



# Predictors of Dropout in Cognitive Processing Therapy for PTSD: An Examination of Trauma Narrative Content

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Dropout rates in trauma-focused treatments for adult posttraumatic stress disorder (PTSD) are high. Most research has focused on demographic and pretreatment predictors of dropout, but findings have been inconsistent. We examined predictors of dropout in cognitive processing therapy (CPT) by coding the content of trauma narratives written in early sessions of CPT. Data are from a randomized controlled noninferiority trial of CPT and written exposure therapy (WET) in which CPT showed significantly higher dropout rates than WET (39.7% CPT vs. 6.4% WET). Participants were 51 adults with a primary diagnosis of PTSD who were receiving CPT and completed at least one of three narratives in the early sessions of CPT. Sixteen (31%) in this subsample were classified as dropouts and 35 as completers. An additional 9 participants dropped out but could not be included because they did not complete any narratives. Of the 11 participants who provided a

reason for dropout, 82% reported that CPT was too distressing. The CHANGE coding system was used to code narratives for pathological trauma responses (cognitions, emotions, physiological responses) and maladaptive modes of processing (avoidance, ruminative processing, overgeneralization), each on a scale from 0 (*absent*) to 3 (*high*). Binary logistic regressions showed that, averaging across all available narratives, more negative emotions described during or around the time of the trauma predicted less dropout. More ruminative processing in the present time frame predicted lower rates of dropout, whereas more overgeneralized beliefs predicted higher rates. In the first impact statement alone, more negative emotions in the present time frame predicted lower dropout rates, but when emotional reactions had a physiological impact, dropout was higher. These findings suggest clinicians might attend to clients' written trauma narratives in CPT in order to identify indicators of dropout risk and to help increase engagement.

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POSTTRAUMATIC STRESS DISORDER (PTSD) is estimated to affect 8% of the United States population (Kessler et al., 2005; Kilpatrick et al., 2013) and 1% to 9% of the populations of various countries worldwide (Atwoli, Stein, Koenen, & McLaughlin, 2015). PTSD is associated with a number of deleterious effects, including an increased risk of

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comorbid psychiatric disorders (Kessler et al., 2005), physical health problems (Wald & Taylor, 2009), impaired social functioning (Kuhn, Blanchard, & Hickling, 2003), and suicide (Wald & Taylor, 2009).

Fortunately, there are a number of treatments for PTSD with demonstrated efficacy (Cusack et al., 2016; Institute of Medicine [IOM], 2012). According to the current American Psychological Association guidelines (APA, 2017), treatments that are strongly recommended for adult PTSD include cognitive processing therapy (CPT; Resick & Schnicke, 1992; Resick, Monson, & Chard, 2017), cognitive therapy (Ehlers & Clark, 2000), prolonged exposure (PE; Foa, Hembree, & Rothbaum, 2007), and cognitive behavioral therapy (CBT) broadly.

Although moderate to large effect sizes are reported in clinical trials of these treatments in civilian populations (see Cusack et al., 2016, for a review), client dropout remains a concern. In order to reap the benefits of empirically supported treatments, clients must participate in them. Yet, a recent meta-analysis of dropout in adult PTSD treatments found an average dropout rate of 24% for PE and 29% for CPT (Kline, Cooper, Rytwinski, & Feeny, 2018). Other meta-analyses have reported average dropout rates as high as 36% in trauma-focused treatments (Imel, Laska, Jakupcak, & Simpson, 2013), and these rates are even higher among military veterans (Kehle-Forbes et al., 2016). It is possible that some clients who drop out of treatment do so because they have experienced sufficient improvement, and a small body of research shows that a number of clients who drop out of PTSD treatments do improve (Szafranski et al., 2019; Szafranski, Smith, Gros, & Resick, 2017). However, those studies do not examine whether those who dropped out reaped less benefit than completers, and it is unknown whether the dropouts who did improve would have experienced even greater benefit had they stayed in treatment. Although some clients who drop out do improve, a substantial number do not (Holmes et al., 2019), and it is important to help the greatest number of people to benefit from therapy.

One way to better understand high dropout rates is to identify client factors that predict dropout risk, so that clinicians can tailor PTSD interventions to maximize treatment engagement and completion. Most research on predictors of dropout in adult PTSD treatment has focused on demographics (e.g., age, sex) and pretreatment symptom severity. This research has yielded mixed findings, however, with few consistent predictors of dropout (Cooper, Kline, Baier, & Feeny, 2018). Similarly, in the randomized noninferiority trial that is the focus of

the present study (Sloan, Marx, Lee, & Resick, 2018), no pretreatment variables predicted dropout, including demographic variables, IQ, baseline PTSD symptom severity, and treatment expectancy. There were also no significant therapist effects. The therapeutic alliance was correlated with dropout, but the alliance was only assessed at the last treatment session or after dropout, so it could not be examined as a predictor of dropout (Marx, Sloan, Lee, & Resick, 2017; Sloan et al., 2018).

Specific PTSD symptoms and impairments at baseline have shown a somewhat more consistent picture. Higher dropout has been associated with more pretreatment avoidance (Bryant, Moulds, Guthrie, Dang, & Nixon, 2003; Garcia, Kelley, Rentz, & Lee, 2011), reexperiencing (Garcia et al., 2011) and hyperarousal symptoms (Garcia et al., 2011; Zayfert et al., 2005), more catastrophic cognitions (Bryant et al., 2003), more anger (Rizvi, Vogt, & Resick, 2009), and greater impairment in social functioning (Zayfert et al., 2005).

Cooper and colleagues (2018) encourage researchers to rethink their approach to studying psychotherapy dropout by moving from demographic and pretreatment variables to client factors that unfold early in the course of treatment. Surprisingly few studies measure or examine variables after treatment starts but before dropout has occurred. In the child and adolescent literature on trauma-focused cognitive behavioral therapy (TF-CBT; Cohen, Mannarino, & Deblinger, 2006, 2017) for posttraumatic stress, in-session child avoidance (Yasinski et al., 2018) and difficulties in the therapeutic relationship (Ormhaug & Jensen, 2018; Yasinski et al., 2018) have been identified as predictors of dropout. No study to our knowledge has specifically examined early treatment variables as predictors of dropout in adult PTSD treatments.

