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Patient-Level Predictors of Premature Termination in Cognitive Processing Therapy for Posttraumatic Stress Disorder at a Diverse Community Health Center

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Abstract

Although premature termination or dropout from psychotherapy has been shown to occur at high rates, there is considerable variability in the literature regarding which patient-level variables may predict whether a patient is likely to drop out of treatment. **Objective:** The present study examined three patient-level domains–demographic variables, barriers to treatment, and initial impairment in posttraumatic stress disorder (PTSD), depression, and anxiety symptomatology–with the objective of identifying patient-level predictors of dropout from Cognitive Processing Therapy (CPT) for posttraumatic stress disorder (PTSD) in a diverse community health setting. **Method:** Data for this study were derived from a hybrid pilot implementation-effectiveness study of CPT for PTSD. Patients (N = 72) provided demographic information including age, gender, race/ethnicity, educational level, and income, and completed the Posttraumatic Symptom Checklist-Specific Version, Patient-Health Questionnaire-9, Generalized Anxiety Disorder Checklist-7, and the Barriers to Treatment Questionnaire (BTQ) at baseline. **Results:** The overall rate of premature termination in this sample was 72.2%. Block-wise binary logistic regressions indicated that age significantly predicted premature termination, with every one-unit increase in age reducing the odds of dropping out of treatment by 6% (OR = 0.94, 95% CI: 0.89–0.99, p = .026). Financial and logistical barriers at baseline were also found to significantly predict premature termination (OR = 1.31, 95% CI: 1.03–1.66, p = .028): for every one-point increase in a patient's BTQ *Logistical/financial* composite score, the likelihood of dropping out of treatment increased by 31%. No other demographic variables or BTQ domains were associated with dropout. Initial impairment measures were not found to predict dropout. **Conclusion:** The findings of the current study have clinical implications for detecting patients at risk for premature termination from CPT in community settings and for implementing retention strategies that

address patients' financial and logistical concerns. Future studies should replicate these findings in larger samples, examine therapist- and system-level predictors of dropout, and consider a more nuanced conceptualization of dropout.

Patient-Level Predictors of Premature Termination in Cognitive Processing Therapy for Posttraumatic Stress Disorder at a Diverse Community Health Center

Premature termination, also known as premature discontinuation or dropout, occurs when a patient discontinues psychotherapy prior to recovering from the symptoms or functional impairment that led to their mental health treatment seeking (Swift, Callahan, & Levine, 2009). Dropout in psychotherapy is a ubiquitous and pervasive phenomenon, with a recent meta-analysis reporting dropout rates from psychotherapy to be 19.7% (Swift & Greenberg, 2012).

Subsets of patient populations have been shown to experience dropout at higher rates. For example, dropout rates for patients diagnosed with posttraumatic stress disorder (PTSD) have been shown to range from 28% to 68% (Garcia, Kelley, Rentz, & Lee, 2011; Schottenbauer, Glass, Arnkoff, Tendick, & Gray, 2008). In a study of 1,924 Veterans Affairs (VA) patients who initiated Cognitive Processing Therapy (CPT) or another psychotherapy for PTSD, the median number of therapy sessions attended was five, which represents less than 50% of the 12 sessions required for CPT protocol completion (Watts et al., 2014).

Across disorders, settings, and treatment modalities, dropout from psychotherapy has negative clinical consequences (Barrett, Chua, Crits-Christoph, Gibbons, & Thompson, 2008). Patients who prematurely discontinue mental health treatment express increased dissatisfaction with treatment (Björk, Björck, Clinton, Sohlberg, & Norring, 2009) and tend to exhibit poorer outcomes (Klein, Stone, Hicks, & Pritchard, 2003; Lampropoulos, 2010). The negative effects of dropout also extend to providers, who are faced with misallocation of time and resources, and demoralization at the perceived rejection from their clients (Swift & Greenberg, 2012). Finally, for mental health organizations, dropout is associated with the financial burden of lost revenue and with denied access to resources and services for other patients (Barrett et al., 2008).

