

Running head: WORKING ALLIANCE FACTORS IN DBT

WORKING ALLIANCE FACTORS AND THEIR RELATION TO EMOTION,
ENGAGEMENT AND DROPOUT IN DIALECTICAL BEHAVIOR THERAPY

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WORKING ALLIANCE FACTORS IN DBT

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Abstract

Background: Dialectical behavior therapy (DBT) is an effective treatment for individuals with borderline personality disorder (BPD) and related problems, however, many individuals who begin DBT have limited engagement in therapy or prematurely dropout. Predictors of non-engagement and dropout are poorly understood. Low therapeutic alliance has been identified as a proximal predictor of dropout in DBT. **Aims:** This study explores 1) the trajectory of working alliance as perceived by clients and therapists during six months of DBT treatment, 2) the association of emotion indices with the strength of, and fluctuation in, working alliance ratings over time, and 3) the predictive association of working alliance factors with total engagement, average weekly engagement, and dropout. **Method:** Fifty-five adults with BPD and their therapists rated the working alliance (alliance) at the first four sessions, mid-treatment and post-treatment. At the end of the first four sessions, clients reported positive and negative state affect. Client attendance and homework completion were calculated to yield measures of their total engagement and average weekly engagement while in treatment. **Results:** Alliance ratings were high overall, and susceptible to within-person fluctuation throughout treatment. Positive affect predicted client alliance ratings, while negative affect predicted therapist alliance ratings. Rates of engagement and dropout in this study were comparable to other studies, with 15 of 55 participants dropping out. Associations were found between alliance and 1) overall engagement, and 2) dropout. These associations were stronger when both client and therapist ratings were utilized, and the effects appear to be due to the Agreement factor of the alliance measure. **Conclusions:** This study suggests that the alliance factor measuring the extent to which clients and therapists agree on the tasks and goals of therapy is related to engagement and dropout in DBT. Attention to agreement on the goals and establishing the tasks of therapy may help identify

clients at risk for low engagement or dropout, who may benefit from explicit interventions (e.g., commitment strategies, contingencies) aimed at promoting engagement and therapy completion.

Dedication

This dissertation is dedicated to my mother, Jean C. Thomas, who taught me the dialectic of quietly knowing oneself while constantly growing through lifelong openness, curiosity and learning.

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Chapter I: Introduction

Dialectical behavior therapy (DBT; Linehan, 1993) is a principle-based, cognitive-behavioral treatment initially developed for suicidal individuals with borderline personality disorder (BPD). DBT has been rigorously investigated as a treatment for BPD and associated problems. In several randomized controlled trials (RCTs) conducted by separate research teams, DBT has been found to be effective in reducing suicidal and self-injuring behaviors, emotional distress such as depression and anger, and inpatient hospitalization (for reviews, see Linehan et al., 2015; Rizvi, Steffel & Carson-Wong, 2013; Stoffers et al., 2012). Despite the efficacy of DBT, many individuals who begin therapy have low engagement in treatment or they terminate prematurely.

Low engagement in treatment may be behaviorally indicated by non-compliance with therapy recommendations, such as poor quality or quantity completion of homework assignments, low degree of meaningful participation in therapy sessions, and problems in attending scheduled therapy appointments. Low engagement behaviors interfere with the client receiving or benefiting from the treatment offered, and are considered therapy-interfering behaviors (TIBs) in DBT. Perhaps the most extreme form of low engagement is premature dropout.

