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History of Sexual Trauma Moderates Psychotherapy Outcome for Posttraumatic Stress Disorder

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Abstract

Background—Moderators of differential psychotherapy outcome for posttraumatic stress disorder (PTSD) are rare, yet have crucial clinical importance. We tested the moderating effects of trauma type for three psychotherapies in 110 unmedicated patients with chronic DSM-IV PTSD.

Methods—Patients were randomized to 14 weeks of Prolonged Exposure (PE, N=38), Interpersonal Psychotherapy (IPT, N=40), or Relaxation Therapy (RT, N=32). The Clinician-Administered PTSD Scale (CAPS) was the primary outcome measure. Moderator candidates were trauma type: interpersonal, sexual, physical. We fit a regression model for week 14 CAPS as a function of treatment (a three-level factor), an indicator of trauma type presence/absence, and their interactions, controlling for baseline CAPS, and evaluated potential confounds.

Results—Thirty-nine (35%) patients reported sexual, 68 (62%) physical, and 102 (93%) interpersonal trauma. Baseline CAPS scores did not differ by presence/absence of trauma types. Sexual trauma as PTSD criterion A significantly moderated treatment effect: whereas all therapies had similar efficacy among non-sexually-traumatized patients, IPT had greater efficacy among sexually-traumatized patients (efficacy difference with and without sexual trauma: IPT vs. PE and IPT vs. RT p 's<.05), specifically in PTSD symptom clusters B and D (p 's<.05).

Conclusions—Few studies have assessed effects of varying trauma types on effects of differing psychotherapies. In this exploratory study, sexual trauma moderated PTSD outcomes of three therapies: IPT showed greater benefit for sexually traumatized patients than PE or RT. The IPT focus on affect to help patients determine trust in their current environments may particularly benefit patients who have suffered sexual assault.

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Keywords

sexual trauma; psychotherapy; posttraumatic stress disorder; moderation

Having determined a patient's psychiatric diagnosis, clinicians face a crucial choice. Which empirically validated therapy will most likely benefit the patient? Clinicians may decide based on patient treatment preference (a factor with limited empirical support for affecting treatment efficacy [Markowitz et al., 2016]), or their own preference (which lacks empirical support). Little research informs treatment choice for patients with posttraumatic stress disorder (PTSD). Yet the decision has consequences, committing therapist and suffering patient to months of treatment that might prove either helpful or futile.

Baseline variables may predict favorable outcome across interventions ("predictors") or signal differential therapeutic outcome ("moderators" of treatment effect [Baron and Kenny, 1986; Kraemer et al., 2002; Kraemer, 2016]). In randomized clinical trials, "moderators of the effect of treatment choice (treatment versus control) on outcome suggests on whom or under what conditions treatment choice differentially effects outcome" (Kraemer, 2016), providing the basis for personalized medicine. Moderators are *rarae aves*. Lacking such data makes it hard to gauge whether differing theoretical stances and clinical techniques actually matter.

Partly because exposure-based treatments have dominated PTSD clinical research, few opportunities have arisen to examine differential benefits of divergent PTSD treatments. SCOPUS and PubMed searches of "moderator"+"PTSD"+"treatment" reveal little relevant adult PTSD research. Betancourt and colleagues (2012) conducted a randomized trial of 304 depressed, war-affected Ugandan adolescents, 42% of whom had military abduction histories. Group interpersonal psychotherapy (IPT) most effectively treated depressed girls without abduction histories (effect size = 1.06) relative to recreation/play group and wait-list comparisons. Group IPT effectively treated both depressed male and female adolescents with abduction histories (effect sizes = .92 and .50, respectively), but unabducted males did not improve in group IPT compared to control conditions (Betancourt et al., 2012). Although abduction likely correlated with subsequent PTSD, PTSD was not assessed (Betancourt, personal communication, 4/21/2016).

