THERAPEUTIC ALLIANCE AND TREATMENT OUTCOME IN COGNITIVE-BEHAVIORAL AND SUPPORTIVE PSYCHOTHERAPY FOR INTERMITTENT EXPLOSIVE DISORDER

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ABSTRACT

Therapeutic alliance is widely considered one of the factors most associated with treatment success in psychotherapy across a variety of outcomes. However, these effects may differ based on treatment approach or who is rating alliance (client, therapist, or third-party observer). Notably, research on this relationship among individuals with primary aggression problems is limited, with no study to date investigating therapeutic alliance in psychotherapy among individuals with intermittent explosive disorder (IED), the only psychiatric disorder for which affective aggression is pathognomonic. The current study sought to fill this gap by exploring the role of therapeutic alliance on a range of outcomes among 51 adults with IED who participated in a randomized clinical trial comparing cognitive-behavioral and supportive psychotherapy. Therapeutic alliance was assessed by clients, therapists, and an observer at week four of treatment, and outcomes included time in treatment, anger, aggression, emotion dysregulation, and IED remission status. Results showed that alliance was positively associated with reduced anger and aggression at post-treatment. Although alliance was more highly rated in the cognitive-behavioral condition, the alliance-outcome relationship did not differ based on treatment condition. There were no differences found between raters of alliance. These findings support the importance of developing and maintaining a strong relationship in psychotherapy with individuals diagnosed with IED.

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CHAPTER 1.

THERAPEUTIC ALLIANCE AND TREATMENT OUTCOME IN COGNITIVE-BEHAVIORAL AND SUPPORTIVE PSYCHOTHERAPY FOR INTERMITTENT EXPLOSIVE DISORDER

Introduction

The relationship between therapist and client, often known as therapeutic alliance, is one of the most ubiquitous and important factors in effective psychotherapy (Frank, 1985) and is often a better predictor of outcome than specific therapy techniques (Lambert & Barley, 2001). Though therapeutic alliance (frequently referred to as simply "alliance") can be broadly considered to be a positive emotional bond between therapist and client (Horvath & Luborsky, 1993), the most common definition of therapeutic alliance includes three components: the emotional bond, clear and shared therapeutic goals, and collaboration on a unified task (Bordin, 1979). Despite minor variations in operationalization of the term, the relationship between alliance and therapy outcome has been repeatedly and robustly demonstrated across a variety of therapeutic approaches and populations (Flückiger, Del Re, Wampold, & Horvath, 2019; Flückiger, Del Re, Wampold, Symonds, & Horvath, 2012; Martin, Garske, & Davis, 2000).

Alliance appears to be central to several related therapy outcomes. Early on, Bordin (1979) explicitly noted that maintaining good alliance is critical for avoiding a client's premature dropout from therapy, and subsequent research has empirically supported a negative relationship between alliance and dropout rate (Horvath, Del Re, Flückiger, & Symonds, 2011; Sharf, Primavera, & Diener, 2010), as well as a positive relationship

between alliance and "time in treatment" (i.e., attending more sessions prior to dropout or completion), which, in contrast to dropout rate, is a more continuous measure of treatment perseverance (Barber, Connolly, Crits-Christoph, Gladis, & Siqueland, 2009). Beyond retaining clients in treatment, therapeutic alliance has been linked to disorder-specific symptom reduction across a wide range of disorders, including depression (Barber et al., 2009; Feeley, DeRubeis, & Gelfand, 1999), eating disorders (Stiles-Shields et al., 2013; Treasure, 1999), and alcohol/substance use disorders (Belding, Iguchi, Morral, & McLellan, 1997; Connors, Carroll, DiClemente, Longabaugh, & Donovan, 1997). Further, alliance has been implicated in reduction of transdiagnostic symptoms (e.g., emotion dysregulation; Goldberg, Davis, & Hoyt, 2013; Owens, Haddock, & Berry, 2013). Finally, at the diagnostic level, better alliance is also associated with post-treatment diagnostic remission (Isserlin & Couturier, 2012; Svanborg, Bäärnhielm, Wistedt, & Lützen, 2008; Wilson, 1999). Thus, developing a strong therapeutic alliance appears to be key for successful therapy, regardless of how "success" is measured.

The association between alliance and treatment outcome may be influenced by several factors. Though alliance measured later in treatment has a stronger association with outcome than alliance measured in earlier (Horvath et al., 2011; but also see Zilcha-Mano, Dinger, McCarthy, & Barber, 2014), this finding may reflect a confounding of alliance measured late in treatment with earlier client change, such that as a client's symptoms or functioning improves, so does the affiliation with the therapist or interpersonal skills, leading to a better alliance (Crits-Christoph, Gibbons, & Hearon, 2006). Later alliance is also by definition more temporally associated with outcome, leading to a greater likelihood of association. Therefore, alliance measured earlier in treatment may be a "purer" indicator

of the relationship between alliance and outcomes (Crits-Christoph, Gibbons, Hamilton, Ring-Kurtz, & Gallop, 2011) as it is less associated with these potential confounds.

Another factor that may affect alliance ratings is who is evaluating the alliance (i.e., therapist, client, or observer; Martin et al., 2000). For instance, it has been repeatedly found that client and therapist ratings are only moderately related, and clients tend to rate alliance higher than therapists (e.g., Tryon, Blackwell, & Hammel, 2008), though it should be noted that this difference is not always found (e.g., Hatcher, Barends, Hansell, & Gutfreund, 1995). Furthermore, observer-rated alliance is less commonly measured, and less is known about how these ratings compare to client and therapist ratings (Martin et al., 2000). The role of alliance rater is even more opaque when looking at the alliance—outcome relationship. While an early meta-analysis suggested that client rating of alliance is most associated with treatment outcome (Horvath & Symonds, 1991), subsequent studies found therapist (Symonds & Horvath, 2004) or observer ratings of alliance (Fenton, Cecero, Nich, Frankforter, & Carroll, 2001) to be more predictive of outcome, and later meta-analyses failed to find any differences in the alliance—outcome relationship associated with rater perspective (Flückiger et al., 2019; Horvath et al., 2011; Martin et al., 2000). Thus, it remains unclear whether the magnitude of alliance rating or association between alliance and treatment outcome varies as a function of who is assessing alliance.

Finally, although the preponderance of evidence suggests that alliance is rated highly and predicts outcome with a consistent moderate effect size across therapeutic approaches (e.g., Flückiger et al., 2019; Flückiger et al., 2012; Horvath et al., 2011), different components of alliance (e.g., task, goal, bond) may play a larger role in some therapies than others. Several studies have suggested that task agreement (Boira, del Castillo,

Carbajosa, & Marcuello, 2013; Hoffart, Øktedalen, Langkaas, & Wampold, 2013; Knaevelsrud & Maercker, 2007; Preschl, Maercker, & Wagner, 2011), having shared goals (Boira et al., 2013; Knaevelsrud & Maercker, 2007; Preschl et al., 2011), and even a combination of these factors (termed "Agreement"; Brady, Warnock-Parkes, Barker, & Ehlers, 2015; Rector, Zuroff, & Segal, 1999; Webb et al., 2011) are more strongly associated with outcome than the relationship bond in CBT-based treatments. These differences may be grounded in the fact that CBT tends to conceptualize alliance as a necessary (but insufficient) basis for supporting structured, directive interventions (Beck, 1979). In contrast, the limited extant research on components of alliance in supportive psychotherapy suggests that all three components of alliance are equally associated with outcome (Bhola & Kapur, 2013; Weerasekera, Linder, Greenberg, & Watson, 2001).

Despite the evidence supporting the importance of therapeutic alliance, it is notable that adult studies have primarily focused on internalizing disorders (e.g., mood and anxiety disorders; Horvath et al., 2011; Krupnick et al., 2006; Moras & Strupp, 1982). In contrast, there is a dearth of alliance research on adults with aggressive disorders or even those who engage in aggression more generally. This is a noteworthy gap, as clients with high levels of aggressive behavior may have difficulty developing positive interpersonal relationships, including therapeutic alliances (DiGiuseppe, Tafrate, & Eckhardt, 1994; Taft, Murphy, King, Musser, & DeDeyn, 2003), which may be due in part to hostile attribution biases (Chemtob, Novaco, Hamada, Gross, & Smith, 1997; Coccaro, Noblett, & McCloskey, 2009) and low motivation to change (Coccaro, Posternak, & Zimmerman, 2005). Additionally, given the importance of therapist contribution to alliance (Del Re, Flückiger, Horvath, Symonds, & Wampold, 2012), therapist expectations or biases toward aggressive

clients may impede the alliance. Despite (or possibly because of) this difficulty in maintaining relationships, alliance formation may still play an important role in treatment for aggressive behavior. Indeed, it has been hypothesized that therapeutic alliance may be *more* important for treatment of problems related to anger and aggression, as the alliance itself may be an intervention that targets blaming behaviors and resistance to change (DiGiuseppe et al., 1994; Murphy & Baxter, 1997).

The few studies that have investigated the relationship between alliance and treatment of aggression tend to focus on populations of individuals convicted of violent offenses, including intimate partner violence. These preliminary studies suggest better alliance may be associated with longer time in treatment (Polaschek & Ross, 2010) and reduced anger and aggression post-treatment (Brown & O'Leary, 2000). Though important, this work represents only a small subset of individuals with aggression problems and does not differentiate between those who engage in predominately instrumental or reactive aggression, the former of which is more associated with psychopathy and violent recidivism (Cima & Raine, 2009; Swogger, Walsh, Christie, Priddy, & Conner, 2015), while the latter is much more common in psychiatric disorders (Kockler, Stanford, Meloy, Nelson, & Sanford, 2006). The limited alliance research on psychiatric disorders for which aggression is a symptom, such as posttraumatic stress disorder (PTSD) and borderline personality disorder (BPD), have also supported a link between alliance and treatment outcome across a range of outcome measures, including longer time in treatment (Ruglass et al., 2012; Yeomans, Gutfreund, Selzer, Clarkin, & et al., 1994), overall symptom reduction (Forbes et al., 2008; Ruglass et al., 2012), decreased anger/aggression (Hirsh, Quilty, Bagby, & McMain, 2012), improvement in transdiagnostic factors (e.g., emotion

regulation; Cloitre, Chase Stovall-McClough, Miranda, & Chemtob, 2004), and diagnostic recovery (Spinhoven, Giesen-Bloo, van Dyck, Kooiman, & Arntz, 2007). However, aggression is not pathognomonic for these disorders. The relationship between anger-based aggression and PTSD is small to moderate (e.g., $r = .29$; Orth & Wieland, 2006), and only about one-half to two-thirds of individuals with BPD meet the anger/aggression criteria (Newhill, Eack, & Mulvey, 2009; Soloff et al., 2003). This limits the extent to which these studies can be generalized to individuals whose clinical presentation is clearly characterized by pathological aggression.

Intermittent explosive disorder (IED) is the only adult psychiatric disorder that requires frequent and/or destructive acts of impulsive, anger-based aggression (American Psychiatric Association, 2013). In addition to high personal (Kulper, Kleiman, McCloskey, Berman, & Coccaro, 2015; McCloskey, Kleabir, Berman, Chen, & Coccaro, 2010) and societal (Butchart & Mikton, 2014) costs associated with acts of aggression, IED has been linked to a variety of emotional, cognitive, and behavioral deficits including a hostile attribution bias (Coccaro et al., 2009; Coccaro, Solis, Fanning, & Lee, 2015) and difficulties identifying, understanding, and regulating emotions (Coccaro et al., 2015; Fahlgren, Puhalla, Sorgi, & McCloskey, 2019; Fettich, McCloskey, Look, & Coccaro, 2015). These factors, in addition to contributing to the impairments in developing and maintaining interpersonal relationships prevalent in IED (Kulper et al., 2015), may create barriers to developing an alliance in psychotherapy.

Indeed, although IED tends to persist throughout the lifespan (Coccaro, Schmidt, Samuels, & Nestadt, 2004; Kessler et al., 2006), the limited research supports the efficacy of pharmacological and psychotherapeutic intervention for IED (McCloskey, Fahlgren, &

Coccaro, 2019). Specifically, multiple randomized control trials have demonstrated the efficacy of a cognitive-behavioral intervention for IED (Cognitive Restructuring, Relaxation, and Coping Skills Training: CRCST; McCloskey, in preparation; McCloskey, Noblett, Deffenbacher, Gollan, & Coccaro, 2008). However, despite the well-established role of the therapeutic alliance and potential challenges to developing alliance with clients with IED, no study to date has examined the role of therapeutic alliance in treatment outcome for IED or potential moderators of this relationship.

Aims and Hypotheses

The current study examined the role of early therapeutic alliance in treatment outcome as well as factors that influence potential differences in mean alliance and the alliance-outcome relationship among those with IED. These differences were investigated as a function of alliance component (i.e., task, bond, and goal) and treatment condition (i.e., cognitive-behavioral [CRCST] or supportive psychotherapy [SP]). It was hypothesized that across treatments, therapeutic alliance (averaged across raters) would be associated with a) longer time in treatment, (i.e., higher number of sessions until dropout or treatment completion) b) decreased anger, c) decreased aggression, d) improved emotion regulation, and e) IED remission at the end of treatment. It was also hypothesized that the task and goal components of alliance would be both rated higher and be stronger predictors of outcome than the bond component for participants in the CRCST, but not SP, treatment condition. Given the equivocal evidence regarding differences in the magnitude of alliance and the alliance-outcome relationship across rater perspectives (client, therapist, and observer), these analyses were exploratory with no *a priori* hypotheses made.

Methods

Participants

Participants consisted of 51 individuals who participated in a randomized clinical trial comparing CRCST to SP conducted at Temple University from 2011-2016, with follow-up assessments continuing into 2017. Participants were recruited through advertisements and local referrals, and all participants volunteered for treatment. All participants met current integrated research criteria for IED (IED-IR; McCloskey, Berman, Noblett, & Coccaro, 2006), which are similar to DSM-5 IED criteria (American Psychiatric Association, 2013), as diagnosed by the IED-Interview (Coccaro, unpublished instrument). Lifetime history of bipolar disorder, schizophrenia, delusional disorder, organic brain disorder, as well as current substance dependence, major depressive disorder, post-traumatic stress disorder, and suicidal or homicidal ideation were exclusionary for participation in the study. Participants were also excluded if they were currently taking any psychotropic medications and/or participating in a separate anger management program. As there were three potential alliance measures, all participants who were randomized and had data (including a recording of the therapy session and/or self-report data) for at least one of the raters (client, therapist, or observer) were included.

Participants primarily identified as male (n = 30 [58.8%]) and White (n = 24 [47.1%]) or Black/African American (n = 20 [39.2%]). They were highly educated (n = 43 [84.3%] had at least some college), and the average age of participants was 36.71 (SD = 9.7). All participants completed written informed consent prior to enrollment, and the Institutional Review Board of the institution approved the study. Observer-rated data were

collected from video recordings taken of therapy sessions and self-report data collected from participants (see Procedure below).

It is worth noting that there are some missing data in this sample. Specifically, 52 participants attended treatment session four. Due to technological issues (i.e., video recording failure, link to online survey site broken), not all participants had self-report data and video recordings from the sessions they attended. There is at least one measure of alliance (client-, therapist- and/or observer-rated) for 51 participants from session four, and 37 participants (73%) had all three alliance ratings (therapist, client, and observer). Any missing outcome variable data (i.e., aggression, anger, emotion dysregulation, and IED remission) were approximated using multiple imputation based on the existing data (Sterne et al., 2009).

Treatments

The active treatment condition was a CRCST treatment protocol adapted from the Deffenbacher and McKay (2000) anger treatment manual. For the CRCST IED treatment, the first three sessions focused on relaxation training, sessions four and five focused on cognitive restructuring, and the remaining sessions focused on coping skills training, with an increase in intensity of anger-provoking scenes presented in coping skills training as therapy continued. For more information about the CRCST intervention, please see McCloskey et al. (2008). The supportive psychotherapy (SP) comparison treatment also used a manualized protocol adapted from a supportive intervention for adults with bulimia nervosa (Wilson, Fairburn, & Agras, 1997) that utilized client-centered techniques that may be typically delivered in an outpatient setting. Importantly, the SP treatment prohibited the use of cognitive-behavioral therapy techniques (e.g., relaxation training, cognitive

restructuring) aside from discussion of a time-out intervention. Both groups participated in 12 weekly 50-minute sessions conducted by therapists who were advanced clinical psychology graduate students, pre-doctoral interns, or post-doctoral fellows. These sessions were completed over a maximum of 14 weeks, so participants could miss up to two weeks and still receive all 12 sessions, but three or more weeks missed would result in sessions missed. The Principal Investigator (PI), a licensed clinical psychologist, supervised all therapists. Preliminary analyses of therapist adherence to the active treatment protocol indicate that all therapists were 100% adherent to the protocol for sessions 1 through 4.

Measures

Diagnostic Interview Measures

IED-Interview (IED-I, Coccaro, unpublished instrument). The IED-I is a semi-structured clinical interview used to diagnose IED using the integrated research criteria (Coccaro, Kavoussi, Berman, & Lish, 1998), which is similar to current DSM-5 criteria for IED (American Psychiatric Association, 2013). The diagnosis takes into account frequency and descriptive information of both minor and major aggressive acts. The IED-I is a valid and reliable instrument, based on preliminary analyses (McCloskey & Coccaro, 2003) and more recent research showing it discriminated individuals with IED from other psychiatric groups on frequency (η^2 = 0.21-0.65, $p < .001$), emotional experience (χ^2 = 14.76-107.7, ps $< .001$), and consequences (χ^2 = 9.74-203.48; ps $< .01$) of aggressive acts (Kulper et al., 2015). This measure was used to diagnose participants with IED as part of inclusion criteria for the study. Diagnoses were confirmed using a best estimate procedure (Klein, Ouimette, Kelly, Ferro, & Riso, 1994), in which a diagnostic report for each participant is presented

and reviewed by a team of diagnosticians, supervised by a licensed clinical psychologist, to enhance the reliability of diagnoses. A modified version of the IED-I, which assesses criteria for IED for the past month only, was used as an indicator of IED remission at the end of treatment. Specifically, if the participant reported no acts of physical aggression or fewer than two acts of verbal aggression per week (i.e., does not meet A criteria for IED) over the past month at the post-treatment visit, they were considered remitted.

Therapeutic Alliance

Working Alliance Inventory, Short Form (WAI-S; Tracey & Kokotovic, 1989). The WAI-S is a 12-item self-report measure derived from a longer measure based on Bordin's (1979) conceptualization of alliance as a three-component concept; the WAI-S measures agreement on goals and collaboration on tasks between client and therapist, as well as the bond between the dyad (Horvath & Greenberg, 1989). There are client (WAI-C) and therapist (WAI-T) versions of the WAI-S, which are similar in structure. Both the subscales (WAI-C: βs = .80-.93, ps < .01; WAI-T: βs = .88-.99, ps < .01) and total scores (WAI-C: βs = .88-.97, ps < .01; WAI-T: βs = .96-.99, ps < .01) are highly associated between the WAI-S and full WAI (Busseri & Tyler, 2003). The WAI-S demonstrates predictive validity with a composite measure of symptom improvement for both client (r = .34, p < .01) and therapist (r = .42, p < .01) ratings, as well as strong correlations between subscales for both client (rs = .73-.89, ps < .01) and therapist (rs = .66-.80, ps < .01) rated versions (Busseri & Tyler, 2003). The WAI-S was administered to clients and therapists at treatment session four.

