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Patterns of Therapeutic Alliance: Rupture-Repair Episodes in Prolonged Exposure for PTSD

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Abstract

Objective—To better understand the role of therapeutic alliance in PTSD treatment, we examined patterns of and shifts in alliance. First, we identified individuals with repaired ruptures, unrepaired ruptures, and no ruptures in alliance. Then, we explored group differences in these alliance events for clients with common clinical correlates (i.e., co-occurring depression and childhood abuse history) and whether or not the presence of these events influenced treatment outcome.

Method—At pre-treatment, clients ($N = 116$); 76.1% female; 66% Caucasian; age $M = 36.7$ years ($SD = 11.3$) completed measures assessing PTSD diagnosis and severity (PTSD Symptom Scale Interview and Self-Report), depression diagnosis and severity (Structured Clinical Interview for DSM-IV and Beck Depression Inventory), and trauma history. During ten weeks of prolonged exposure therapy, alliance (California Psychotherapy Alliance Scale) measures were completed. At post-treatment, PTSD and depression were re-assessed.

Results—Ruptures in alliance were quite common (46%). No significant differences emerged in the frequency of repaired ruptures, unrepaired ruptures, or no ruptures between those with and without co-occurring MDD, X^2 (2, $N = 82$) = 2.69, $p =$. 26, or those with and without a history of childhood abuse, X^2 (2, $N = 81$) = 0.57, $p = .75$. Unrepaired ruptures predicted worse treatment outcome ($\beta = .45$, $p = .001$).

Conclusions—The current study underscores the importance of attending to discontinuities in alliance throughout treatment.

Keywords

therapeutic alliance; PTSD treatment; child abuse; exposure therapy

A large body of evidence supports the efficacy of exposure therapy for posttraumatic stress disorder (PTSD; e.g., Powers, Halpern, Ferenschak, Gillihan, & Foa, 2010). Moreover, the Institute of Medicine report on the status of PTSD treatments (IOM, 2007) highlighted exposure therapy as the only sufficiently validated intervention for PTSD. Yet, we know little about the processes underlying *how* and *for whom* the treatment works. Researchers have been urged to build upon the efficacy literature by studying key elements of and processes underlying therapeutic change (Hayes, Hope, & Hayes, 2007). As Hayes,

Laurenceau, Feldman, Strauss, and Cardaciotto (2007) have highlighted, the psychotherapy process involves introduction of interventions that often challenge and destabilize old patterns of thoughts and behaviors before establishing new patterns. It is theorized that, rather than view these moments of destabilization or disruption as negative and harmful, it is precisely these disruptions that may be the catalysts of change. Indeed, understanding how therapies exert their effects can lead to advances in treatment development including better-focused, more mechanistically precise treatments. For the treatment of PTSD, beginning to understand the course and potential disruptions underlying change is a crucial next step to enhancing PTSD-related patient care.

One potentially important area of process research in the treatment of PTSD is the therapeutic alliance. The therapeutic alliance is broadly defined as the overall bond between therapist and client evolving during the process of therapy (Horvath, Re, Flückiger, & Symonds, 2011). Although there is no single definition of the therapeutic alliance, often-highlighted aspects include agreement on tasks and goals, role investment, empathic resonance, mutual affirmation and a relational or therapeutic bond (e.g., Bordin, 1994). Across a variety of disorders and therapeutic modalities, a stronger alliance has been shown to be associated with better treatment outcome (Horvath et al., 2011), including an exposure-based treatment for adult survivors of childhood sexual abuse (e.g., Cloitre, Stovall-McClough, Miranda, & Chemtob, 2004). In an attempt to better understand the relationship between alliance and treatment efficacy, some work has begun to explore patterns of alliance over the course of therapy. For example, Gelso and Carter (1994) theorized that effective, time-limited therapies are characterized by a u-shaped alliance pattern in which an initially high level of alliance declines and, over the course of therapy, returns to the former higher level. The reasoning behind this theory centers on the notion that as therapy progresses, challenges arise (e.g., the "work" of therapy; the therapist makes a mistake or says something that does not sit well with the client; an encouraging push by the therapist to approach feared situations). These challenges can create tension in the therapeutic relationship. Once the challenges have been navigated or resolved, the relationship is then restored or enhanced.

Empirical investigations of this theory often show a u-shaped pattern of alliance is associated with better treatment outcome (Golden & Robbins, 1990; Kivlighan & Shaughnessy, 2000; for a review see Safran, Muran, Samstag, & Stevens, 2001). For example, Kivlighan and Shaughnessy (2000) identified three patterns of alliance including stable alliance, linear alliance growth, and u-shaped alliance growth. A u-shaped alliance pattern was associated with a higher level of improvement over the course of counseling in comparison to the other two patterns. However, this study was limited in that the clients were volunteer undergraduate students and may not accurately represent a clinical sample. Other studies finding similar results (e.g., Golden & Robbins, 1990) are characterized by small sample sizes and qualitative approaches, which underscore the need for continued research with larger and more diverse samples.