Separate studies found that degree of extinction learning did not moderate d-cycloserine effects in exposure therapy for PTSD (de Kleine et al., 2015), nor did dissociative symptoms moderate PTSD outcome in narrative exposure therapy or usual treatment (Halverson et al., 2014). Kuester et al. (2016), meta-analyzing 20 randomized internet PTSD trials, reported cognitive behavioral and expressive writing interventions were more effective than passive but not active control conditions, and that no CBT components moderated outcome. Rothbaum and colleagues (2012) found early Prolonged Exposure (PE) intervention prevented PTSD more effectively for sexually assaulted patients than patients with other traumas. Findings from our current trial, the only data on actual patient treatment preference moderating PTSD outcome in a randomized trial, showed no treatment-specific effect for patient treatment preference (Markowitz et al., 2016). Thus we know little about moderators of the efficacy of PTSD psychotherapy outcome.

One might expect the type of precipitating trauma to affect PTSD treatment outcome, and possibly to differentially affect differing treatment approaches. Little research addresses this. Epidemiological studies indicate people experience interpersonal traumas as more upsetting than impersonal traumas such as natural disasters (Janoff-Bulman, 1992; Morina et al., 2014; Neria et al., 2008), presumably due to the malign intentional human agency involved. Chronic repetitive trauma intuitively seems worse than acute trauma, and later life trauma less destructive than early life trauma that impairs formative attachment styles and personality development; yet these clinical perceptions lack clear empirical demonstration (Yehuda, 2002; Rothbaum et al., 2008). Rothbaum and colleagues (2008) found non-sexual trauma predicted greater PTSD symptom improvement with venlafaxine than placebo in symptom-related disability and resilience, but not on the primary outcome, Clinician-Administered PTSD Scale (CAPS; Blake et al., 1995) score. Data on trauma type moderation of differential psychotherapy efficacy for PTSD appear vanishingly rare.

Our randomized, fourteen week clinical no more than minimal inferiority trial compared PE, IPT, and Relaxation Therapy (RT) for 110 unmedicated patients with chronic PTSD (Markowitz et al., 2015). The three treatments differ markedly: PE is the quintessential and best tested of the varied interventions that pursue habituation and fear extinction through systematic *in vivo* and imaginal exposure of patients to avoided reminders of their trauma (Foa and Rothbaum, 1998). Prolonged Exposure helps patients construct and process a coherent, detoxified trauma narrative, attempting change in cognitive outlook. Eschewing exposure, IPT focuses on patients' affective attunement and using their emotions to read and manage current interpersonal encounters, blaming PTSD for the patient's interpersonal difficulties (Markowitz et al., 2009; Markowitz, 2016). Relaxation Therapy, highly scripted, induces progressive physical and psychic relaxation (Jacobsen, 1938).

All treatments showed benefit at 14 weeks, with large pre/post CAPS (Blake et al., 2015) decreases ($d=1.32-1.88$). Interpersonal Psychotherapy was statistically and clinically non-inferior to PE; both fared somewhat better than RT (Markowitz et al., 2015). IPT had a higher response rate (*a priori* definition: >30% CAPS reduction) than RT (63% vs. 38%), and non-significantly lower attrition than competing treatments (IPT= 15%, PE= 29%, RT= 34%). Among patients with comorbid major depressive disorder (MDD) – 50% overall -- PE dropout trended higher than in IPT ($p=0.086$) (Markowitz et al., 2015). The treatments' theoretical and procedural divergence encouraged examination of potential moderators of their outcome. As the study was not powered to detect mediators or moderators, this report constitutes pilot data for future studies (Kraemer, 2016).

Our earlier study publications reported that facing trauma reminders early in treatment mediated the effect of PE (Markowitz et al., 2015), and that patient preference did not moderate the effects of the psychotherapies (Markowitz et al., 2016). Now, assessing trauma type as a potential psychotherapy effect moderator, we hypothesized for this planned secondary analysis that subjects with sexual trauma, an extreme interpersonal insult, would have better response to IPT than to the other psychotherapies. IPT works to help patients tolerate their affects and build trust, potentially working through attachment rather than an exposure mechanism (Markowitz and Milrod, 2011).