Working Alliance Inventory, Observer-rated (WAI-O; Darchuk et al., 2000; Tichenor & Hill, 1989). The initial version of the WAI-O was adapted directly from the

WAI-S to be coded by an observer. Research has supported the reliability (internal consistency: α = .98; inter-rater reliability: ICC = .92) and convergent validity (correlations with other measures of working alliance: *r*s =.71-.84, *p*s < .05) of this measure (Tichenor & Hill, 1989). Notably, similar reliability (ICC =.82, α = .96) and criterion-related validity (with other measures of treatment engagement [i.e., "protherapeutic" behavior, stage of change, treatment motivation]: *r*s = .25-.73, *p*s < .05) was found in a highly aggressive population (Santirso, Martín-Fernández, Lila, Gracia, & Terreros, 2018). The current study utilized an updated version of the measure (Darchuk et al., 2000) consisting of the same 12 items from the WAI-S but with updated rating anchor labels designed to improve on invariability of scores and a ceiling effect found in older versions of the measure (Raue, Goldfried, & Barkham, 1997). For this study, the primary author (MF) coded all available session four videos, and the study PI (MM) independently coded 20% of those sessions to calculate inter-rater reliability (see procedure below). The two raters demonstrated excellent inter-rater reliability for total WAI score across nine videos (ICC = .91). Inter-rater reliability was also excellent across task (ICC = .88), goal (ICC = .87), and bond (ICC = .75) subscales.

Treatment Outcome

Time in treatment. Time in treatment was measured as final session number attended before dropout (or completion of treatment). The minimum possible time in treatment score is one; the maximum is 12. Participants were excluded if they did not attend at least one treatment session. This method of measuring dropout was chosen instead of dichotomizing participants to better account for variation in dropout times (e.g., participants who dropped out after session two may have experienced different alliance

than those who dropped out after session six). Furthermore, as CRCST treatment consisted of consecutive phases which built upon each other, and participants were allowed to continue with later treatment sessions after missing earlier sessions, there is likely a qualitative difference between a participant who attended through session 10 (even if they missed session eight) versus a participant who attended the same *number* of sessions, but dropped out after session nine. Therefore, this variable was treated as continuous in the analyses.

Overt Aggression Scale-Modified (OAS-M; Coccaro, Harvey, Kupsaw-Lawrence, Herbert, & Bernstein, 1991). The OAS-M is a semi-structured interview designed to assess, among other behaviors, frequency and severity of past-week aggressive acts. The OAS-M assesses number, type, and content of aggressive acts, and the raw frequency is then weighted for severity (e.g., verbal arguments are weighted less than physical assaults). Weighted scores are summed for a total aggression score that represents the overall "seriousness" of aggression exhibited over the past week. The OAS-M has demonstrated excellent inter-rater reliability (ICCs = .93-.98; Coccaro & Kavoussi, 1997; Endicott, Tracy, Burt, Olson, & Coccaro, 2002). OAS-M aggression scores were drawn from pre-treatment ("baseline"), and end of treatment, and was used as an outcome measure of recent aggression.

State-Trait Anger Expression Inventory-2 (STAXI-2; Spielberger, 1999). The STAXI-2 is a 57-item self-report assessment that measures several subdomains of anger and aggression, including state anger, trait anger, anger expression-out, anger expression-in, anger control-out, and anger control-in. The STAXI-2 has been shown to be an internally consistent (α = .70) instrument that demonstrates convergent (with Novaco

Anger Scale: $|r|$s = .25-.75, ps < .001) and predictive (to reactions to provocative events measure: βs = .23-.40, ps < .001) validity (Culhane & Morera, 2010). For this study, the total state anger scale (measured at baseline and end of treatment) was used as an indicator of recent anger as an outcome. The 15-item state anger scale is internally consistent (α = .96), appropriately demonstrating more limited reliability over time (r = .59), and it is significantly correlated with the Buss-Perry Aggression Questionnaire, anger subscale (r = .30, p < .001); notably, this association is lesser than the trait anger scale (r = .60, p < .001), further supporting the concurrent validity of the state anger scale (Lievaart, Franken, & Hovens, 2016).

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS is a 36-item self-report assessment that measures six domains of emotion dysregulation (non-acceptance of emotional responses, inability to engage in goal-directed behaviors, difficulties controlling impulsive behaviors, limited access to emotion regulation strategies, lack of emotional awareness, and lack of emotional clarity), and aggregates these into an overall emotion dysregulation score. The DERS has demonstrated internal consistency (α = .93), as well as convergent (with Negative Mood Regulation Scale: rs = -.34 – -.69) and predictive (with self-harm: rs = .20-.26, ps < .05; intimate partner abuse in men: r = .34, p < .01) validity (Gratz & Roemer, 2004). The overall score of this measure (completed at baseline and end of treatment) was used as an outcome indicator of severity of emotion dysregulation.

Procedure

The WAI-O was utilized to code therapeutic alliance for all participants with existing videos of the fourth therapy session. Prior to coding, the primary researcher and

study PI thoroughly read and familiarized themselves with the WAI-O manual (Darchuk et al., 2000). They met to discuss their impressions of the manual and clarified any questions or ambiguities. The primary researcher and PI independently coded one study session from each treatment condition that was not used in the primary analyses (i.e., session three from two participants who dropped out of treatment and thus later data are not available, to prevent bias in future coding), and ICC was calculated for these sessions. ICCs were all "excellent" (i.e., ICC > 0.75; Hallgren, 2012), and the primary author coded all existing videos for session four (n = 45), while the PI coded a randomly selected subset of 20% of these videos (n = 9) for reliability.

Data Analytic Plan

Preliminary Analyses

A composite total alliance score (henceforth called ct-alliance), created by averaging the WAI total alliance scores across the three raters (i.e., client, therapist, observer), was the primary measure of alliance. Note that all participants included in this study had at least one measure of alliance (client-, therapist-, or observer-rated), so each ct-alliance score was the mean of one to three ratings for that dyad.

To assess for potential multicollinearity (defined as $r \geq .80$), zero order correlations were conducted (a) across the three (client, therapist, observer) ratings of alliance, (b) across the three composite alliance subscales (tasks, goals, and bond) and (c) across the five outcome measures (i.e., last session attended, OAS-M aggression score, STAXI anger score, DERS total score, and IED remission status). If multicollinearity was found between either (a) the three rater scores or (b) the three composite alliance subscales, then (where appropriate) these scales were combined.

Primary Analyses

Regression analyses were conducted to investigate the relationship between ct-alliance and treatment outcome. Specifically, three hierarchical linear regressions were conducted for the three treatment outcomes of anger, aggression, and emotion dysregulation, with baseline levels of the appropriate outcome entered at Step 1 and ct-alliance entered at Step 2. For outcome variables with no baseline assessment, linear (time in treatment) and logistic (remission status) regressions were conducted with ct-alliance as the sole predictor.

As the WAI task, bond, and goals subscales were found to be multicollinear (see below), rather than looking at CRCST versus SP differences for each scale in a mixed-method ANOVA, we conducted a *t*-test comparing ct-alliance between CRCST and SP. Likewise, rather than conducting a series of hierarchical regressions to assess the role of each specific WAI subscale in moderating treatment response, we used the ct-alliance score. Thus, for the treatment outcomes of anger, aggression, and emotion dysregulation, regression analyses included the baseline outcome measure at step 1, ct-alliance and treatment condition at step 2, and their interactions at step 3. For time in treatment (linear regression) and IED remission status (logistic regression), ct-alliance and treatment condition were included in step 1, and their interaction at step 2.

Exploratory Analyses

To explore potential differences in alliance as a function of alliance rater, a one-way, within-subjects ANOVA was conducted on total alliance ratings of clients, therapists, and observers. Significant differences between raters were probed using Bonferroni-corrected pairwise comparisons to determine the nature of the group difference.

To examine differences in the alliance-outcome relationship as a function of alliance rater, a series of hierarchical regressions were conducted. For anger, aggression, and emotion dysregulation, separate regression analyses included baseline levels of each outcome measure at step 1 and overall WAI ratings for each rater (i.e., WAI-T, WAI-C, WAI-O) entered in step 2. For time in treatment (using a linear regression), and IED remission (using a logistic regression), WAI ratings for each rater were entered as simultaneous predictors. For all primary and exploratory regression analyses, continuous predictor variables were mean-centered.

Results

Preliminary Analyses

Most participants (n =29) were missing at least some data. Missing data were determined to be missing at random (Little's Missing Completely at Random [MCAR] Test; $\chi^2(146) = 169.57$, $p = .09$; Little, 1988), therefore, missing data can be estimated by available data. To do this we used multiple imputation, which fills in missing data by predicting missing values from all other available data. Multiple imputation imputes several values for each missing value, then results are then averaged across (in our case five, based on recommendations for a small number of missing values; Rubin, 1987) datasets to obtain final estimates of missing data (Schafer, 1997). This allows for variability from sampling error and/or model uncertainty. All subsequent analyses were conducted on the imputed data.

In testing assumptions for parametric analyses, all assumptions of normality for the outcome variables were met, aside from the OAS-M aggression score, which was positively skewed (skewness = 5.87). Thus, this variable was log-transformed and all

analyses were repeated with this transformed variable. The pattern of results was identical, so for ease of interpretability, the untransformed data were used.

Therapist-rated WAI total score was significantly, but moderately, correlated with client-rated WAI ($r = .55$, $p < .001$) and observer-rated WAI ($r = .46$, $p = .004$) total scores, as were client-rated and observer-rated WAI total scores ($r = .38$, $p = .02$). Thus, there is sufficient variability between total WAI scores across the three raters to enter as separate predictors in regressions to investigate the exploratory hypotheses.

Simple correlations were conducted between the WAI goal, task, and bond subscales (averaged across raters). WAI task and goal subscales were very highly correlated ($r = .82$, $p < .001$), suggestive of multicollinearity. WAI task and bond subscales ($r = .75$, $p < .001$), as well as goal and bond subscales ($r = .77$, $p < .001$), were similarly very highly correlated. Thus, alliance differences across treatment conditions were explored on the ct-alliance score, and regression analyses included ct-alliance, treatment condition, as well as ct-alliance by treatment condition interactions, rather than using the subscales. See Table 1 for descriptive statistics for all study variables.

Regarding outcomes, STAXI anger was correlated with OAS-M aggression and DERS emotion dysregulation. Emotion dysregulation was also correlated with remission status. There were no other significant correlations between outcome measures (Table 2).

Table 1.
Descriptive statistics for all study variables

		M / *N*	*SD* / %
Alliance total scores	ct-WAI	54.06	8.70
	Therapist-rated	57.77	12.56
	Client-rated	52.79	10.24
	Observer-rated	51.76	9.93
Alliance composite subscales	WAI Task	18.06	3.14
	WAI Bond	17.72	3.32
	WAI Goal	18.28	2.96
Baseline outcome variables	OASM-A	31.36	41.55
	STAXI Anger	35.18	12.51
	DERS total	88.88	19.83
Post-treatment outcome variables	Last session attended	10.90	2.27
	OASM-A	16.68	42.95
	STAXI Anger	25.00	9.81
	DERS total	84.05	29.50
	IED remission	18	35.29%

Note. ct-WAI = Composite Total Working Alliance Inventory score; WAI = Working Alliance Inventory; OASM-A = Overt Aggression Scale-Modified, Aggression subscale; STAXI Anger = State-Trait Anger Expression Inventory, State Anger subscale score; DERS = Difficulty in Emotion Regulation Scale; IED = Intermittent Explosive Disorder.

Table 2.
Correlations between outcome variables at post-treatment

	1.	2.	3.	4.
1. Last session attended				
2. OASM-A	-.18			
3. STAXI Anger	-.17	.65**		
4. DERS total	-.01	.25	.61*	
5. IED remission[a]	-.17	.09	.40*	.34

Note. *p <.05, **p <.01; [a]point biserial correlations; OASM-A = Overt Aggression Scale-Modified, Aggression subscale; STAXI Anger = State-Trait Anger Expression Inventory, State Anger subscale score; DERS = Difficulty in Emotion Regulation Scale; IED = Intermittent Explosive Disorder.

Primary Analyses

Hierarchical linear regressions suggested that, after controlling for baseline, higher ct-alliance rating predicts lower aggression, anger and (at a non-significant trend level), emotion dysregulation at outcome (see Table 3). In contrast, time in treatment (B = 0.03, SE = 0.04, t = 0.78, p = .43, CI = [-0.04, 0.10]) and IED remission (B = -0.01, SE = 0.05, OR = 0.99, p =.84, CI = [0.89, 1.10]) were not significantly associated with ct-alliance.

A t-test showed that ct-alliance was rated significantly higher in CRCST (M = 59.26, SD = 6.05) than SP (M = 49.64, SD = 8.22), t = 4.64, p < .001, CI = [-13.79, -5.46], d = 1.33. Hierarchical regression analyses showed that neither treatment condition, nor its interaction with ct-alliance predicted anger, aggression, or emotion dysregulation at post-treatment (see Table 4). As seen in our previous analysis, in the final models, ct-alliance significantly predicted anger and aggression, but not emotion dysregulation. Likewise, the final model of a hierarchical linear regression found that neither ct-alliance (B = 0.03, SE = 0.05, t = 0.51, p = .61, CI = [-0.08,0.13]), treatment condition (B = 0.46, SE = 0.77, t = 0.59, p = .55, CI = [-1.06, 1.97]), nor their interaction (B = -0.04, SE = 0.09, t = -0.38, p = .70, CI = [-0.22, 0.15]) predicted last session attended. Similarly, the final model of a hierarchical logistic regression found that that neither ct-alliance (B = 0.04, SE = 0.07, OR = 1.04, p = .56, CI = [0.90, 1.21]), treatment condition (B = -1.34, SE = 0.87, OR = 0.26, p = .13, CI = [0.05, 1.46]), nor their interaction (B = -0.03, SE = 0.12, OR = 0.97, p = .82, CI = [0.37, 2.69]) predicted IED remission status.

Table 3.
Hierarchical regression of ct-alliance on post-treatment anger, aggression, and emotion dysregulation

			B	*SE*	*t*	*95% CI*
OASM-A						
	Step 1	OASM-A Baseline	0.12	0.07	1.73	(-0.02, 0.25)
	Step 2	OASM-A Baseline	0.08	0.07	1.21	(-0.05, 0.21)
		ct-WAI	-0.68	0.07	-2.50*	(-1.21, -0.15)
STAXI Anger						
	Step 1	STAXI Anger Baseline	0.26	0.16	1.61	(-0.09, 0.6)
	Step 2	STAXI Anger Baseline	0.20	0.16	1.24	(-0.14, 0.53)
		ct-WAI	-0.33	0.16	-2.05*	(-0.64, -0.01)
DERS total						
	Step 1	DERS total Baseline	0.68	0.20	3.35**	(0.28, 1.08)
	Step 2	DERS total Baseline	0.68	0.19	3.53***	(0.3, 1.06)
		ct-WAI	-1.09	0.54	-2.02^{+}	(-2.2, 0.03)

Note. $^{+}p < .06$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$; OASM-A = Overt Aggression Scale-Modified, Aggression subscale; STAXI Anger = State-Trait Anger Expression Inventory, State Anger subscale score; DERS = Difficulty in Emotion Regulation Scale; ct-WAI = composite total Working Alliance Inventory score.

Exploratory Analyses

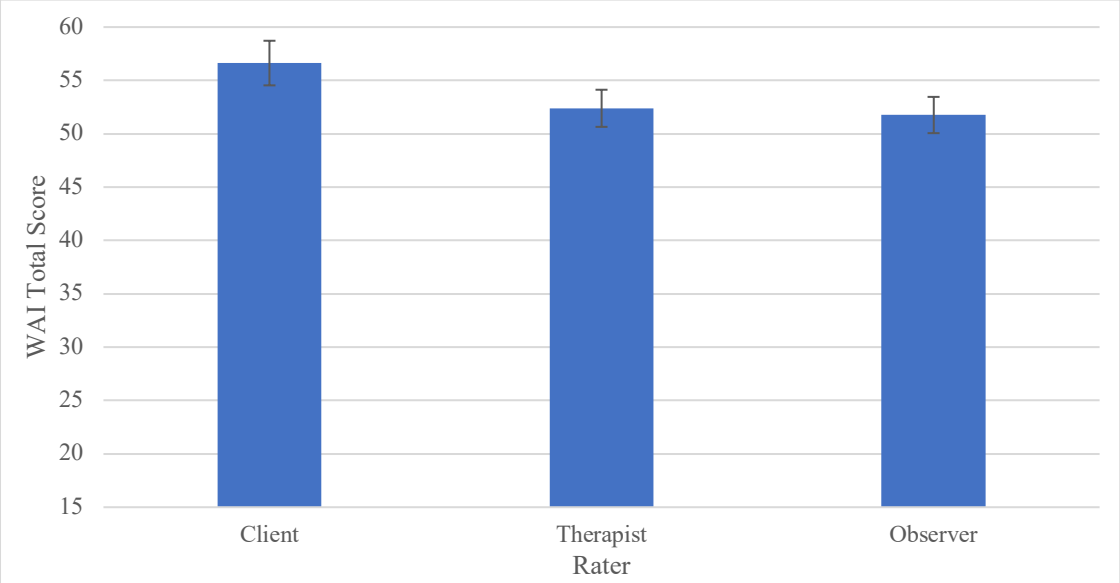
Results of a one-way within-subjects ANOVA suggest that there is a significant difference between total alliance rating based on rater, $F(74,2) = 3.74$, $p = .028$, $\eta_p^2 = 0.092$. However, after Bonferroni-correction, pairwise comparisons (see Figure 1) indicated only trend level differences between client (M = 56.63, SD = 12.87) and therapist (M = 52.39, SD = 10.71) ratings ($t = 2.82$, $p^{adj} = .085$, CI = [-0.416, 8.890], $d = 0.358$), as well as client and observer (M = 51.76, SD = 10.46) ratings ($t = 2.27$, $p^{adj} = .088$, CI = [-0.513, 10.250], $d = 0.415$). Therapist and observer ratings did not differ ($t = 0.35$, $p^{adj} = 1.00$, CI = [-3.843, 5.106], $d = 0.060$).