Others have examined specific disruptions or shifts in therapeutic alliance, notably, "rupture-repairs." Safran and Muran (2000) described an alliance "rupture" as a quick decline in alliance. Ruptures, or dips in alliance can occur for many reasons including when hidden negative feelings emerge, a therapist makes a mistake (Safran & Muran, 2000) or therapeutic progress halts (Omer, 1995). If the negative feelings or problems are resolved, the rupture becomes a "repaired rupture." On the other hand, an unresolved rupture is termed an "unrepaired rupture." Recent investigations suggest that alliance patterns characterized by the presence of a repaired rupture episode, compared to those patterns that did not demonstrate a sharp decrease and subsequent increase in alliance levels, are associated with favorable outcome among those with personality disorders and depression

(Stiles, Glick, Osatuke, Hardy, Shapiro, Agnew-Davies et al., 2004; Strauss et al., 2006). In a recent investigation of alliance patterns during cognitive behavioral therapy for generalized anxiety disorder (Westra, Constantino, & Aviram, 2011), experiencing an alliance rupture led to poor treatment outcome. In addition, ruptures related to decreases in patients' perception of the treatment's efficacy, which in turn related to poorer outcome.

Taken together, this growing area of process research provides evidence for the dynamic nature of the therapeutic alliance and the existence of certain alliance patterns or alliance events that are linked to better treatment outcome. Yet, only one study has examined patterns of alliance in an exposure-based therapy for PTSD (Cloitre et al., 2004). Moreover, none have examined the "repaired rupture" event or u-shaped pattern of alliance as a predictor of treatment outcome for PTSD. Given that exposure therapy in PTSD, in particular prolonged exposure (PE), involves approaching trauma-related situations and memories that may require a great deal of faith or trust in the therapist, improving treatment outcomes may be aided by better understanding the nature of the therapeutic relationship. It is possible that ruptures may be more likely to occur in PE when the challenging work of exposure is initiated and some clients feel apprehensive and uncertain engaging in activities that they have long feared and avoided. This is all the more critical in that PE is being widely disseminated within the therapeutic community, in particular in the active military and veteran communities (e.g., Karlin, Ruzek, Chard, Eftekhari, Monson, Hembree, et al., 2010). Thus, the current study seeks to fill significant gaps in our current understanding of patterns of alliance and the relationship between alliance and response to exposure therapy for PTSD.

Two possible impediments to the formation of a strong alliance are the presence of other Axis I disorders and/or a history of experiencing abuse as a child. One of the most frequent disorders to co-occur with PTSD is major depressive disorder (MDD). A recent meta-analysis showed that over 50% of individuals with PTSD exhibit co-occurring depression (Rytwinski, Scur, Youngstrom, & Feeny, in press). Hallmark features of MDD include impaired affect regulation and interpersonal functioning, as well as anhedonia and deficits in motivation (e.g., Durbin & Shafir, 2008). These symptoms may serve as additional factors complicating the development and maintenance of a strong alliance. Specifically, the lack of positive emotions is likely to hinder rapport with the therapist, given the powerful role of reciprocal positive emotion expression in affiliative behavior (Bänninger-Huber, 1992). The low energy and motivation may also make it difficult to engage in treatment and follow therapist recommendations (e.g., homework assignments), potentially creating a mutual sense of frustration. Given that alliance is considered an important component of client engagement and better treatment outcome (e.g., Gaston, 1991), the co-occurrence of MDD with PTSD may potentially hinder clients' motivation for forming a strong relationship with their therapist and fully engaging in the treatment. Finally, recent evidence suggests that therapists report a weaker alliance with patients who present with anxiety and co-occurring depression than with individuals who present with anxiety alone (Constantino & Smith-Hansen, 2008; Levin, Henderson, Ehrenrich-May, 2012).

Similarly, individuals with histories of childhood abuse are at risk to develop PTSD (e.g., Carey, Walker, Rossouw, Seedat, & Stein, 2008); and, for these individuals, a strong therapeutic alliance may be a particularly important component of therapy (Cloitre et al., 2004). Indeed, in a study of women receiving treatment for child abuse-related PTSD, Cloitre and colleagues (2004) found that early therapeutic alliance was associated with better treatment outcome and that the relationship was larger (Cohen's d = 0.47) than those reported in other reviews of alliance impact (i.e., Cohen's d ranging from 0.21 - 0.24; Horvath et al., 2011). Cloitre et al. (2004) hypothesized that the relationship between alliance and outcome for those with PTSD may be particularly strong because of the harmful

long-term effects (e.g., mistrust, unresolved attachment) that may potentially result from enduring childhood physical or sexual abuse. It is possible that the experience of repairing the ruptured therapeutic relationship is a corrective interpersonal experience that helps to further reduce the symptoms of PTSD. These patterns of repaired and unrepaired ruptures in alliance have not yet been examined for those receiving treatment for PTSD. Finally, individuals with a history of CSA tend to display worse interpersonal functioning across a variety of domains including work, intimate relationships, family life, and social situations (e.g., Callahan, Price, & Hilsenroth, 2003) which may lead to difficulties establishing a strong therapeutic alliance (e.g., Elz, Shirk, & Sarlin, 1994). Overall, individuals who present with these common clinical correlates (MDD or childhood abuse history) may have difficulties forming a strong therapeutic alliance.