#### THE CURRENT STUDY

In line with the recommendation to examine client variables early in treatment that predict dropout (Cooper et al., 2018), we coded the content of trauma narratives that clients completed in first five sessions of CPT in order to better understand dropout in CPT. The data source for this study is a noninferiority trial (Sloan et al., 2018) of CPT (Resick & Schnicke, 1992; Resick et al., 2017), a 12-session, gold-standard treatment, and written exposure therapy (WET; Sloan & Marx, 2019), a briefer, 5-session treatment. As only 6.4% of participants dropped out of WET, the current study only focuses on dropout from the CPT condition, which had a 39.7% dropout rate

(Sloan et al., 2018). Of those who dropped out of CPT, 76.0% did so by session five.

Narratives were archived, and all available narratives written by session five of CPT were coded using an observational coding system (CHANGE; Hayes, Feldman, & Goldfried, 2007) to quantify trauma-related cognitions, emotions, and physiological experiences expressed in the narratives. We also coded maladaptive modes of processing employed by clients to manage or make sense of their posttraumatic difficulties, including avoidance, ruminative processing, and overgeneralization of negative beliefs.

Because higher pretreatment physiological arousal (Garcia et al., 2011; Zayfert et al., 2005) and avoidance at both pretreatment (Bryant et al., 2003; Garcia et al., 2011) and in session (Yasinski et al., 2018) were identified as predictors of dropout in prior studies, we hypothesized that these variables expressed in early CPT narratives would also predict dropout in this sample. Negative trauma-related cognitions, negative emotions, ruminative processing, and overgeneralization in narratives have not been explored as predictors of dropout in prior studies. However, both social cognitive theory and emotional processing theory, which inform CPT, posit that activation of trauma-related cognitions and emotional responses is necessary for treatment success (Foa, Huppert, & Cahill, 2006; Resick et al., 2017). In the context of CPT, clients' ability and willingness to express trauma-related cognitions and emotions in the narratives could reflect engagement with the tasks of therapy and activation of trauma-related experiences. We therefore expected these variables to predict lower dropout. Similarly, ruminative processing and overgeneralization might reflect engagement with traumatic memories and early attempts at meaning-making, even if maladaptive. However, it is also possible that if unchecked, these maladaptive modes of processing may interfere with new learning, maintain the symptoms of PTSD, and contribute to dropout. Therefore, analyses of ruminative processing and overgeneralization as predictors of dropout were exploratory.

## Method

### PARTICIPANTS

Participants were 51 adults with a primary DSM-5 diagnosis of PTSD recruited as part of an NIMH-funded randomized controlled noninferiority trial of written exposure therapy (WET; Sloan & Marx, 2019) and cognitive processing therapy (CPT; Resick & Schnicke, 1992). The trial was conducted at the VA Boston Healthcare

System and was approved by institutional review boards at the VA Boston Healthcare System and Boston University (ClinicalTrials.gov identifier NCT01800773; PI: Denise Sloan, Ph.D.; see Sloan et al., 2018 and Thompson-Hollands, Marx, Lee, Resick, & Sloan, 2018, for trial outcomes and detailed study procedures). Participants who had experienced any type of traumatic event were recruited from the greater Boston area using flyers posted in the community, Craigslist announcements, a listing on clinicaltrials.gov, and referrals from providers in the area. Inclusion criteria were a primary PTSD diagnosis based on the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5; Weathers et al., 2018), a duration of 3 months since the traumatic event, no current psychotherapy for PTSD, and a stable pharmacotherapy regimen for at least 1 month if on medication. Exclusion criteria were current substance dependence, current psychotic symptoms, unstable bipolar disorder, significant cognitive impairment, current involvement in an abusive relationship if the index trauma was domestic violence, and high suicide risk.

Of the 126 participants randomized, 63 (50%) were assigned to the CPT arm of the study. The present sample includes the 51 of those 63 individuals (81.0%) who provided at least one of the three narratives written by session five of the study. Narratives were assigned as homework between sessions, and clients could participate in treatment without completing narratives. Eleven participants did not provide any of these narratives and therefore could not be included. One participant was administratively withdrawn and is excluded from the present sample, but is not considered a dropout. Demographic variables, estimated IQ, treatment expectancy, and baseline PTSD severity were not significantly correlated with inclusion in our sample vs. exclusion due to not providing narratives. Of the 11 CPT participants excluded for not providing narratives, 9 dropped out of treatment. A chi square test indicated that these 11 participants were significantly more likely to drop out than the 51 who provided at least one narrative ( $\chi^2 = 9.57, p < .01$ ). Even excluding the 3 participants who completed only one session (thus having no opportunity to return a narrative), the remaining clients were still more likely to drop out than those who did provide narratives ( $\chi^2 = 5.63, p < .05$ ). This difference suggests that failure to provide written narratives may itself be a marker of dropout risk.

Participants included in the present analyses were 27 males (52.9%) and 24 females (47.1%) with a mean age of 42.82 ( $SD = 14.25$ ). Twenty-six (51.0%) reported that they were White/Caucasian,

17 (33.3%) African American/Black, 2 (3.9%) American Indian or Alaska Native, 1 (2.0%) Asian, and 5 (9.8%) “other.” Eight (15.7%) reported their ethnicity as Hispanic/Latino, 42 (82.4%) as Not Hispanic/Latino, and 1 (2.0%) did not report ethnicity. Of the 51 participants in the present sample, 35 (68.6%) completed all 12 treatment sessions, and 16 (31.4%) dropped out before the end of treatment; all dropout occurred before session 10. The number of sessions completed by the 16 dropouts were: two sessions ( $n = 3$ ), three sessions ( $n = 2$ ), four sessions ( $n = 4$ ), five sessions ( $n = 2$ ), six sessions ( $n = 2$ ), seven sessions ( $n = 1$ ), and nine sessions ( $n = 2$ ). Sloan and colleagues (2018) list reasons participants provided for dropout. The reasons given by the 16 CPT dropouts who completed at least one narrative and were included in the present sample were: treatment was too distressing ( $n = 9$ ), too busy for treatment ( $n = 2$ ), and could not be reached to provide a reason ( $n = 5$ ). Although given the option, none indicated that they dropped out because they were feeling better. Participants in the present sample provided on average 2.4 narratives of the first three narratives assigned ( $SD = 0.76$ ); 124 narratives were included in the current study.