Table 4.
Hierarchical regression of ct-alliance and treatment condition on anger, aggression, and emotion dysregulation

			B	*SE*	*t*	*95% CI*
STAXI Anger						
	Step 1	STAXI anger baseline	0.26	0.16	1.61	(-0.09, 0.60)
	Step 2	STAXI anger baseline	0.20	0.16	1.24	(-0.14, 0.53)
		ct-WAI	-0.44	0.19	-2.27*	(-0.82, -0.06)
		Tx Condition	3.43	3.45	0.99	(-3.42, 10.28)
	Step 3	STAXI anger baseline	0.20	0.16	1.29	(-0.13, 0.54)
		ct-WAI	-0.50	0.23	-2.17*	(-0.95, -0.05)
		Tx Condition	3.01	3.70	0.81	(-4.38, 10.4)
		WAI × Tx condition	0.19	0.43	0.45	(-0.65, 1.04)
OASM-A						
	Step 1	OASM-A Baseline	0.17	0.09	1.83	(-0.02, 0.35)
	Step 2	OASM-A Baseline	0.11	0.09	1.27	(-0.07, 0.29)
		ct-WAI	-0.71	0.34	-2.11*	(-1.37, -0.05)
		Tx Condition	3.08	5.60	0.55	(-7.9, 14.06)
	Step 3	OASM-A Baseline	0.10	0.09	1.10	(-0.08, 0.28)
		ct-WAI	-0.96	0.41	-2.33*	(-1.76, -0.15)
		Tx Condition	1.30	5.83	0.22	(-10.08, 12.68)
		WAI × Tx condition	0.75	0.71	1.05	(-0.65, 2.14)
DERS						
	Step 1	DERS baseline	0.68	0.20	3.35**	(0.28, 1.08)
	Step 2	DERS baseline	0.68	0.20	3.48**	(0.29, 1.06)
		ct-WAI	-1.10	0.74	-1.48	(-2.69, 0.50)
		Tx Condition	0.42	12.03	0.04	(-24.95, 25.78)
	Step 3	DERS baseline	0.68	0.20	3.47**	(0.29, 1.06)
		ct-WAI	-0.83	0.71	-1.17	(-2.24, 0.59)
		Tx Condition	2.30	13.48	0.17	(-26.86, 31.45)
		WAI × Tx condition	-0.86	1.34	-0.64	(-3.6, 1.88)

Note. *$p < .05$, ** $p < .01$; OASM-A= Overt Aggression Scale-Modified, Aggression subscale; STAXI Anger = State-Trait Anger Expression Inventory, State Anger subscale score; DERS = Difficulty in Emotion Regulation Scale; ct-WAI = composite total Working Alliance Inventory score; Tx condition = treatment condition (coded such that CRCST = 1).

Figure 1.
Mean total alliance ratings by client, therapist, and observer



Note. WAI = Working Alliance Inventory; Error bars represent Standard Error.

Hierarchical linear regressions (controlling for baseline levels of each assessed outcome) found no significant associations between client, therapist, or observer ratings of alliance and anger, aggression, or emotion dysregulation (see Table 5). A linear regression also found no association between client (B = 0.037, SE = 0.029, t = 1.258, p = .208, CI = [-0.020, 0.094]), therapist (B = -0.029, SE = 0.037, t = -0.778, p = .436, CI = [-0.100, 0.434]), or observer (B = 0.011, SE = 0.034, t = 0.318, p = .750, CI = [-0.056, 0.077]) ratings of alliance and time in treatment. Finally, a logistic regression found no relationship between client (B = -0.006, SE = 0.035, OR = 0.994, p = .860, CI = [0.927, 1.065]), therapist (B = 0.024, SE = 0.058, OR = 1.024, p = .684, CI = [0.910, 1.152]), or observer (B = 0.020, SE = 0.043, OR = 1.020, p = .643, CI = [0.937, 1.111]) ratings of alliance and IED remission.

Table 5.
Hierarchical regression of client-, therapist-, and observer-rated alliance on post-treatment anger, aggression, and emotion dysregulation

			B	*SE*	*t*	*95% CI*
STAXI Anger						
	Step 1	STAXI Anger baseline	0.17	0.13	1.33	(-0.08, 0.43)
	Step 2	STAXI Anger baseline	0.17	0.13	1.34	(-0.08, 0.17)
		WAI Client	0.01	0.14	0.07	(-0.26, 0.01)
		WAI Therapist	-0.11	0.18	-0.60	(-0.46, -0.11)
		WAI Observer	-0.22	0.16	-1.38	(-0.54, -0.22)
OASM-A						
	Step 1	OASM-A baseline	0.11	0.08	1.40	(-0.04, 0.27)
	Step 2	OASM-A baseline	0.08	0.08	1.05	(-0.07, 0.24)
		WAI Client	0.07	0.30	0.23	(-0.52, 0.66)
		WAI Therapist	-0.66	0.38	-1.76	(-1.40, 0.08)
		WAI Observer	-0.09	0.33	-0.26	(-0.74, 0.57)
DERS						
	Step 1	DERS baseline	0.64	0.17	3.71^{***}	(0.30, 0.64)
	Step 2	DERS baseline	0.65	0.17	3.80^{***}	(0.31, 0.65)
		WAI Client	-0.54	0.36	-1.50	(-1.25, -0.54)
		WAI Therapist	-0.05	0.46	-0.11	(-0.97, -0.05)
		WAI Observer	-0.15	0.42	-0.35	(-0.97, -0.15)

Note. $^{***}p < .001$; OASM-A = Overt Aggression Scale-Modified, Aggression subscale; STAXI Anger = State-Trait Anger Expression Inventory, State Anger subscale score; DERS = Difficulty in Emotion Regulation Scale; WAI = Working Alliance Inventory.

Discussion

The purpose of this study was to examine the relationship between therapeutic alliance and treatment outcomes among those with IED, as well as to explore factors that may affect this relationship. The results partially supported the hypotheses. Specifically, better therapeutic alliance at week four of treatment was associated with lower aggression and anger at post-treatment. This adds to the robust broader literature supporting the importance of alliance for relieving disorder-specific symptoms (Brown & O'Leary, 2000; Hirsh et al.,

2012). This is a particularly important finding as anger-based aggression is the hallmark symptom of IED (American Psychiatric Association, 2013), and thus these symptoms could be considered the most important targets of treatment. Furthermore, given the high personal (Kulper et al., 2015; McCloskey et al., 2010) and societal (Butchart & Mikton, 2014) costs of aggressive behavior, this is particularly promising evidence for the impact of this non-specific therapy factor on especially impairing symptoms. Finally, this evidence lends support to previously proposed clinical approaches suggesting that alliance may be particularly important in therapy with individuals prone to anger and aggression (DiGiuseppe et al., 1994), and highlights the significance of developing and maintaining strong therapeutic alliance, despite interpersonal challenges common in this population.

In contrast, the alliance-outcome relationship only trended toward significance for emotion dysregulation at post-treatment. This could suggest that for individuals with IED, alliance may not be as strongly related to transdiagnostic symptoms. Instead, it may be that other specific therapy factors (e.g., skills training), are more closely associated with changes in emotion regulation than the therapeutic alliance. Alternatively, as emotion dysregulation at post-treatment was significantly associated with baseline across several analyses, this may reflect a more trait-like measure (especially as respondents were asked to rate how often statements of emotion regulation apply generally, without specifying time frame). However, it is also possible that this lack of significance was a function of the somewhat limited sample size.

Additionally, there was no significant association with alliance for time in treatment or IED remission. Notably, while alliance is frequently associated with time in treatment across studies (Barber et al., 2009; Horvath et al., 2011; Sharf et al., 2010), most studies

examining alliance in treatment for violent offenders found alliance was not associated with premature dropout or time in treatment (Beyko & Wong, 2005; Brown & O'Leary, 2000; DeSorcy, Olver, & Wormith, 2017; Taft et al., 2003). This suggests that other factors may be influencing treatment persistence for highly aggressive individuals, which may be varied and individualized (e.g., schedule changes, moving) and unrelated to the therapeutic alliance. Additionally, given the nature of the research study, other incentives (e.g., payment for travel and follow-ups, a dedicated research staff working to encourage and remind participants about attendance) may have been improving attendance and thus limiting variability of time in treatment, as average last session attended for this sample was nearly 11 (out of 12) sessions. Regarding IED remission, despite decreased anger and aggression associated with alliance, achieving full diagnostic remission is a higher bar: only a little over one-third of participants attained full IED remission, so this may be more associated with other specific therapy factors (e.g., engagement in cognitive restructuring, practicing relaxation exercises).

In examining the difference between alliance subscales and treatment condition in the alliance-outcome relationship, hypotheses were also partially supported. As the subscales of alliance were found to be multicollinear, we were not able to investigate differences between the subscales. Given that there was very strong relationship between the three subscales, it is possible that there was a "halo effect" such that if one aspect of the therapeutic relationship is going well, alliance was rated highly in all areas.

Notably, CRCST evinced higher total composite alliance than SP, which may suggest that the therapeutic relationship was better with CRCST therapists across the board. Given evidence suggesting CBT-based therapies have stronger task and goal alliance (Boira et

al., 2013; Knaevelsrud & Maercker, 2007; Preschl et al., 2011), it is possible that this overall difference reflects an over-emphasis of task and goal alliance as compared to bond, but this is not likely given the high correlation between the subscales.

We found a significant relationship between composite total alliance on anger and aggression, even when accounting for treatment condition; however, there was association between treatment condition and these outcomes, and treatment condition did not moderate the alliance-outcome relationship. This finding further emphasizes the importance of alliance as a transtheoretical, non-specific therapy factor, regardless of treatment approach (Flückiger et al., 2019). Again, there was no significant association for composite total alliance, nor treatment condition or their interaction, on the time in treatment or IED remission outcomes. This further emphasizes the need to understand which specific (or non-specific) factors uniquely predict these outcomes.

Exploratory analyses did not support any notable differences in alliance or alliance-outcome relationship based on client, therapist, or observer ratings. Although the omnibus mean difference test suggested the magnitude of alliance was different between the raters, post-hoc comparisons indicated that clients rated alliance more highly than therapists and observers at a trend level only. Unsurprisingly given these small differences, client-, therapist-, and observer-rated total alliance scores did not differentially predict outcomes. This suggests that regardless of who is rating alliance, it is overall associated with outcome (as seen with the composite alliance analyses). Furthermore, this may suggest that each rater's perception of the therapeutic relationship is similarly "accurate" (i.e., representing assessments of the same construct), such that there is too much shared variance for one rating to independently predict above the others. This indicates that when assessing therapy

for those with IED specifically, any available rating of alliance is useful in predicting outcome.

This study has some notable strengths; it is the first study to our knowledge to demonstrate the importance of early therapeutic alliance in treatment for IED, particularly in reducing aggression and anger. This study utilized multiple raters of alliance to allow for direct comparison of varying perspectives of the relationship. Additionally, the use of a measure of alliance early in treatment allows for more confident interpretation that alliance is affecting symptom change, rather than the reverse. This study also has some limitations. Although week four alliance was relatively early in treatment, it is possible that there was some symptom improvement in the first three weeks of treatment, which could have improved the therapeutic relationship. There were also considerable missing data. Although multiple imputation methods were utilized to estimate these missing data points, ultimately improving the power of the analyses, it would strengthen the conclusions to have full participant data. Another limitation of the study is that by nature of the design, both therapists and the observer were not blind to the treatment condition, which may have biased ratings of alliance (e.g., inflating ratings for the CBT condition).

This study lays the groundwork for additional research into therapeutic alliance and associated factors in treatment for IED. Future research should continue to investigate specific and non-specific therapy factors that may affect outcomes, particularly transdiagnostic symptoms such as emotion dysregulation, as well as time in treatment, and IED diagnosis. Additionally, it is notable that the ratings from clients, therapists, and observers were correlated but not perfectly overlapping, suggesting that there are some differences in the construct of "alliance" depending on who is making the ratings. It may

be useful to use qualitative data analysis to investigate what members of a therapeutic dyad, or observers of this relationship, are considering when making ratings of alliance to further understand this broad construct.

In summary, results of this study suggest that therapeutic alliance, regardless of who is rating this alliance or what treatment approach is used, predicts reduction in anger and aggression in psychotherapy for those diagnosed with IED. This finding reinforces the importance of developing and nurturing the therapeutic relationship in both CBT-based and supportive psychotherapy for highly aggressive individuals.

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CHAPTER 2.

ADDITIONAL ANALYSES

A priori Power Analysis

To determine if there were sufficient data to detect effects using the present analyses, an *a* priori power analysis was conducted. Meta-analyses of the relationship between alliance and psychotherapy outcome have consistently found a moderate effect size (r = .28-.30; Flückiger et al., 2019; Flückiger et al., 2012; Horvath et al., 2011), with larger effects for studies including individuals who have engaged in aggression (*r* = .29-.64; Brown & O'Leary, 2000; Polaschek & Ross, 2010; Rondeau, Brodeur, Brochu, & Lemire, 2001). Thus, for Hypothesis 1, assuming more moderate effect size of .35, an alpha of .05, and two predictors for each regression (i.e., baseline level of the dependent variable, alliance), our sample size of 51 would yield 0.75 power to detect a significant effect (G*Power; Faul, Erdfelder, Lang, & Buchner, 2007).

Studies of the relationship between task and goal alliance components and outcome in cognitive-behavioral therapy have evinced generally moderate to large effects (*r* = .40-.86; Boira et al., 2013; Knaevelsrud & Maercker, 2007; Preschl et al., 2011). For Hypothesis 2, even at a minimally expected moderate-large effect size of *r* = .40, an alpha of .05 and eight predictors for each regression (i.e., baseline level of dependent variable, three alliance subscales, treatment condition, and three alliance by condition interaction terms), our sample size of 51 would yield .86 power to detect a significant effect (G*Power; Faul et al., 2007).

Principal Components Analysis for Alliance Composite Score

Given literature suggesting that alliance may differ based on rater, as well as a range of extant operationalizations of alliance, it is possible that our different raters were capturing a slightly different construct. Thus, when averaging these ratings of alliance to create a composite total alliance score, we first conducted a principal components analysis to see if this ct-alliance score should be weighted to account for differing perspectives on alliance. This principal components analysis was conducted on the three total alliance ratings (client, therapist, observer) using a non-orthogonal (oblimin) rotation and extracting one primary factor. If the three variables are weighted similarly to the primary factor (i.e., +/- .20), this suggests that raw alliance scores can be averaged for simplicity; however, if the factor loadings vary more widely across the three ratings, each score can multiplied by the factor loadings prior to averaging the scores into the composite alliance rating. All variables loaded similarly onto the primary factor (WAI-T = .85, WAI-C = .80, WAI-O = .75), so raw, unweighted total alliance scores were averaged across raters to create a composite total alliance score.

Differences in Key Variables between Subgroups with Full and Partial Data

Although Little's MCAR test indicated that multiple imputation was appropriate for these data, we wanted to further examine any notable differences between participants with missing data and those with complete data. Thus, we conducted *t*-tests to compare key variables across those who had complete data (n = 22) and those with partial data (n = 23-29; Table 6). Unsurprisingly, it was determined that individuals who had full data all

attended through the final session while those with some missing data attended fewer sessions. Additionally, participants with full data were more likely to have remitted from IED at the end of treatment than those who have some missing. Furthermore, participants with full data were older and more likely to have graduated college than those missing some data.

Therapist Effects

Given that the therapists in the study each had multiple clients, it is possible that the effects of shared therapists could impact alliance ratings. Potential therapist-specific effects on alliance were assessed using a one-way analysis of variance (ANOVA) on ct-alliance for the ten therapists used in the study, as well as examining alliance effects for each rater. There were no significant differences in ct-alliance score between the different study therapists, $F(9,40) = 1.98$, $p = .07$. As this approached significance, exploratory analyses examined therapist differences separately for client-, therapist-, an observer-rated alliance. When comparing therapist effects for each rater, there were no significant differences in client-rated WAI total score ($F[9,33] = 1.03$, $p = .44$) or therapist-rated WAI total score ($F[9,33] = 1.54$, $p = .18$) between therapists. However, there were significant differences in observer-rated WAI total scores between therapists, $F(8,36) = 3.00$, $p = .01$. Post-hoc Tukey HSD-corrected pairwise comparisons revealed a significant difference between the lowest-rated therapist ($M = 41.38$, $SD = 9.81$), and two other therapists, $M_1 = 62.00$, $SD_1 = 9.64$, $t(36) = 3.58$, $p = .03$, $CI = [-39.61, -1.64]$, $d = 2.12$, $M_2 = 56.14$, $SD_2 = 4.49$, $t(36) = -3.37$, $p = .04$, $CI = [-29.27, -0.26]$, $d = 0.77$. There were no other pairwise differences that approached significance (all $p > .066$). Generally, given small cell sizes, it is likely that these analyses were somewhat underpowered.

Table 6.
Differences in key variables between participants with full data and partial data

	Full data	Partial data			
	M(SD)/ N(%)	*M(SD)/ N*(%)	t / χ^2	ES (d /ϕ)	*95% CI*
Outcomes					
Last session	12.00(0.00)	10.07(0.28)	-3.29**	0.992	(-3.11, -0.75)
STAXI Anger	20.68(4.59)	26.61(12.51)	2.02	0.630	(-0.04, 11.9)
OASM-A	4.09(5.72)	21.18(60.25)	1.33	0.414	(-8.95, 43.13)
DERS Total	79.68(21.38)	80.64(27.65)	0.12	0.039	(-15.69, 17.61)
IED remission	19(86.4%)	9(52.9%)	5.29*	0.136	
Baseline					
STAXI Anger	34.68(12.75)	35.55(12.53)	0.24	0.069	(-6.30, 8.04)
OASM-A	29.66(45.32)	32.66(39.23)	0.25	0.072	(-20.84, 26.83)
DERS total	87.36(22.56)	90.07(17.74)	0.48	0.133	(-8.74, 14.16)
Demographics					
Age	40.82(8.49)	34.07(9.80)	-2.58*	0.736	(-12.01, -1.49)
Gender (Female)	7 (31.7%)	14 (48.3%)	1.40	0.027	
Education (College Graduate)	17(77.3%)	13 (44.7%)	5.44*	0.107	
Race (White)	11 (50.0%)	13 (44.8%)	0.134	0.003	
Predictors					
Treatment condition (CRCST)	13 (59.1%)	10 (34.5%)	3.06	0.060	
WAI-T total	51.61(10.34)	53.91(10.24)	0.73	0.222	(-4.05, 8.63)
WAI-C total	59.19(12.95)	56.41(12.33)	-0.72	0.219	(-10.57, 5.00)
WAI-O total	53.95(10.98)	50.15(8.96)	-1.28	0.378	(-9.80, 2.21)

Note. *p < .05, **p < .01; ES = Effect Size; Last session = last session attended; STAXI Anger = State-Trait Anger Expression Inventory, State Anger subscale score; OASM-A = Overt Aggression Scale-Modified, Aggression subscale; DERS = Difficulties in Emotion Regulation Scale; CRCST = Cognitive Restructuring, Relaxation, and Coping Skills Training; WAI-T = Working Alliance Inventory-Therapist rating; WAI-C = Working Alliance Inventory-Client rating; WAI-O = Working Alliance Inventory-Observer rating.

Alliance Subscale Differences as a Function of Treatment Condition

In exploring the differences in alliance subscales as a function of treatment condition, despite the evidence for multicollinearity of subscales, the planned analyses were conducted (i.e., two by three mixed-design ANOVA). In examining the differences between subscales entered into the mixed-design ANOVA, results indicated no overall difference between subscales, $F(2,48) = 1.68$, $p = .19$, $\eta_p^2 = .03$; however, alliance on average was higher for CRCST ($M = 19.75$, $SE = 0.51$) than SP ($M = 16.55$, $SE = 0.47$; $F[2,48] = 21.56$, $p < .001$, $\eta_p^2 = .310$) and there was a significant condition by subscale interaction ($F[2,48] = 6.89$, $p = .002$, $\eta_p^2 = .13$). Simple effects analysis showed that, though alliance was rated higher for CRCST relative to SP for each subscale (all $p < .05/3$), this effect was stronger for Task and Goal scales (both $p < .001$) than for the Bond scale ($p = .014$).