Despite the significant obstacles posed by premature psychotherapy termination, the factors that contribute to it are not yet well-understood (Swift, Spencer, & Goode, 2018). Patient demographics are a category of variables that have been explored in relation to psychotherapy dropout. Younger age, male gender, and lower levels of education have generally been found to predict dropout across multiple mental health diagnoses (Swift & Greenberg 2012). However, when studies specific to patients with PTSD are aggregated, few demographic variables emerge as consistent significant predictors of dropout. For example, while some studies have found that younger age (Kehle-Forbes, Meis, Spoont, & Polusny, 2016; Rizvi, Vogt, & Resick, 2009), male gender (Van Minnen, Arntz, & Keijsers, 2002), and lower levels of education (Kubany et al., 2004) predict dropout from psychotherapies for PTSD, other studies with PTSD patient populations have failed to find such relationships (Belleau et al., 2017; Szafranski, Gros, Menefee, Wanner, & Norton, 2014). In addition, the evidence associated with other demographic attributes is mixed. While a meta-analysis conducted by Swift and Greenberg (2012) did not observe a relationship between race and dropout from psychotherapy across multiple mental health diagnoses, studies with PTSD patient populations have conversely found minority status to be associated with higher levels of dropout from psychotherapy (Spoont et al., 2015). For example, Harpaz-Rotem and Rosenheck (2011) found Hispanic ethnicity to be associated with a lower number of PTSD-related visits. Additionally, although some studies with PTSD patient populations have found lower annual income to predict dropout (Galovski, Blain, Mott, Elwood, & Houle, 2012), others have failed to find such a relationship (Zandberg, Rosenfield, Alpert, McLean, & Foa, 2016). Taken together, the substantial variability in these findings point to the need for a reliable and consistent set of patient demographic variables that predict dropout in populations of patients with PTSD.

Because patient demographics have been found to predict only a small portion of the variance in the dropout rate (Swift & Greenberg, 2012), other types of variables warrant examination. A promising direction for understanding dropout are patients' perceived barriers to treatment. When seeking mental health treatment, minorities and diverse, low-income communities are often confronted by difficulties in accessing culturally- and linguistically-appropriate mental health services (McCabe, 2002). Barriers such as stigma, distrust of mental health professionals, lack of insurance coverage, daily social crises, and inaccurate perceptions of psychotherapy can interfere with mental health care utilization (McCabe, 2002). Financial and environmental constraints like transportation to treatment and childcare also restrict access to care (Shattell, Quinlan-Colwell, Villalba, Ivers, & Mails, 2010).

Previous studies have examined how barriers to treatment impact treatment seeking and initiation (Marques et al., 2010), and there is emerging evidence that these barriers may impact treatment retention (i.e., dropout; Hoge et al., 2014; McCabe, 2002; Zayfert & Black, 2000). However, additional empirical evidence is needed to understand how specific types of barriers to treatment differentially impact dropout. For example, stigma-related barriers have been routinely found to inhibit mental health treatment seeking (Marques et al., 2010; Valentine, Dixon, Borba, Shtasel, & Marques, 2016), and some researchers have argued that they also contribute to dropout (Schwarzbaum, 2004). However, in a study of Mexican-American children in psychotherapy, stigma was found to be unrelated to dropout, and instead, parents' perceived lack of credibility of the intervention predicted dropout (McCabe, 2002). Stigma has also been found to be unrelated to dropout in CPT (Harpaz-Rotem et al., 2014). Consequently, while stigma may significantly impact initial treatment seeking, its influence on treatment completion may be more modest.

Barriers that have been more closely associated with dropout in patients with PTSD include low patient ratings of treatment credibility and negative attitudes towards mental health care (Spoont et al., 2015; Tarrier et al., 1999). Commonly-cited reasons for dropout related to treatment perceptions and attitudes include the belief that one can manage one's psychological distress on one's own (e.g., self-sufficiency) and the perceived ineffectiveness of psychological treatment (Hoge et al., 2014). Other barriers linked to dropout from psychotherapies for PTSD include logistic and financial factors like transportation, availability of child care, and occupational interference (Hoge et al., 2014; Zayfert & Black, 2000), as well as pragmatic concerns like changes in family demands or housing (Szafranski, Gros, Menefee, Norton, & Wanner, 2016). Overall, these findings suggest that barriers related to treatment perception, logistical concerns, and financial challenges may be stronger predictors of dropout than stigma, which conversely may be more influential during the earlier stage of treatment seeking. However, given the paucity of studies examining the relationship between barriers to treatment and dropout, a closer examination of whether these barriers predict dropout in populations that present many barriers to treatment is necessary.