Methods

Study details have been reported (Markowitz et al., 2015). Individuals eligible after telephone screening signed informed consent for intake interviews to determine DSM-IV-defined trauma, PTSD as primary diagnosis, and exclusion criteria. Independent evaluators (Ph.D.'s) established current and lifetime diagnoses using CAPS (Blake et al., 1995), Structured Clinical Interview for DSM-IV (First et al., 1995), and SCID-II (First et al., 1997). Eligible subjects signing IRB-approved informed treatment study consent were randomly assigned to PE, IPT, or RT in 4:4:3 ratio, with randomization stratified by MDD (Structured Clinical Interview for DSM-IV diagnosis, 24-item Hamilton Depression Rating Scale [Ham-D; Hamilton, 1960] score ≥ 20) and implemented in random-sized blocks (11 or 22).

Patients, 18–65 years old, had a primary DSM-IV diagnosis of chronic PTSD and CAPS score ≥ 50 . Exclusion criteria comprised psychotic disorders, bipolar disorder, unstable medical conditions, substance dependence, active suicidal ideation; antisocial, schizotypal, borderline, or schizoid personality disorder; prior non-response to ≥ 8 weeks of a study therapy; and ongoing psychotherapy or pharmacotherapy.

Treatments

In PE, patients narrate an increasingly detailed trauma narrative (imaginal exposure) and confront trauma reminders (*in vivo* exposure) to extinguish fear responses (Foa and Rothbaum, 1998). Relaxation Therapy induces progressive muscle and mental relaxation (Jacobsen, 1938). These treatments require listening to session or relaxation tapes as homework. Interpersonal Psychotherapy addresses not trauma itself but its interpersonal aftermath, and assigns no homework. The first half of IPT enhanced affective attunement, recognizing, naming, and expressing one's feelings in non-trauma-related interpersonal situations; the remainder addressed typical IPT problem areas (e.g., role transitions) (Markowitz, 2016; Weissman et al., 2007). Psychologist or psychiatrist study therapists treated ≥ 2 pilot cases to ensure expertise. Audiotaping, adherence monitoring, and expert supervision ensured adherence and competence. Therapy teams did not significantly differ in age or modality-specific psychotherapy experience (Markowitz et al., 2015). Patients could choose male or female therapists.

Assessments

Independent evaluators blinded to treatment condition conducted major evaluations at baseline, week 7, and week 14.

The widely used 30-item CAPS (Blake et al., 1995) assessed PTSD using Likert-style item symptom scales. Interrater reliability for frequency and severity was excellent for intrusion, hyperarousal, and avoidance subscales ($r > .92$). CAPS score ≥ 50 defines at least moderate PTSD; scores < 20 indicate remission (Weathers et al., 2001). Independent evaluators, meeting regularly to compare taped interview ratings, achieved excellent interrater reliability on CAPS (primary outcome measure; Shrout-Fleiss interclass reliability coefficient = 0.93), Ham-D (0.89), and other instruments.

Experienced independent evaluators used the Life Events Checklist, a psychometrically tested (Gray et al., 2004) component of the CAPS (Blake et al., 1995), to determine type and age of PTSD Criterion A trauma exposure and symptom onset. Evaluators elicited the range of traumas, asking which each patient found most troubling. We subsequently divided Criterion A traumas into prevalent categories: interpersonal (versus impersonal) trauma, sexual trauma, and physical trauma, and analyzed the effects of these baseline traumas by treatment on total DSM-IV CAPS score, CAPS symptom clusters B, C, and D, Ham-D, social adjustment (Weissman and Bothwell, 1976), quality of life (Endicott et al., 1993), and dropout rates. Whereas sexual and physical trauma were discrete categories, interpersonal trauma was differentiated from impersonal trauma and overlapped the first two categories.