Alternate Analysis: Alliance Subscale Differences as a Function of Treatment Condition

Another way we sought to answer the question of how alliance subscale scores differ by treatment condition, while accounting for potential multicollinearity, is by conducting three separate *t*-tests (one for each alliance subscale) between SP and CRCST. Contrary to our hypotheses, all three subscales were rated higher for CRCST than SP (see Table 7), although it is notable that the effect sizes for the task and goal subscales can be considered very large ($d > 1.20$) in the large range, while the effect size for bond was in the medium-large range ($d = 0.73$; see Table 7).

Proposed Analyses: Alliance Subscales Predicting Outcomes as a Function of Treatment

In exploring the differences in alliance subscales as a function of treatment condition, despite the evidence for multicollinearity of subscales, the planned analyses were conducted (i.e., hierarchical regression analyses for each outcome entering the subscales and interactions simultaneously.) Unsurprisingly, given evidence of multicollinearity between the alliance subscales, results of hierarchical regression analyses indicated unacceptably low tolerance values for the alliance subscales (M = 0.18, min = 0.07, max = 0.24), as well as the alliance by treatment condition interaction terms (M = 0.13, min = 0.05, max = 0.18). Thus, these results were not interpreted here.

Table 7.
Mean differences in alliance subscales between treatment conditions

		M	*SD*	*t*	*d*
WAI Task	SP	16.07	3.09	-4.47***	1.28
	CRCST	19.65	2.47		
WAI Goal	SP	16.21	2.82	-5.83***	1.68
	CRCST	20.23	1.85		
WAI Bond	SP	17.35	3.20	-2.55*	0.73
	CRCST	19.38	2.25		

*Note***.** *p < .05, **p < .01, ***p < .001; SP = Supportive Psychotherapy, CRCST = Cognitive Restructuring, Relaxation, and Coping Skills Therapy; WAI = Working Alliance Inventory; Task = Mean task subscale score across raters; Bond = Mean bond subscale score across raters; Goal = Mean goal subscale score across raters

Alternate Analysis: Alliance Subscales Predicting Outcomes as a Function of Treatment

To further explore how alliance subscales may differ in their relationship to outcomes based on treatment condition, while accounting for multicollinearity between

subscales, three separate hierarchical regressions were conducted for each outcome (anger, aggression, emotion dysregulation, last session attended, IED diagnosis).

Regarding the task subscale, results of three hierarchical linear regressions, accounting for baseline at step 1, found that the neither task subscale, treatment condition, nor their interaction significantly predicted anger, aggression, or emotion dysregulation outcomes; though baseline emotion dysregulation significantly predicted emotion dysregulation at post-treatment at each step of the model (see Table 8). For last session attended, neither the task subscale (B = 0.10, SE = 0.14, t = 0.75, p = .46, CI = [-0.17, 0.37]), treatment condition (B = 0.38, SE = 0.75, t = 0.50, p = .62, CI = [-1.10, 1.85]), nor their interaction (B = -0.11, SE = 0.23, t = -0.48, p = .63, CI = [-0.57, 0.34]) were associated with outcome. A logistic regression predicting IED diagnosis at post-treatment similarly showed no association for the task subscale (B = 0.15, SE = 0.23, OR = 1.17, p = .51, CI = [0.72, 1.90]), treatment condition (B = -1.31, SE = 0.92, OR = 0.27, p = .16, CI = [0.04, 1.72]), or their interaction (B = -0.16, SE = 0.32, OR = 0.86, p = .63, CI = [0.45, 1.64]).

The regressions including the goal subscale replicated the pattern of results found when utilizing the ct-alliance score (Table 9). Results of hierarchical linear regressions accounting for baseline at step 1 found a significant association between WAI goal and the STAXI anger and OASM aggression outcomes, as well as a significant association between DERS baseline and DERS outcome. There were no other significant associations within these regressions (see Table 9). For last session attended, neither the goal subscale (B = 0.11, SE = 0.15, t = 0.74, p =.46, CI = [-0.18, 0.41]), treatment condition (B = 0.55, SE = 0.87, t = 0.64, p =.53, CI = [-1.15, 2.25]), nor their interaction (B = -0.22, SE = 0.29, t = -0.75, p =.46, CI = [-0.79, 0.35]) were associated with outcome. A logistic regression

predicting IED diagnosis at post-treatment similarly showed no association for the goal subscale (*B* = 0.09, *SE* = 0.20, OR = 1.10, *p* = .64, *CI* = [0.73, 1.65]), treatment condition (*B* = -1.78, *SE* = 1.07, OR = 0.17, *p* = .10, *CI* = [0.02, 1.36]), or their interaction (*B* = 0.13, *SE* = 0.37, OR = 1.14, *p* = .72, *CI* = [0.55, 2.34]).

Regressions including the bond subscale partially replicated the analyses utilizing the ct-alliance score. Results of hierarchical linear regressions accounting for baseline at step 1 found a significant relationship between WAI bond and STAXI anger, a non-significant trending relationship between WAI bond and OASM aggression, and a significant relationship between DERS baseline score and DERS score at post-treatment; no other associations were significant in these regressions (see Table 10). For last session attended, neither the bond subscale (*B* = -0.01, *SE* = 0.13, *t* = -0.06, *p* = .95, *CI* = [-0.27, 0.25]), treatment condition (*B* = 0.52, *SE* = 0.67, *t* = 0.77, *p* = .44, *CI* = [-0.80, 1.83]), nor their interaction (*B* = -0.03, *SE* = 0.25, *t* = 0.11, *p* = .91, *CI* = [-0.46, 0.51]) were associated with outcome. A logistic regression predicting IED diagnosis at post-treatment similarly showed no association for the bond subscale (*B* = 0.07, *SE* = 0.16, OR = 1.07, *p* = .68, *CI* = [0.78, 1.47]), treatment condition (*B* = -1.13, *SE* = 0.78, OR = 0.32, *p* = .15, *CI* = [0.07, 1.51]), or their interaction (*B* = -0.09, *SE* = 0.31, OR = 0.91, *p* = .76, *CI* = [0.50, 1.67]).

Table 8.
Hierarchical regression of task subscale and treatment condition on post-treatment anger, aggression, and emotion dysregulation

			B	*SE*	*t*	*95% CI*
STAXI Anger						
	Step 1	STAXI anger baseline	0.26	0.16	1.61	(-0.09, 0.60)
	Step 2	STAXI anger baseline	0.23	0.16	1.43	(-0.11, 0.56)
		WAI task	-0.66	0.56	-1.17	(-1.77, 0.46)
		Tx Condition	1.69	3.67	0.46	(-5.65, 9.03)
	Step 3	STAXI anger baseline	0.23	0.16	1.43	(-0.11, 0.56)
		WAI task	-0.67	0.70	-0.95	(-2.07, 0.74)
		Tx Condition	1.67	3.80	0.44	(-5.93, 9.27)
		WAI x Tx condition	0.03	1.13	0.03	(-2.19, 2.26)
OASM-A						
	Step 1	OASM-A Baseline	0.17	0.09	1.83	(-0.02, 0.35)
	Step 2	OASM-A Baseline	0.13	0.10	1.37	(-0.06, 0.33)
		WAI task	-0.95	1.01	-0.94	(-2.94, 1.04)
		Tx Condition	-0.26	5.91	-0.04	(-11.83, 11.32)
	Step 3	OASM-A Baseline	0.12	0.10	1.17	(-0.09, 0.33)
		WAI task	-1.51	1.42	-1.07	(-4.30, 1.27)
		Tx Condition	-0.84	6.05	-0.14	(-12.69, 11.01)
		WAI x Tx condition	1.20	2.07	0.58	(-2.86, 5.26)
DERS						
	Step 1	DERS baseline	0.68	0.20	3.35**	(0.28, 1.08)
	Step 2	DERS baseline	0.67	0.20	3.41**	(0.28, 1.06)
		WAI task	-2.22	2.16	-1.03	(-7.02, 2.59)
		Tx Condition	-2.23	12.72	-0.18	(-29.50, 25.04)
	Step 3	DERS baseline	0.68	0.20	3.39**	(0.28, 1.07)
		WAI task	-1.48	2.10	-0.71	(-5.80, 2.84)
		Tx Condition	-0.81	13.74	-0.06	(-30.79, 29.18)
		WAI x Tx condition	-2.10	3.48	-0.60	(-9.22, 5.03)

Note. **$p < .01$; OASM-A = Overt Aggression Scale-Modified, Aggression subscale; STAXI Anger = State-Trait Anger Expression Inventory, State Anger subscale score; DERS = Difficulty in Emotion Regulation Scale; WAI = Working Alliance Inventory; Tx condition = treatment condition (coded such that CRCST = 1).

Table 9.
Hierarchical regression of goal subscale and treatment condition on post-treatment anger, aggression, and emotion dysregulation

			B	*SE*	*t*	*95% CI*
STAXI Anger						
	Step 1	STAXI anger baseline	0.26	0.16	1.61	(-0.09, 0.60)
	Step 2	STAXI anger baseline	0.22	0.16	1.34	(-0.14, 0.57)
		WAI goal	-1.28	0.55	-2.34*	(-2.35, -0.21)
		Tx Condition	4.44	3.59	1.24	(-2.63, 11.51)
	Step 3	STAXI anger baseline	0.23	0.16	1.43	(-0.12, 0.57)
		WAI goal	-1.57	0.64	-2.47*	(-2.81, -0.32)
		Tx Condition	3.22	3.97	0.81	(-4.62, 11.05)
		WAI x Tx condition	1.12	1.28	0.87	(-1.39, 3.62)
OASM-A						
	Step 1	OASM-A Baseline	0.17	0.09	1.83	(-0.02, 0.35)
	Step 2	OASM-A Baseline	0.12	0.08	1.42	(-0.05, 0.28)
		WAI goal	-2.65	0.89	-2.98**	(-4.39, -0.90)
		Tx Condition	6.43	5.55	1.16	(-4.44, 17.30)
	Step 3	OASM-A Baseline	0.11	0.08	1.33	(-0.05, 0.27)
		WAI goal	-3.39	1.02	-3.34**	(-5.38, -1.40)
		Tx Condition	3.07	5.91	0.52	(-8.51, 14.65)
		WAI x Tx condition	2.90	2.00	1.45	(-1.01, 6.81)
DERS						
	Step 1	DERS baseline	0.68	0.20	3.35**	(0.28, 1.08)
	Step 2	DERS baseline	0.68	0.20	3.41**	(0.28, 1.07)
		WAI goal	-2.98	1.89	-1.57	(-6.84, 0.88)
		Tx Condition	1.79	11.76	0.15	(-22.12, 25.70)
	Step 3	DERS baseline	0.68	0.20	3.41**	(0.29, 1.08)
		WAI goal	-2.45	2.07	-1.19	(-6.59, 1.68)
		Tx Condition	4.00	13.46	0.30	(-23.81, 31.81)
		WAI x Tx condition	-1.98	3.92	-0.51	(-9.77, 5.81)

Note. *$p < .05$, **$p < .01$; OASM-A = Overt Aggression Scale-Modified, Aggression subscale; STAXI Anger = State-Trait Anger Expression Inventory, State Anger subscale score; DERS = Difficulty in Emotion Regulation Scale; WAI = Working Alliance Inventory; Tx condition = treatment condition (coded such that CRCST = 1).

Table 10.
Hierarchical regression of bond subscale and treatment condition on post-treatment anger, aggression, and emotion dysregulation

			B	*SE*	*t*	*95% CI*
STAXI Anger						
	Step 1	STAXI anger baseline	0.26	0.16	1.61	(-0.09, 0.60)
	Step 2	STAXI anger baseline	0.17	0.16	1.07	(-0.17, 0.51)
		WAI bond	-1.34	0.48	-2.78**	(-2.28, -0.39)
		Tx Condition	1.85	2.98	0.62	(-4.05, 7.75)
	Step 3	STAXI anger baseline	0.17	0.16	1.11	(-0.16, 0.51)
		WAI bond	-1.44	0.58	-2.50*	(-2.57, -0.31)
		Tx Condition	1.68	3.13	0.54	(-4.57, 7.92)
		WAI x Tx condition	0.36	1.18	0.30	(-2.00, 2.71)
OASM-A						
	Step 1	OASM-A Baseline	0.17	0.09	1.83	(-0.02, 0.35)
	Step 2	OASM-A Baseline	0.12	0.09	1.32	(-0.06, 0.30)
		WAI bond	-1.69	0.87	-1.94+	(-3.40, 0.02)
		Tx Condition	0.33	5.14	0.07	(-9.73, 10.4)
	Step 3	OASM-A Baseline	0.11	0.09	1.23	(-0.07, 0.29)
		WAI bond	-2.02	1.03	-1.95+	(-4.05, 0.01)
		Tx Condition	-0.48	5.34	-0.09	(-10.94, 9.99)
		WAI x Tx condition	1.19	1.95	0.61	(-2.63, 5.02)
DERS						
	Step 1	DERS baseline	0.68	0.20	3.35**	(0.28, 1.08)
	Step 2	DERS baseline	0.68	0.19	3.51**	(0.30, 1.06)
		WAI bond	-2.98	1.79	-1.67	(-6.73, 0.77)
		Tx Condition	-4.10	9.91	-0.41	(-24.55, 16.35)
	Step 3	DERS baseline	0.66	0.19	3.46**	(0.29, 1.04)
		WAI bond	-2.17	1.67	-1.30	(-5.46, 1.12)
		Tx Condition	-2.80	10.69	-0.26	(-25.31, 19.71)
		WAI x Tx condition	-2.73	3.79	-0.72	(-10.60, 5.14)

Note: $^{+}p < .06$, $*p < .05$, $**p < .01$; OASM-A = Overt Aggression Scale-Modified, Aggression subscale; STAXI Anger = State-Trait Anger Expression Inventory, State Anger subscale score; DERS = Difficulty in Emotion Regulation Scale; WAI = Working Alliance Inventory; Tx condition = treatment condition (coded such that CRCST = 1).

CHAPTER 3.

THE ROLE OF THERAPEUTIC ALLIANCE IN THERAPY FOR ADULTS WITH PROBLEMATIC AGGRESSION

A Preliminary Examination

submitted to the Department of Psychology

In Partial Fulfillment

of the Requirements for the Degree

DOCTOR OF PHILOSOPHY

by

Martha K. Fahlgren, M.A.

Abstract

The nature and quality of the relationship between therapist and client in psychotherapy, known as therapeutic alliance, has been proposed as one of the most important factors for successful treatment outcome. Research has robustly supported this relationship across many types of treatment, populations, raters of alliance (i.e., client, therapist, or observer), and alliance measures. However, most research on alliance and treatment outcome has been conducted in children and adults with internalizing problems (e.g., mood and anxiety disorders) or children with externalizing problems (e.g., conduct disorder), despite the fact that alliance may be particularly important for adults with externalizing problems such as problematic aggression, who may have high levels of resistance, blaming, and interpersonal problems. Limited research has examined the role of alliance in individuals who may engage in high levels of aggressive behavior specifically (i.e., those with post-traumatic stress disorder, antisocial personality disorder, or borderline personality disorder; psychiatric inpatients; and violent offenders). The current systematic review examined the extant research on the relationship between alliance and outcome in treatment of these populations. Overall, it was shown that alliance has a positive impact on treatment outcome among those engaging in or at risk for problematic aggression. Additionally, the alliance-outcome relationship may be affected by therapy modality, alliance rater perspective, and potential mechanisms of alliance. Implications for future research, including utilizing more primarily aggressive samples, are discussed.

Introduction

Although much research on psychotherapy outcome emphasizes specific approaches and modalities (e.g., Burke, Arkowitz, & Menchola, 2003; Butler, Chapman, Forman, & Beck, 2006; McGurk, Twamley, Sitzer, McHugo, & Mueser, 2007), evidence suggests that non-specific therapy factors contribute significantly to outcomes across psychotherapy approaches (Frank, 1985; Martin, Garske, & Davis, 2000). These factors include providing a treatment rationale, between-session practice or reflection (Ilardi & Craighead, 1994), credibility of treatment, expectancies for treatment outcome (Kazdin, 1979), and the relationship between therapist and client/patient (Horvath & Symonds, 1991). This relationship, known as therapeutic alliance, (also known as helping alliance, working alliance, or simply "alliance,") seems to be a particularly important and potentially necessary ingredient for any successful psychotherapy (Horvath, Del Re, Flückiger, & Symonds, 2011; Horvath & Symonds, 1991; Lambert & Barley, 2001; Martin et al., 2000).

Therapeutic alliance

The importance of the therapeutic relationship was identified early in the conceptualization of non-specific therapy factors. Indeed, therapeutic alliance was one of the four components Frank (1985) identified as common in all forms of therapy. However, despite the early theorized and later empirically-supported importance of the therapeutic alliance, there is no single unifying definition of this construct, leading to many operationalizations and measures. One of the earliest formal definitions of therapeutic alliance comes from Bordin (1979) who identified three distinct domains: therapist and client working together on a unified task, clear and shared therapeutic goals, and a strong and enduring bond between the two (or more) individuals in the therapeutic relationship.

This conceptualization has persisted in the literature and informed several commonly used measures of alliance (see below), but it is not the only understanding of alliance. Horvath and Luborsky (1993) described alliance as affective attachments between therapist and patient, as well as willing collaboration in the therapy process. Though this definition does not directly mirror the three domains (task, goals, and bond) suggested by Bordin (1979), it does incorporate an emotional bond, which was also reflected in Frank's (1985) description of the relationship as "emotionally-charged," and an action-focused aspect of therapy work, which is encapsulated in the "task" domain of Bordin's (1979) definition. Thus, while there are multiple definitions of alliance, these are rarely conflicting and share significant overlap, and thus can be seen as a singular, if broad, concept.

Accordingly, despite some variability in operationalization, the many studies of alliance in psychotherapy have been aggregated into meta-analyses. Early meta-analyses of 24 studies (Horvath & Symonds, 1991) and 79 studies (Martin et al., 2000) both found a moderate (r = 0.22-0.26) positive association between therapeutic alliance and treatment outcome with no significant moderators (e.g., type of therapy, length of treatment, publication status). More recent meta-analyses have largely supported these earlier findings, with a meta-analysis of therapeutic alliance among 190 datasets (Horvath et al., 2011), showing a moderate positive (r = 0.275) relationship between therapeutic alliance and treatment outcome, and finding the use of only two outcome measures (a depression measure and client dropout) emerged as significant moderators. Likewise, a longitudinal meta-analysis explicitly examining moderators of the alliance-outcome relationship found a moderate effect of alliance on treatment outcome (r = 0.295), and found that the only significant moderator was researcher allegiance to the topic of alliance, which was only

present for early alliance and disappeared over the course of treatment (Flückiger, Del Re, Wampold, Symonds, & Horvath, 2012).