#### PROCEDURE

After providing informed consent, participants were assessed for PTSD severity and trauma history. During CPT, participants wrote narratives as homework after sessions 1, 3, 4, and 11. As we were interested in predicting dropout, only the first three narratives were examined. The narrative written after the first session was an impact statement in which clients described their beliefs about why the trauma occurred and its impact on their worldview. The second and third narratives were written accounts in which clients recounted their traumatic experience. In the most recent version of the CPT protocol (Resick et al., 2017), updated after this trial began, the written trauma accounts are optional. Narrative prompts are provided in the Appendix.

#### TREATMENT

CPT (Resick & Schnicke, 1992) consists of 12, one-hour individual therapy sessions. The first session includes psychoeducation about common reactions to trauma and PTSD and the treatment rationale. The following sessions focus on reviewing the cognitive-behavioral conceptualization of PTSD, using Socratic questioning to challenge clients' negative beliefs, and helping clients to process emotions related to those beliefs.

#### THERAPISTS

Therapists were master's- or doctoral-level clinicians. Neither treatment expectations nor therapist effects predicted client dropout or outcome (Marx et al., 2017). Therapists were trained and supervised by the developer of CPT, Patricia Resick, Ph.D. Twenty percent of sessions were randomly selected to be rated for fidelity. Adherence to the treatment protocol and competence in implementation were rated on separate scales ranging from 1 (*poor*) to 7 (*excellent*). Ratings of 4 and above were considered satisfactory. Ratings were very good for both adherence ( $M = 5.71$ ,  $SD = 0.60$ , range = 4–7) and competence ( $M = 5.91$ ,  $SD = 0.89$ , range = 4–7).

#### DROPOUT

Dropout was operationalized in the present study as discontinuing treatment before session 10. In the original trial (Sloan et al., 2018), dropout was defined as not completing all 12 sessions of CPT, but we found that there was a natural discontinuity in number of sessions completed such that there were two distinct profiles: clients who completed all 12 sessions ( $n = 35$  participants, 68.6%) or clients who discontinued before session 10 and were considered dropouts ( $n = 16$ , 31.4%). No participants in this sample completed 10 or 11 sessions. Defining dropout as discontinuing treatment before session 10 is consistent with other investigations of dropout in CPT (Jeffreys et al., 2014; Rizvi et al., 2009) and other trauma-focused treatments (Eftekhari et al., 2013; Goodson et al., 2017), which define treatment completion as receiving an adequate dose of treatment, based on a threshold of 8–10 sessions. Other studies of dropout in CPT (Forbes et al., 2012; Kehle-Forbes et al., 2016; Stirman et al., 2018) and other trauma-focused treatments (Bryant et al., 2003; Marks et al., 1998; Reger et al., 2016) define dropout more stringently as failure to complete the full course of treatment.x.

#### MEASURES

*Clinician-Administered PTSD Scale for DSM-5*  
The Clinician-Administered PTSD Scale for DSM-5 (CAPS-5; Weathers et al., 2018) was administered at baseline to assess PTSD symptom severity. The CAPS-5 is a gold-standard, structured diagnostic interview for assessing PTSD symptoms and demonstrates good reliability and validity (Weathers et al., 2018). Each symptom is rated on a 5-point scale from 0 (*absent*) to 5 (*extreme/incapacitating*), with a total score from 0–80. Interrater reliability in the overall trial was very good ( $\kappa = 0.85$ ).

### *Traumatic Life Events Questionnaire*

The Traumatic Life Events Questionnaire (TLEQ; Kubany et al., 2000) was administered at baseline to assess lifetime trauma history and provides the number of traumas a participant has experienced. The TLEQ demonstrates good psychometric properties (Kubany et al., 2000).

### *CHANGE*

The CHANGE (Hayes et al., 2007) is a coding system designed to capture processes of therapeutic change, including both facilitators and inhibitors of change. It was used to code the first three narratives in the CPT arm of the trial. This coding system has been used to code narratives in a CBT treatment for depression (Hayes, Beavers, Feldman, Laurenceau, & Perlman, 2005; Hayes et al., 2007), as well as audio-recorded sessions of juvenile PTSD (Ready et al., 2015) and treatment-resistant depression (Abel, Hayes, Henley, & Kuyken, 2016). Each CHANGE variable is coded on a four-point scale from 0 (*absent or very low*) to 3 (*high*).

A team of 10 graduate and undergraduate students coded written narratives. Coders were trained in the CHANGE system and then coded with experienced coders until they reached good agreement (intraclass correlations [ICCs] of  $\geq .80$ ). Two coders rated each narrative, and weekly meetings were held to prevent rater drift over time and to reach group consensus on discrepancies of two or more points on the 0–3 scale. Consensus ratings were used, and the two coders' ratings were averaged. Coders were blind to study hypotheses, treatment condition, session number, and dropout vs. completer status.

*Trauma response content.* For each narrative, variables were coded to reflect the content of clients' cognitive, emotional, and physiological trauma responses. These variables were coded separately for present experiences (reported in the past week) and for past experiences (occurred during or around the time of the traumatic event). The negative cognitions code was operationalized as the highest (most intense) of three cognitive codes: negative beliefs about the self, relationships, and future. The negative emotions code captures emotions such as fear, guilt, shame, anger, and sadness. The negative physiological code captures the somatic impact of negative emotions and thoughts, such as gastrointestinal distress and sleep difficulties.