Statistical analysis

Efficacy of the three treatments with respect to symptom severity reported in Markowitz et al. (2015) was estimated based on longitudinal mixed-effects models (Diggle et al., 1994) using multiple imputation for the missing values (Little and Rubin, 2002). Fifty imputed data sets were generated and used in the analyses reported here.

Subjects with and without a given trauma type were compared on baseline characteristics using t-test and χ^2 tests for continuous and categorical measure, respectively. To evaluate each of the three trauma type variables (interpersonal, sexual and physical) as potential moderators of treatment effect on outcomes, we modeled each outcome at week 14 as a linear function of treatment pair, a given trauma variable, and their interaction, adjusting for baseline value of the outcome. A significant interaction term (trauma-by-treatment) would indicate that the specific trauma moderates the effect of the treatment on the outcome. For each outcome 3 linear models were employed corresponding to the three treatment pairs (IPT vs. PE; IPT vs. RT; and PE vs. RT). We conducted omnibus tests for significance of the interaction between treatment (3 levels) and trauma type (2 levels) separately for each outcome, using an F-test with 2 degrees of freedom for the numerator. For the dichotomous outcome “dropout” logistic regression was employed.

We investigated effects of potentially confounding variables using the modeling strategy above, replacing the trauma variable with the potential confounder. Potential confounders included gender, childhood/adolescent trauma (age 18), and the two most prevalent personality disorders, avoidant and paranoid (Markowitz et al., 2016).

Everywhere significance was judged at level $\alpha=0.05$, two-sided. *P*-values are reported without adjustment for multiple testing.

Results

Patient demographics and clinical characteristics were previously reported (Markowitz et al., 2015). Mean age was 40.1 (s.d.=11.6) years, only 15.5% of patients were married or cohabitating, and only 36.4% fully employed. Reported race was 65% white, 17% African-American, and 8% Asian, with 28% Hispanic ethnicity. Ninety-three percent reported interpersonal trauma, 58% chronic trauma, 35% sexual and 62% physical abuse. Thirty-six percent reported childhood/adolescent trauma (age 18). Sexual trauma was roughly half

childhood sexual abuse and half adult sexual assault, with some overlap. Mean trauma number was 2.8 (s.d.=1.8), and duration since primary trauma 14.1 (s.d.=14.4) years. Half the sample received MDD diagnoses, and 49% a personality disorder (Markowitz et al., 2015, 2015a).

Table 1 contrasts patients with and without specific trauma types, showing no baseline differences in demographics, PTSD or depressive severity, social functioning, or quality of life for each of the three trauma types. Female gender and childhood/adolescent trauma had higher prevalence among patients reporting than those not reporting sexual trauma (85% vs. 62%, $\chi^2(1)=5.12$, $p=0.024$ and 38% vs. 19%, $\chi^2(1)=4.03$, $p=0.045$ respectively).

Table 2 and Figure 1 illustrate effects of the three trauma types as moderators of treatment effects on the selected outcomes. Sexual trauma moderated the relative efficacy of IPT versus PE and IPT versus RT on total CAPS score. Although all therapies had equal efficacy among patients without sexual trauma, sexually traumatized patients fared worse in PE and RT than in IPT. The relative efficacy of IPT for patients with and without sexual trauma significantly differed from relative efficacies of both PE ($p=0.0244$) and RT ($p=0.0282$) (Figure 1). Subanalyses indicated this IPT effect derived from differential effects in CAPS DSM-IV PTSD symptom clusters B (re-experiencing) and D (arousal), not cluster C (avoidance). Physical and interpersonal traumas did not moderate relative efficacy of any treatment pair. Table 3 reports the effect sizes by trauma type: notably, large effect sizes of 1.3 on CAPS total score for sexual trauma relative to PE, and of 1.7 relative to RT.