Though alliance seems to have a moderate effect on outcome independent of most moderators, one factor that may influence this relationship is whose judgment of alliance is being considered. Most studies of therapeutic alliance utilize client-rated measures (Horvath et al., 2011), which may have resulted from an early meta-analysis that found that clients' ratings of alliance were most predictive of outcome, therapists' ratings were less predictive, and observers' ratings of alliance were least predictive (Horvath & Symonds, 1991). However, few studies have directly compared client, therapist, and observer ratings directly; one of the only studies that did so found that observer ratings predicted treatment outcome, while therapist and client perspectives did not (Fenton, Cecero, Nich, Frankforter, & Carroll, 2001). Other meta-analyses have failed to find any differences in rater perspective in relation to treatment outcome (Horvath et al., 2011; Martin et al., 2000), although in one of these meta-analyses therapists seemed to be slightly less *reliable* raters (Martin et al., 2000). Overall, it is not clear whose perspective on alliance most accurately predicts treatment outcome (if there is a difference at all), and more research needs to be done to determine the impact of rater on the relationship between alliance and outcome. Furthermore, in addition to varying rater perspective used in alliance research, there are a wide variety of measures of alliance used in the literature, suggesting that it is worthwhile to briefly review what these measures are and how they differ.

Common measures of alliance

Measures of alliance tend to share significant core features (e.g., rating the quality of the therapist-client relationship, examining multiple domains of the relationship).

However, there is also considerable variation across alliance measures based on factors such as rater perspective and the therapeutic approach for which they were designed. Some early measures of alliance were developed to assess broad interpersonal or therapy processes, (e.g., Structural Analysis of Social Behavior System [SASB]; Benjamin, 1974), and were later adapted to capture therapeutic alliance specifically. Subsequent measures were developed specifically to assess therapeutic alliance as well as sub-domains of alliance (e.g., bond, task, goal) more directly. These measures include the Penn Helping Alliance Questionnaire Method (HAq and HAq-II; Alexander & Luborsky, 1986; Luborsky et al., 1996), and Therapeutic Alliance Scale (TAS; Marziali, Marmar, & Krupnick, 1981). Among these measures developed for therapeutic alliance in particular are the two most commonly used measures of alliance (Martin et al., 2000): the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989; Tichenor & Hill, 1989) and the California Psychotherapy Alliance Scales (CALPAS; Marmar, Gaston, Gallagher, & Thompson, 1989). Both of these scales have client, therapist, and observer versions, and consist of subscales generally reflecting the three dimensions of alliance described by Bordin (1979) as well as an overall alliance score.

While the use of the aforementioned quantitative measures of alliance predominate psychotherapy outcome research (Horvath et al., 2011), recent studies have expanded the investigation of therapeutic alliance via qualitative methods. These qualitative studies have provided supporting evidence that both clients and therapists perceive the therapeutic relationship as one of the most important factors for positive outcome (e.g., Lillevoll et al., 2013; Olivera, Braun, Gómez Penedo, & Roussos, 2013; Sly et al., 2014). In addition, qualitative approaches, which are flexible and context-driven, can expand understanding

of alliance by allowing for patterns and themes to emerge from the relationship itself (e.g., trust development, therapist insight, instilling hope in client; Bachelor, 1995; Lavik, Frøysa, Brattebø, McLeod, & Moltu, 2018), that may be missed by objective ratings of the therapeutic relationship. Thus, qualitative approaches to investigating therapeutic alliance can support the abundant quantitative research on alliance and treatment outcome, both by demonstrating that alliance is an extremely important factor in successful psychotherapy, as well as further informing the theoretical conception of alliance.

Taken together, the literature, including both quantitative and qualitative studies, strongly suggests that therapeutic alliance is important for successful psychotherapy. Furthermore, this relationship is generally robust across a variety of presenting problems (e.g., mood disorders; Krupnick et al., 2006), types of therapy (e.g., cognitive behavioral therapy [CBT]; Flückiger et al., 2012) and populations (e.g., children/family therapy; Karver, Handelsman, Fields, & Bickman, 2006). However, the extant research does not yet effectively capture the alliance-outcome relationship for all client populations, including those who are perceived as particularly difficult to treat, such as those for whom aggression is a primary symptom.

Role of alliance in treatment for adults with problematic aggression

Despite an extensive literature demonstrating the positive role of therapeutic alliance in treatment outcome for adults (e.g., Horvath et al., 2011; Lambert & Barley, 2001), studies have primarily focused internalizing problems (e.g., mood and anxiety disorders; Horvath et al., 2011; Krupnick et al., 2006; Moras & Strupp, 1982) or varied/unspecified presenting problems (Horvath & Greenberg, 1989). Research on the role of alliance among individuals with problematic aggression is more limited and tends

to focus on the treatment of children with externalizing disorders (e.g., oppositional defiant disorder, conduct disorder; Kazdin, Marciano, & Whitley, 2005; Kazdin, Whitley, & Marciano, 2006). However, high levels of aggressive behavior is a common feature of several adult client populations, including those for whom heightened aggression is a defining diagnostic feature (i.e., intermittent explosive disorder [IED]), a specific diagnostic indicator (i.e., posttraumatic stress disorder [PTSD], antisocial personality disorder [ASPD], and borderline personality disorder [BPD]; American Psychiatric Association, 2013), or otherwise clearly problematic (e.g., psychiatric inpatients, violent offenders). Furthermore, there is evidence that suggests that individuals who are more hostile may have worse alliance, and relatedly, that the relationship between alliance and outcome may be different for aggressive clients than for those with internalizing problems (Hirsh, Quilty, Bagby, & McMain, 2012). In fact, it has been hypothesized that that alliance may be more important when treating those with problems related to anger and aggression, due to the tendency of these individuals to blame others and resist change (DiGiuseppe, Tafrate, & Eckhardt, 1994). Despite this, to date, there have been no reviews of the literature on the relationship between alliance and therapy outcome among adults who present with problematic aggression.

Purpose of review

In sum, therapeutic alliance has emerged in the literature as a key factor for treatment outcome, but it is not clear what role alliance plays in treatment outcome for adults who present with problematic aggression. Ideally, this would be assessed by examining studies of adults who present for treatment of an aggression disorder. Alas, there are currently no published studies of therapeutic alliance in treatment outcome among

individuals with IED, which is the only adult disorder for which aggression is the defining symptom (American Psychiatric Association, 2013). However, several other psychological disorders include problematic aggression as a symptom (i.e., PTSD, ASPD, BPD), and other adults may present for treatment specifically because of their aggressive behavior but are not diagnosed with IED (i.e., those who engage in aggressive behavior on inpatient units and violent offenders). Studies of these individuals may help elucidate the role of therapeutic alliance in treatment outcome for adults with problematic aggression. Accordingly, the current review synthesized the extant literature on the relationship between alliance and treatment outcome among those with problematic aggression as defined above in order to determine if there is a unique relationship between alliance and outcome for these clients, and what factors may influence this relationship. The current review also suggests areas of future research to improve understanding of this key therapeutic ingredient to best help clients with problematic aggression.

Methods

A systematic review of the literature was conducted. Initial studies were found using the electronic search feature of the databases PsycINFO and PubMed, and included the following search terms: externaliz* or aggress* or impuls* or "intermittent explosive disorder" or "ptsd" or "post-traumatic stress disorder" or "antisocial personality disorder" or "borderline personality disorder" or "aggress*" or violence and alliance or "therapeutic alliance" or "therapeutic relationship" "therap* alliance" or "therap* relationship." A follow-up search used similar terms with the exclusionary search term "not child*" to exclude studies utilizing non-adult populations. Studies were screened for initial inclusion

based on the following criteria: English language, full text available, included adult human participants, involved a randomized or naturalistic experimental treatment design (i.e., no case studies, no treatment manuals), included some measure of therapeutic alliance and some measure of treatment outcome (and reported on the relationship of the two). Studies were selected for inclusion only if diagnosis of interest included aggressive behavior as a diagnostic criterion (i.e., PTSD, ASPD, BPD) or if the study focused on aggressive behavior as a presenting problem or key outcome (i.e., psychiatric inpatients, those convicted of a violent offense). Studies retrieved by the initial search terms were reviewed for inclusion criteria. Furthermore, references of articles selected were also examined for additional relevant studies.

Study Selection

See Figure 2 for details of literature selection for this review. In total, 1310 studies were identified in the first round of searching. After excluding studies that clearly did not meet inclusion criteria based on the title and/or abstract, 44 full-text articles were assessed for eligibility. Seven of these studies were excluded due to not meeting one of the above criteria (specifically, using a measure of therapeutic alliance and assessing treatment outcome), and one additional study was included from the reference of one of these articles. Ultimately, 38 studies were included in the current review (see Table 11), and the findings are summarized below.

Results

Posttraumatic stress disorder

Posttraumatic stress disorder (PTSD) is characterized by a diverse array of symptoms, including intrusion symptoms, avoidance, negative cognitions and mood, and

altered reactivity and arousal (including high levels of irritability and aggression) following a traumatic event (American Psychiatric Association, 2013). PTSD has been significantly associated with high levels of anger, hostility, outward anger expression and difficulty controlling anger, as well as physical and psychological aggression perpetration (Orth & Wieland, 2006; Taft, Street, Marshall, Dowdall, & Riggs, 2007; Taft, Watkins, Stafford, Street, & Monson, 2011). It is important to understand the role of alliance in PTSD, specifically, as some research has shown that therapists may have difficulty forming alliance with clients with PTSD (Ruglass et al., 2012), which may be in part due to high levels of hostility or aggression, a known barrier to forming alliance (Hirsh et al., 2012).

Although high levels of anger and aggression may be present in PTSD, most studies of alliance and in PTSD treatment look at overall PTSD-symptom change as their primary variable of interest. One such study looked at the role of alliance in those who had differential responses to treatment (Brady, Warnock-Parkes, Barker, & Ehlers, 2015). Researchers rated alliance in the first session of trauma-focused cognitive therapy for PTSD using used the WAI-O (Tichenor & Hill, 1989) for 25 "poor responders" (less than one-third reduction of self-report PTSD symptoms) and 34 "good responders" (greater than two-thirds reduction of self-report PTSD symptoms). The researchers utilized their own subscales: "agreement/confidence" and "relationship", based on prior literature in CBT and alliance. The agreement/confidence subscale was marginally lower (p = .05) for poor relative to good responders, suggesting that therapist-client agreement in the first session may have a lasting impact on PTSD symptoms for the duration of treatment. However, there was no significant difference between good and poor responders on the relationship subscale (though this subscale only includes 3 items), and there was no evaluation of

overall WAI-O, limiting the generalizability of this study finding to studies using traditional subscales.

Beyond comparing alliance between arguably arbitrary categories of "good" and "poor" treatment responders, much research on PTSD and alliance has examined dimensional symptom change and treatment dropout as primary outcomes. One such study examined the utility of therapeutic alliance within a two-phase skills training and exposure treatment for 34 women who experienced childhood abuse and were diagnosed with PTSD (Cloitre, Chase Stovall-McClough, Miranda, & Chemtob, 2004). Client-rated WAI was assessed early in treatment (weeks three to five), and outcome was measured at the end of treatment by negative mood regulation ("NMR") and PTSD symptoms. The researchers found that WAI ratings were not related to treatment dropout, but that average WAI ratings were significantly negatively related to PTSD symptoms, and positively related to change in NMR, at post-treatment, with a moderate to large effect size. Further, when entered into a regression model adjusting for baseline PTSD symptoms, WAI accounted for 39% of variance in PTSD symptoms at post-treatment.

To extend the findings of the impact of alliance on treatment outcome, one study (Ruglass et al., 2012) looked at both short- and long-term outcome for both PTSD and comorbid symptomology. Specifically, the study examined patient-rated early (week two) alliance (HAq-II) to a CBT-based group treatment versus a psychoeducation-based control group therapy for 223 women diagnosed with comorbid PTSD and substance use disorders. PTSD and substance use symptoms were assessed at baseline, one-week post-treatment, and three-, six-, and 12-months follow-up. Across treatments, when accounting for change in PTSD scores from baseline to week 2, early alliance predicted lower PTSD scores at

post-treatment, but this relationship weakened over the follow-up time points and was not significant at 12-months post-treatment. Notably, early alliance was not significantly associated with substance use outcomes. Further, researchers reported that CBT participants had significantly higher early alliance than psychoeducation participants, but that this difference only trended at week six. This replicates earlier research (Cloitre et al., 2004), while also suggesting that the impact of therapy alliance may be stronger for PTSD symptoms, but may weaken over time. Notably, neither Cloitre and colleagues (2004) nor Ruglass and colleagues (2012) looked at specific PTSD symptoms such as anger or aggression.

Several studies did consider anger as related to alliance in PTSD treatment. One study examined alliance as a potential mediator of the anger–therapy outcome relationship among 103 male veterans completing PTSD treatment (Forbes et al., 2008). They found that therapist- but not client-rated alliance (WAI short form [WAI-S]; Tracey & Kokotovic, 1989) assessed 3 weeks post-intake predicted overall PTSD symptom score at 9 months of treatment, when accounting for baseline PTSD and anger. Alliance did not mediate the relationship between anger and PTSD symptoms, and baseline anger was not associated with later alliance. Thus, although alliance may not explain the relationship between anger and PTSD treatment outcome, this does suggest that therapist-rated alliance may be more useful that client-rated alliance for predicting outcome in veterans with PTSD.

Another study focused specifically on the relationship between alliance and anger in PTSD by investigating an anger management treatment for those with PTSD (Mackintosh, Morland, Frueh, Greene, & Rosen, 2014). It was found that, among 109 veterans participating in anger management groups conducted either in person or via webcam,

alliance (measured via the Group Therapy Alliance Scale [GTAS]; Pinsof & Catherall, 1986) was not directly associated with change in aspects of anger and aggression ("cognitive anger," "behavioral anger," and "arousal anger"). However, there was an indirect effect of alliance on all three outcome measures mediated through development of arousal calming skills. Thus, at least in this study, the effect of alliance was more related to facilitating skills development than to directly reducing anger symptoms. The study also failed to identify differential effects of alliance on treatment outcome for the web-based versus in-person group therapy, though it should be noted that the web-based intervention was delivered via video feed, and thus included face-to-face interaction.

Furthering the examination of non-traditional applications of CBT, researchers examined the role of alliance in text only (i.e., no face-to-face contact) online CBT for individuals with "PTSD" (though in actuality only 70% of participants met full DSM criteria; Knaevelsrud & Maercker, 2007). Ninety-six clients completed 10 "writing sessions" over a 5-week period and received feedback and support from therapists during writing sessions. Clients and therapists completed the WAI-S after sessions four and 10 (e.g., end of therapy); the latter was the primary variable of interest in predicting symptom outcomes. It was found that client-rated overall alliance at session 10 was significantly correlated with improvement across treatment in PTSD symptoms, depression, anxiety, and general psychological functioning. This was also true of the task and goal subscales but not the bond subscale, which was only associated with anxiety. For therapist total alliance score at session 10, only change in depression, anxiety, and psychological functioning were significantly associated; this was not true for PTSD symptoms. Furthermore, while client-rated alliance significantly improved across treatment, this was

not true for therapists. It is possible that it took longer to build alliance for clients due to the format, or it may be that alliance at session 10 is confounded with symptom change at the end of treatment. It is worth noting that the authors did not examine the impact of earlier alliance on treatment outcome in this manuscript; a separate manuscript by the same authors using the same study design among "traumatized" individuals found no relationship between week four alliance and treatment outcome (Knaevelsrud & Maercker, 2006).

In addition to research exploring different formats of therapy delivery (such as those reviewed above), research has also compared the role of alliance in PTSD treatment outcome across different in-person therapy techniques or modalities. An open trial outcome study of 29 World Trade Center responders from the September 11, 2001 terrorist attacks examined aspects of alliance as related to outcome in a clinic conducting "integrative psychotherapy," which includes both psychodynamic and cognitive-behavioral techniques (Haugen, Werth, Foster, & Owen, 2016). Researchers used the patient-rated Combined Alliance Short Form (CASF-P; Hatcher & Barends, 1996) and examined the interaction between therapeutic approach (i.e., frequency of cognitive-behavioral [CB] versus psychodynamic techniques) and alliance on an omnibus measure of mental health outcome, as rated by participants. Researchers found that although alliance was not significantly associated with outcome overall (when controlling for baseline levels of outcome measures), there was a significant interaction between alliance and technique. Clients who rated alliance as high had no difference in outcome based on the number of psychodynamic techniques used in therapy; however, clients with higher-rated alliance tended to have better outcomes when their therapist used *fewer* than average CB techniques. In contrast,

clients reporting lower alliance tended to evince better outcomes when therapists used more CB or psychodynamic techniques than average, suggesting that more specific therapeutic interventions are needed when alliance is low, regardless of theoretical approach. Therefore, this study suggests that for first responders with PTSD, while alliance may not be associated with improvement in general psychiatric functioning, a higher alliance may lessen the need for specific technical interventions. Indeed, too many highly structured or didactic interventions (e.g., CB techniques) may interfere with improvement in clients who already report a strong alliance. This provides support for alliance as a key contributor to good treatment outcomes, though this effect may interact with the specific therapy approach utilized.

Alliance in CBT (i.e., prolonged exposure: PE) was also directly compared to a pharmacological intervention (sertraline) in a randomized controlled trial of 118 outpatients with PTSD (Keller, Zoellner, & Feeny, 2010). Overall, participants in PE reported higher alliance than those in the sertraline condition. Alliance was associated with the treatment completion across interventions but was only associated with adherence for the prolonged exposure treatment (PE homework adherence), but not for the sertraline management condition (medication adherence, final medication dosage). This provides further evidence that alliance is key for treatment completion, and suggests that alliance may facilitate psychotherapy homework adherence in PE specifically, but may not support adherence for medication management, which may place less emphasis on therapeutic techniques and thus not prioritize the relationship (Mojtabai & Olfson, 2008).

Another study examined potential modifications of PE with 65 inpatient participants, who completed one of two variations of PE (Hoffart, Øktedalen, Langkaas, & Wampold,

2013). Participants completed 10 weeks of treatment, and reported on symptoms and alliance (WAI-S) every week, which allowed for analysis of within-and between-person effects. Task agreement was most associated with treatment outcome across PE variations. Initial task agreement (and bond) predicted greater overall decreases in PTSD symptoms, as did week-to-week changes in task agreement. Furthermore, higher initial task agreement scores (but not goal and bond scores) predicted a *stronger* association of within-person task alliance changes and within-person PTSD symptoms. Interestingly, the authors did not find reverse causality within-person (i.e., decrease in symptoms did not predict subsequent increase in alliance for any subscale), despite suggestions that this is a reciprocal relationship. Overall, the results highlight the potential importance of task agreement, especially very early in treatment, when conducting PE for PTSD.

In addition to looking at the relationship between alliance ratings and outcome, several studies looked at the effect of changes in alliance, known as ruptures (i.e., significant decreases in therapeutic alliance) and repairs (i.e., subsequent increases in alliance), on therapy outcome. One such study utilized the aforementioned sample of 9/11 responders and examined the role of rupture-repair episodes on general psychiatric outcome (Haugen, Werth, Foster, & Owen, 2017). They operationalized the presence of a rupture-repair episode as a decrease of one standard deviation in the CASF-P between sessions, followed by an increase of at least one standard deviation in the score at any point before the end of treatment. Although nearly 38% of their participants (n = 12) experienced a rupture-repair episode as they defined it, there was no significant difference in psychiatric symptom change across treatment between those who experienced a rupture-repair episode and those who did not, except for a moderate but non-significant association with the

Goals/Task subscale. Thus, therapy ruptures, if later repaired, did not seem to have a strong adverse impact on PTSD treatment outcome among 9/11 first responders.