*Modes of processing.* For each narrative, we also coded maladaptive ways that clients try to manage or make sense of their traumatic experi-

ences. Processing variables were only coded in the present time frame, as we were interested in how clients were engaging with their traumatic experiences at the time of treatment rather than at the time of the trauma or soon after. The modes of processing included avoidance (difficulty engaging with or remaining in contact with aversive experiences), ruminative processing (approaching trauma-related content but becoming stuck in repetitive thought), and overgeneralization (thinking in an exaggerated way or spreading a belief across situations, people, or time). The overgeneralization category is similar to Sobel, Resick, and Rabalais's (2009) overaccommodation construct, but the CHANGE overgeneralization category is broader in scope to capture beliefs that may or may not be directly related to traumatic experiences (e.g., "My life is a total waste").

Table 1 presents a detailed description, an example of narrative content that would be coded as high for past and present time frames, and intraclass correlations (ICCs) for each code. Interrater agreement was good to excellent for all CHANGE variables.

### DATA ANALYTIC PLAN

Binary logistic regression analyses were conducted in SPSS to examine predictors of dropout (0 = completer; 1 = dropout). Other types of analyses were considered, such as survival analysis, which can take into account time until dropout (Gros, Allan, Lancaster, Szafranski, & Acierno, 2018); however, logistic regression was selected to maintain consistency with the majority of prior investigations of predictors of dropout in PTSD (e.g., Garcia et al., 2011; Ormhaug & Jensen, 2018; Rizvi et al., 2009; Yasinski et al., 2018; Zayfert et al., 2005).

First, each CHANGE coding score was averaged across all three narratives. This approach was taken to make use of all available data, and because the variables of interest are elicited by both impact statement and trauma account prompts. Combining narratives allowed us to elucidate factors that therapists might attend to in the narratives in general, and further, variables that may generalize to in-session factors that relate to PTSD treatment dropout. Separate logistic regression models were run for each group of predictors, with predictors separated by type (trauma response content, modes of processing) and time frame (present, past). Predictor variables were grouped in three models as follows: models 1 and 2 included trauma response variables (cognitions, emotions, and physiological experiences) in the present and past,

Table 1

Descriptions of CHANGE Coding Categories With Examples of High Levels of Each Variable for Present and Past Codes and Intra-Class Correlations (ICCs) of Inter-Rater Agreement

Coding Category	Description	Example (Present)	Example (Past)	ICC Present, Past
Negative Self	Negative beliefs about the self, including expressions of negative self-worth, self-criticism, and feelings of failure.	"I don't trust myself because I can't seem to make good decisions"	"I truly believed for a long time that I was a bad person"	.91, .94
Negative Relationships	Perceived negative quality of relationships with others or interactions with others, including specific people and people in general.	"I don't want to get close to anyone, they'll just use you"	"For months after the trauma, I felt people were unpredictable...I no longer felt I could rely on my friends"	.90, .92
Negative Hope	Feelings of being stuck or having no way out, feeling tired of trying, or negative beliefs about the future.	"I don't think I'll ever get over what happened"	"At one point I thought life was not worth living because this happened"	.76, .73
Negative Emotion	Rated based on the number and intensity of negative emotion words (e.g., anxious, sad, angry, ashamed, guilty) and quality of the emotional tone (e.g., crying).	"I'm very angry, agitated, my emotions are all mixed up"	"I just felt horror, so helpless"	.92, .96
Negative Physiological	Negative physiological experiences resulting from a person's thinking or emotions.	"I'm always on edge, I can never relax"	"My heart was racing, it was like the air from my lungs was gone"	.92, .95
Avoidance	Difficulty engaging or remaining with aversive emotions, thoughts, memories, or somatic sensations. Includes pulling away, withdrawing, shutting down, or emotional blunting.	"I don't like to go out, so I usually just stay home"; "I feel so numb and shut down, I can't feel anything"	-	.92
Ruminative Processing	Approaching, exploring, and attempting to make meaning of a problem area but becoming stuck repeatedly thinking about or analyzing the issue without significant insight. Includes analysis without progress, emotional venting, worry, or intrusive re-experiencing.	"I can't stop thinking about whether I failed him. Why, why, why couldn't I save my friend? I just keep asking, why?! I need this to leave me alone – it's taking me over."	-	.88
Overgeneralization	Exaggerating and applying beliefs about the self, others, or the world across time, people, and situations.	"I definitely don't trust anyone, and I especially fear men."	-	.91

Note. ICC = intra-class correlation

respectively, and model 3 included processing variables in the present (avoidance, ruminative processing, and overgeneralization). Age was unrelated to dropout or any predictor variables in the present sample, so it was not included in the analyses. Although baseline PTSD severity and number of traumas did not predict dropout, these variables were associated with some of the predictor variables. Therefore, they were included as control variables in each model, as we were interested in the effect of predictor variables on dropout independent of baseline severity and trauma history.

A second set of analyses included only the initial impact statement for two reasons: (a) the subsequent trauma account narratives are optional in the

most recent version of CPT and therefore might not be included in treatment (Resick et al., 2017), and (b) some clients drop out so early in treatment (Kehle-Forbes et al., 2016) that they only complete one narrative. Analyses that isolate the initial narrative can therefore provide useful information that might be obscured by averaging the first three narratives. In this sample, 48 of 51 clients (94.1%) provided the initial narrative (33 completers, 15 dropouts). Three participants (5.9%) provided a later trauma account narrative but not the first impact statement (2 completers, 1 dropout) and were excluded from this set of analyses. The same three logistic regression models were repeated using the coding scores from the first narrative rather than averaged across all available narratives.

## Results

### DESCRIPTIVE ANALYSES AND INTERCORRELATIONS

Means and standard deviations for predictor variables, both averaged across available narratives and in the first narrative only, are presented in Table 2. These descriptive statistics are presented for the total sample, as well as separated by completer and dropout status. Intercorrelations among predictor variables averaged across the first three narratives and in the first narrative only are presented in Table 3.

### PREDICTORS OF DROPOUT: ALL AVAILABLE NARRATIVES

The first set of logistic regression analyses examined predictors of treatment dropout (1) vs. completion (0) using coding variables averaged across all available narratives. All models controlled for baseline PTSD severity and number of traumas experienced. Results of each model are presented in Table 4.