Low engagement and dropout may have deleterious effects for clients, therapists, health care systems, and public health by limiting potential benefits of therapy and perpetuating a pattern of high treatment utilization which may tax health care systems and lead to decreased satisfaction and burnout for both clients and therapists. TIBs and therapy dropout are especially troubling among this client population and represent a growing public health concern due to the associated risk for psychosocial impairment, morbidity and mortality among suicidal clients with

BPD. Researchers are increasingly recognizing dropout as an important clinical outcome in its own right (Kegel & Fluckiger, 2015; Swift & Greenberg, 2012), as clients who drop out from treatment have poorer outcomes than treatment completers (Cahill et al., 2003; Klein, Stone, Hicks, & Pritchard, 2003; Lampropoulos, 2010; Pekarik, 1992). Degree of engagement also appears to be critical for therapeutic gains. After reviewing over 2,300 empirical studies, Orlinsky, Grawe and Parks (1994) concluded that quality of client participation in therapy was the most important variable determining outcome.

Effectively engaging clients in DBT is undoubtedly important. DBT therapists convey that DBT cannot help clients if they are not in therapy, either literally (due to non-attendance or dropout) or more abstractly (due to avoidance of emotional content or non-compliance with homework). One of DBT's strengths is the utilization of multiple therapeutic modes (i.e., individual therapy, group skills class and phone coaching) to motivate clients as well as teach, strengthen and generalize skills to clients' everyday lives. As such, the proposed mediators of DBT's effects (Lynch, Chapman, Rosenthal, Kuo & Linehan, 2006) rely on client engagement in therapy. Indeed, one study found that client-reported practice of DBT skills mediated primary treatment outcomes (Neacsiu, Rizvi & Linehan, 2010).

We know very little about factors that promote client engagement or lead to dropout from DBT. Our understanding of therapeutic engagement and therapy-interfering behaviors is even more limited. We propose that client motivation to attend treatment, complete therapy homework, and otherwise engage in DBT may be influenced in part by therapeutic processes such as the therapeutic alliance. As Linehan (1993, p. 514) writes, "the strength of the relationship is what keeps such a patient (and often the therapist as well) in the therapy." This study aims to enhance understanding of the therapeutic alliance among individuals with BPD

receiving DBT, and evaluate whether alliance is associated with engagement and dropout.

Difficulties Treating BPD: Engagement and Dropout

The rate of completed suicide for individuals with BPD has been estimated to be as high as 5 to 10% (Frances, Fyer, & Clarkin, 1986; Linehan, Rizvi, Welch, & Page, 2000), with rates of attempted suicide and non-suicidal self-injury (NSSI) estimated between 69 and 80% (Clarkin, Widiger, Frances, Hurt, & Gilmore, 1983; Cowdry, Pickar, & Davies, 1985; Grove & Tellegen, 1991; Gunderson, 1984; Stone, 1993). Despite a high need for mental health treatment, dropout from psychotherapy is common among clients with BPD, with dropout rates as high as 64%, and an average dropout rate of 25% in treatments shorter than one year and 29% for therapies lasting one year or longer (Barnicot, Katsakou, Marougke & Priebe, 2011).

Beyond directly interfering with therapy, low engagement and dropout may contribute to negative outcomes by leading to negative beliefs about therapy and decreasing client satisfaction with treatment (Björk, Björck, Clinton, Sohlberg, & Norring, 2009; Kokotovic & Tracey, 1987; Lebow, 1982). Furthermore, these behaviors help maintain a “revolving door” problem (Woogh, 1986) of high treatment utilization without significant gains, and often resulting in treatment failure (Rizvi, 2011). Studies estimate that, at any given time, 40% of mental health services are directed toward clients with BPD (Woogh, 1986). Individuals with BPD have higher rates of hospital admission and are more likely to have been prescribed most classes of psychotropic medications relative to patients with other personality disorders or depression (Bender et al., 2011). Over the course of their lifetime, individuals with BPD have been found to receive outpatient therapy from more than six therapists (Perry, Herman, Van der Kolk, & Hoke, 1990; Skodol, Buckley, & Charles, 1983). In a six-year longitudinal study following admitted inpatients with BPD, three-quarters reported sustained use of outpatient mental health services

over time, and repeated use of intensive and inpatient services (Zanarini, Frankenburg, Hennen & Silk, 2004). High treatment utilization represents a burden for clients and health systems, and contributes to public health costs.