In line with Hayes et al.'s (2007) recommendations that research focus on the process of therapeutic change, we examined patterns of the alliance including disruptions in the alliance, in a chronic PTSD sample. Given the documented interpersonal difficulties associated with individuals who experience PTSD and common clinical correlates of MDD or a history of childhood abuse, we first hypothesized that individuals with these common clinical correlates would experience lower overall, early, and late alliance levels and, further, that alliance ruptures would occur more frequently for these individuals. Next, in line with previous research (Strauss et al., 2006), we hypothesized that outcome for those with a rupture repair event would be better than for those without a rupture repair event. Finally, we hypothesized that key parameters of the alliance (overall level, slope, and standard deviation) would be related to outcome. Specifically, we hypothesized that higher mean alliance would be associated with better treatment outcome, higher positive slope (reflecting improvements in alliance) would be associated with better treatment outcome, and larger standard deviations would be associated with better outcome.

Method

Participants

Participants were recruited through a wide range of sources, including clinical referrals and community advertising, such as flyers and media advertisements. Inclusion criteria were purposely broad in an attempt to recruit a clinically representative sample. Participants had to meet DSM-IV criteria for a primary diagnosis of chronic PTSD and be between the ages of 18 and 65. Exclusion criteria were designed to be minimal and informed by appropriate clinical care. Diagnostic co-occurrence was not an exclusion criterion as long as PTSD was determined to be primary. Participants were excluded if they had a current diagnosis of schizophrenia, delusional disorder, or had a current diagnosis of unstable (non-medicated) bipolar disorder, depression severe enough to require immediate psychiatric treatment (i.e., serious current suicide risk), current substance dependence, or ongoing contact with their perpetrator (in assault cases).

One-hundred and sixteen participants (88 women and 28 men) with chronic PTSD were randomly assigned to one of two conditions: "choice" or "no choice". Those in the "choice" condition chose their treatment: either prolonged exposure therapy (PE) for PTSD or a selective serotonin reuptake inhibitor (sertraline). Those who were randomly assigned to the "no choice" groups were then randomly assigned to either PE or sertraline. The current study includes those participants who were randomly assigned to or who chose PE. Participants were on average 36.60 (*SD* =11.30) years old. Most participants were Caucasian (66%). Thirty-six percent (*n* = 42) reported having a four-year or higher college degree, and 43% (*n* = 50) reported a yearly income level of $20,000 or below. When reporting their primary trauma, 30% (*n* = 35) reported experiencing adult sexual assault, 21% (*n* = 24) adult non-sexual assault, 19% (*n* = 22) reported experiencing childhood sexual assault (CSA), 8%

(*n* = 9) reported a childhood non-sexual assault, 14% (*n* = 16) a motor vehicle/other serious accident, 2% (*n* = 3) reported combat-related event, and 6% (*n* = 7) reported unexpected death of a loved one. The average time since target trauma was 12.0 years (*SD* = 12.2). In addition to the target trauma, participants reported, on average, exposure to 8.0 (*SD* = 5.9) additional Criterion A traumas. Although 27% of our sample reported child abuse as their primary target trauma, in terms of history of prior trauma exposure, 60% of the sample (*n* = 69) reported having a history of child abuse.

Interview Measures

Interview measures were completed by independent evaluators who were trained in the mental health field, ranging from nursing to Master's and Ph.D. level clinical psychologists. Independent evaluators received standardized interview instrument training via multiple-day workshops and on-going clinical supervision. Before serving as an independent evaluator, they must have met 80% reliability criterion for each interview measure.

PTSD Symptom Scale-Interview Version—The PSS-I (Foa et al., 1993) is an interviewer-administered measure consisting of 17 items and produces both PTSD severity and diagnostic status. Items are rated on a scale based on frequency and severity of symptoms from 0 (*not at all*) to 3 (*5 or more times per week/very much*) in the past two weeks. This measure was used to determine PTSD diagnosis for the study. The PSS-I demonstrates good convergent validity and inter-rater reliability, *r* = .93 - .95 (Foa & Tolin, 2000). In the current study, 10% of cases were rerated for inter-rater reliability; reliability was high for PTSD severity scores (ICC = .95) and PTSD diagnosis (κ = 1.00).

Structured Clinical Interview for DSM-IV (SCID-IV)—The SCID-IV (First et al., 1995), a semi-structured interview, was used to determine if other Axis I disorders were primary and the presence/absence of current co-occurring MDD. The SCID-IV has good validity and reliability (Skre, Onstad, Torgersen, & Kringlen, 1991). In this study, 10% of the SCID-IVs were rerated for inter-rater reliability; reliability across current diagnoses was acceptable (κ = .80). Approximately 50% of the sample (*n* = 59) presented with co-occurring MDD.

Prior trauma history—Based on a standardized trauma history interview (Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993), individuals were asked about their non-index trauma history. Specifically, the presence of prior childhood physical abuse (CPA) and childhood sexual abuse (CSA) was assessed. Individuals were determined to have a history of CSA if they reported at least one experience before the age of 13 in which someone five years or more older had sexual contact with them, defined as hand to genital or genital to genital contact. Individuals were determined to have a history of CPA if, as a child, if he or she was subjected to non-accidental physical injury that left mark or bruises.

Self-Report Measures

PTSD Symptom Scale – Self-Report (PSS-SR)—The PSS-SR (Foa et al., 1993) is a 17-item self-report measure of DSM-IV PTSD symptom frequency/severity. Each symptom is rated on a 4-point scale from 0 (*not at all)* to 3 (*very much*), with higher scores indicating more severe symptoms. It is internally consistent (α = .91) and has good test-retest reliability for the total score (*r* = .83; Foa et al., 1993). In the current study, α = .84.