Because sexual trauma was associated with a) gender and b) childhood/adolescent trauma (age 18), we investigated whether confounding explained the observed moderating effect of sexual trauma. Table 4 shows moderating analyses for gender and child/adolescent trauma similar to those conducted for the three trauma types. Gender moderated relative efficacy of IPT vs. PE on CAPS and CAPS cluster D, and relative efficacy of PE vs. RT on social adjustment (Weissman and Bothwell, 1976). Omnibus tests for interactions (treatment (3 levels) by gender; [2 degrees of freedom]) were nonsignificant, however, suggesting the moderating effect of sexual trauma is unlikely to derive from the confounding effect of patients' gender. Childhood/adolescent trauma did not moderate the relative efficacy of any pair of treatments with respect to any of the outcomes of interest, ruling out possible confounding effect.

Discussion

Little research has addressed crucial clinical questions of differential therapeutics and the moderating effect of trauma type in psychotherapy of PTSD. The paucity reflects a literature with few randomized psychotherapy trials that varied both trauma type and psychotherapeutic approach. This trial entered new territory in comparing three very different psychotherapeutic approaches to PTSD: classic exposure to trauma reminders, a non-exposure-based affect- and interpersonally-focused approach, and progressive physical and psychic relaxation, treating patients who reported a naturalistic range of often multiple traumas, as many patients with PTSD do. These divergencies permitted a novel search for psychosocial moderators, identifying sexual trauma as a moderator for the relative efficacy

of IPT compared with PE or RT. Therapeutic efficacies differed on CAPS symptom severity, but not on secondary outcomes such as quality of life or social functioning. This is the first research to demonstrate that trauma type may moderate psychotherapy outcome in PTSD.

What do the findings mean? Interpersonal traumas generally have worse consequences than impersonal ones: something is more distressing and more disruptive of trust in malevolent violence, malice, or depraved indifference, than natural disaster (Janoff-Bulman, 1992; Morina et al., 2014; Neria et al., 2008). Sexual trauma reflects an especially severe personal violation – hence the high risk of PTSD following rape (Resnick et al., 1993; Kessler et al., 1995) – fostering extreme levels of mistrust. Rothbaum et al. (2008) found patients with sexual abuse responded more poorly to venlafaxine than placebo on disability and resilience measures, albeit not primary CAPS score. Interpersonal trauma did not differentiate among our three study treatments (unsurprisingly, as only 7% of patients reported impersonal traumas). Nor did physical abuse. Sexual trauma, however, did, yielded large between-treatment effect sizes for improvement in PTSD. We speculate that IPT, focusing on feelings to help patients understand relationships and gauge trust in others, may have fit interpersonally mistrustful sexually violated patients particularly well. It is not that PE produced negative outcomes for patients with sexual trauma, just less positive ones: CAPS scores fell from 76.3 (23.2) to 54.83 (29.0) for PE patients with sexual trauma ($n=11$), versus from 69.7 (15.9) to 39.6 (30.6) for PE patients with no sexual traumas ($n=27$). IPT helped numbed patients to recognize their strong affects in interpersonal situations, validating them as social signals that, verbalized, might help to determine whether others were trustworthy (Markowitz, 2016; Weissman et al., 2007). We have conceptualized that vulnerability to PTSD following trauma reflects dysregulation in formative attachments, a relationship difficulty IPT targets (Markowitz, 2016; Markowitz and Milrod, 2011; Milrod, 2016). The other study therapies addressed trauma with less interpersonal focus.

Pursuing interpersonal mistrust, we evaluated whether paranoid or avoidant personality disorders, prevalent in the sample (Markowitz et al., 2015a), might explain the trauma moderator finding. They did not. We previously found, however, that many patients' baseline SCID-II personality disorders remitted during the 14 week treatment, and hence may have reflected chronic PTSD psychopathology rather than “true” personality disorder (Markowitz et al., 2015a).

