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Predictors of dropout in concurrent treatment of posttraumatic stress disorder and alcohol dependence: Rate of improvement matters

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ABSTRACT

Objective: The present study examined predictors and moderators of dropout among 165 adults meeting DSM-IV criteria for posttraumatic stress disorder (PTSD) and alcohol dependence (AD). Participants were randomized to 24 weeks of naltrexone (NAL), NAL and prolonged exposure (PE), pill placebo, or pill placebo and PE. All participants received supportive AD counseling (the BRENDA manualized model).
Method: Logistic regression using the Fournier approach was conducted to investigate baseline predictors of dropout across the entire study sample. Rates of PTSD and AD symptom improvement were included to evaluate the impact of symptom change on dropout.
Results: Trauma type and rates of PTSD and AD improvement significantly predicted dropout, accounting for 76% of the variance in dropout. Accidents and "other" trauma were associated with the highest dropout, and physical assault was associated with the lowest dropout. For participants with low baseline PTSD severity, faster PTSD improvement predicted higher dropout. For those with high baseline severity, both very fast and very slow rates of PTSD improvement were associated with higher dropout. Faster rates of drinking improvement predicted higher dropout among participants who received PE.
Conclusions: The current study highlights the influence of symptom trajectory on dropout risk. Clinicians may improve retention in PTSD-AD treatments by monitoring symptom change at regular intervals, and eliciting patient feedback on these changes.

Alcohol dependence (AD) is frequently comorbid with posttraumatic stress disorder (PTSD; Kessler, Chiu, Demler, & Walters, 2005), and the presence of one of these disorders carries a significantly higher risk of being diagnosed with the other (Breslau, Davis, & Schultz, 2003). Compared to individuals with PTSD or AD alone, those with PTSD-AD exhibit greater PTSD and AD symptom severity, higher rates of comorbid disorders, higher rates of suicide attempt, and greater functional impairment (Blanco et al., 2013). PTSD treatment research has predominantly excluded patients with comorbid alcohol dependence, due to concerns that addressing trauma may increase alcohol use, or that ongoing alcohol use may impede PTSD treatment effects. Research published in the last five years, however, has begun to evaluate the efficacy of various pharmacological and psychological treatment combinations that address PTSD and AD symptoms concurrently (Foa et al., 2013; Hien et al., 2015; Sannibale et al., 2013). While the outcomes from these studies have been promising, many patients discontinue treatment prematurely or are lost to follow-up (e.g., 32% in Foa et al., 2013; 42% in Hien et al., 2015).

No previous research has identified patient characteristics associated with dropout during concurrent treatment of PTSD and AD. In the broader literature on treatment of PTSD and substance use disorders (SUD), a small number of studies have investigated factors associated with dropout, with mixed results. Importantly, none of these studies used multiple predictor analyses, which examine many predictors simultaneously, thereby controlling for the effects of related constructs. Instead, these studies examined group differences between treatment completers and dropouts on various pre-treatment variables. Compared to completers, some studies have found lower levels of education (Brady, Dansky, Back, Foa, & Carroll, 2001) and greater pretreatment SUD and PTSD severity (Najavits, Weiss, Shaw, & Muenz, 1998) among treatment

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dropouts. In contrast, other studies have found no relationships between pre-treatment variables and treatment dropout, including demographic characteristics (Hien, Cohen, Miele, Litt, & Capstick, 2004; McGovern et al., 2009; Najavits et al., 1998; Triffleman, 2000), baseline SUD or PTSD severity (McGovern et al., 2009; Mills et al., 2012), trauma type (Mills et al., 2012), or age at the time of the trauma (Mills et al., 2012).

Studies of AD treatment alone have also found few consistent predictors of treatment dropout. Demographic characteristics have predicted dropout in some studies (e.g., younger age: Vuoristo-Myllys, Lahti, Alho, & Julkunen, 2013; male gender: Schilling & Sachs, 1993), whereas other studies have failed to identify significant demographic predictors (e.g., age: Ray, Hutchison, & Bryan, 2006; gender: Elbreder, de Souza e Silva, Pillon, & Laranjeira, 2011; Vuoristo-Myllys et al., 2013). Similarly, comorbid depression has been identified as a predictor of AD treatment dropout in some studies (e.g., Filho & Baltieri, 2012) and found unrelated to dropout in other studies (e.g., Kavanagh et al., 2006). Perhaps most illustrative of all, some studies have found that baseline drinking severity is associated with higher dropout (e.g., Graff et al., 2009), other studies have found it to predict lower dropout (e.g., Ray et al., 2006), and still others have found it to be unrelated to dropout from AD treatment (e.g., Filho & Baltieri, 2012).