Beck Depression Inventory (BDI)—The BDI (Beck, 1978) is a 21-item self-report measure assessing depression severity. Each item consists of four self-evaluative statements scored 0 to 3, with increasing scores indicating greater severity of depression. Correlations

with clinician ratings of depression range from .62 to .66; the BDI demonstrates good reliability and validity (Beck, Steer, & Garbin, 1988). In the current study, α = .88.

California Psychotherapy Alliance Scale (CALPAS)—The CALPAS (Marmar, Weiss, & Gaston, 1989) is a well-validated (e.g., Gaston, 1991) 24-item self-report measure of therapeutic alliance. This measure has been used in other psychotherapy trials examining the rupture-repairs in the alliance (e.g., Strauss et al., 2006) and has been shown to have similarly strong psychometric properties as other commonly used alliance measures (Horvath & Luborksky, 1993). The CALPAS includes items tapping the client's commitment to therapy, their capacity to undertake work, the therapist's understanding/ involvement in therapy and the dyad's agreement on goals/strategies. These items attempt to capture the nature of the interaction between the therapist and client, which is central in the concept of the alliance (Gaston & Marmar, 1994). Although no moderating effect of rater perspective on the association between alliance and outcome has been found (e.g., Horvath et al., 2011), we were most interested in the client's perspective of the alliance. Thus, we used the patient version of the CALPAS. Each item describes the relationship between the therapist and patient and is rated on a 7-point Likert scale ranging from 1 (*not at all*) to 7 (*very much so)*. The measure yields an average score across all items with higher scores indicating a stronger alliance. Gaston (1991) reported Cronbach's α = .83 indicating adequate internal consistency. Clients' completed the CALPAS at the beginning of Sessions 2, 4, 6, 8, and 10. In the current sample, internal consistency for the CALPAS at each session was satisfactory (Streiner & Norman, 1995): Session 2, α = .74; Session 4, α = .75; Session 6, α = .67; Session 8, α = .70; and Session 10, α = .70.

Psychotherapy (Prolonged Exposure)

Prolonged Exposure (PE; Foa, Hembree, & Dancu, 2002) consisted of 10 weekly, 90-120 minute therapy sessions provided by a Master's or Ph.D.-level clinician. Approximately 40% of participants were treated by Master's-level clinicians and 60% of participants were treated by Ph.D.-level clinicians. Session 1 was devoted to information gathering, psychoeducation about PTSD, presentation of treatment rationale, and introduction/practice of relaxed breathing. Session 2 focused on psychoeducation about PTSD, construction of the *in vivo* exposure hierarchy and initiation of *in vivo* homework. Imaginal exposure to the traumatic memory began in Session 3 and consisted of revisiting the traumatic event by recounting aloud the memory during this session. For clients experiencing PTSD related to a prolonged event or events (e.g., childhood physical or sexual abuse) the trauma memory to be recounted is chosen collaboratively with the client and is typically the memory that elicits the highest level of intrusions, fears, and avoidance (see Foa et al., 2007, for a complete description of PE). The trauma memory was repeated to allow for reliving of 45-60 min in duration. Processing of the imaginal exposure that is, discussing thoughts and feelings about the revisiting, occurred for 15-20 min. Sessions 4 through 10 followed a similar format to Session 3; however, Session 10 was also devoted to relapse prevention. The imaginal exposure was tape-recorded and participants were instructed, for homework, to listen to the tape daily. Additional homework assigned during Sessions 3 through 9 included in vivo exposure to objectively safe, trauma-related situations that caused anxiety or were avoided. Participants attended 0 to 10 sessions.

Procedure

The study was conducted in compliance with appropriate Internal Review Boards (IRB). Initial eligibility was determined through a semi-structured phone screen, and potentially eligible participants were scheduled for an intake evaluation. In collaboration with the independent evaluator (IE), study information was reviewed and discussed as part of the informed consent process. After consent procedures, an IE conducted the intake consisting

of diagnostic interviews, assessment of symptom severity, gathering demographic, and trauma history information, including history of childhood abuse. Following the intake, eligible participants who chose or were assigned to PE began treatment. Participants rated their therapeutic alliance at all even numbered sessions (2, 4, 6, 8, 10). Approximately two weeks of completing treatment, participants completed a post-treatment evaluation in which an IE assessed their PTSD symptoms and completed a measure of self-reported depression.

Data Analytic Strategy

Repaired rupture and unrepaired rupture events—Utilizing previous research on repaired rupture events and significant change, we quantified repaired rupture. In their study of rupture-repair events, Stiles et al. (2004) and Strauss et al. (2006) emphasized the importance of measuring a significant shift in alliance. Because internal consistency is a widely used substitute for determining significant change when the standard error of the difference is not available (Ogles, Lunnen, & Bonesteel, 2001), we computed clinical significance using internal consistency (.83) and the standard deviation (.57) originally reported for the CALPAS (Gaston, 1991). The standard error of measurement for the scale yielded .24 (standard error of measurement= .57) and the standard error of the difference between two administrations of the measure was calculated as, or .33. Consequently, reductions of at least .33 points on the CALPAS were identified for consideration as a rupture, and a subsequent increase of at least .33 CALPAS points during treatment was considered to be a repaired rupture. Although there is a convention of using 1.96 times the standard error of the difference as an index of reliable change in therapy (e.g., Jacobson & Truax, 1991), we elected to use a more liberal threshold for both statistical and clinical reasons. The statistical consideration was that a more inclusive definition would increase the number of events, increasing the variability and power for statistical modeling. The clinical consideration is that we would want to attend to "probable" ruptures rather than ignoring them until they were so severe that they were psychometrically "reliable" at a conservative level. Similar to other measures of psychotherapy process (Hofmann, Schulz, Meuret, Moscovitch, & Suvak, 2006; Tang & DeRubeis, 1999), without the third data point one cannot assess whether or not there has been a repair. Thus, the construct of interest requires at least three time points for an operational definition.