The first model included negative cognitions, emotions, and physiological trauma responses described in the present time frame as predictors of dropout. More negative emotions trended towards predicting lower dropout ( $p = .051$ ); none of the other predictors were significant. The second model included the same content areas but in the past time frame. More negative emotions during or around the time of the trauma significantly predicted lower dropout, such that a one-point increase in negative emotions on the 0–3 scale of the CHANGE corresponded to being 88% less likely to drop out of treatment. Cognitions and physiological experiences in the past did not predict dropout.

The third model examined maladaptive modes of processing traumatic experiences in the present, including avoidance, ruminative processing, and overgeneralization. Ruminative processing predicted lower dropout, such that a one-point increase in ruminative processing corresponded to being 91% less likely to drop out. Overgeneralization was associated with higher dropout risk, with a one-point increase being associated with a 3.72 times higher likelihood of dropping out. Avoidance did not significantly predict dropout.

### PREDICTORS OF DROPOUT: IMPACT STATEMENT ONLY

Results of each model isolating the initial narrative only are presented in Table 4. All models again controlled for baseline PTSD severity and number of traumas.

The first model included negative cognitions, emotions, and physiological trauma responses in the present as predictors of dropout. In the first narrative, more negative emotions in the present time frame predicted lower risk of dropout such that a one-point increase in negative emotions corresponded to being 76% less likely to drop out. Negative physiological experiences predicted greater risk of dropout such that a one-point increase in negative physiological experiences was associated with being 20.03 times more likely to drop out. Negative cognitions were not associated with dropout. The second model, which included the same content areas but in the past time frame, did not identify significant predictors of dropout.

The third model examined maladaptive modes of processing in the present as predictors of dropout, including avoidance, ruminative processing, and overgeneralization. None of these variables in the first narrative predicted dropout.

## Discussion

We investigated predictors of dropout in CPT (Resick & Schnicke, 1992; Resick et al., 2017) by examining the content of client-written narratives. CPT is a gold-standard treatment for adult PTSD (APA, 2017), which like other trauma-focused treatments, has notably high dropout rates across trials (Imel et al., 2013; Kline et al., 2018). Narratives written early in treatment were coded for the content of clients' trauma responses (negative cognitions, emotions, and physiological experiences) in both the past and present time frames, as well as maladaptive modes of processing (avoidance, ruminative processing, and overgeneralization) in the present time frame. These predictors were examined across all three of the early narratives to make use of all available data, and they were also examined in the initial impact statement only to isolate findings from that first narrative. We focused on early narratives so that clinicians might be able to use these narratives to identify clients at risk for dropout and perhaps tailor treatment to increase engagement. The present sample included only participants who completed at least one of the early narratives.

On average across narratives, describing more negative emotions experienced in the past (during the trauma or in the aftermath) predicted lower dropout, and expressing more negative emotions in the present also trended towards predicting lower dropout. In the initial impact statement, negative emotions described in the present also predicted lower dropout. In contrast, present negative physiological experiences predicted higher dropout. For

Table 2  
Descriptive Statistics for Predictors of Dropout Averaged Across the First Three Narratives and in the First Narrative Only

Group Predictor	Total Sample: First Three Narratives		Completers: First Three Narratives		Dropouts: First Three Narratives		Total Sample: First Narrative Only		Completers: First Narrative Only		Dropouts: First Narrative Only	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<b>Control Variables</b>												
Baseline PTSD Severity (CAPS) <sup>‡</sup>	-	-	-	-	-	-	36.08	9.24	36.20	9.20	35.81	9.62
Number of Traumas (TLEQ) <sup>‡</sup>	-	-	-	-	-	-	28.76	19.71	29.34	20.11	27.50	19.36
<b>Trauma Response Content (Present)</b>												
Negative Cognitions	1.06	0.74	1.02	0.61	1.15	0.98	1.80	1.10	1.79	1.09	1.83	1.18
Negative Emotions	0.66	0.52	0.74	0.54	0.48	0.44	0.61	0.74	0.70	0.78	0.43	0.62
Negative Physiological	0.25	0.35	0.25	0.35	0.26	0.36	0.13	0.36	0.08	0.22	0.23	0.56
<b>Trauma Response Content (Past)</b>												
Negative Cognitions	1.02	0.90	1.10	0.91	0.85	0.88	0.88	1.07	0.91	1.08	0.80	1.08
Negative Emotions	1.16	0.71	1.40	0.61	0.61	0.63	0.27	0.62	0.32	0.68	0.17	0.45
Negative Physiological	0.62	0.65	0.75	0.65	0.34	0.56	0.05	0.24	0.06	0.27	0.03	0.13
<b>Modes of Processing (Present)</b>												
Avoidance	0.67	0.67	0.59	0.58	0.84	0.82	0.88	0.98	0.76	0.88	1.13	1.17
Ruminative processing	0.44	0.49	0.48	0.54	0.36	0.38	0.73	0.94	0.77	0.96	0.63	0.92
Overgeneralization	0.80	0.74	0.65	0.55	1.13	0.98	1.60	1.08	1.61	1.09	1.60	1.09

Note. CAPS = Clinician-Administered PTSD Scale for DSM-5; TLEQ = Traumatic Life Events Questionnaire. <sup>‡</sup>CAPS and TLEQ were only provided at baseline, which occurred before treatment started and before Narrative 1 was provided.

the modes of processing across the averaged narratives, ruminative processing predicted lower dropout, whereas overgeneralization predicted

higher dropout risk. Avoidance, rumination, and overgeneralization in the first narrative were not significant predictors of dropout. Taken together,

Table 3  
Correlations Among Predictors of Dropout: Averages of Codes Across the First Three Narratives and First Narrative Only