Predictor findings are similarly mixed in PTSD treatment studies, which typically include AD as an exclusion criterion. Female gender was associated with dropout in one study (e.g., Eftekhari et al., 2013) and unrelated to dropout in other studies (e.g., Hagenaars, van Minnen, & Hoogduin, 2010). Younger age has predicted dropout in some studies (e.g., Rizvi, Vogt, & Resick, 2009) but not others (e.g., Van Minnen, Arntz, & Keijsers, 2002). Inconsistent findings have been reported for employment status (e.g., Foa et al., 1999; but see Taylor et al., 2003), education (e.g., Rizvi et al., 2009; but see Hagenaars et al., 2010), depressive symptoms (e.g., Garcia, Kelley, Rentz, & Lee, 2011; but see Hagenaars et al., 2010), experience of childhood abuse (e.g., Van Minnen et al., 2002; but see Zayfert et al., 2005), and greater PTSD severity (e.g., Marks, Lovell, Noshirvani, Livanou, & Thrasher, 1998; but see Eftekhari et al., 2013). An exception to these mixed findings is that comorbid SUDs have been predictive of dropout from PTSD treatment with some consistency (e.g., Najavits, 2015; Szafranski, Gros, Menefee, Wanner, & Norton, 2014; Van Minnen et al., 2002).

To date, the majority of predictor studies have looked exclusively at pre-treatment patient characteristics. However, patterns of symptom change during treatment may have important implications for treatment retention. The hypothesis here is that patients' decisions about continuing versus leaving treatment are impacted by the amount of symptom improvement they have experienced. One study has investigated the relationship between dropout and drinking improvement during AD treatment (Vuoristo-Myllys et al., 2013), and found no significant association. In contrast, a study examining dropout during cognitive behavioral therapy for anxiety (Krishnamurthy, Khare, Klenck, & Norton, 2015) showed that during any given week, patients with the highest anxiety symptom severity were most likely to drop out of treatment. Interestingly, rapid symptom improvement was associated with a higher rate of dropout, but only among patients with low baseline levels of anxiety. Patients who drop out of treatment are often considered treatment failures and are assumed to have poor outcomes. The findings of Krishnamurthy et al. suggest that some patients may discontinue treatment because they have improved sufficiently and perceive additional treatment as unnecessary.

The present study utilized data from a randomized controlled trial (RCT; Foa et al., 2013) to examine predictors of dropout among patients with comorbid PTSD-AD. In this RCT, all participants received supportive counseling for AD (the BRENDA manualized model; Starosta, Leeman, & Volpicelli, 2006) and were randomized to one of four concurrent treatment conditions: 1) Prolonged Exposure (PE) + placebo, 2) PE + naltrexone (NAL), 3) NAL, or 4) placebo. At post-treatment, all groups showed large reductions in PTSD and AD symptoms, with no differences observed between the PE (with BRENDA) and no PE (BRENDA alone) arms on reduction of PTSD symptoms. Individuals who received NAL achieved better drinking outcomes than those who received placebo.

To our knowledge, no prior study has examined predictors of dropout during concurrent PTSD-AD treatment. Moreover, no study has examined the relationship between symptom change and treatment dropout among patients with comorbid PTSD-AD or PTSD-SUD. Examining predictors of treatment dropout is critical in order to identify patients who may benefit from additional monitoring and interventions to maintain treatment engagement. While the previous findings on dropout are largely conflicting, newer statistical approaches increase power to detect predictor effects where they might exist, and reduce the possibility of identifying predictors that are better accounted for by related constructs.

In the current study, we employ an approach developed by Fournier (Fournier et al., 2009) that maintains sufficient power to test a wide range of potential predictors across construct domains, while minimizing the likelihood of identifying predictors that are in fact proxies for third variables. Further, using the Fournier method, we are able to examine the influence of symptom improvement by evaluating baseline characteristics and rates of symptom change in a concurrent model. Seven predictor domains were evaluated: 1) demographics, 2) socio-economic factors, 3) comorbid disorders, 4) trauma features, 5) PTSD features, 6) alcohol features, and 7) slopes of improvement during treatment. We hypothesized that dropout would be more likely to occur among patients who experience either very slow improvement (e.g., they may perceive that treatment is not helping them), or very rapid improvement (e.g., they have benefited and thus may not perceive a need for more treatment). Consistent with Krishnamurthy et al.'s (2015) findings, we hypothesized that dropout would be highest among those who made fast improvements but started with lower symptom severity (i.e., individuals who might have achieved expected treatment gains prior to the prescribed number of sessions).

1. Methods

1.1. Participants

Participants were 165 adults meeting DSM-IV criteria for AD and PTSD who were enrolled in a randomized, single-blind treatment study taking place at the University of Pennsylvania's Center for the Treatment and Study of Anxiety and the Philadelphia Veterans Affairs Hospital. Participants had a mean age of 42.8 ($SD = 9.8$), and the majority were men (65.5%) and Black/African-American (63.6%). The mean score on the PSS-I at baseline was 28.1 ($SD = 7.9$), indicating a moderately severe level of PTSD severity, and participants drank alcohol on an average of 74.8 ($SD = 25.2$) of the 90 days prior to study enrollment. Participants were excluded for: 1) current substance dependence other than nicotine or cannabis, 2) current psychotic or bipolar disorder, 3) active suicidal or homicidal ideation with intent, 4) opiate use in the month prior to enrollment, 5) medical illness that could interfere with treatment (e.g., active hepatitis, AIDS), or 6) pregnancy or nursing. Baseline participant characteristics can be found in Table 1.