Sexual trauma moderated the effect of treatment on PTSD Clusters B and D symptoms, with greater improvement in IPT. Whereas PE focused directly on Cluster C (avoidance symptoms), and indeed fighting avoidance mediated PE outcome in this study (Markowitz et al., 2015), IPT focused on interpersonal issues, not avoidance. Thus perhaps it makes sense that IPT worked through symptom Clusters B (re-experiencing) and D (hyperarousal). Ironically, sexual trauma was the defining characteristic of patients in the initial studies of PE (Foa et al., 1991), yet IPT showed advantages for this patient subpopulation. Future research might evaluate the effects of STAIR (Cloitre et al., 2012), a therapy for PTSD due to complex trauma that (like IPT) focuses on affective tolerance but then (unlike IPT) proceeds to exposure, on a similarly traumatically diverse sample.

Moderators of differential therapeutics from randomized controlled trials advance our knowledge of what works best for whom (Kraemer, 2016; Roth and Fonagy, 2005), personalized treatment. The study results need replication. If replicated, the advantage of IPT in treating sexually traumatized patients with chronic PTSD would suggest that such patients should be first offered IPT. We hope to retest the outcome in a PTSD trial for veterans with military sexual trauma.

Sexual trauma, particularly in childhood, is associated with limbic system abnormalities including smaller hippocampus (Driessen et al., 2000; Vythilingam et al., 2002; Stein et al., 1997; Rubin et al., 2016), likely contributing both to general PTSD risk (Vythilingam et al., 2002; Stein et al., 1997) and specifically to subsequent impaired response to exposure-based PTSD treatments (Rubin et al., 2016). Albeit lacking neuroimaging study data, we speculate that psychotherapies such as PE, reliant on an intact limbic system for extinguishing fearful memories, might have less efficacy for sexually abused patients with impaired hippocampal or amygdalar function. Future research might test whether non-exposure, interpersonal treatment might preferentially benefit sexually abused patients with hippocampal-amygdalar dysfunction in trials employing neuroimaging to assess potential neuroanatomical correlates of treatment mechanisms.

Study strengths include rigorous design and matched therapist teams. Limitations include its relatively small sample size, which was not powered to detect outcome moderators. The sample of sexually traumatized patients was too small to allow delineation of types and ages of sexual trauma. Although we sought to address confounding variables for our analyses, other potential confounding variables may exist for which we could not control. We doubt that our present hypothesis favoring IPT, which we raised before conducting the current analyses but never considered while conducting the study, influenced these results. Findings from this unmedicated, mainly civilian treatment sample might not generalize to medicated patients or military personnel with PTSD. Adherence monitoring was incomplete for some treatment dyads (Markowitz et al., 2015). Nonetheless, the data reveal an intriguing, novel, and potentially clinically useful finding, that sexual trauma as PTSD criterion A may moderate efficacy of Interpersonal Psychotherapy for chronic PTSD symptoms relative to Prolonged Exposure and Relaxation Therapy.

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Figure 1.
Effect of Trauma Type on Psychotherapy Outcome: CAPS Total Score and Symptom Cluster Scores at Week 14