A third domain of patient-level variables that have been studied in the context of psychotherapy dropout is initial impairment. Previous studies with PTSD patient populations have shown that increased baseline severity of PTSD, depression, and anxiety symptoms predicts treatment dropout (Garcia et al., 2011; Grubbs et al., 2015). In a study of imaginal exposure therapy for PTSD, Zayfert and colleagues (2005) reported that patients who dropped out endorsed higher overall PTSD severity, higher levels of avoidance and arousal, increased depression severity, and more impaired social functioning at intake than treatment completers. A study by Jaeger and colleagues (2009) paralleled these results by showing that increased

symptom severity at baseline and comorbid disorders were associated with decreased receptivity to PTSD psychotherapy. Other studies, however, have failed to find a relationship between initial impairment and dropout (Kehle-Forbes et al., 2016; Szafranski et al., 2014).

Therefore, it appears that greater baseline impairment may be an underlying factor contributing to dropout from psychotherapy for PTSD, although mixed findings suggest the need for further analysis. Differentially higher dropout rates in patients with greater depressive symptomatology may be partly explained by unaddressed social isolation and hopelessness about treatment that can characterize depression (Zayfert et al., 2005). Further, certain PTSD psychotherapies may not be optimally suited to address the clinical needs of patients with high levels of depressive and/or avoidance symptomatology (Bryant, Moulds, Guthrie, Dang, & Nixon, 2003). Moreover, high baseline levels of avoidance in PTSD patients may be manifested as a reluctance to begin treatment (Zayfert et al., 2005) and unwillingness to confront distressing trauma-related stimuli in therapy, thus inhibiting treatment engagement and contributing to dropout (López, Shealy, & Rheingold, 2014).

Taking into account the inconclusive results of the current body of literature on dropout, the aim of the present study is to clarify patient-level predictors of dropout in an underserved population with high rates of dropout: predominantly low-income patients with PTSD receiving CPT at a diverse community health center. Specifically, this study aimed to identify predictors of dropout within three patient-level domains: 1. Demographic variables, including gender, age, race/ethnicity, educational level, and income; 2. Barriers to treatment, including logistical/financial, stigma-related, and treatment perception barriers; and 3. Initial impairment, including baseline PTSD, depression, and anxiety symptomatology. Given the complexity that characterizes the literature on demographic predictors of dropout, no specific hypotheses were

formulated regarding which demographic variables, if any, would predict dropout and to what degree. Moreover, following the limited number of studies on barriers to treatment and dropout, it was predicted that logistic/financial and treatment perception barriers, but not stigma-related barriers, would be predictive of dropout in this population. Finally, based on the literature of initial impairment and dropout, it was anticipated that all measures of baseline impairment would significantly predict dropout in this population. Thus, this study provides preliminary data on predictors of treatment dropout in a sample of patients with PTSD receiving CPT at a diverse community health center.

Methods

Study Design

Data were obtained from a National Institute of Mental Health-funded (NIMH K23 MH096029-01A1) implementation-effectiveness hybrid pilot study of CPT for PTSD in a diverse community health center. CPT is an evidence-based treatment that has shown efficacy and effectiveness in the treatment of PTSD (Resick, Monson, & Chard, 2006). The study design is described in detail by Marques and colleagues (under review). Briefly, the study evaluated the feasibility and acceptability of adapting the CPT manual to be linguistically, culturally, and contextually appropriate for a low-income, diverse community population. The adapted manual was implemented and pilot tested in a diverse community health center with providers and patients in both English and Spanish. The results showed that the adapted manual is an effective and appropriate intervention for this population.

For the purpose of this study, patients were considered to have prematurely terminated treatment if they did not complete a minimum of 12 CPT sessions (as this constitutes the full CPT treatment protocol) and as determined by clinical judgment of the treating provider.

Participants

Patients (N = 72) were eligible to participate in this study if they were at least 18 years of age, had a current primary diagnosis of PTSD as indicated by their medical record and/or a Posttraumatic Symptom Checklist-Specific Version (PCL-S; Blanchard, Jones-Alexander, Buckley, & Forneris, 1996) score above the clinical cut-off (> 36; Wilkins, Lang, & Norman, 2011), and were able to participate in therapy in English or Spanish. Patients were excluded from the study if they reported acute suicidality or homicidality, need for hospitalization, unstable psychiatric medication regimen, evidence of current psychosis or mania, current primary diagnosis of substance dependence, prescribed benzodiazepines, and self-reported participation in concurrent cognitive-behavioral therapy (CBT) or previous CPT treatment.