Prolonged and often unsatisfactory experiences in therapy may contribute to client burnout (e.g., exhaustion from working with therapists, feeling ineffective in therapy, and tendencies to depersonalize therapists). In turn, client burnout at pretreatment predicts therapist burnout four months into treatment (Linehan, Cochran, Mar, Levensky & Comtois, 2000), which demonstrates the reciprocal nature of client and therapist experiences in therapy. BPD has also been associated with other behaviors that interfere with therapy and decrease therapist motivation, such as inconsistent attendance, “storming out” of sessions, not leaving when sessions are over, and hostility toward the therapist (Chalker et al., 2015; Linehan, 1993; Rizvi, 2011). These TIBs are frequently identified by therapists as behaviors associated with their own burnout and stress.

Engagement and Dropout in DBT

Linehan (1993) developed DBT with the explicit intention of addressing problems interfering with therapy in order to increase therapy retention and benefit. DBT is structured to target and decrease treatment non-engagement through the use of commitment and relational strategies, contingency management, and a target hierarchy that prioritizes TIBs of any kind second only to life-threatening behaviors. When compared head to head with treatment as usual, as well as specific treatments for BPD, DBT has demonstrated reduced dropout rates. However, a meta-analysis conducted by Kliem, Kroger & Klosfelder (2010) found no significant difference in mean dropout rates between DBT (24.7%) and control conditions (27.3%). In RCTs of outpatient DBT, reported dropout rates are between 23 and 39% (Koons et al., 2001; Linehan et

al., 2002; Linehan et al., 2006; McMain et al., 2009). Dropout rates from comprehensive DBT reported in community samples in the United States tend to be relatively low, ranging from 11.5 to 24% (Ben-Porath, Peterson & Smee, 2004; Comtois, Elwood, Holdcraft, Smith & Simpson, 2007), while in research studies more broadly, dropout rates range from 10 to 51.8% (Kroger, Harbeck, Armbrust & Kliem, 2013; Landes, Chalker & Comtois, 2016).

Short of dropout from therapy, degree of engagement—encompassing the extent of active, meaningful participation—is also highly important in DBT. In outpatient RCTs, mean attendance to individual therapy tends to hover around two-thirds of individual sessions (e.g., individual sessions in 12 months: $M = 32$, $SD = 15.97$, in McMain et al., 2009; $M = 33.29$, $SD = 20.4$, in Linehan et al., 2002; interquartile range = 33.3—51.5 in Linehan et al., 2006). Group attendance tends to be consistently lower, with average attendance of only half the number of scheduled skills groups (group sessions in 12 months: $M = 26$, $SD = 14.98$, in McMain et al., 2009; $M = 26.69$, $SD = 15.9$, in Linehan et al., 2002; interquartile range = 26—45.3 in Linehan et al., 2006). Missed skills groups may entail missed opportunities to learn skills that could potentially help clients avoid problematic, self-damaging behaviors and reach their life worth living goals.

In a study of challenging client behaviors in DBT, therapists most commonly reported behaviors categorized as *avoidant/disengaged* (Chalker et al., 2015). Within this category, behaviors related to attendance problems were the most pervasive, with 77.8% of clients reported to have no-showed to sessions, and 55.6% arriving late to sessions or leaving early. Problems of homework non-compliance were second most common, with 66.7% of clients reported to have not completed homework assignments. The presence of attendance and homework completion problems were each associated with important mental health outcomes of frequency of suicide

attempts and NSSI, and lower therapist satisfaction.

The importance of engagement for positive outcomes has been consistently found in CBT studies. In a meta-analysis, homework compliance had a small to medium effect on outcome (Mausbach, Moore, Roesch, Cardenas & Patterson, 2010). The association between non-engagement and suicidal and NSSI behaviors in DBT, and homework compliance with outcome in CBT, suggest that level of engagement may be related to treatment outcome in DBT.