McLaughlin and colleagues (McLaughlin, Keller, Feeny, Youngstrom, & Zoellner, 2014) similarly examined rupture-repair episodes in treatment of 118 outpatients with PTSD, although they additionally considered the effect of unrepaired ruptures on treatment outcome. They used a different measure of alliance (client-rated CALPAS), and calculated rupture-repair episodes as a reduction of CALPAS points by 0.33 after a single session and a subsequent increase of 0.33 points. Overall, when controlling for pre-treatment PTSD symptoms, higher alliance was significantly associated with lower post-treatment PTSD symptom ratings, though it was not associated with more global symptoms (i.e., depression severity). Most participants in this study (54%) did not have a rupture, and these participants evinced the lowest PTSD severity at post treatment. Notably, an unrepaired rupture (18%) predicted greater severity of PTSD at treatment outcome.

Though most alliance studies focus on treatment outcome, given the importance for treatment expectancy and client perception in outcome (Collins & Hyer, 1986; Kazdin, 1979; Noble, Douglas, & Newman, 2001), studies have begun to examine how alliance relates to these factors. For example, a recent study examined the role of alliance (using WAI-S as rated by patients) with a *previous* treatment provider in predicting treatment expectancies at the beginning of residential treatment for 837 veterans with PTSD, and the differential role this may play in racial minority (i.e., African American, Hispanic American Indian/Alaska Native, Asian/Pacific Islander, and "Other" non-White) clients (Koo, Tiet, & Rosen, 2016). Overall, higher alliance with a previous provider was significantly associated with better expectancies for current treatment. Although racial

minority participants had lower alliance overall and across bond and goal subscales, minority status did not moderate the relationship between alliance and treatment expectancy. This finding furthers the therapeutic alliance literature by suggesting that alliance formed with a treatment provider not only affects outcomes in the current relationship, but also may affect perception of future treatment. Additionally, this preliminarily shows that minority individuals may generally experience lower alliance with their providers, though this does not seem to specifically influence treatment expectancies.

Another study of client perception of treatment used qualitative methodology to assess client understanding of aspects of therapy and how this impacted their change over time (Vincent, Jenkins, Larkin, & Clohessy, 2013). The authors interviewed seven asylum-seekers who met criteria for PTSD and were currently participating in trauma focused-CBT. Interviews assessed their experiences of therapy, and authors used interpretive phenomenological analysis (IPA) to determine several common themes. One theme included importance of the therapeutic relationship, which all subjects identified at least some aspect of as being "vital" to engaging in and benefitting from therapy, supporting quantitative research that empirically reached a similar conclusion.

In summary, the literature on alliance in PTSD treatment suggests that higher levels of alliance are broadly associated with better outcomes, including decreases in PTSD-specific symptoms in psychotherapy and higher treatment attendance. This was true for overall alliance in several studies, though multiple studies emphasized the particular association of task agreement with positive treatment outcome. For some specific treatment modalities (e.g., integrated psychotherapy, anger management, online CBT), the relationship between alliance and outcome is attenuated (by factors such as number of specific techniques used,

skills development, and rater perspective) or absent. Further, although alliance with a previous provider impacts treatment expectancies for future treatment, and clients perceive alliance as important for outcome, one study suggests that alliance may *not* be associated with symptoms for long-term follow up (e.g., 12 months). Additionally, although rupture-repair episodes have been proposed as important for therapy (Kivlighan & Shaughnessy, 2000), this was not consistently found for individuals with PTSD. However, the only study to examine *unrepaired* ruptures specifically (McLaughlin et al., 2014) found that clients with unrepaired ruptures had worse outcomes than those with repaired ruptures, further supporting the general conclusion that alliance is positively associated with improvement for psychotherapy treatment for PTSD. Notably, although PTSD is generally associated with anger and aggression (Birkley & Schumm, 2016), few studies specifically examined these aspects of PTSD. Those that did suggested that alliance may not be affected by baseline anger (Forbes et al., 2008), and supported an indirect effect of alliance on anger and aggression through skills development (Mackintosh et al., 2014), providing no evidence of a relationship between therapeutic alliance and aggressive behavior, at least in PTSD.

Antisocial personality disorder

Antisocial Personality Disorder (ASPD) is highly associated with aggression; presence of repeated acts of physical aggression is one of the diagnostic criteria for the disorder (American Psychiatric Association, 2013). Despite disproportionate levels of aggression perpetrated by this population, and high barriers to successful treatment, such as the high level of resistance often found among clients with ASPD (Kaylor, 1999), only one study was found that specifically examined alliance in treating participants with ASPD.

Gerstley and colleagues (1989) examined 48 male ASPD patients treated for opioid addiction via either (a) drug "counseling" (which emphasized "providing external services rather than dealing with intrapsychic processes," [Woody et al., 1983, p. 640] and was equivalent to case management) (b) drug counseling plus supportive psychotherapy or (c) CBT. The researchers assessed alliance as reported by both clients and therapists using the HAq after session three of 24 and looked at substance use symptoms and general quality of life outcomes. It was found that both therapist and client ratings of alliance were positively associated with better overall outcome (e.g., increased employment, decreased drug use) in CBT and drug counseling plus supportive psychotherapy conditions. In contrast, there was only a non-significant trend between overall outcome and the patient and counselor alliance rating in the drug counseling condition. Thus, this very limited sample suggests alliance may be linked to psychotherapy outcome in ASPD, at least among those presenting with opioid addiction. It is still unknown to what extent alliance is associated with treatment outcome in a more general ASPD population. Although no additional studies of alliance and outcome were found specifically looking at ASPD, further information about alliance in treatment of individuals with personality disorders can be found in research on borderline personality disorder, another Cluster B disorder that includes frequent or intense displays of aggression as a diagnostic criterion.

Borderline personality disorder

The diagnostic criteria of borderline personality disorder (BPD) include unstable interpersonal relationships and high levels of anger and aggression (American Psychiatric Association, 2013), and those diagnosed with BPD tend to exhibit higher levels of self-reported and behavioral aggression (Dougherty, Bjork, Huckabee, Moeller, & Swann,

1999; Goodman & New, 2000). Thus, it is not surprising that clients with BPD are likely to drop out of treatment and have conflict with the therapist (Linehan, 1993; Smith, Koenigsberg, Yeomans, Clarkin, & Selzer, 1995). Thus, it is important to explore the extent to which alliance in BPD treatment can increase treatment adherence and outcome.

The primary treatment for BPD is Dialectical Behavioral Therapy (DBT), a therapeutic approach that integrates cognitive-behavioral and Zen techniques (Linehan, 1993). Bedics and colleagues (Bedics, Atkins, Comtois, & Linehan, 2012a, 2012b) published a pair of studies among patients with BPD examining therapeutic alliance in DBT. In these studies, alliance was measured by the therapist behavior toward client (i.e., degree of warmth-oriented "affiliation" and change-oriented "control"), client warmth ("affiliation") toward the therapist, and an overall therapist behavior "cluster" score on the SASB (Benjamin, 1974). The authors were interested in behavioral (e.g., non-suicidal self-injury: NSSI) as well as cognitive (e.g., internalizing of others' attitudes toward the self, known as "introject") outcomes. In the first study (Bedics et al., 2012a), 101 women with BPD across both DBT and community treatment by experts (CTBE) showed no overall association between therapist affiliation and NSSI or introject across treatments, when accounting for baseline ratings of the dependent variables. However, within the DBT condition, therapist affiliation predicted greater affiliative patient introject and less NSSI, whereas in the CTBE condition therapist affiliation actually had a *negative* effect on subsequent introject and *increased* NSSI.

The second study (Bedics et al., 2012b), which utilized 41 women from the DBT subsample, used the same SASB rating scales to examine the effect of the dialectical stance (i.e., therapist balance of control and affiliation techniques), therapist-rated patient

affiliation toward therapist, and therapist-rated control on patient improvement (and vice-versa). They then explored the effect of dialectical stance on multiple levels: within-therapists (i.e., varying by patients within a caseload) and between-therapists (i.e., varying across providers). They found that overall, the dialectical stance and patient affiliation with therapist each predicted subsequent patient positive introject and that more positive introject subsequently improved affiliation and control techniques. The dialectical stance finding held for each therapist within their caseload, but they found the *opposite* relationship for between-therapist associations, such that a balance of control and affiliation was predictive of more negative patient introject the following week. Thus, while a dialectical stance might encourage negative introject the following week broadly across all patients in a caseload, this pattern shifts when it is broken down to individual patient-therapist dyads, which ultimately leads to a more positive patient introject over time. Together, these results suggest that both affiliative and dialectic stances taken by DBT therapists leads to better behavioral and cognitive outcomes.

The results from these studies suggest that alliance, as conceptualized in DBT, is associated with treatment outcome. Analysis of the same treatment study using a more traditional measure of alliance (CALPAS), rated by both patients and therapists in DBT and CTBE at four time-points across yearlong treatment, found similar results (Bedics, Atkins, Harned, & Linehan, 2015). Overall, working capacity was rated higher by DBT than CTBE therapists (but not patients) throughout treatment, and strategy consensus in early treatment was rated higher by DBT than CTBE therapists early in treatment. Furthermore, therapist ratings of alliance were associated with reduced suicide attempts (SA) across both DBT and CTBE, though patient-rated patient working capacity was only

associated with decreased SA in DBT. Higher patient-rated (but not therapist-rated) alliance in DBT also predicted a significant decrease of NSSI. In contrast, for CTBE, client-rated alliance was unrelated to NSSI and therapist-rated alliance actually predicted *increased* NSSI, which supports the earlier finding that therapist bond in CBTE increased problematic behaviors (Bedics et al., 2012a). Again, these findings suggest that high levels of therapeutic alliance lead to improvement in DBT patients but may increase problematic behaviors in non-DBT treatments for BPD.

All the studies of DBT and alliance reviewed thus far were conducted by the research team that developed DBT. Outside researchers have conducted similar studies that examined alliance (as traditionally measured) in DBT as compared to general psychiatric management (GPM; McMain et al., 2009). In one such study, researchers assessed alliance (client-rated WAI-S) and outcomes in a sample of 87 individuals with BPD at baseline and every 4 months for a one-year research period of open-ended treatment (Hirsh et al., 2012). Outcome measures included a BPD diagnostic checklist score and associated psychiatric symptoms (e.g., depression, anger, aggression, and SA/NSSI) measures. Using individual growth models, the authors found significant increases in alliance over time. Additionally, for both treatment conditions accounting for baseline levels of the dependent variables, level of alliance and rate of alliance improvement over time predicted symptom reduction across most measures (except SA frequency, which was already low at baseline). A follow-up study using 182 participants from the same initial randomized trial (Wnuk et al., 2013) showed that across both conditions, treatment completers had significantly higher alliance than those who dropped out; in fact, lower alliance was the strongest predictor of dropout among other factors (e.g., Axis I diagnoses, SAs).

An additional study used a small subset of six participants from the DBT condition of the larger RCT (3 recovered, 3 unrecovered), categorized based on a "recovery criterion" incorporating self-report and behavioral outcomes as well as having available tapes for the first four sessions (Boritz, Barnhart, Eubanks, & McMain, 2018). Observers coded alliance using the Rupture Resolution Rating System (3RS; Eubanks, Muran, & Safran, 2015) to determine instances of "withdrawal" (i.e., client silence or physical withdrawal) and "confrontation" (i.e., client anger or argumentativeness) ruptures, as well as resolution strategies used by therapists. Overall, both recovered and unrecovered clients experienced ruptures. Recovered clients had significantly fewer withdrawal ruptures than unrecovered clients. There was no difference in frequency of confrontation ruptures or resolution strategies in recovered versus unrecovered clients. In addition, the researchers looked at the pattern of ruptures and overall alliance and found that confrontation ruptures and withdrawal ruptures had a greater impact on overall alliance for unrecovered clients; in contrast, resolution strategies had a more significant impact on overall alliance in recovered clients. Taken together, these studies support the evidence that general alliance is associated with reduced dropout rates and better outcomes across measures for both DBT and GPM; further, they are is the first to find that this is the case for anger and aggression outcomes specifically. It was demonstrated that withdrawal ruptures may be particularly damaging for treatment response and that the pattern of response to ruptures may also be important in DBT specifically.

Given the efficacy of DBT for BPD, additional researchers have adapted and examined specific aspects of DBT. In a community clinic, 24 adults with BPD were randomized to either (a) DBT-informed individual therapy, which was based on Linehan's (1993)

theoretical approach but was adapted to include psychodynamic schema work and individual skills training (and excluded weekly skills groups), or (b) client-centered individual therapy (CCT; Turner, 2000). The researchers administered an early version of the HAq (Alexander & Luborsky, 1986) at 6 months into the 12-month intervention. Both treatments were found to be efficacious and were also associated with comparable levels of alliance. Repeated measures analyses showed that helping alliance was significantly associated with all outcomes across treatments, most significantly suicidal ideation, SA, and NSSI.

Although the aforementioned study did not have formal skills groups, skills acquisition in DBT is thought to be a key aspect of treatment (Linehan, 1993). One study looked at the role of alliance in the relationship between skills acquisition and outcome in DBT (Barnicot, Gonzalez, McCabe, & Priebe, 2016). Specifically, the study examined the role of therapy processes (primarily skills usage, also including alliance) on dropout and self-harm across time, measured in two-month intervals of a 12-month study period among 70 patients with BPD in ongoing DBT treatment. Given the community setting, researchers used the Scale to Assess Therapeutic Relationships in Community Mental Health Care: Patient Version (STAR-P; McGuire-Snieckus, McCabe, Catty, Hansson, & Priebe, 2007) as the alliance measure. Higher alliance was initially associated with lower self-harm and lower likelihood of dropout at the next time point (accounting for within-person variability). However, when entered into a multilevel model with other factors (skills usage, treatment credibility, self-efficacy), alliance was no longer significantly associated with either outcome. Though the authors did not examine this relationship directly, it is possible that alliance contributes to skills development and usage, which then explains

treatment retention and reduced self-harm. Thus, given other research supporting the importance of alliance for DBT outcomes, the current study proposes one possible explanation: alliance may be important for acquiring and using skills, whether or not these skills are delivered in a group format.

Non-DBT therapies have also sought to determine idiosyncratic aspects of therapy that can develop alliance that targets BPD specifically. An early study (Yeomans, Gutfreund, Selzer, Clarkin, Hull, et al., 1994) specifically looked at "contract setting" at the beginning of psychodynamic psychotherapy, which is seen as particularly important for establishing alliance in treatment for BPD (Horvath et al., 2011). The authors rated the CALPAS based on session tapes of early ("contract-setting") sessions from 20 women with BPD recruited from an inpatient sample (10 completers). Their primary outcome measure was treatment dropout. They found that CALPAS Therapist Understanding and Involvement subscale score was significantly positively correlated with length of time in treatment. However, included in a regression with the other significant predictor (therapist contract setting), this was attenuated to a non-significant trend, suggesting that the contract setting aspect of treatment is more explanatory for their dropout outcome than alliance itself.

Another study compared Interpersonal Group Psychotherapy (IGP), which is designed to target relational problems in BPD, and Individual Dynamic Psychotherapy (IDP), which takes an internally-focused approach (Marziali, Munroe-Blum, & McCleary, 1999). Thirty-four patients with BPD completed the TAS or the GTAS during multiple sessions, though this was subsequently separated in to "early" (session three for most participants) and "later" (session eight for most participants) alliance. Outcome measures

included social performance, depression, other psychiatric symptoms, and behavioral dysregulation. For those in IDP, early and later alliance significantly predicted change across all outcome measures except behavioral dysregulation at 12 months, though at 24 months, there was only a non-significant trend for social performance. For IGP, later alliance significantly predicted all outcomes except behavioral dysregulation at both 12- and 24-months, while early alliance evinced no significant association with outcomes. Neither early nor late alliance was significantly associated with time in treatment for either condition, but researchers did not measure dropout explicitly, so it is not clear how alliance affects treatment retention. These findings suggest that later alliance was a reliable predictor of outcomes for both IDP and (more enduringly) for IGP, while early alliance was associated with a positive outcome for IDP only. These differences may be a function of the therapy mode (group versus individual) or approach (dynamic versus interpersonal) and may conflate late alliance ratings with symptom improvement at the end of treatment. The study design does not allow for these factors to be teased apart.

Research has also explored the role of alliance change over time, including in a trial of cognitive-based schema focused therapy (SFT) compared to psychodynamic-based transference-focused therapy (TFT) for BPD (Spinhoven, Giesen-Bloo, van Dyck, Kooiman, & Arntz, 2007). Seventy-eight participants and their therapists completed the WAI at three months (“early”), 15 months (“mid-treatment”), and 33 months (“late treatment”) of a three-year treatment. Therapists also completed a self-report measure of alliance that assessed therapist frustration with patients. Every three months, participants were interviewed to determine symptom severity score on the BPD Severity Index (BPDSI-IV). Dimensional severity scores, dichotomous “recovery” (BPDSI-IV < 15) and "reliable

change" (BPDSI-IV change of ≥ 11.7) criteria, and time to dropout were the primary study outcomes. Overall, early therapist- and patient-rated alliance was higher for SFT than TFP, and these ratings as well as therapist-rated frustration, significantly predicted time to dropout across conditions. Further, patient- (but not therapist-) rated alliance increased across both treatments over time, while therapist frustration increased in TFP but decreased for SFT over time. Early alliance ratings did not predict change in BPD symptom severity at three years of treatment. Patient-rated early alliance initially predicted the likelihood of meeting the recovery and reliable change criteria; however, this became non-significant when treatment condition was added to the model. However, *change* in patient-rated alliance (but not therapist-rated alliance or frustration) from early- to mid-treatment predicted a decrease in BPD severity from mid-to late-treatment. Thus, while early patient- and therapist-rated alliance is associated with dropout irrespective of treatment, it may be that the *growth* of patient-rated alliance during the first year is the mechanism by which overall reduction of BPD symptom severity is facilitated, irrespective of treatment condition.

Another RCT examined alliance at regular intervals in the treatment of BPD using GPM versus a motive-oriented therapeutic relationship (MOTR), the latter of which emphasizes therapist responsiveness to specific patient idiosyncrasies (Kramer et al., 2014). Therapists and clients (N = 60) both completed the WAI at every session, and clients completed the Outcome Questionnaire (OQ-45) at intake and after the 10th (and final) session; a change score of the OQ-45 was used for outcome analyses. Alliance across raters was greater for MOTR than GPM. Mean patient alliance was not associated with outcome for either treatment (though there were some positive correlations for individual MOTR

sessions, some early and some later in treatment). Interestingly, mean therapist related alliance was *negatively* correlated with outcome in MOTR (and non-significantly negatively correlated in GPM). The authors hypothesize that this surprising finding in MOTR may have resulted from therapists assessing the relationship more negatively due to the client population or therapeutic orientation, and this assessment led to a more "mindful" conceptualization and therapeutic interaction that facilitated symptom improvement, though the relationship ratings remained inversely proportional to outcome. This may also reflect the effect seen in other studies that an overly validating or warm therapist may worsen BPD symptoms; although this is less likely given the positive association in client-rated alliance, the lack of significant mean associations in MOTR patient-rated alliance leaves this possibility open. The disparity between alliance-outcome relationships for therapists and patients in MOTR may be indicative that therapist perception of alliance with "difficult" clients may not be reflective of actual alliance, consistent with previous findings showing client ratings of alliance are more positively associated with outcome than therapist ratings (e.g., Martin et al., 2000; Spinhoven et al., 2007).