Table 1

Comparison of Patients With and Without a Specific Baseline Trauma

Baseline Characteristic	Sexual Trauma			Physical Trauma			Interpersonal Trauma		
	With (n=39) Mean (sd)	Without (n=71) Mean (sd)	Test ¹ t ₁₀₈ (p-value)	With (n=68) Mean (sd)	Without (n=42) Mean (sd)	Test t ₁₀₈ (p-value)	With (n=102) Mean (sd)	Without (n=8) Mean (sd)	Test t ₁₀₈ (p-value)
Age	39.09 (10.41)	40.71 (12.18)	-0.77 (.44)	40.01 (11.62)	40.25 (11.61)	-0.10 (0.915)	39.99 (11.37)	41.58 (14.62)	-0.30 (.723)
CAPS	71.36 (19.36)	69.12 (15.26)	.62 (.53)	68.76 (17.19)	71.79 (16.11)	-.93 (.35)	70.15 (16.89)	66.88 (15.91)	.62 (.53)
CapsB	19.62 (8.62)	17.23 (7.01)	1.48 (.14)	17.71 (7.30)	18.67 (8.29)	-.62 (.54)	18.02 (7.74)	18.75 (7.13)	-.28 (.78)
CapsC	29.05 (8.82)	30.61 (7.39)	-.93 (.35)	29.59 (8.77)	30.81 (7.39)	-.85 (.40)	30.22 (7.95)	28.00 (7.80)	.77 (.44)
CapsD	22.69 (7.06)	21.29 (7.23)	.99 (.32)	21.46 (6.86)	22.31 (7.69)	-.58 (.56)	21.92 (7.21)	20.13 (6.75)	.72 (.47)
SAS	2.79 (0.52)	2.66 (0.54)	1.23 (.22)	2.71 (0.55)	2.7 (0.52)	.17 (.86)	2.72 (0.54)	2.57 (0.53)	.81 (.42)
QLesQ	43.01 (13.52)	44.62 (13.18)	-.61 (.54)	44.19 (13.81)	43.83 (12.49)	.14 (.89)	43.83 (13.21)	46.86 (14.33)	-.56 (.57)
HamD24	21.65 (7.77)	19.14 (6.29)	1.73 (.08)	19.87 (6.80)	20.29 (7.2)	-.31 (.76)	20.09 (6.97)	19.20 (6.68)	0.39 (.70)
	With N (%)	Without N (%)	Test ² χ^2 (p-value)	With N (%)	Without N (%)	Test χ^2 (p-value)	With N (%)	Without N (%)	Test χ^2 (p-value)
Sex: n (%) female	33 (85)	44 (62)	5.12 (.024)	50 (74)	27 (64)	0.66 (.42)	72 (71)	5 (63)	0.01 (.90)
Trauma age 18 ³	15 (38)	13 (19)	4.03 (.045)	17 (25)	11 (26)	0.01 (.99)	27 (27)	1 (13)	0.23 (.63)
Avoidant PD ⁴	10 (28)	13 (21)	0.66 (.42)	13 (21)	10 (27)	0.47 (.49)	22 (24)	1 (16)	0.15 (.69)
Paranoid PD ⁴	13 (36)	15 (24)	1.71 (.19)	18 (29)	10 (27)	0.04 (.83)	27 (29)	1 (16)	0.42 (.51)

CAPS= Clinician-Administered PTSD Scale (total score); CAPSB, CAPSC, and CAPSD= CAPS symptom clusters; SAS= Social Adjustment Scale; QLESQ= Quality of Life, Enjoyment, and Satisfaction Questionnaire; HamD24= Hamilton Depression Rating Scale, 24-item version

¹ t-test on 108 degrees of freedom

² χ^2 test on 1 degree of freedom

³ Two subjects do not have age of primary trauma

⁴ Eleven subjects do not have Axis II diagnosis

Table 2

Trauma type as a treatment effect modifier: *p*-values for significance of interaction term between treatment and presence of given trauma type in a linear regression

Outcome	Sexual (yes/no) ¹			Physical (yes/no)			Interpersonal (yes/no)		
	IPT vs PE	IPT vs R	PE vs R	IPT vs PE	IPT vs R	PE vs R	IPT vs PE	IPT vs R	PE vs R
CAPS	0.0244 ^{2,3}	0.0282	0.7742	0.7244	0.5670	0.5954	0.1326	0.3797	0.3886
CAPSB	0.0212	0.0087	0.6097	0.3344	0.3650	0.1426	0.0948	0.3935	0.2058
CAPSC	0.3421	0.3466	0.8008	0.6185	0.2531	0.1609	0.2120	0.2310	0.3548
CAPSD	0.0153	0.0089	0.6341	0.7267	0.3961	0.4616	0.1453	0.4519	0.4557
SAS	0.2612	0.4499	0.3740	0.5046	0.2857	0.4021	0.2508	0.2916	0.4814
QLESQ	0.2202	0.4399	0.3188	0.3362	0.1559	0.4306	0.1763	0.2589	0.3469
HamD24	0.1019	0.0839	0.6254	0.6252	0.6074	0.4607	0.3814	0.4176	0.4947
Dropout ⁴	0.3250	0.1850	0.6741	0.5534	0.8167	0.7040	0.9921	0.9999	0.9922