Predictors of Engagement and Dropout in DBT

Few studies have examined predictors of client engagement and dropout in outpatient DBT, with no studies examining predictors of engagement. Findings from studies of inpatient DBT have identified no consistent predictors of dropout, with anger, hostility, low motivation to change (Rüsch et al., 2008), depression (Bohus et al., 2004), higher experiential avoidance, and long-term inpatient admissions identified (Kröger et al., 2006; Kröger, Harbeck, Armbrust & Kliem, 2013; Perroud, Uher, Dieben, Nicastro, & Huguelet, 2010). Predictors of dropout from outpatient DBT have focused largely on pre-treatment client characteristics, such as age, education, income, and clinical symptom severity (Landes, Chalker & Comtois, 2016; Webb et al., 2009) with the most consistent findings that demographics and severity are not associated with dropout (Barnicot et al., 2011). There is some support for the association of psychological variables with dropout, such as low commitment to change (Soler, 2008) and less emotional communication in therapy (Meehan, 2008). In response to general inconsistency among data regarding the association of client variables and outcome, Clarkin and Levy (2004) posited that client variables transact with therapist and treatment variables in a dynamic way, such that the therapy process is critical to understanding client responses to therapy. One study identified low working alliance just prior to dropout (Wnuk et al., 2013) as a predictor of dropout from

outpatient DBT, which is consistent with findings relating alliance to lower risk of dropout from CBT (Sharf, Primavera & Diener, 2011).

Difficulties Treating BPD: Interpersonal Factors Affecting the Alliance

Building and maintaining a strong alliance has been theorized to be integral to BPD treatments due to unique challenges associated with the presentation of BPD (Gunderson, 2008). BPD is a disorder of emotion dysregulation characterized by “stable instability” across five domains: affect, interpersonal relationships, cognition, behavior, and self-image. According to the current *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association (APA), 2014), a BPD diagnosis requires a pervasive pattern of symptoms representing these domains for several years, accompanied by significant functional impairment. Clinically, individuals with BPD suffer from labile mood; difficulties controlling anger; interpersonal sensitivity; intense and volatile relationships; and NSSI or suicidal behavior frequently elicited by interpersonal stressors (APA, 2014; Brodsky, Groves, Oquendo, Mann & Stanley, 2006). As summarized by Linehan and colleagues, “it would be difficult to imagine another set of behavioral characteristics more likely than BPD criteria to interfere with a therapist’s and a client’s ability to form a mutually cooperative and stable therapeutic alliance” (Linehan, Cochran, Mar, Levensky & Comtois, 2000).

Therapeutic Alliance

Therapeutic alliance, the degree of agreement, collaboration, respect and trust in the therapeutic relationship (Horvath, Del Re, Fluckiger & Symonds, 2011), has been found to account for five to eight percent of the variance in outcome for psychotherapies for the treatment of a broad array of mental health problems (Fluckiger, Horvath, Del Re, Symonds & Holzer, 2015; Martin, Garske & Davis, 2000; Priebe & McCabe, 2006). Accordingly, the alliance is

widely held to be an essential component of the therapeutic process such that a strong alliance is critical for success regardless of treatment modality (Wampold, 2001).

Across treatment approaches, alliance has been associated with symptom improvement in the treatment of BPD (Barnicot et al., 2012). It has been proposed that in structured, disorder-specific therapies, the therapeutic alliance may function to support client acceptance and adherence to treatment tasks (Horvath & Symonds, 1991), and effective use of therapeutic interventions (Horvath & Marx, 1990). It is possible that the relationship between alliance and outcome in BPD treatments may be partly mediated by client engagement and retention, as suggested by the association between alliance and dropout found by Wnuk and colleagues (2013). DBT is a comprehensive treatment that requires significant client commitment, both in terms of commitment to behavior change as well as the investment of time into therapy itself (i.e., twice weekly therapy, weekly skills practice and tracking, and daily self-monitoring logged via diary cards). A strong alliance may function as “the sugar that helps the medicine go down” (Linda Dimeff, personal communication, September 18, 2013) by facilitating client acceptance of DBT’s structure and rationale, and engagement in treatment tasks.