Alliance and outcome—To quantify the shape of an individual's pattern of alliance, we utilized mean alliance, slope, standard deviation, and scores for each individual. The mean alliance score describes the average level of alliance and provides similar information to the intercept of a regression equation (identical information in the case of a mean-centered model). The slope parameter describes the shape of the alliance relationship and whether it was improving or deteriorating over the course of therapy. The standard deviation provides an index of the instability of the therapeutic alliance.

Power and Preliminary Analyses—In an effort to examine clinically meaningful differences, we used a medium effect size as the target when conducting our power analyses. Medium-sized effects would correspond to Number Needed to Treat (NNT) values in the single digits (Furukawa & Leucht, 2004), which are "differences that would be apparent in day-to-day clinical practice and hence compelling" (Citrome, 2008). Using the G-Power 3 software, we performed "sensitivity" post-hoc power analyses for the analyses we used to test our hypotheses (Faul, Erdfelder, Lang, & Buchner, 2007). We had power of .80 to detect effect sizes in the medium range across all analyses: Cohen's $d = 0.6$ or above for t-tests, $f^2 = 0.1$ or greater in regressions, $w = 0.34$ in chi-squared analyses, all corresponding to roughly medium-sized effects and NNT values less than 9.0. No imputation methods were utilized.

Results

Pre-Treatment Psychopathology

Overall, participants presented with moderate to severe levels of pre-treatment PTSD and depressive symptoms. See Table 1. In addition, pre-treatment self-reported PTSD severity (PSS-SR) was not associated with early alliance ($r = .09$, $p = .93$). The mean number of PE sessions attended was 7.47 ($SD = 3.63$) with a median and mode of 10 sessions attended.

Frequency of Rupture-Repair or Rupture without Repair Events

Of 116 participants, 82 had at least three in-session ratings of therapeutic alliance, which were necessary to allow detection of a high-low-high pattern of alliance. Of the 82 participants with at least three data points, 23 (28%) experienced a repaired rupture, 15 (18%) experienced an unrepaired rupture, and 44 participants (54%) did not meet our criteria for a rupture episode.[1]

Clinical Correlates in Relation to Alliance Level, Ruptures and Repaired Ruptures

Utilizing *t*-tests, we examined whether those with co-occurring depression (MDD) as diagnosed using the SCID-IV or a history of childhood abuse differed significantly on overall level, early, and late alliance scores (see Table 2). There were no mean differences on overall, $t(81) = 0.78$, $p = .44$, early, $t(99)= 0.05$, $p = .96$, or late alliance, $t(76)= 1.05$, $p = .30$, between those with and without co-occurring MDD. Similarly, those with a history of childhood abuse did not differ from those without a history of abuse on overall, $t(79) = -0.76$, $p = .45$, early, $t(98) = -0.92$, $p = .36$, or late, $t(75) = -0.37$, $p = .71$, alliance.

Two chi-square analyses compared those with and without co-occurring MDD and those with and without an abuse history on the frequency of repaired ruptures, unrepaired ruptures, and no rupture. See Table 3. No significant differences in repaired ruptures, unrepaired ruptures, or no ruptures were found among those with and without a history of co-occurring MDD, X^2 $(2, N = 82) = 2.69$, $p =. 26$. Similarly, there were no differences between those with and without a history of childhood abuse on the frequency of repaired ruptures, unrepaired ruptures, or no ruptures, X^2 $(2, N = 81) = 0.57$, $p = .75$.[2]

Rupture-Repair and Rupture without Repair Events in Relation to Treatment Outcome

We ran a series of Chi-square analyses to determine if any demographic variables impacted the presence of no rupture, repaired rupture, or unrepaired rupture. The three groups did not significantly differ from one another on main demographic variables (e.g., education, income, minority status).

We then examined the relationship between overall level of client-rated alliance over the course of treatment and post-treatment PTSD symptoms. A higher overall therapeutic alliance (CALPAS) significantly correlated, at a medium size effect, with lower post-treatment PTSD severity, $r(80) = -0.37$, $p = .001$. We then examined the experience of a repaired rupture, unrepaired rupture, or no rupture on treatment outcome measures using linear regression. In Step 1, we entered centered pre-treatment PTSD severity as well as

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[1]Of 116 participants, 82 had three or more alliance ratings and only eight had two alliance ratings. Given the small and unequal sample sizes, we were unable to run statistical analyses. However, descriptively, two of the eight patients (25%) with only two alliance ratings experienced a rupture in their alliance. Among the 82 participants with three or more data points, 15 (18%) experienced an unrepaired alliance rupture. Thus, while purely descriptive, this data suggests that ruptures occurred at a similar rate in both those with two and at least three data points.