Measures

Demographic information form. A self-report questionnaire was administered at baseline to collect participant demographic information, including gender, age, race/ethnicity, educational level, and income.

Posttraumatic Stress Disorder symptomatology. The Posttraumatic Symptom Checklist-Specific Version (PCL-S; Weathers, Litz, Herman, Huska, & Keane, 1993) is a widely-used 17-item self-report measure of PTSD symptom criteria based on the Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV). Using a 5-point Likert scale (1 = *Not at all*, 5 = *Extremely*), patients are asked to rate the extent to which they have been bothered by specific PTSD symptoms in the past week, to generate a total score ranging from 17 to 85 (with higher scores indicating greater symptom severity). The PCL-S has demonstrated good internal consistency ($\alpha > .75$), test-retest reliability, convergent validity, and discriminant validity with

measures evaluating depression and other psychopathology (Wilkins et al., 2011). In the present study, Cronbach's alpha was .90 at baseline.

Depressive symptomatology. The Patient Health Questionnaire-9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001) is a commonly used 9-item self-report measure that assesses for depressive symptoms based on DSM-IV criteria. Patients are asked to indicate how frequently they have experienced symptoms of depression in the past two weeks using a 4-point Likert scale ranging from 0 = *Not at all* to 4 = *Nearly every day*, to generate a total score ranging from 0 to 27 (with higher scores indicating greater symptom severity), with a clinical cut-off score of 10 (Kroenke et al., 2001). The PHQ-9 has demonstrated strong internal consistency (α = .89), construct validity, and test-retest reliability (Kroenke & Spitzer, 2002; Kroenke et al., 2001). In the present study, Cronbach's alpha was .85 at baseline.

Anxiety symptomatology. The Generalized Anxiety Disorder-7 (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006), is a 7-item self-report measure that assesses patients' symptoms of anxiety. Patients are asked to indicate the frequency of symptoms experienced over the past two weeks using a 4-point Likert scale ranging from 0 = *Not at all* to 5 = *Nearly every day*, to generate a total score from 0 to 21 (with higher scores indicating greater symptom severity) with a clinical cut-off score of 10 (Spitzer et al., 2006). The GAD-7 has demonstrated good internal consistency (α = .92), test-retest reliability (Spitzer et al., 2006), and strong convergent validity with other anxiety scales (Omani-Samani, Maroufizadeh, Ghaheri, & Navid, 2018). In the present study, Cronbach's alpha was .86 at baseline.

Barriers to treatment. The Barriers to Treatment Questionnaire (BTQ; Goodwin, Koenen, Hellman, Guardino, & Struening, 2002; Marques et al., 2010) is a 24-item, self-report measure that assesses patients' perceived barriers that may have prevented them from seeking or

accessing treatment for mental health concerns in the past year. The BTQ assesses three different domains: 1. Logistical and financial barriers, 2. Stigma, shame and discrimination barriers, and 3. Treatment perception and satisfaction barriers. In items 1–23, participants are asked to indicate the extent to which these barriers played a role in their decision to delay or avoid mental health treatment seeking in the past year on a 5-point Likert scale ranging from 0 to 4, where 0 = *Not at all* and 4 = *Extremely.* A composite score is then calculated for each domain to allow comparison on the domain level. The first domain, *Logistical/financial*, includes 7 items that assess barriers related to the cost of treatment, health insurance, time constraints, and transportation barriers, with a composite score ranging from 0–28. The second domain, *Stigma, shame and discrimination*, includes 7 items of barriers such as feelings of shame about one's mental health needs, fear of being judged, and beliefs that one can manage mental health problems on one's own, with a composite score ranging from 0–24. The third domain, *Treatment perception/satisfaction*, includes 3 items of barriers such as perceived ineffectiveness of treatment and satisfaction with available treatments, with a composite ranging from 0–12. In the last item, respondents are instructed to rank the three most significant barriers to their mental health treatment seeking and engagement in the last year from the items presented in items 1–23. In the present study, Cronbach's alpha was .50 for the *Logistical/financial* domain, .87 for the *Stigma, shame and discrimination* domain, and .58 for the *Treatment perception/satisfaction* domain at baseline.

Procedure

As part of routine clinical care, providers identified and invited eligible patients to participate in the study. Interested patients met with a research staff member to provide informed

consent. All study procedures were approved by the site's Institutional Review Board. Participants completed all measures at baseline, prior to the first clinical treatment visit.