	1	2	3	4	5	6	7	8	9	10
Predictor: First three narratives										
1. Baseline PTSD	-									
2. Number of Traumas	.35*	-								
3. Neg Cognitions Present	.25	.24	-							
4. Neg Emotions Present	.14	-.06	.10	-						
5. Neg Physio Present	.21	.08	-.05	.43**	-					
6. Neg Cognitions Past	.16	.05	.35*	-.04	-.21	-				
7. Neg Emotions Past	.01	-.17	-.15	.33*	-.04	.40**	-			
8. Neg Physio Past	.19	-.25	.06	.19	.08	.29*	.13	-		
9. Avoidance Present	.11	.22	.44**	.14	.10	.06	.03	.17	-	
10. Rumination Present	.20	-.03	.39**	.40**	.16	.28*	.10	.44**	.52***	-
11. Overgeneralization Present	.28*	.11	.62***	-.09	-.15	.07	.14	.07	.47***	.43**
Predictor: First narrative only										
1. Baseline PTSD	-									
2. Number of Traumas	.35*	-								
3. Neg Cognitions Present	.33*	.19	-							
4. Neg Emotions Present	.14	.05	.16	-						
5. Neg Physio Present	-.18	.03	-.29*	.42**	-					
6. Neg Cognitions Past	.08	.04	.10	.01	.03	-				
7. Neg Emotions Past	-.07	-.09	-.10	.13	-.01	.38**	-			
8. Neg Physio Past	-.06	-.23	.16	.18	.11	.34*	-.08	-		
9. Avoidance Present	.20	.31*	.39**	.00	-.22	-.12	.07	-.11	-	
10. Rumination Present	.22	-.02	.39**	.12	-.12	.12	.01	.35*	.38**	-
11. Overgeneralization Present	.29*	.12	.56***	.03	-.24	-.03	.03	.17	.46**	.43**

Note. PTSD = posttraumatic stress disorder symptoms; Neg = Negative; Physio = Physiological responses. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

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Table 4

Binary Logistic Regression Models Predicting Dropout, Controlling for Baseline PTSD Severity and Number of Traumas: Averages of Codes Across First Three Narratives and First Narrative Only

Group	B	SE	Wald	<i>p</i>	OR	95% CI		<i>R</i> <sup>2</sup>
						Lower	Upper	
Predictor: First three narratives								
<b>Model 1: Trauma Response Content (Present)</b>								
Negative Cognitions	.49	.46	1.16	.282	1.63	.67	3.98	.14
Negative Emotions	-1.58	.81	3.81	.051	.21 <sup>†</sup>	.04	1.01	
Negative Physiological	1.25	1.05	1.41	.235	3.48	.44	27.23	
<b>Model 2: Trauma Response Content (Past)</b>								
Negative Cognitions	.26	.48	.30	.585	1.30	.51	3.32	.39
Negative Emotions	-2.08	.76	7.52	.006	.12**	.03	.55	
Negative Physiological	-.22	.86	.06	.800	.80	.15	4.33	
<b>Model 3: Modes of Processing (Present)</b>								
Avoidance	1.13	.77	2.16	.141	3.10	.69	13.96	.29
Ruminative processing	-2.45	1.12	4.80	.028	.09*	.01	.77	
Overgeneralization	1.31	.59	4.97	.026	3.72*	1.17	11.82	
Predictor: First narrative only								
<b>Model 1: Trauma Response Content (Present)</b>								
Negative Cognitions	.42	.36	.14	.235	1.53	.75	3.08	.22
Negative Emotions	-1.43	.67	4.53	.033	.24*	.07	.89	
Negative Physiological	3.00	1.38	4.70	.030	20.03*	1.33	301.47	
<b>Model 2: Trauma Response Content (Past)</b>								
Negative Cognitions	-.02	.32	.00	.957	.98	.52	1.85	.02
Negative Emotions	-.57	.84	.46	.498	.57	.11	2.94	
Negative Physiological	.40	2.19	.03	.855	1.49	.02	107.95	
<b>Model 3: Modes of Processing (Present)</b>								
Avoidance	.70	.43	2.70	.100	2.01	.87	4.63	.09
Ruminative processing	-.43	.44	.99	.320	.65	.28	1.52	
Overgeneralization	-.15	.36	.17	.684	.86	.42	1.76	

Note. Each group of predictors entered separately in a multiple logistic regression model predicting therapy dropout (1) vs. completer (0), controlling for baseline PTSD severity and number of traumas. SE = Standard Error, OR = Odds Ratio or Exponentiated B, *R*<sup>2</sup> = Nagelkerke *R*<sup>2</sup>; CI = confidence interval. <sup>†</sup>*p* < .06; \**p* < .05, \*\**p* < .01

these findings suggest that exploration of negative emotions, as well as ruminative processing expressed in the narratives, indicate positive prognosis for completing treatment. In contrast, greater expression of physiological symptoms and overgeneralized beliefs point to worse prognosis for completing treatment.

A consistent finding was that writing about negative emotions in the narratives predicted less dropout, as hypothesized. Across the narratives, writing about past negative emotions that occurred during the trauma and soon afterwards predicted lower dropout, as did writing about current negative emotions in the impact statement, with a similar trend across the narratives. Social cognitive theory and emotional processing theory, which inform CPT, highlight activation of trauma-related cognitions and emotions as beneficial and even necessary for treatment success (Foa et al., 2006;

Resick et al., 2017). There is some evidence to support the theory that client-reported emotional activation early in trauma-focused treatments might predict better PTSD symptom outcomes (Jaycox, Foa, & Morral, 1998; van Minnen & Hagenaars, 2002). However, findings on this relationship have been mixed (for a review see Asnaani et al., 2016), and it is not clear how this emotional engagement relates to premature dropout. Our findings lend support to the idea that clients who are willing to explore their emotions about their traumatic experiences and are able to tolerate the distress of doing so may be more able to engage in treatment and perhaps ultimately derive more benefit from CPT.

Writing about and accessing trauma-related cognitions in the narratives did not predict dropout, as we had predicted, although two of the cognitive modes of processing did. Ruminative processing—

churning repeatedly over negative thought content—on average across the narratives was associated with lower risk of dropout. While rumination has been associated with the development and maintenance of PTSD (e.g., Michael, Halligan, Clark, & Ehlers, 2007) and poor treatment outcomes (Brady, Warnock-Parkes, Barker, & Ehlers, 2015), rumination during the course of treatment has not been examined as a predictor of dropout. Just as clients who are willing to engage with negative emotions may be especially amenable to CPT, those who are already trying to make sense of their trauma might be particularly open to the cognitive and emotional processing skills taught in CPT. Clients who are less willing to explore negative emotions and thought processes may find therapy too distressing and drop out. Indeed, 9 of the 11 clients (82%) who provided a reason for dropout reported that CPT was too distressing. Our findings suggest that it might be important for clinicians to attend to clients' early descriptions of their emotional responses and the extent to which they are attempting to make sense of the traumatic experiences.