[2]Additionally, we conducted analyses comparing the percentages of repaired rupture, unrepaired rupture, or no rupture event between those who were randomized to choice of treatment vs. no choice of treatment. Results indicated that there were no significant differences between conditions.

treatment length (i.e., total number of sessions attended). In Step 2, we entered the alliance variables. See Table 4. Overall, the presence of an unrepaired rupture predicted worse PTSD treatment outcome ($\beta = .44$, $p < .001$, 95% CI [5.15, 16.63]). Overall, the no rupture group reported the lowest PTSD severity (PSS-SR) at post-treatment ($M = 10.04$, $SD = 8.20$), followed by the repaired rupture group ($M = 12.45$, $SD = 9.84$). The unrepaired rupture group reported the highest post-treatment PTSD severity ($M = 19.06$, $SD = 11.48$).

Patterns of Client-Perceived Therapeutic Alliance

As seen in Table 2, in terms of pattern of alliance, those with current co-occurring MDD had a slightly steeper alliance slope over the course of treatment than those who did not, $t(80) = 1.92$, $p = .06$, suggesting that the alliance increased more quickly for those with MDD at a trend level. The standard deviation of alliance scores was similar among those with and without co-occurring MDD $t(80) = 1.57$, $p = .12$. Those with a history of abuse did not differ on slope of alliance over the course of treatment $t(79) = 0.87$, $p = .39$. The standard deviation of alliance scores was moderately larger among those with a history of child abuse $t(79) = 1.81$, $p = .07$, $d = .41$. Thus, those with a history of abuse seemed to have more variability in their alliance scores over the course of treatment, albeit at a trend level.

Regression analyses were conducted to examine whether or not parameters of alliance pattern (i.e., mean, slope, and standard deviation) predicted post-treatment PTSD and depressive symptoms. In the first regression examining post-treatment PTSD as the dependent variable, the overall model was significant, $F(3, 79) = 5.21$, $p = .003$, $R^2 = .17$. A higher overall mean alliance score was a significant predictor of a lower PTSD severity at post-treatment ($\beta = -.33$, $p = .01$). In the second regression analysis examining depressive symptoms at post-treatment as the dependent variable, the overall model was not significant, $F(3, 79) = 2.08$, $p = .11$, $R^2 = .08$.

Discussion

This study examined alliance patterns by looking at key parameters and disruptions in individual patterns and examining their utility in predicting improvement in PTSD and depressive symptoms. The experience of a rupture in the therapeutic alliance was common, with 46% of the sample experiencing a significant drop in the therapeutic alliance over the course of treatment. However, the experience of a transient alliance dip may not be detrimental to treatment outcome; what seems more crucial, is the restoration of this alliance rupture. In understanding PE treatment for PTSD, this alliance instability and repair have important clinical and theoretical implications.

Our results suggest that the experience of an unrepaired rupture relates to poorer PTSD treatment outcome. Clinically, these findings underscore the importance of attending such discontinuities in the therapeutic relationship, as unresolved ruptures may contribute to poorer outcome and may signal important moments during the process of therapy. In previous studies, a u-shaped pattern of alliance, and, similarly, the presence of repaired ruptures have been associated with better treatment outcome (Safran et al., 2001; Strauss et al., 2006). However, our current data also argues that an alliance instability and repair is not necessary for successful PE outcome. In fact, there was a positive relationship, although non-significant, between experiencing a repaired rupture and worse treatment outcome. Also, the post-treatment PTSD mean score for individuals with a repaired rupture in alliance was actually higher than the mean post-treatment score for individuals with no rupture event. Clearly, an in-depth understanding of the rupture and repair process may help researchers and clinicians identify critical junctures in the therapeutic relationship, how they can be prevented, and subsequently mended should they occur.

A stronger mean alliance across PE was predictive of better treatment outcome. Establishing and continuing to develop a strong therapeutic relationship early in treatment facilitates change. The development of a strong therapeutic alliance may be particularly important for those receiving PE treatment for PTSD in which the client repeatedly discloses and emotionally engages with details about their trauma memory. Several factors may differentially impact alliance during PTSD treatment, such as strong trauma-related avoidance (Ullman, 1996), specific problems with disclosure of the traumatic event (Ullman, 1996), strong negative beliefs about others (Safran, Crocker, McMain, & Murray, 1990), as well avoidance of intimacy and trust (Gaston, Marmar, Thompson, & Gallagher, 1988). Thus, it may be particularly important to establish a strong alliance during PE in order to proceed in therapy, enable the client to engage with imaginal exposure, and engage in the real life exposure activities (i.e., in vivo assignments).