Data Analytic Plan

Block-wise binary logistic regression models (odds ratios [ORs] and 95% confidence intervals [CIs]) were used to evaluate the effects of multiple independent variables on treatment dropout. Covariates were entered as three separate blocks (Block 1 = Demographic characteristics; Block 2 = Barriers to Treatment Questionnaire [BTQ] domains; Block 3 = Initial/baseline impairment [PCL-S, PHQ-9, GAD-7] total scores), with patient status (completer/dropout) as the dichotomous dependent variable. Dummy-coded variables were generated for the binary dependent variable, where 0 = completer and 1 = dropout, as well as for all categorical predictors of interest. An alpha level of $p < .05$ was chosen a priori.

The data were checked to ensure they fit the data analytic methodology assumptions: the dependent variable was dichotomous in nature, there were no outliers in continuous predictors of the dependent variable, and there were no high intercorrelations among the predictors of interest (Tabachnick and Fidell, 2013). However, taking into account that logistic regressions require large sample sizes, the limited sample size ($N = 72$) was a significant data-analytic limitation in this study.

Results

Overall sample characteristics. Sample characteristics for the overall sample ($N = 72$), and separated by completers and dropouts are presented in Table 1. The majority of patients ($N = 50$; 69.4%) identified as female. Patients' age ranged from 18 to 68 ($M = 39.11$, $SD = 13.55$) years. Within the whole sample, 27 (37.5%) patients reported an annual income ranging from $0–$9,999, while 31 (43.1%) of patients reported an annual income of $10,000 or higher. The

racial/ethnic distribution of the sample was as follows: 27 (37.5%) patients identified as "White," and 44 (61.1%) patients identified as "Latino/Hispanic or other." Lastly, 17 (23.6%) patients reported attaining an educational level of partial high school or less, 25 (34.7%) reported earning a high school degree, and 27 (37.5%) reported attaining partial college, earning a college degree, or attending graduate school.

Whole sample baseline PCL-S total scores ranged from 32 to 83 (M = 62.25, SD = 13.68), baseline PHQ-9 total scores ranged from 3 to 26 (M = 16.08, SD = 6.22), and baseline GAD-7 total scores ranged from 4 to 21 (M = 14.44, SD = 4.68). In addition, participants reported an average composite score of 4.47 (SD = 3.99) in the Barriers to Treatment Questionnaire–*Logistical/financial* domain, an average composite score of 9.76 (SD = 7.25) in the *Stigma, shame and discrimination* domain, and an average composite score of 2.98 (SD = 2.84) in the *Treatment perception/satisfaction* domain.

Premature termination rates. Overall, the mean number of CPT sessions completed by patients was 8.17 (SD = 4.01, range = 1–14). Treatment completers, who comprised 27.8% (N = 20) of the sample, attended a mean number of 12.5 (SD = 1.43) CPT sessions. By contrast, treatment dropouts (72.2%; N = 52) attended an average of 6.2 (SD = 3.16) CPT sessions.

Binary logistic regression analyses. Results of the binary logistic regression analyses are presented in Table 2. Results for the first block-wise logistic regression show that the demographic variables of gender, race/ethnicity, educational level, and income level were not significant predictors of premature termination. Age was found to significantly predict dropout (OR = 0.94, 95% CI: 0.89–0.99, p = .026), such that, for every one unit increase in age, the odds of dropping out of treatment were reduced by 6%.

The binary logistic regression for Block 2 showed that the first BTQ domain, *Logistical/financial* significantly predicted treatment dropout (OR = 1.31, 95% CI: 1.03–1.66, *p* = .028). For every one-point increase in a patient's BTQ *Logistical/financial* composite score, the odds of dropping out of treatment increased by 31%. No other BTQ domains were significantly associated with treatment dropout.

Of the three measures–PCL-S, PHQ-9, and GAD-7–assessing initial impairment, none were found to significantly predict treatment dropout.

Discussion

Dropout from psychotherapy is a prevalent phenomenon that has raised concerns in recent years (Swift & Greenberg, 2012). However, few reliable predictors of dropout have thus far been identified. The aim of this study was to add to the understanding of predictors of dropout by identifying demographic variables, barriers to treatment, and initial impairment that predict dropout in patients with PTSD receiving CPT at a diverse community health center.