CAPS= Clinician-Administered PTSD Scale (total score); CAPSB, CAPSC, and CAPSD= CAPS symptom clusters; SAS= Social Adjustment Scale; QLESQ= Quality of Life, Enjoyment, and Satisfaction Questionnaire; HamD24= Hamilton Depression Rating Scale, 24-item version

¹Number of subjects with and without a given trauma type for each treatment

²Shaded sets of 3 cells indicate that the omnibus test for treatment (3 levels) by presence/absence of a type of trauma (which is F test on 2 and 104 degrees of freedom) was significant at level $\alpha=0.05$.

³Bolded are *p*-values < 0.05

⁴Logistic regression is used to model dropout from treatment

Table 3

Effect Sizes for Pair-wise Comparisons between Treatment Groups separately for Subjects with and without each Trauma Type

Outcome	Trauma type	With trauma			Without trauma		
		IPT vs PE	IPT vs. R	PE vs. R	IPT vs PE	IPT vs. R	PE vs. R
CAPS total	Sexual assault	1.3	1.68	0.38	-0.52	-0.11	0.4
CAPSB		0.42	0.58	0.17	-0.12	-0.09	0.03
CAPSC		0.18	0.48	0.31	-0.17	0.14	0.31
CAPSD		0.45	0.6	0.15	-0.22	-0.15	0.06
CAPS total	Physical assault	0.12	0.45	0.33	0.19	0.85	0.66
CAPSB		0.01	0.25	0.24	0.22	0.03	-0.19
CAPSC		0.01	0.13	0.13	-0.14	0.55	0.68
CAPSD		0.01	0.06	0.05	0.06	0.29	0.24
CAPS total	Interpersonal assault	-0.04	0.48	0.52	1.99	1.42	-0.56
CAPSB		0.02	0.16	0.13	0.67	0.14	-0.53
CAPSC		-0.11	0.22	0.33	0.67	0.92	0.25
CAPSD		-0.03	0.1	0.13	0.63	0.45	-0.19

Patients' sex and age at trauma 18, as treatment effect modifiers: *p*-values for Significance of the Interactions with Treatment in a Linear Regression

Table 4

Outcome	Sex (Female/Male) ¹		Primary Trauma Age 18 (yes/no)	
	IPT vs PE	IPT vs R	IPT vs PE	IPT vs R
CAPS	0.0355 ³	0.2394	0.6761	0.1585
CAPSB	0.2222	0.1668	0.5821	0.2556
CAPSC	0.1003	0.3337	0.7417	0.1235
CAPSD	0.0220	0.4822	0.3215	0.3294
SAS	0.2956	0.0975	0.2063	0.3233
QLESQ	0.5152	0.4544	0.0905	0.3647
HamD24	0.0964	0.4169	0.1042	0.0634
Dropout ²	0.1260	0.9924	0.7430	0.9064

CAPS= Clinician-Administered PTSD Scale (total score); CAPSB, CAPSC, and CAPSD= CAPS symptom clusters; SAS= Social Adjustment Scale; QLESQ= Quality of Life, Enjoyment, and Satisfaction Questionnaire; HamD24= Hamilton Depression Rating Scale, 24-item version

¹Number of female and male

²Logistic regression is used to model dropout from treatment

³Bolded are *p*-values < 0.05

⁴Two subjects do not have age of primary trauma