Agreement and relationship factors of the alliance. Alliance has been defined and measured in many ways (Elvins & Green, 2008; Horvath, Del Re, Fluckiger & Symonds, 2011). Bordin’s popular, pantheoretical conceptualization of alliance (1979; 1994) emphasizes the development of a collaborative, working relationship that consists of three, theoretically independent components: (a) agreement on the goals of therapy, (b) agreement on therapeutic tasks to achieve treatment goals, and (c) a trusting, affective bond between client and therapist. Factor analysis of the Working Alliance Inventory (Tracey & Kokotovic, 1989), a common measure of Bordin’s three-factor model of therapeutic alliance (Andrusyna et al., 2001), has

yielded a two-factor model; one factor encompassing agreement between the client and therapist (Agreement), and a second factor consisting of the affective tone of the interpersonal relationship (Relationship). Research examining cognitive behavioral therapies (CBT) has adopted the two-factor model, which forms the Agreement factor by collapsing the task and goals subscales together and incorporating an item from the bond subscale assessing the client's confidence in the therapist's ability to help the client. It is possible that of these two alliance factors, either Agreement or Relationship may be of greater import in certain therapies. For example, while the bond is viewed as the core of the alliance in psychodynamic treatment (e.g., Hartmann, Joos, Orlinsky & Zeeck, 2014), Agreement is more strongly associated with outcome in cognitive therapy for depression (Webb et al., 2011). Studies that parse apart the two factors will help identify therapeutic strategies that promote the alliance (e.g., orienting versus bonding strategies), and clarify theories of therapeutic mechanisms. Greater empirical understanding of the alliance process in DBT will help inform clinical decision making regarding the implications of alliance challenges and whether to address them.

Single informant versus aggregate effects. The alliance reflects the shared perception of the working relationship between client and therapist. Nevertheless, extant research rarely incorporates alliance ratings from both informants' perspectives, instead using only client ratings of the alliance (e.g., Bedics, Atkins, Comtois & Linehan, 2012a; Wnuk et al., 2013), only therapist ratings (Bedics, Atkins, Comtois & Linehan, 2012b), or observer ratings of sessions as measures of alliance. The dialectical philosophy underpinning DBT acknowledges the mutual, transactional influence of client and therapist behaviors on the therapeutic process. Investigating the *aggregated* effect of alliance may increase construct validity when studying alliance as a predictor variable. As delineated by Kenny, Kashy and Cook (2006), aggregated (also termed

pooled dyadic) interactions, in which partners' ratings are added together to predict outcomes, are a valid test of interactive effects. For example, considering only one informant's perspective would leave out important information in a therapy dyad in which client ratings of the alliance are high but therapist's ratings are low. According to a pooled dyadic (aggregated) model, therapy dyads in which one informant makes high ratings and the other low ratings would have similar outcomes to a dyad in which both informants make moderate ratings. Zilcha-Mano and colleagues (2016) recently tested whether the aggregated model better explained outcomes relative to client or therapist models, and found that the aggregated variable was a better fit. Aggregated alliance variables show potential as a face valid method of measuring the dyadic interaction in the alliance, and have also demonstrated enhanced predictive utility.