The dropout rate in the present study was 72.2%, which falls above the range that has been identified for CPT in other studies (28%–68%; Garcia et al., 2011; Schottenbauer et al., 2008), including studies with a similar operationalization of dropout as the present study. This increased rate of premature termination may be explained by the setting of this study. It has been argued that dropout rates are particularly high in community settings, where complex conditions like substance dependence, homelessness, suicidality, ongoing domestic violence, poverty, and other psychosocial challenges can severely intervene with the ability to remain in treatment (Najavits, 2015; Najavits & Hien, 2013).

In this study, the demographic variables of gender, race/ethnicity, education, and income were not found to predict dropout. This is consistent with the literature, which has found few

reliable demographic predictors of dropout in patients with PTSD. Age, however, was found to significantly predict dropout, with the risk of dropout decreasing as patients' age increased. This is in line with the literature, which has routinely associated younger age with a higher likelihood of dropout from psychotherapy (Swift & Greenberg, 2012). A possible explanation for this finding may be that younger patients have less ingrained beliefs and may be more receptive to the cognitive restructuring (Donnellan & Lucas, 2008) that is key in CPT. This cognitive flexibility, in turn, may result in rapid or early symptom improvement in younger patients, which may then be followed by dropout. This hypothesis has been supported by studies that have found younger age to be associated with dropout due to early treatment response (Szafranski, Smith, Gros, & Resick, 2017). Although sample size limitations in the present study restricted the ability to examine differences within dropouts, future studies should explore the underlying reasons for this association.

The finding that no other demographic variables significantly predicted dropout suggests that pretreatment patient variables other than age may not be particularly helpful for identifying patients at elevated risk of dropout from CPT. Factors at other levels, such as therapist-level and system-level variables, may prove to be more useful predictors of dropout. Therapist-level factors may include the quality of the therapeutic alliance, client-therapist ethnic match, and provider experience. For example, provider expertise has been previously found to predict dropout across multiple mental health diagnoses, with less experienced providers reporting a higher rate of dropout than more experienced ones (Swift & Greenberg, 2012). Further, system-level factors such as therapist turnover, accessibility of information regarding treatment options, and the organizational stability of a clinic (Werbart, Andersson, & Sandell, 2014) may play a role in dropout. Future studies should explore the influence of such factors on dropout.

The hypothesis that logistic, financial, and treatment perception barriers, but not stigma, would predict dropout was partially supported. While treatment perception and satisfaction barriers were not found to predict dropout, logistic and financial barriers made a significant contribution to the prediction of premature termination in this study. This is consistent with previous studies' findings that have associated logistic and financial constraints such as transportation, child-care, and occupational interference with dropout (Hoge et al., 2014; Zayfert & Black, 2000). The clinical implications of this finding are that perceived financial and logistical constraints should be assessed prior to treatment, and realistic expectations of the cost and time demands of psychotherapy should be clearly outlined to patients with many identified financial and logistical barriers to treatment. For example, studies have found that pre-therapy orientation to educate patients about the expectations of therapy can lead to decreased rates of dropout (Swift & Callahan, 2011). In addition, briefer interventions should be considered in community settings, where daily financial and logistic stressors may make it difficult to attend and pay for therapy for long periods of time. Another possible way to reduce the interference of perceived logistical and financial concerns may be through telehealth, or the provision of assessment and treatment to patients through video telecommunication. There is preliminary evidence that the delivery of CPT through telehealth may be equivalent to the delivery of CPT in person (Morland, Hynes, Mackintosh, Resick, & Chard, 2011). As such, telehealth may be a feasible solution to overcoming logistical and financial barriers in low-income community settings by reducing the transportation barriers and travel time associated with treatment attendance. Furthermore, community clinics should consider providing in-site childcare at a low cost and extending care to more central locations in underserved communities, so that the burden of childcare and transportation to treatment is reduced.

The finding that stigma, shame, and discrimination barriers failed to predict dropout is of note. While stigma-related barriers have been found to impact treatment seeking in community settings, the results of this study suggest that the role of stigma may be more minimal once a patient has passed the stage of treatment seeking and initiated psychotherapy. This may be because stigma had to be overcome to begin treatment, and thus may not be as large of a barrier once a patient is already in treatment (McCabe, 2002). As such, it may be that challenges that endure for longer throughout all stages of psychotherapy may be financial and logistic ones. The ability to secure reliable transportation, time, and financial means to continue attending therapy is an enduring concern that can determine one's attendance to therapy on a session-to-session basis. Thus, when these requirements to attend therapy can no longer be met, premature termination may quickly follow.