We also identified variables that predicted higher risk of dropout. Although more emotional engagement in the narratives was associated with less dropout, when emotional responses were so strong that clients reported physiological distress in the initial impact statement, they were *more* likely to drop out. This finding is consistent with studies showing relationships between dropout and hyperarousal symptoms at pretreatment (e.g., increased startle response, trouble sleeping; Garcia et al., 2011; Zayfert et al., 2005). It is important for clinicians to help clients engage optimally in trauma-focused treatments, as being either under- or over-engaged with emotions can inhibit cognitive and emotional processing (Foa et al., 2007). Too much affective engagement (often indicated by hyperarousal) might be overwhelming and contribute to dropout. Clinicians often attend to level of affective engagement during sessions, and our findings suggest that the initial narrative might provide an additional source of information. If emotional responses are so strong that clients report high levels of physiological reactivity, perhaps relaxation exercises, such as the breathing retraining exercises used in prolonged exposure (Foa et al., 2007), might be useful to reach more optimal levels of engagement. However, this would need to be empirically tested.

Related to this finding, more overgeneralization across the first three narratives in CPT predicted higher risk of dropout. Overgeneralization might be another marker of being overwhelmed, as these beliefs represent exaggerated cognitions that spread

across time, people, and situations. As such, overgeneralization may capture beliefs that are particularly rigid and entrenched (Cohen, 2012). While ruminative processing can be redirected with Socratic questioning, strongly held and rigid overgeneralized beliefs may be particularly resistant to change and interfere with processing of new information. In addition, clients may view overgeneralized beliefs (e.g., that no one can be trusted) as protective against future traumatization. Although overgeneralization has been found to predict worse treatment outcomes in CPT (Dondanville et al., 2016) and in TF-CBT for traumatized youth (Ready et al., 2015), it has not been examined as a predictor of dropout. Clients with overgeneralized beliefs may be more likely to discontinue treatment because it becomes too distressing, or because they do not agree with the tasks of treatment. Overgeneralization is typically addressed in the second half of treatment in the CPT protocol, and there is evidence that CPT completers benefit more from treatment when overgeneralized beliefs are addressed later (Farmer, Mitchell, Parker-Guilbert, & Galovski, 2017). That study did not examine overgeneralization among treatment dropouts, who may have had higher levels of overgeneralization than completers. Our findings suggest that among clients with high levels of overgeneralization early in treatment, it might be beneficial to work on these beliefs at that time to maximize treatment engagement.

Inconsistent with prior findings (Bryant et al., 2003; Garcia et al., 2011; Yasinski et al., 2018) and with our hypotheses, descriptions of avoidance in the narratives did not predict dropout. Overgeneralized thinking and less exploration of negative emotions in the narratives did predict dropout, which may be a subtle form of avoidance by moving to abstract levels of thinking with some emotional distance. Coding of written narratives is one way to assess avoidance; avoidance can also be captured in session recordings, self-report measures, or behavioral tasks. A particularly interesting behavioral finding in this trial was that clients who did not write any narratives were more likely to drop out than those who did provide narratives. Similarly, clients in a trial of PE who did not complete imaginal exposure homework (listening to the recording of the exposure) had worse outcomes (Cooper et al., 2017). Avoidance of the trauma-focused homework of CPT might indicate low engagement, difficulty approaching trauma-related material, perceptions that the task is not useful, or difficulties with the therapeutic alliance, all of which can herald premature dropout (Stirman et al., 2018). Thus, avoidance of the narrative task

could be an opportunity for clinicians to explore clients' reluctance and perhaps prevent dropout. In addition, dropout itself can be conceptualized as a form of avoidance. Although some clients may drop out of treatment because of improvement (e.g., Szafranski et al., 2017; Zandberg, Rosenfield, Alpert, McLean, & Foa, 2016), none of the clients in our trial reported that this was their reason for their dropout. Nine of the 11 clients (82%) who provided a reason for dropout reported that they discontinued treatment because it was too distressing. Therefore, although the CHANGE avoidance variable did not predict dropout, avoidance construed more broadly does seem to be at play.

Importantly, the findings from this study differed somewhat when examining narratives on average as compared with the first narrative alone. This may be in part because the impact statement asks clients to describe ways their traumatic experiences have affected their lives (mostly present focus), whereas the written accounts encourage them to recount their traumas in detail (mostly past focus). This difference in time frame may explain why present negative emotions predicted lower dropout in the impact statement and only approached statistical significance across narratives, whereas past negative emotions predicted lower dropout across narratives, but not in the impact statement alone. Our findings suggest that data from impact statements and written accounts could be useful in identifying markers of dropout, even if the written accounts are optional in the updated CPT protocol (Resick et al., 2017). Combining the narratives may provide information about processes related to dropout that clinicians can attend to in whichever narratives they assign. Future research can elucidate whether the predictors that we identified generalize to other trauma treatments that include narratives (e.g., narrative exposure therapy [NET; Schauer, Neuner, & Elbert, 2011]; trauma-focused cognitive behavioral therapy [TF-CBT; Cohen et al., 2006, 2017]). Further, future research could examine the content of treatment sessions to see whether these predictors generalize to trauma-focused PTSD treatments more broadly (e.g., prolonged exposure).