Repeated measurement. Like any interpersonal relationship, the alliance process is implicitly susceptible to fluctuation and change. Traditionally, however, extant research has used a single measurement of global alliance, most often assessed early in therapy, and correlated this score with symptom change (e.g., Coffman, Martell, Dimidjian, Gallop & Hollon, 2007; DeRubeis, Feeley & Gelfand 1999). Recently, a number of studies have utilized repeated measurement to evaluate more complex models of the temporal association between alliance and symptom change (Falkenström, Granström, & Holmqvist, 2013; Hoffart, Øktedalen, Langkaas, & Wampold, 2013; Tasca & Lampard, 2012). Repeated measurement enables understanding of the temporal process of the alliance and identification of alliance trajectories that may signal patients who are at risk for poor outcome or dropout. Even when there is insufficient power for these more sophisticated statistical approaches, repeated measurement may be necessary simply to achieve an adequate measure of alliance at the client level. Crits-Christoph and colleagues (2011) found that averaging alliance scores from a minimum of 4 sessions was needed to achieve

a generalizability coefficient that sufficiently reduces the error in the alliance measure, and there was no additional benefit when more than 7 sessions were averaged. Furthermore, the authors found evidence of reverse causation (influence of prior symptom change) in scores measured after mid-treatment. The data appear to suggest that averaging alliance data from at least 4 sessions occurring in the first half of treatment is a sound approach that assesses individual client differences and enhances predictive utility.

Repeated measurement offers specific advantages to process research of BPD treatment. Individuals with BPD have difficulty regulating emotions, cognitions, and behavior. Recent empirical evidence suggests that many of the behavioral difficulties experienced by those with BPD are prompted by interpersonal events. Experience-sampling research has identified interpersonal experiences including rejection, disappointment in and betrayal by others, interpersonal conflict, and being offended, as precipitants of BPD symptoms including anger, devaluing others, impulsive behaviors, substance use, dissociation, and identity confusion (Berenson, Downey, Rafaeli, Coifman & Paquin, 2011; Coifman, Berenson, Rafaeli & Downey, 2012; Miskewicz, Fleeson, Arnold, Law, Mneimne & Furr, 2015). Given the sensitivity and reactivity to interpersonal experiences demonstrated by those with BPD, alliance factors may be especially prone to fluctuation among this population. Repeated assessment may therefore be imperative to capture the alliance process as it unfolds over the course of therapy.

Emotion effects. There is relatively little understanding of clinical factors that may influence alliance patterns, with some evidence that dispositional personality factors influence treatment process in BPD treatment. Therapist perceptions of client agreeableness has been associated with steeper increases in alliance ratings during DBT treatment (Hirsh, Quilty, Bagby & McMain, 2012), while self-rated baseline hostility ratings predict BPD clients' early dropout

from inpatient treatment (Rusch et al., 2008; Smith, Koenigsberg, Yeomans, Clarkin & Selzer, 1995). According to the model of BPD on which DBT is based, BPD is primarily a disorder of emotion dysregulation and other symptoms are either a direct consequence of dysregulated emotion or an attempt to regulate aversive emotions (Linehan, 1993). Given the proposed centrality of emotion dysregulation to understanding the behavioral problems experienced by people with BPD, an important area for study is the influence of negative emotionality and emotion dysregulation on the development and maintenance of the alliance in DBT.

Empirical Studies of Therapeutic Alliance in DBT

Despite the large evidence base that DBT is effective and the explicit emphasis on commitment, collaboration, and the therapeutic relationship in DBT, few studies have examined the therapeutic alliance in DBT, and findings reported thus far are limited to data from two RCTs, discussed below. These studies analyzed client or therapist ratings in isolation of each other. While both studies used repeated measurement of alliance ratings, the alliance was assessed only once every four months.