This study also focused on initial impairment, and found baseline measures of PTSD, depression, and anxiety severity to be unrelated to dropout. These findings are surprising given that previous studies have reported an association between initial PTSD, depression, and anxiety symptom severity and dropout in patients with PTSD (Garcia et al., 2011; Grubbs et al., 2015; Zayfert et al., 2005). It is possible that, in this sample, motivation to improve could have played a role. Although patients with more severe PCL, depression, and anxiety symptomatology normally drop out at higher rates than less severe patients, it may be that more severe patients in this sample were particularly motivated to persevere through treatment in order to overcome their significant impairment. Thus, motivation or other unknown factors may have overridden the disadvantage of severe symptomatology so that these patients did not drop out at higher rates than those with less severe impairment. Future studies should test this hypothesis by replicating

these findings with measures of motivation and in different populations to increase our understanding of the factors that underlie the association between initial impairment and dropout.

The high dropout rate found in this study suggests the general need to employ treatment retention strategies to meet the clinical and psychosocial needs of low-income, diverse communities (Schwarzbaum, 2004). For example, some strategies may include increased flexibility of community health organizations in rescheduling psychotherapy sessions when patient social and economic crises arise. In addition, flexibility should also be maintained in the content of therapy sessions, such as through the use of crisis management to cope with social stressors as needed. By addressing diverse, low-income populations' socioeconomic and domestic challenges, providers and community health organizations may be able to increase patient retention in the long-term.

A number of limitations should be taken into consideration when interpreting these findings. A possible explanation for the general lack of associations found in this study may have been the small sample size ($N = 72$) and limited statistical power. Because this study was largely underpowered for the logistic regressions that were carried out, it is possible that analyses failed to detect significant effects where there may have been. Future studies should replicate these analyses in larger samples.

Another limitation of the present study was the low internal consistency that was found for the BTQ domains of *Logistical/financial* barriers and *Treatment perception/satisfaction* barriers. As a relatively new measure, a thorough examination of the psychometric properties of the BTQ has not yet been conducted, and the individual domains are not yet validated subscales. As such, the findings of this study regarding barriers to treatment should be interpreted with caution. Future studies should explore the psychometric properties of the BTQ.

Another significant limitation of this study was in its dichotomous conceptualization of dropout. As with most studies of dropout, this study conceptualized dropouts as a homogeneous rather than heterogeneous group by failing to distinguish between subsets of dropouts. This conceptualization significantly restricted the ability to understand the potential differences that may exist within dropouts. For example, although it is commonly believed that all dropouts terminate treatment with poor outcomes, recent evidence suggests that a subset of dropouts terminate psychotherapy due to early symptom improvement (Erbes, Curry, & Leskela, 2009). It is possible that these patients, often called "early responders," may not need a full treatment protocol to experience improvements (Galovski et al., 2012; Szafranski et al., 2017). For example, Szafranski and colleagues (2017) found that 35.85–55.56% of a sample of PTSD psychotherapy dropouts displayed significant improvement and/or met good end-state criteria for PTSD and depression at the time of treatment termination. In addition, younger age, higher income, and being married or partnered were linked to the likelihood of being an early responder (Szafranski et al., 2017). Another way in which dropouts may differ is in timing of dropout. For example, timing of dropout has been differentially associated with social deprivation, with earlier subsets of dropouts reporting higher levels of social deprivation than dropouts at later stages of psychotherapy (Self, Oates, Pinnock-Hamilton, & Leach, 2005). These findings indicate that important differences exist amongst dropouts and may underlie different reasons for dropping out. Although the possibility of examining subsets of dropouts was not available in the present study due to the limited sample size, it is recommended that future studies consider examining types of dropouts to develop a more nuanced understanding of premature termination.

The findings of this study represent an important step to understanding patient-level predictors of dropout. This study demonstrates that although demographic variables other than

age and initial impairment measures may not always predict dropout from psychotherapy in PTSD patient populations, perceived barriers to treatment are a promising direction for future studies of premature termination. In particular, logistic and financial barriers may provide important predictive information for identifying patients at risk of dropout and for guiding the development of appropriate interventions and strategies to reduce the burden of these barriers on diverse, low-income populations with PTSD. By developing and testing various retention strategies that address these specific barriers, future research may be able to reduce premature termination rates and ensure the successful delivery of effective psychotherapies in this population.