Specifically, we sought to better understand the alliance patterns in individuals with common clinical features (i.e., co-occurring MDD and childhood abuse history), which are also often thought to interfere with the alliance. Encouragingly, there were no differences in the frequency with which repaired ruptures, unrepaired ruptures, or no ruptures in the alliance occurred for those with and without such clinical correlates. Compared to other studies, repaired ruptures in this sample occurred at about the same frequency or less often (e.g., 56%; Strauss et al., 2006; 50%, Stevens et al., 2007), and ruptures that were not repaired occurred at similar rates (18%) as previously reported (Strauss et al., 2006; 12%). When examining overall, early, and late alliance levels, those with co-occurring depression or a history of abuse did not differ significantly in the strength of their alliance from those without these common clinical features. Previously, some have suggested that exposure is only suitable for individuals who experience single-incident traumatic events (e.g., Cook, Schnurr, & Foa, 2004; Ruscio & Holohan, 2006) or that an augmentation to exposure is necessary for individuals with multiple incident traumas (e.g., childhood abuse; Cloitre et al., 2010). However, based on this study, alliance potentially develops similarly among those with clinical features that have been thought to interfere with successful implementation of PE (e.g., Becker, Zayfert, & Anderson, 2004).

There was however, a trend toward individuals with childhood abuse histories to have a larger standard deviation in alliance scores. This would suggest that these individuals might exhibit a slightly more variable pattern of alliance over the course of treatment or may perceive their alliance as more variable than other patients. Challenges in attachment formation and interpersonal functioning (Cloitre et al., 2004) that can potentially translate to alliance problems for individuals with abuse histories may help explain this slightly greater instability. That said, greater standard deviation of therapeutic alliance did not predict less change in either PTSD or depression from pre- to post-treatment, reflecting a therapeutic process that did not interfere with outcome.

Theoretically, how alliance exerts its effect is not clear from this data. Recent research suggests that the experience of a rupture is linked to lowered treatment expectations, which in turn related to poorer treatment outcome (Westra et al., 2011). It may be that individuals with a stronger therapeutic alliance are more likely to buy into the therapeutic rationale, allow themselves to experience fear activation during imaginal exposure, tolerate exposure-related distress, or adhere more to homework assignments. Regardless, these results further underscore clinical recommendations that therapeutic alliance is something to carefully monitor and potentially address, even when implementing manualized or more tightly prescriptive forms of therapy. In the future, it would be interesting to examine whether or not providing therapists with feedback regarding alliance ruptures would aide in repairing this strain in alliance.

Overall, the findings from this study shed light on client-reported therapeutic alliance patterns for those receiving PE for chronic PTSD. In a study of individuals receiving treatment for PTSD, the effect size for the role of alliance in treatment outcome was moderate ($d = .47$; Cloitre et al., 2004). The present study further suggests a moderate relationship between alliance and outcome for those receiving PE for PTSD. Notably, alliance scores in this study were similar to those reported in previous studies not conducted in PTSD (e.g., personality disorders; Strauss et al., 2006), arguing against the notion that having a client directly approach trauma memories and experience related thoughts and emotions may damage or impede alliance.

This study was one of the first to examine discontinuities in the therapeutic alliance among individuals receiving treatment for chronic PTSD. The current sample was similar to other PTSD treatment trials with regard to PTSD severity levels (e.g., Foa et al., 2005). The analyses presented were limited by definitions of rupture and rupture repairs that were relatively liberal. This may blur the differences between those with and without significant ruptures; yet, utilizing a more stringent cutoff (multiplying the standard error of the difference by 1.96 for a 95% confidence interval), more severe shifts only occurred for a small subset of the sample ($n = 5$). Our results indicate that even mild-to-moderate ruptures (defined as 1.00 standard error of the difference instead of 1.96 standard error of the difference) are fairly common yet still have an adverse impact on treatment if they do not go addressed. These more frequent but moderate ruptures are at the level that deserves clinical attention. That is, the cost of a false positive rupture would entail spending a little extra time on the part of the therapist, emphasizing the value of the relationship with the client, the therapeutic process, and their hard work. Conversely, the cost of a false negative or determining that the alliance is fine until it plunges is much worse as it may potentially threaten the alliance and the continuity of therapy.

With regard to alliance patterns, some have used other methods such as cluster analyses (Kivlighan & Shaughnessy, 2000; Stiles et al., 2004) to identify subgroups of participants that experienced different patterns of alliance. Once subgroups are identified, the relationship between their particular pattern of alliance and outcome measure is examined. A limitation of this approach is that cluster analyses are exploratory and descriptive techniques and may be sample dependent. Indeed, the published examples in this content area failed to replicate each other's solutions. Alternatively, we utilized key parameters, that is, quantifiable descriptors of each participant's alliance pattern over the course of therapy and entered these parameters into linear regression analyses as predictors. It is however, possible that quantitative definitions of these shifts may have blurred the differences between the causes of the rupture such as therapist "slip-ups" versus client resistance to change (i.e., exposure-avoidant behavior). These very different causes may lead to unique alliance patterns. For example, a rupture due to exposure-avoidant behavior may occur early on in treatment during the initiation of exposure but in the presence of a supportive therapist, may likely be repaired after successful exposure sessions. However, ruptures due to therapist slip-ups may take a different course or occur at various time points throughout the course of treatment. Thus, a more fine-grained time series analysis of therapy content may be able to begin to unpack these potential differences.