In the comparative outcome trial from which the narratives were drawn, dropout rates were significantly different in CPT (39.7%) and WET (6.4%; Sloan et al., 2018). The low dropout rate in the WET arm of the trial is consistent with other studies of WET (Sloan, Lee, Litwack, Sawyer, & Marx, 2013; Sloan, Marx, Bovin, Feinstein, & Gallagher, 2012), and WET in this trial produced noninferior

outcomes to CPT. Importantly, clients may drop out of CPT prematurely because they find the early phase of treatment distressing. Seventy-six percent of the sample dropped out of CPT by session five, and distress related to the treatment was the primary reason given for dropout. If a client is experiencing distress in treatment, knowing that there are many more sessions ahead (e.g., eight more sessions) could contribute to dropout. This might be one reason that only 6.4% of the sample from the larger study (Sloan et al., 2018) dropped out of WET, which is a brief, five-session treatment. In the present study, we focused on the CPT arm of the trial to identify predictors of dropout from a gold-standard PTSD treatment with a large evidence base but notably high dropout rates (e.g., Kline et al., 2018). Our analysis of the content of early treatment narratives from CPT highlights variables that might identify risk for dropout and that may be points of intervention to enhance treatment engagement.

#### STRENGTHS, LIMITATIONS, AND FUTURE DIRECTIONS

A strength of this study is that we used clinical data collected in early sessions of CPT, a gold-standard PTSD treatment, to identify predictors of dropout. The CHANGE coding system (Hayes et al., 2007) allowed for the examination of variables early in treatment that may be more amenable to change than baseline characteristics or demographics. Although narratives are collected for clinical purposes, the CHANGE allowed us to examine narratives quantitatively.

A drawback to studying narratives, however, is that missing data due to noncompliance can create sampling bias. Of the 63 participants randomized to CPT in the present trial, 11 were excluded from this sample because they did not provide any narratives, and 9 of those dropped out. Therefore, the present findings are limited in that they only apply to clients who return at least one narrative; they do not generalize to all CPT clients. However, it is important to note that participants who did not complete narratives had a higher dropout rate than those who did, suggesting this kind of homework noncompliance itself can be a marker of dropout risk. In addition, some clients returned only one or two of the three early narratives. We averaged across available narratives in our first set of analyses in order to maximize clinical utility. At the same time, the prompts for the impact statement and the written accounts elicit narrative content that is somewhat different, introducing some variability and lack of specificity to this set of analyses.

Coding in-session content might capture more information and context than what clients express in written narratives. The CHANGE coding system (Hayes et al., 2007) can be used to code recordings of sessions as well as narratives. It is important to note, however, that this method still relies on client verbalizations and audible cues like crying. Other nonverbal measures, such as lab tasks, behavioral assessments, and physiological measures during the course of treatment could also provide useful and more multi-modal information in future studies. It could also be useful to examine the associations between CHANGE variables and concurrent measures of similar constructs.

It is important to note that not all clients who drop out do so for negative reasons; some drop out after their symptoms have improved (Szafranski et al., 2017; Zandberg et al., 2016). None of the participants in our trial reported symptom improvement as their reason for dropout, but the role of improvement and positive therapy processes, such as cognitive and emotional processing, warrant further consideration as predictors of dropout in PTSD treatments.

The use of client-provided narratives also presents the limitation that only client variables were captured in this study. Therapist factors (e.g., years of experience) and therapist-client factors (e.g., therapeutic alliance) may also be important to our understanding of dropout (Cooper et al., 2018), and these could be captured in self-report measures or audio recordings of sessions. Some studies (Ormhaug & Jensen, 2018; Yasinski et al., 2018) have found that a better therapist-child relationship predicted lower dropout in youth PTSD treatment. The therapeutic alliance in the current study was assessed at the dropout session or posttreatment, so this variable could not be examined a predictor of dropout. However, those who dropped out reported lower concurrent alliance scores (Marx et al., 2017). It might also be useful to capture situational factors outside of therapy that can contribute to dropout, through session coding or self-report measures. For instance, one participant in this study stated that she dropped out of treatment because she was diagnosed with cancer and needed to prioritize her physical health.

Finally, the small sample size of 51 participants presents limitations. This study may have been underpowered to detect additional predictors of dropout. Related to this, there are so few studies of in-treatment predictors of dropout from PTSD treatments that we did not correct for multiple analyses, which would have made it difficult to detect potentially important and clinically relevant

predictors. The findings should therefore be interpreted cautiously and the variables evaluated further in future research.

On the whole, predictors of dropout in adult PTSD treatments have been inconsistent across studies. Even predictors reported across multiple studies have been shown to have no relationship with dropout in others. The present findings accordingly need to be replicated. Further, the mechanisms by which predictors identified in this study might influence dropout remain unclear. Future studies should elucidate these processes to better inform clinician responses when clients show markers of dropout risk. Our findings provide preliminary evidence that CPT clinicians can attend to the content of their clients' narratives, including clients' emotional and physiological responses, rumination, and overgeneralization, in order to gauge dropout risk early in treatment. By doing so, they might be able to tailor therapy and potentially give their clients a better chance of completing and benefiting from treatment.

#### Conflict of Interest Statement

The authors have no conflicts of interest to declare.

#### Appendix. Narrative Prompts

##### FIRST NARRATIVE (IMPACT STATEMENT)

For the next session, I want you to start working on how you think about and explain the traumatic event. I also want you to pay attention to how the traumatic event impacted on your views of yourself, other people, and the world. I want you to write at least one page on 1) why this event happened to you, and 2) how has it changed or strengthened your views about yourself, other people and the world in general? In order for this assignment to be most helpful to you, I strongly suggest you try to start this assignment soon, so that you have enough time to write thoughtfully. Pick a time and place where you have as much privacy as possible, so you can feel any feelings that arise as you complete the assignment.

##### SECOND NARRATIVE (WRITTEN ACCOUNT)

Please begin this assignment as soon as possible. Write a full account of the traumatic event and include as many sensory details (sights, sounds, smells, etc.) as possible. Also, include as many of your thoughts and feelings that you recall having during the event. Pick a time and place to write so you have privacy and enough time. Do not stop yourself from feeling your emotions. If you need to stop writing at some point, please draw a line on the

paper where you stop. Begin writing again when you can, and continue to write the account even if it takes several occasions.

### THIRD NARRATIVE (WRITTEN ACCOUNT)

Write the whole incident again as soon as possible. If you were unable to complete the assignment the first time, please write more than last time. Add more sensory details, as well as your thoughts and feelings during the incident. Also, this time write your current thoughts and feelings in parentheses (e.g., “I’m feeling very angry”).

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