Although many studies were primarily interested in specific aspects or approaches to treatment of BPD (e.g., DBT, "expert" treatment, contract-setting in psychodynamic therapy, MOTR), one study primarily explored the role of alliance in general community treatment "as usual" for BPD (Gunderson, Najavits, Leonhard, Sullivan, & Sabo, 1997). The authors recruited 33 BPD patients who had begun treatment at a hospital. Patients were mostly treated with dynamically-informed therapies, but some were CBT-based. Alliance was measured with the HAq, completed by patients and therapists six weeks after

beginning therapy. Follow-up assessments were conducted at six months and at one through five years from intake, though they only used outcomes from year three (e.g., drop-out, psychiatric symptoms, social adjustment) for the study analyses and controlled for these outcomes as measured at week six. Therapist-rated alliance predicted treatment dropout as well as social adjustment at three-year follow-up. However, patient- and therapist-rated alliance were not broadly associated with any other outcomes, suggesting that for general treatment, alliance may not be significantly associated with treatment improvement. The study's findings are limited by small sample size (n = 15 at three-year follow up), though they are consistent with other research that failed to find a relationship between alliance and outcome in community-based treatments (e.g., Bedics et al., 2015; Spinhoven et al., 2007).

Overall, evidence suggests that in the treatment of BPD, alliance is associated with outcome, though this seemed to be moderated somewhat by type of treatment. Alliance in DBT, one of the most commonly used and most effective therapies for BPD, is positively associated with symptom reduction whether alliance is traditionally measured or operationalized based on DBT-specific theory. Further, research suggests that withdrawal ruptures, in which the client pulls away emotionally and/or physically following a drop in alliance, are associated with poorer outcomes. This is not surprising as DBT explicitly focuses on the patient-therapist relationship and developing interpersonal skills. Accordingly, other therapy modalities that focus on building interpersonal bonds (e.g., IGP, SFT, CCT) seem to have a stronger alliance-outcome relationship, particularly later alliance. In contrast, preliminary research on alliance among general community treatment providers (which tend to be less structured and less relationally-focused) largely failed to

show a relationship between alliance and outcome. In studies where dropout was measured, alliance (particularly when rated by the patient) seems to be a protective factor for reducing dropout across treatments. Thus, it may be that outcomes for BPD patients are best when alliance is explicitly facilitated, whether through interpersonal-specific therapy techniques or approaches or focusing on reducing ruptures, such that the client perceives a positive therapeutic relationship. Importantly, as with the PTSD literature, few studies of therapy for BPD explicitly examined anger or aggression as therapy outcomes. The one study that did supported a positive relationship between therapeutic alliance and reduction of anger and aggression, further strengthening the tentative evidence that therapeutic alliance improves aggressive behavior, as well as generally improving outcomes for those who may engage in high levels of aggression.

Primary aggression

General aggression and violence, not associated with a particular diagnosis, has been proposed as one of the most difficult challenges to alliance formation (DiGiuseppe et al., 1994), and thus understanding the role of alliance in the treatment of aggressive behavior specifically is key. While the studies reviewed above can help examine the impact of alliance in treatment outcome for aggression-associated diagnoses, most did not examine aggression directly. Studies that included participants who explicitly engage in aggressive or violent behavior can further clarify this relationship. First, given the high frequency of violence seen in inpatient populations regardless of diagnosis (Foster, Bowers, & Nijman, 2007; Wells & Bowers, 2002) the role of alliance in reducing this aggression in inpatient settings was reviewed. Additionally, research with individuals who were convicted of

violent offenses was reviewed, to begin to elucidate the role of alliance in treatment specifically designed to target and reduce aggressive behavior.

Inpatient adults

Violence and aggressive behavior are significant issues for patients in inpatient psychiatric facilities (Foster et al., 2007; Wells & Bowers, 2002), and several studies have therefore investigated the impact of alliance on aggression directly within this population. An initial study sought to directly link therapeutic alliance to violent behavior, using a university-based inpatient intake sample of 328 adults (Beauford, McNiel, & Binder, 1997). The researchers developed a one-item scale to rate alliance during the intake session based on physician notes. They used the Overt Aggression Scale to rate aggressive behavior. The authors dichotomized alliance into "good" and "bad," and then conducted Chi-square analyses to examine the relationship between alliance and the presence of aggressive behavior (i.e., physical attack and/or use of fear-inducing behavior, 32% of sample) during the first inpatient week. Poor initial alliance was significantly associated with presence of aggression during the first week even after adjusting for other significant correlates of aggression (e.g., diagnosis, demographic factors, and personality factors). Thus, despite basic analyses and a very simple rating scale, the authors were able to show that initial alliance predicts less violent behavior during the first week of an inpatient stay. It is important to note that the relationship developed during an intake session is likely different than that developed during the first few sessions of therapy, and thus may be a different alliance construct than others described in this review.

Another study (Cookson, Daffern, & Foley, 2012) similarly examined 79 patients who had completed an intake at an acute inpatient psychiatric unit. Patients completed the WAI,

a rating of perceived admission coercion, and an assessment of psychotic symptoms at intake. Following patient discharge, observers completed an Overt Aggression Scale (based on review of incident forms and an interview with the patient's primary nurse) for presence of patient aggression during their stay. The authors found that the majority of participants exhibited aggression (75.9%), with no significant difference in alliance between participants who did and did not engage in aggression. Notably, alliance was measured across all staff, thus it failed to account for potentially important differences between nurses, doctors, and other staff. Furthermore, the very short-term nature of the stays and lack of clarity about the type of treatment (i.e., psychotherapy) that occurred, the construct measured may not reflect true "therapeutic alliance," similar to the previous study reviewed (Beauford et al., 1997).

Overall, the limited research on alliance and violence among inpatients is mixed. It is possible that the milieu of inpatient stays requires a more nuanced measure of alliance to account for different alliances that may be formed with different treatment providers. It may also be the case that initial alliance with hospital staff, which may or may not even include psychotherapy, only predicts subsequent aggression over the immediately following time frame (i.e., one week) in the psychiatric setting, rather than having long-term predictive effects. Although not identical to psychiatric inpatient samples, research on participants who engage in high levels of aggression in residential facilities may help elucidate these discrepancies. Thus, the literature on justice-involved participants, specifically violent offenders, is an important addition to this review.

Violent offenders

Some of the most difficult-to-treat clients are those who are incarcerated for committing violent offenses (Taft, Murphy, King, Musser, & DeDeyn, 2003). Notably, although up to 60% of incarcerated offenders may have a diagnosis of ASPD (Moran, 1999), this is not invariably associated with violent recidivism (Glover, Nicholson, Hemmati, Bernfeld, & Quinsey, 2002). Indeed, individuals convicted of a violent offense may have a variety of diagnoses or none at all (Gunn, 2000; Strick, 1989). Independent of diagnosis, these individuals are often mandated to treatment for their violent behavior, which can make forming alliance particularly difficult (Wong & Hare, 2005). The homogeneity of the population with regard to violence also makes this literature key for clarifying the importance of alliance in the treatment of aggressive clients.

One of the most-researched justice-involved populations includes those who have engaged in intimate partner violence (IPV). One such study (Rondeau, Brodeur, Brochu, & Lemire, 2001) utilized dropout as an outcome in a study of 286 men convicted of partner abuse across eight centers conducting process-focused group therapy for perpetrators of IPV. The authors examined a number of factors that may be related to dropout, including internal, external, and interactive factors (one of which was alliance, as measured by the patient-rated CALPAS). Therapeutic alliance was the strongest predictor of treatment perseverance, with those reporting a below median score on the CALPAS over four times more likely to drop out of treatment. With regard to aspects of alliance, participants who did not drop out reported higher working capacity, engagement in the therapy relationship, and consensus on therapeutic strategies.

In addition to examining dropout, outpatient studies of those who have been convicted of violent offenses have emphasized the impact of alliance on actual aggression

reduction. A study of outpatient CBT for 107 men previously convicted of IPV (Taft et al., 2003) measured alliance (client- and therapist-rated WAI) at 4 time points, which were reduced to "early" and "late" alliance. Multiple outcomes, including homework compliance, session attendance, and collateral partner reports of abuse (measured six months prior to intake and six months after completion of treatment for baseline and follow-up respectively; the baseline measure was controlled for in the analyses) were assessed. Early WAI ratings were not associated with session attendance. However, early therapist WAI ratings predicted subsequent homework compliance, as well as decreased partner-reported psychological and (at a trend level) physical abuse. The effect of early WAI ratings on partner-reported abuse remained significant when controlling for homework compliance, suggesting that the association between alliance and violence goes beyond encouraging compliance with aspects of treatment. Notably these findings are in contrast to prior research showing that client-rated alliance is a better predictor of behavioral outcomes than therapist-rated alliance (e.g., Horvath & Symonds, 1991; Spinhoven et al., 2007).

Further exploring the population of those who have perpetrated IPV, another study examined the role of minority status in the relationship between alliance and aggressive behavior, as rated by partners of IPV perpetrators (Walling, Suvak, Howard, Taft, & Murphy, 2012). This study included 107 participants, roughly evenly divided between White and racial minority patients, who had been referred for IPV perpetration to one of 13 programs. Therapists and patients completed alliance ratings (therapist: WAI-S, patients: WAI) at regular intervals (sessions three, five, 11, and 13) throughout treatment, and the authors used collateral reports of partner abuse as the outcome measure. Authors

found that variation in the trajectory of alliance was significantly accounted for by client race in client-rated, but not therapist-rated, alliance and thus only examined client-reported alliance as a predictor of physical abuse. Results showed that absolute levels of client-rated alliance were not significantly predictive of change in abuse perpetration over time. However, for minority (but not White) participants, increases in client-reported working alliance over time was associated with a substantial decrease in abuse from pre- to post-treatment, which plateaued and then continued to decrease between post-treatment and follow-up. In contrast, minority participants who had no change in client-rated alliance over time had a decrease in physical abuse from pre-to post-treatment, but a slight *increase* in physical abuse from post treatment to follow-up. This suggests that for IPV perpetrators, improving alliance over time may be particularly important for minority participants. It also may help explain the lack of relationship found in other studies of similar populations, which included participants from a variety of racial backgrounds but did not specifically examine minority versus White groups.

The previous studies focused on treatment directed solely at the (typically male) abuser. However, one study examined alliance as it related to group therapy for 70 married couples in which the husband engaged in IPV (Brown & O'Leary, 2000). Both partners completed measures of marital adjustment, emotional abuse, and physical abuse at pre-treatment (which was used as a covariate) and post-treatment. Two observers rated alliance using the WAI at session one. It was found that session one observer-rated husband therapeutic alliance predicted decreased post-treatment mild and severe psychological and physical aggression. However, husband therapeutic alliance did not predict marital satisfaction or dropout. Observer-rated wife therapeutic alliance did not predict dropout or

any other study outcomes. As the purpose of therapy is to change husband behavior, it is unsurprising – and important – that husband alliance better predicted outcomes than wife alliance. However, as this study did not employ therapist or client ratings of alliance (which other studies have shown to be good predictors of outcome), it is not clear how perceptions of alliance by participants in treatment may be related to outcome.

In addition to the previous studies, which have all used quantitative methods to examine alliance, some studies thus far in the literature on treatment with violent offenders have included qualitative methods to expand understanding of this particular population. One study examined the role of alliance in outcome of group therapy for perpetrators of IPV (Boira, del Castillo, Carbajosa, & Marcuello, 2013). Participants were 27 men who had previously completed a CB and psychoeducational group intervention. Three months after treatment, the participants completed the WAI, as well as an unpublished measure of therapy utility (e.g., improved conflict resolution, reduction in aggressive responding), interest in therapy topics, group climate, and desire to resume a relationship with victim. The authors used Chi-square analyses and correlations to determine associations and followed up with interviews and conducted qualitative analyses to explore additional themes related to treatment process and outcome. WAI scores (except the Goals subscale) were positively associated with ratings of usefulness of the therapy (including improvement in conflict resolution and reduction of aggression), and ratings of interest in therapy. WAI was not associated with group climate ratings or the desire to get back with the participant's partner/victim. The secondary qualitative analyses of interviews with participants supported these findings, and interviews with the participants themselves also

revealed that bond with the therapist was perceived as one of the most important factors for their overall improvement in behaviors such as conflict resolution and empathy.

A final qualitative study of the IPV treatment-alliance relationship is also the only study that explored alliance in both male and female perpetrators of IPV (Rosenberg, 2003). The author interviewed 70 participants following completion of a 52-week court-mandated intervention program for domestic violence and collected information about what was most helpful about the program, whether they had learned anything lasting about themselves or the program, how they felt about the length of the program, and whether there were any drawbacks to the program. The author collected and organized this data to determine patterns and common features of the responses. He reported that the relationship with group leader was the second most commonly mentioned helpful aspect of therapy for addressing their violent behavior and was mentioned by 86% of interviewees. This research supports previous findings that perceived therapeutic alliance by patients is important for feelings of confidence and helpfulness of treatment.

Treatment for other (non-IPV) violent offenders has also examined the alliance-outcome relationship. One study examined the role of alliance as an aspect of the theoretical risk-need-responsivity model for treating 64 adult males convicted of a sexual offense attending an intensive inpatient treatment program for high-risk sex offenders (Beyko & Wong, 2005). Although some sexual offenses may not be committed through aggressive means (e.g., molestation of a child through coercion), all participants were convicted of a contact offense, and over two-thirds of this sample was convicted of rape, an inherently violent offense. Further, it was found that all participants were generally aggressive (e.g., had pre-treatment violent offenses and/or engaged in aggressive behavior

on the unit), warranting inclusion in the current review. The authors used client-rated WAI as the measure of alliance and used discriminant function analysis to classify treatment completers and non-completers. Approximately half of the participants dropped out of treatment, with no difference in WAI score between those who did and did not drop out of treatment. This provides initial evidence that alliance may not be integral to treatment completion for sexual offenders.

Another study of those convicted of a sex offense extended this research to the role of psychopathy and alliance on both treatment dropout and post-release recidivism (DeSorcy, Olver, & Wormith, 2017). This study included 111 incarcerated participants who were admitted to a CBT-based risk-need-responsivity treatment program for moderate- to high-risk sex offenders. Participants were divided into high and low psychopathy groups based on their score on the Psychopathy Checklist. Given the link between psychopathy and aggression (Reidy, Zeichner, Miller, & Martinez, 2007), this sample is also pertinent to the current review. Researchers investigated in how psychopathy and alliance (among other things) interacted to predict dropout and recidivism within an average of 10 years following re-entry. Participants completed the full WAI three months after beginning the program, which typically lasted six to nine months depending on the individual client. Client-rated WAI was not significantly associated with either treatment dropout or subsequent recidivism (including overall recidivism, sexual recidivism, or violent recidivism). As alliance was high across both psychopathy groups, it may be that demand characteristics of incarcerated participants completing a rating of their therapists led to artificially high ratings, which were not useful predictors.

Although recidivism is clearly an important outcome among violent offenders, a potentially more relevant outcome would be reduction or cessation of violence. To examine the impact of alliance in reducing violence, therapist, client, and observer alliance (WAI) was assessed at four time points (weeks two, 10, 18, and 26) during a treatment group for 150 men incarcerated for violent crimes (Polaschek & Ross, 2010). Outcome was measured using the dynamic violence risk items of the Violence Risk Scale. Alliance increased over the first three time points and plateaued at the fourth. Although clients (as opposed to therapists or observers) reported the highest level of alliances, the study only examined the relationship between dynamic risk and alliance as rated by observers and therapists to test the "objectivity" of therapist alliance ratings. Observer- (but not therapist-) rated improvement in alliance over time predicted change in behavioral dynamic risk. Similarly, initial observer-rated alliance was positively associated with time in treatment, but therapist-rated alliance was not. However, initial alliance rating for both observer and therapist was unrelated to dynamic risk change. It is important to note that because the participants were in a controlled environment (i.e., incarcerated), it is not clear if this would generalize to behavior once released from incarceration. Generally, observer-rated alliance was most related to time in treatment and behavior change, but not therapist alliance, suggesting that observers might have the most objective, and thus predictive, perspective.

Overall, research in patients with violent behavior further suggests that alliance is important for treatment outcome. With inpatient adults, alliance with the intake physician primarily seems to have an impact on initial acts of violence, but this may not be the case when alliance is rated for multiple providers at once or for entire inpatient stays. For justice-involved adults convicted of violent offenses, alliance is broadly associated with improved

attendance and reduction of risk and actual violent behavior. These findings were supported both quantitatively and qualitatively, with the use of both rating scales and interviews revealing that perception of alliance by clients and rating of alliance by observers was associated with improvement in aggression-related outcomes. Importantly, multiple studies that examined dropout did not find that alliance was significantly associated with treatment retention. However, two of these studies involved sex offenders, who may have different needs in therapy than those who engage in other forms of violence (Olver, Stockdale, & Wormith, 2011), and one study of intimate partner violence did find that aspects of alliance were significantly higher in non-dropout participants, suggesting that the role of alliance in treatment attendance is not clear for violent offenders.

Discussion

Therapeutic alliance has been shown repeatedly in the psychotherapy literature to be an important factor for treatment outcome, but this relationship has not been well established for the subset of therapy participants whose problems specifically involve aggressive and violent behavior. This review sought to fill this gap by examining the current literature on the relationship between alliance and treatment outcome in adults who may engage in problematic aggression, including those with diagnoses of PTSD, ASPD, and BPD and individuals who show a propensity toward violent behavior (i.e., psychiatric inpatients, violent offenders).

Overall, most studies found that stronger therapeutic alliance was associated with better outcomes, consistent with the broader body of literature on therapeutic alliance. The positive alliance-outcome relationship was found across treatment populations examined (i.e., PTSD, personality disorders, and clients with primary aggression) and with nearly all

standard measures of alliance (except CASF-P, which was only used by one research team; Haugen et al., 2016, 2017). Further, these studies were bolstered by qualitative examinations of patient perspectives on alliance (Boira et al., 2013; Rosenberg, 2003; Vincent et al., 2013) and the role of alliance on patient expectancies of future treatment outcome (Koo et al., 2016), which indicate that patients themselves believe the therapeutic relationship to be important for successful treatment.

Importantly, "successful treatment" can be defined in many different ways, and accordingly, the reviewed studies supported the impact of alliance on a range of outcomes measured. As improvement in symptoms or functioning can only be made if the patient participates in treatment, treatment engagement and dropout were examined as outcomes in many of the studies reviewed. Encouragingly, in most of the studies that used treatment engagement/retention as an outcome, alliance was positively associated with patient engagement (e.g., homework adherence, interest in therapy; Boira et al., 2013; Keller et al., 2010), as well as longer time in treatment and resistance to dropout (Gunderson et al., 1997; Rondeau et al., 2001; Wnuk et al., 2013). This supports the notion that although clients who may be prone to anger or aggression can be resistant to treatment (DiGiuseppe et al., 1994; Howells & Day, 2003) and have high levels of dropout (e.g., Heinssen & McGlashan, 1988; Hornsveld, 2005), alliance may serve as a protective factor against these barriers and allow for treatment to be effectively implemented.