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Table 1

Demographic Characteristics, Mean Barriers to Treatment Composite Scores, and Mean Initial PTSD, Depression, and Anxiety Impairment for Whole Sample, Completers, and Dropouts

	Whole sample (*N* = 72; 100.0%)		Patient status in study: Completer (*N* = 20; 27.8%)		Patient status in study: Dropout (*N* = 52; 72.2%)	
Variables of Interest	*M* (*SD*)	*N* (%)	*M* (*SD*)	*N* (%)	*M* (*SD*)	*N* (%)
Gender						
Female		50 (69.4%)		13 (65.0%)		37 (71.2%)
Male		20 (27.8%)		7 (35.0%)		13 (25.0%)
Age (years)	39.1 (13.6)		44.8 (14.9)		36.6 (12.2)	
Race/ethnicity						
White		27 (37.5%)		9 (45.0%)		18 (34.6%)
Latino/Hispanic or other		44 (61.1%)		11 (55.0%)		33 (63.5%)
Highest educational level						
Partial high school or less		17 (23.6%)		4 (20.0%)		13 (25.0%)
High school degree		25 (34.7%)		4 (20.0%)		21 (40.4%)
Partial college, college degree or graduate school		27 (37.5%)		11 (55.0%)		16 (30.7%)
Income level						
$0 to $9,999		27 (37.5%)		9 (45.0%)		18 (34.6%)
$10,000 +		31 (43.1%)		8 (40.0%)		23 (44.2%)
Barriers to Treatment						
Logistical/financial	4.5 (4.0)		2.3 (2.8)		5.3 (4.1)	
Stigma, shame and discrimination	9.8 (7.3)		9.1 (7.8)		10.0 (7.1)	
Treatment perception/satisfaction	3.0 (2.8)		2.2 (2.5)		3.3 (2.9)	
Initial Impairment						
PCL-S[1]	62.3 (13.7)		58.4 (11.4)		63.9 (14.4)	
PHQ-9[2]	16.1 (6.2)		15.3 (5.4)		16.4 (6.6)	
GAD-7[3]	14.4 (4.7)		12.5 (5.0)		15.11 (4.4)	

Notes. Totals may vary across demographic categories due to missing data. [1]PCL-S = Posttraumatic Symptom Checklist–Specific Version. [2]PHQ-9 = Patient Health Questionnaire-9. [3]GAD-7 = Generalized Anxiety Disorder Checklist-7.

Table 2

Block-Wise Binary Logistic Regressions Predicting Premature Termination Based on Demographic Variables, Barriers to Treatment Questionnaire Domains, and Initial PTSD, Depression, and Anxiety Impairment

Predictors	*B*	*SE*	OR	95% CI	*p*
Demographic Variables					
Female[1]	-0.49	0.77	0.61	0.14–2.74	.52
Age	-0.06	0.03	0.94	0.89–0.99	.026*
Latino/Hispanic or other[2]	0.12	0.72	1.13	0.28–4.58	.87
Educational level[3]					
High school degree	1.45	1.05	4.28	0.55–33.34	.17
Partial college, college degree or graduate school	-0.90	0.87	0.41	0.07–2.26	.31
Income: $10,000 +[4]	1.24	0.77	3.44	0.77–15.43	.11
Barriers to Treatment					
BTQ - Logistical/financial	0.27	0.12	1.31	1.03–1.66	.028*
BTQ - Stigma, shame, and discrimination	-0.04	0.05	0.96	0.87–1.06	.44
BTQ - Treatment perception and satisfaction	0.11	0.14	1.12	0.85–1.47	.42
Initial impairment					
PCL-S[5]	0.04	0.04	1.04	0.97–1.11	.32
PHQ-9[6]	-0.04	0.07	0.96	0.84–1.11	.58
GAD-7[7]	0.07	0.10	1.07	0.87–1.30	.52

Notes. * $p < .05$; *SE* = standard error; OR = odds ratio; CI = confidence interval. The dichotomous dependent variable is the patient's study status, where 0 = completer, 1 = dropout. [1]0 = Male. [2]0 = White. [3]0 = Partial high school or less. [4]0 = $0 to $9,999. [5]PCL-S = Posttraumatic Symptom Checklist–Specific Version. [6]PHQ-9 = Patient Health Questionnaire-9. [7]GAD-7 = Generalized Anxiety Disorder Checklist-7.