Some additional limitations should be kept in mind. First, factors not measured in the present study, such as interpersonal functioning (Levin et al., 2012), may impact alliance trajectories in PTSD treatment. Second, although we examined individuals with co-occurring MDD, which is the one of most commonly co-occurring disorders with PTSD (e.g., Nixon, Resick, & Nishith, 2004), it is possible that other psychiatric disturbances (e.g., borderline personality disorder) and client characteristics (e.g., gender) may also play a role in the development and course of alliance as well as outcomes for individuals receiving PE

for PTSD. We also focused on client-, rather than therapist-rated alliance. However, previous research has suggested that client-rated alliance is a more reliable predictor of treatment outcome than therapist-rated alliance (e.g., Martin et al., 2000). Finally, future research may want to conduct more fine-grained analyses of alliance during treatment, distinguishing between alliance *patterns* versus *events*. For example, Stiles et al. (2004) distinguished the v-shaped event from the u-shaped pattern, such that an *event* is a brief and sharp dip in the alliance that improves relatively quickly. In contrast, the u-shaped *pattern* was described as an alliance pattern that begins high but remains low for the middle portion of treatment before resuming its initially high level. In our analyses, the rupture repair phenomena may have been either a v-shaped event or a u-shaped pattern. We did not make the fine-grained distinction between a pattern and an event. Thus, future work may want to examine whether or not alliance patterns versus events differentially impact treatment outcome.

This study is the first of its kind to take a more refined view of the alliance for individuals with PTSD. Given that 46% of individuals experienced some type of shift in the alliance throughout therapy, we may surmise that alliance is not static in most clients and that these fluctuations are a common part of therapy. Importantly, clinical correlates such as a childhood abuse history and depression were not significantly associated with differences in rates of rupture or repair or in primary outcomes. This is encouraging to clinicians who may have been concerned that normal shifts in the alliance would interfere with treatment outcome or the potentially interfering role of depression or childhood abuse. At the same time, the importance of attending to the alliance and recognizing downward shifts or ruptures cannot be stressed enough as an important task for the clinician. That is, as would be expected, these un-mended downward shifts can contribute to poorer outcome.

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Table 1

Psychopathology, Clinical Co-occurrence, Trauma History, and Alliance

	M	*(SD)*	Range
Psychopathology			
Pre-Treatment PTSD (PSS-SR)	33.77	*(8.10)*	11 – 51
Post-Treatment PTSD (PSS-SR)	14.78	*(12.02)*	0 - 47
Pre-Treatment Depression (BDI)	24.40	*(9.69)*	4 - 48
Post-Treatment Depression (BDI)	9.50	*(9.62)*	0 - 53
Clinical Correlates			
Current MDD	50.4%		
Child Abuse History	60.0%		
Alliance Over Course of Treatment			
Overall Mean Alliance (CALPAS)	5.86	.66	3.91 - 6.92
Session 2 Mean Alliance (CALPAS)	5.63	.77	3.42 – 7.00
Session 4 Mean Alliance (CALPAS)	.67	.79	3.04 – 6.92
Session 6 Mean Alliance (CALPAS)	5.89	.81	3.50 – 7.00
Session 8 Mean Alliance (CALPAS)	5.93	.84	3.42 – 7.00
Session 10 Mean Alliance (CALPAS)	6.10	.73	4.33 – 6.96

Note. PSS-SR = PTSD Symptom Scale- Self Report; BDI = Beck Depression Inventory, CALPAS = California Psychotherapy Alliance Scale

Table 2

Clinical Correlates and Alliance Patterns

	Early Alliance		Late Alliance		Mean Alliance		Alliance Slope		SD of Alliance	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Clinical Correlates										
Current MDD	5.64	(.74)	6.09	(.78)	5.83	(.59)	.07	(.12)	.42	(.28)
No Current MDD	5.63	(.76)	5.90	(.81)	5.92	(.74)	.04	(.07)	.35	(.15)
Trauma History										
History Child Abuse	5.57	(.72)	5.95	(.86)	5.80	(.70)	.07	(.12)	.43	(.26)
No History Child Abuse	5.70	(.77)	6.02	(.70)	5.91	(.62)	.05	(.07)	.34	(.12)

Table 3

Clinical Correlates and Repaired Ruptures, Unrepaired Ruptures, and No Ruptures

	Repaired Rupture In Alliance		Unrepaired Rupture In Alliance		No Rupture In Alliance	
	n	%	*n*	%	*n*	%
Clinical Co-occurrence						
Current MDD	13	30	5	12	25	58
No Current MDD	10	26	10	26	19	48
Trauma History						
History Child Abuse	13	28	10	21	24	51
No History Child Abuse	10	29	5	15	19	56

Table 4

No Rupture, Repaired Rupture, and Unrepaired Rupture in Therapeutic Alliance as a Predictor of Treatment Outcome

A. Prediction of Post-Treatment PTSD Severity	Step ΔR^2	B	SE(B)	B
Step 1[a]	0.02			
Pre-treatment PTSD Severity (PSS-SR)		.18	.14	.14
Total Sessions Attended		.14	1.22	.01
Step 2[a]	0.16*			
Pre-treatment PTSD Severity (PSS-SR)		.32	.14	.26*
Total Sessions Attended		−.30	1.14	−.02
Repaired Rupture *(Repaired Rupture = 1; unrepaired rupture OR no rupture = 0)*		4.08	2.50	.19
Unrepaired Rupture *(unrepaired rupture = 1; repaired rupture OR no rupture = 0)*		10.88	2.88	.44*

Note. Dependent Variable = post-treatment PTSD severity;

[*] $p > .05$

[a] Step 1: R = .14, F(2, 76) = .80, p = .46

[b] Step 2: R = .43, F(4, 74) = 4.05, p = .005