Beyond merely participating in treatment, it is important to understand how emotions, cognitions, and/or behaviors were affected by alliance in treatment, and thus post-treatment symptoms and functioning was examined in many studies reviewed. This included outcomes specific to the presenting problem (e.g., PTSD diagnostic severity,

spousal abuse for IPV perpetrators) as well as associated symptoms (e.g., depression, general psychiatric functioning, anger/aggression). Notably, most studies included symptoms or diagnoses specific to the disorder at hand, and for the majority of the studies using these outcomes, therapeutic alliance predicted improvement in these symptoms or diagnoses (e.g., Brown & O'Leary, 2000; Forbes et al., 2008; Ruglass et al., 2012; Turner, 2000). This promising pattern supports the value of alliance for improving specific outcomes across a range of presenting problems, including those traditionally considered particularly complex or difficult. However, for studies that looked at a broader range of symptom outcomes, results were more mixed. In some cases, alliance was associated with improvement in general functioning (Hirsh et al., 2012; Kramer et al., 2014; Marziali et al., 1999), and concomitant symptoms (e.g., depression/anxiety; Knaevelsrud & Maercker, 2007; Marziali et al., 1999) but in roughly a third of the studies that looked at these broader outcomes, this association was not found (e.g., McLaughlin et al., 2014; Ruglass et al., 2012). Thus, while alliance seems to have a clearer relationship with the targeted behavior or symptoms, it may not significantly impact more general or adjacent outcomes in all cases. This may be because the high-risk nature of primary treatment targets of those in the populations examined (e.g., suicide, impulsivity, other-directed violence) may direct treatment planning and alliance formation toward working on these problems, and less so on other outcomes. However, it would be expected that secondary outcomes would improve alongside primary treatment targets, though maybe not to the same degree, which may be some papers reviewed did support the alliance-outcome relationship with broader outcomes. Further research should confirm or clarify these mixed findings. Overall, the studies reviewed largely support the notion that for individuals who may engage in

problematic aggression, developing a good therapeutic alliance is associated with a more favorable psychotherapy outcome.

In fact, only seven of the 38 studies reviewed did not find any association between alliance and the outcomes examined. Notably, the only two studies that utilized a sample of sex offenders (Beyko & Wong, 2005; DeSorcy et al., 2017) are included in this minority, suggesting that for this specific population, alliance may not be as important for treatment outcome. This could be because the sex offender treatment model may seek to prioritize risk assessment and management (Hanson & Bussiere, 1998) rather than developing a therapeutic relationship. Another possibility is that the lack of an association between treatment outcome and alliance among sex offenders was a function of restricted variance (i.e., alliance or treatment improvement were too low to evince a significant association). On the contrary, alliance was high in both studies and there was considerable variability in treatment response (i.e., approximately half dropped out in one study [Beyko & Wong, 2005] and approximately half re-offended in the other [DeSorcy et al., 2017]). This supports the former possible explanation, though additional research is needed to clarify the role of alliance in treatment of those convicted of a sex offense in particular.

Three of the remaining five studies that failed to find an association between alliance and outcome used uncommon measures of alliance (Brady et al., 2015; Haugen et al., 2016, 2017). Such measures may not fully capture the same construct as more commonly used measures of alliance, particularly as a relationship between alliance and treatment outcome was found in so many other studies of a similar population using more common measures (e.g., Forbes et al., 2008; McLaughlin et al., 2014). The final two studies that did not find a direct alliance-outcome relationship utilized a measure of group alliance

only (Mackintosh et al., 2014) and asked participants to rate their relationship with a series of providers using a singular rating of overall alliance (Cookson et al., 2012); thus, it may have been challenging in these cases to accurately reflect alliance with any single therapy provider, setting these studies apart from the others reviewed. Thus, population or measurement issues may have impacted the otherwise consistent alliance-outcome relationship found in the studies reviewed.

However, it is worth noting that two of the studies that failed to directly link alliance with treatment outcome did find that the effect of alliance may be attenuated by other factors, such as development of coping skills during treatment (Mackintosh et al., 2014) or use of highly directive techniques by the therapist (Haugen et al., 2016), indicating that alliance may play a more nuanced role in the therapeutic process. These studies were not entirely anomalous; even studies that showed a positive relationship between alliance and treatment improvement also indicated some common factors that may impact this relationship, including therapeutic approach, rater perspective, and potential mechanisms.

Treatment Approach

Although a positive association between alliance and outcome was found in many therapeutic approaches (e.g., cognitive-behavioral, psychodynamic) and modalities (e.g., group, individual), a number of studies that directly compared treatment approaches suggest there are some key exceptions. Most notably, several studies suggest that alliance is important for psychotherapy specifically, and this may not apply to non-psychotherapy treatments. For instance, the two studies to compare psychotherapy versus alternative treatments found that alliance was associated with treatment engagement and outcome in psychotherapy, but not medication management (Keller et al., 2010), or case management-

focused drug "counseling" (Gerstley et al., 1989). Although only compared in a few studies, this provides initial evidence that alliance may be a less important factor for treatment outcome for non-psychotherapy approaches. This may be in part due to the centrality of the therapy relationship in psychotherapy relative to these other approaches. This is supported by the aforementioned study showing that alliance among non-therapist treatment providers (e.g., nurses, support staff) was not associated with violent behavior (Cookson et al., 2012).

Additionally, although alliance can be associated with treatment outcome for a broad range of psychotherapies, this relationship seems to be complicated by the therapeutic content, particularly for individuals with BPD. Therapist- and patient-rated alliance in DBT, a highly-structured relationship-oriented treatment for BPD (e.g., Bedics et al., 2012a; Bedics et al., 2015; Turner, 2000), as well as patient-rated alliance in less-structured relationally-focused therapies (Kramer et al., 2014; Turner, 2000), were positively and robustly associated with both general and specific outcomes. In contrast, behavioral and cognitive outcomes *worsened* with higher therapeutic alliance in two studies of non-behavioral CTBE for BPD (Bedics et al., 2012a; Bedics et al., 2015), and there was no evidence for a relationship between alliance and outcome for "general" treatment (Kramer et al., 2014). These findings may be due to the non-directive approaches of the "general" or "community" treatments, which might fail to integrate change strategies or develop relationship-building skills, leading to worse cognitive and behavioral outcomes for those with BPD. In contrast, in an aforementioned study of a relationship-oriented therapy in which patient-rated alliance was associated with better outcomes, higher therapist-rated average alliance was associated with *worse* psychiatric outcome for those with BPD

(Kramer et al., 2014). Another study that could inform these seemingly contradictory findings found that a psychodynamic therapy evinced effects of both early and late alliance, while a relationally-focused therapy only showed an effect of later alliance on post-treatment outcomes (which could be confounded with symptom improvement over the course of treatment). However, the relational treatment was delivered in a group format, while the dynamic condition was an individual therapy, limiting interpretability of this finding. Thus, further research is needed to determine the role of alliance in general, non-relationally focused treatment for BPD.

Rater Perspective

As has been seen in previous alliance research, this review supported the idea that alliance can be predictive of outcome regardless of who is rating the alliance (patient, therapist, or observer). Nearly all studies reviewed utilized patient/client rating for their alliance measure, and many used only this rating to measure alliance. This may be the result of a persistent belief that client ratings of alliance are most predictive of outcomes, as suggested by an early meta-analysis (Horvath & Symonds, 1991). Indeed, many of the studies that only used one rater perspective did find that patient rating of alliance was significantly associated with outcome (Barnicot et al., 2016; Boira et al., 2013; Hirsh et al., 2012; Rondeau et al., 2001), as did studies using therapist (Bedics et al., 2012b) and observer (e.g., (Boritz et al., 2018; Yeomans, Gutfreund, Selzer, Clarkin, Hull, et al., 1994) ratings only. However, when looking at the nine studies that directly compared multiple rater perspectives, the findings can inform more directly the question of whose perspective is most related to outcome.

Eight of these studies compared therapist and patient ratings of alliance. In five of these studies, therapist-rated alliance was significantly associated with outcomes, while patient-rated alliance was not (Bedics et al., 2015; Gunderson et al., 1997; Forbes et al., 2008; Spinhoven et al., 2007; Taft et al., 2003). However, for two of these studies (Bedics et al., 2015; Spinhoven et al., 2007), patient-rated alliance seemed to be dependent on the treatment condition, such that the alliance-outcome relationship approached significance, but was rendered non-significant when treatment condition was added to the model. This may suggest that the differential effect of rater may depend on treatment modality. The remaining three studies showed more complex relationships between alliance rater and outcome. Specifically, one study of clients with PTSD found that patient-rated alliance was associated with PTSD symptoms and comorbid symptoms, while therapist-rated alliance was associated with comorbid symptoms only (Knaevelsrud & Maercker, 2007). Another study showed that patient-rated alliance in specific treatment weeks predicted better outcomes, while average therapist-rated alliance, as well as week-specific alliance, predicted *worse* outcomes (Kramer et al., 2014). The final study comparing these two raters found no difference in effect of therapist- and patient-rating of alliance on overall outcome, though the two were associated with different specific behavioral outcomes (Gerstley et al., 1989). Overall, while the majority of studies comparing rater perspectives suggest that therapist-rated alliance may be particularly useful for predicting outcomes in treatment for patients who may present with problematic aggression, this evidence is not unequivocal. It has been suggested that therapists may rate alliance more "realistically" when working with difficult clients, which could increase validity (Kramer et al., 2014). An alternative or additional explanation may be that aggressive patients in particular situations (e.g.,

mandated to treatment, or pathologically idealizing/devaluing the therapist) may artificially inflate or deflate their ratings due to desirability bias or short-term ruptures, leading to less valid ratings of alliance. Nevertheless, as all rater perspectives were found to be associated with outcomes in at least some studies, it may be that any rating of alliance can approximate the relationship sufficiently to predict outcomes, and further research is needed to explore the nuance of which perspective most effectively captures alliance.

Potential mechanisms

In addition to the aforementioned moderating factors influencing the alliance-outcome relationship, several of the studies included in the current review propose potential mediators through which alliance affects treatment outcome. Studies that examined ruptures and repairs (Boritz et al., 2018; McLaughlin et al., 2014) and trajectory of alliance over time (Polaschek & Ross, 2010; Walling et al., 2012) suggest that it may be the *process* of navigating a therapeutic relationship that impacts treatment outcome, rather than simply having a stable positive relationship. This is a plausible mechanism, given prior research suggesting that positive linear growth in alliance (Greenberg, 1994; Kivlighan & Shaughnessy, 1995) or "U-shaped" alliance (i.e., a rupture-repair cycle; Kivlighan & Shaughnessy, 2000) are most useful for treatment outcome, as well as the fact that members of the populations reviewed tend to have particular deficits in interpersonal situations, such that fostering and maintaining the therapeutic relationship could be seen as skill development itself. Relatedly, other studies suggested that therapeutic alliance improved outcomes by way of specific skill development, such as emotion regulation and arousal calming (Barnicot et al., 2016; Cloitre et al., 2004; Mackintosh et al., 2014). This supports research indicating the utility of skills-based cognitive behavioral treatments for

individuals who are likely to engage in aggressive behavior (e.g., Linehan, 1993; McCloskey, Noblett, Deffenbacher, Gollan, & Coccaro, 2008) and extends prior findings to suggest that a good therapeutic alliance promotes development of the skills necessary to reduce symptoms and improve general outcomes. Though only a few of the studies examined potential mechanisms of the alliance-outcome relationship, these promising findings can inform further examinations of the role of alliance in treatment for clients who may engage in aggressive behavior.

Limitations and future directions

In addition to revealing some patterns of the relationship between alliance and treatment outcome, the present review also revealed some significant limitations of the body of existing literature with regard to clients who exhibit aggressive behavior. Many studies that did not fully support a significant relationship between alliance and all outcomes of interest utilized a small sample size (as in Gunderson et al., 1997; Marziali et al., 1999) and/or had high participant dropout, leading to missing data (as in Beyko & Wong, 2005). Multi-site studies with larger sample sizes (e.g., Ruglass et al., 2012; Spinhoven et al., 2007; Walling et al., 2012) were more likely to find significant associations or nuanced relationships between alliance and outcome. This suggests that it may be important to utilize large sample sizes to pick up smaller effects of alliance on treatment outcome.

There is a notable dearth of research on alliance among individuals with ASPD and IED, which are the psychiatric disorders most highly associated with aggressive behavior. Many of the other disorders reviewed (e.g., BPD, PTSD) are very heterogeneous in presentation and include many other symptoms aside from aggression. Furthermore, most

studies available did not examine specific behaviors (i.e., aggression) as outcomes, instead looking at overall severity of the disorder, attendance/dropout, or quality of life variables. Future research should continue to explore the role of alliance in highly aggressive populations, as well as examining behavioral aggression as an outcome.

Conclusion

Overall, the extant literature suggests that therapeutic alliance generally has a significant positive impact on outcome in treatment for therapy participants at risk for aggressive behavior, across presenting problems, measures of alliance, and outcomes measured. There were few exceptions to this, which may be specific to the population of sex offenders or the use of uncommon or inappropriate measures of alliance. Further, the alliance-outcome relationship may be affected by factors such as therapy modality (e.g., non-relationally-focused "general" therapy for BPD, cognitive-behavioral methods with high alliance clients) and alliance rater perspective (e.g., therapist rating may be more accurate in some, but not all, cases). The review also identified some potential mechanisms of this relationship, including facilitating development of interpersonal or regulatory skills, though this was only investigated in a few studies. Thus, there is a need for further research to examine the role of alliance in therapy for aggressive behavior specifically. As there are fewer studies on alliance in clients who may present with high levels of aggression, and as these therapy interactions may involve more complicated interpersonal dynamics, it is particularly important to continue this line of research to best understand and bolster effective interventions for highly aggressive clients. Specifically, there is limited research in psychiatric outpatients for who present with high levels of problematic anger and aggression but are not justice-involved. Furthermore, to date no studies have been

conducted on alliance for clients with IED. Overall, the present review suggests that alliance is a relevant and important concept for even the most "difficult" clients and may even be more important for treatment improvement in therapy clients who engage in high levels of aggressive behavior.

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Walling et al., 2012	107 men convicted of IPV	CBT group	WAI-S, therapist-rated; WAI, client-rated	Participants drawn from 13 IPV treatment programs consisting of 16 weekly group sessions. 53.2% were White. Alliance ratings completed at sessions 3,5,11,13. Outcome measure was collateral reports of partner abuse from partner (CTS, physical aggression subscale).	Client-rated WAI was not predictive of change in abuse perpetration. WAI trajectory was associated with outcome for minority participants, but not white participants. Minority participants with increases in WAI over time (but not those with no change) had continued to decrease in abuse between post-treatment and follow-up. On average, minority participants did not report increase in WA over treatment.
Wnuk et al., 2013	182 Adults with BPD	DBT vs. GPM	WAI-S, client-rated	Part of larger RCT of DBT vs. GPM; Examined what factors (including alliance) significantly differed between dropouts (38%) and completers. Dropout = failing to attend 4 sessions consecutively over 48 weeks (as indicated in the DBT model).	Completers had higher alliance than dropouts; alliance was the strongest predictor of drop-out
Yeomans et al., 1994	36 women with BPD (inpatient and outpatient)	Psycho-dynamic psycho-therapy	CALPAS-R, observer-rated	Treatment was twice weekly 45-minute sessions; analyzed 20 patients (10 drop-out, 10 completers). CALPAS-R rated by listening to audiotape of contract-setting sessions only; Outcome was Severity of Illness scale (developed by authors) to rate each of 8 BPD criteria; dropout was length of time to leaving treatment.	CALPAS therapist understanding and involvement (TUI) subscale score was positively correlated with time in treatment. In regression analyses, Therapist Contract on CRS made significant independent contribution, while TUI was only trending significant.

3RS = Rupture Resolution Rating system; AMT = Anger Management Treatment; ASI = Addiction Severity Index; BDI = Beck Depression Inventory; BPD = borderline personality disorder; BPDSI-IV = Borderline Personality Disorder Severity Index; CALPAS = California Psychotherapy Alliance Scale; CAPS = Clinician-administered PTSD Scale; CASF-P = Combined Alliance Short Form, Patient Version; CB = Cognitive Behavioral; CBT = Cognitive Behavioral Therapy; CCT = Client-centered therapy; CPPS-P = Comparative Psychotherapy Process Scale; CT-PTSD = Cognitive Therapy for PTSD; CTBE = community treatment by experts; CTS = Conflict Tactics Scale; DAS = Dyadic Adjustment Scale; DBT = Dialectical Behavioral Therapy; DDPRQ = Difficult Doctor-Patient Relationship Questionnaire; DIB = Diagnostic Interview for Borderlines; GAS = Global Assessment Scale; GES = Group Environment Scale; GPM = general psychiatric management; GSI = Global Severity Index; GTAS = Group Therapeutic Alliance Scale; HAq = Helping Alliance Questionnaire; IDP = Individual Dynamic Psychotherapy; IE = imaginal exposure; IES-R = Impact of Event Scale; IGP = Interpersonal Group Psychotherapy; IPA = interpretive phenomenological analysis; IR = imagery rescripting; MMEA = Multidimensional Measure of Emotional Abuse; MOTR = motive-oriented therapeutic relationship; MPSS–SR = Modified PTSD Symptom Scale – Self-Report; NAS = Novaco Anger Scale; NMR = General Expectancy for Negative Mood Regulation; NSSI = non-suicidal self-injury; OAS = Overt Aggression Scale; OBI = Objective Behavioral Index; OQ-45 = Outcome Questionnaire; P-TAS = Patient-rated Therapeutic Alliance Scale; PCL-R = Psychopathy Checklist-Revised; PCL-S = PTSD Checklist, Specific; PDS = Posttraumatic Stress Diagnostic Scale; PE = Prolonged Exposure; PE = Prolonged Exposure; PMWS = Psychological Maltreatment of Women Scale; PSS-SR = PTSD Symptom Scale – Self-Report; PTSD = post-traumatic stress disorder; RCT = randomized controlled trial; RNR = Risk-Need-Responsivity; SA = suicide attempts; SAS = Social Adjustment Scale; SASB = Structural Analysis of Social Behavior; SASII = Suicide Attempt Self-Injury Interview; SCL-90 = Symptom Checklist-90; SD = standard deviation; SF-12 = Outcome Study Self-report Form; SFT = Schema-Focused Therapy; SP = Supportive Psychotherapy; SS = Seeking Safety; STAIR = Skills Training in Affect and Interpersonal Regulation; STAR-P = Scale To Assess Therapeutic Relationships in Community Mental Health Care = Patient Version; STAXI = State-Trait Anger Expression Scale; TAU = treatment as usual; TF-CBT = Trauma Focused Cognitive Behavioral Therapy; TFP = Transference Focused Psychotherapy; VRS = Violence Risk Scale; VRS =SO = Violence Risk Scale for Sex Offenders; WAI-S = Working Alliance Inventory, Short Form; WAI = Working Alliance Inventory; WHE = Women's Health Education