therapy to effectively reduce both PTSD and SUD symptomatology. Additionally, the outcome of these studies suggest that exposure therapy is more

tolerable to patients in this population than initially believed, as evidenced by treatment retention rates that are similar to treatment for SUD alone and participants' positive ratings of the exposure therapy itself.

It is important to note that exposure therapy is but one of a few cognitive behavioral therapies that have demonstrated clear effectiveness in treating PTSD without a co-occurring SUD. As stated above, the *Expert Consensus Guidelines for the Treatment of PTSD* (Foa et al., 1999) recommends trauma-focused exposure therapy as a first-line treatment for PTSD but it also recommends cognitive therapy (e.g., Resick & Schnicke, 1996) as a first-line treatment. Future studies should continue to test the effectiveness of exposure therapy in treating PTSD-SUD, especially in randomized controlled trials. However, researchers and clinicians, rather than attempting to develop novel PTSD treatments for PTSD-SUD, should instead make use of existing and effective treatments from the PTSD literature (e.g., Cognitive Processing Therapy developed by Resick & Schnicke, 1996) when designing new PTSD-SUD treatment approaches. By building on the existing PTSD literature, effective treatments for PTSD-SUD will be developed more quickly and more choices of efficacious treatments will be available to clinicians and their patients.

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