In an RCT comparing DBT to general psychiatric management for individuals with BPD and a history of self-harm or suicidal behaviors (McMain et al., 2009), Hirsh and colleagues (2012) found therapist evaluations of client trait agreeableness on the Revised NEO Personality Inventory (made at varying timepoints during treatment) were associated with increases in client ratings of the WAI rated at baseline and at months four, eight, and twelve. Furthermore, more rapid increases in WAI ratings mediated the association between agreeableness and outcome, including reduced depression, anger, general symptom distress, and borderline symptom severity. Notably, agreeableness levels predicted working alliance development in the DBT condition only. The authors theorize that DBT's emphasis on genuine, warm and intimate

interpersonal engagement may be particularly effective with more agreeable patients, though the mean agreeableness levels in this study were low and thus variance in agreeableness was restricted toward the low end of the spectrum. Additionally, this study's reported alliance ratings (e.g., a reported total mean score of 19.74 at baseline) are hard to interpret, as they do not correspond to the 1 to 7 scale of the 12-item form of the WAI they report having used.

In this same RCT, individuals who dropped out of treatment made significantly lower WAI ratings at the assessment preceding and nearest to dropout relative to patients who completed treatment (Wnuk, et al., 2013). Alliance measured just prior to dropout is confounded with other variables such that ratings of the alliance may be susceptible to the influence of prior symptom change or lack thereof. These results suggest alliance is negatively associated with dropout, however, no causal relationship can be determined from this study. In the third report from these data, a case study comparing the alliance trajectories of two clients with low early alliance illustrated the association of an increasingly strong alliance with more positive outcomes relative to a client whose alliance remained weak (Burckell & McMain, 2011).

In the second RCT that has reported alliance data (Linehan et al., 2006), 101 women with BPD were randomly assigned to 12 months of comprehensive DBT or non-behavioral, community treatment by experts (CTBE). In this study, clients and therapists rated alliance using the California Psychotherapy Alliance Scale (CALPAS; Gaston, 1991) at the end of session one, and again at months four, eight and termination at 12 months (Bedics, Atkins, Harned & Linehan, 2015). The authors found that alliance ratings increased over time in both conditions. Therapist alliance ratings were higher in the DBT condition relative to CTBE, regardless of time in therapy, while DBT had a significantly higher rating of factors measuring goal and strategy

consensus early in treatment, which the authors attribute to the emphasis on pretreatment orientation and commitment to goals in DBT.

In the DBT condition only, associations were found between alliance factors and primary outcomes of reductions in suicide attempts and NSSI (Bedics et al., 2015). However, these associations were not consistent across informants or alliance factors, such that fewer suicide attempts were predicted by (1) therapist ratings of overall alliance and (2) client ratings of two subscales: one measuring the client's commitment to therapy, the therapist, and confidence in the efficacy of treatment, and a second entailing working strategy consensus. Reductions in NSSI were associated with client ratings of therapist understanding and involvement. The CALPAS subscales that were associated with important outcomes are comparable to the Agreement factor of the WAI, which suggests that factors related to the collaborative, working aspect of the alliance, rather than the interpersonal, affective aspect of the alliance, may be associated with outcome. The variability observed among the significant associations suggests that there may be important differences in client and therapist perceptions of the alliance.

Taken together, data suggest that the alliance tends to progress in an upward trajectory of over time, that both the strength of the alliance and an upward trajectory are associated with primary outcomes, and that alliance negatively predicts dropout from DBT.

Chapter II: Aims and Hypotheses

The present study examines working alliance during DBT. Working alliance was chosen as a variable of interest because it has been associated with outcome and dropout in DBT, and alliance has been related to engagement in CBT more broadly. Furthermore, in contrast to commentary describing the challenge of forming a strong therapeutic alliance with clients with BPD, no study has reported the general strength and trajectory of the alliance in DBT. This study aims to describe working alliance in DBT, evaluate the association of emotion indices with working alliance, and then evaluate alliance factors as predictors of therapy engagement and dropout.

Aim I

The first aim of this study was to describe the quality of the working alliance as perceived by clients and therapists during the course of six months of DBT. In light of recent advances in alliance research, we assessed working alliance repeatedly and from the perspective of both client and therapist, with the intention of capturing changes in ratings over time and from the perspective of both partners in the therapeutic relationship. By making several observations and utilizing ratings made by both informants, we also intended to optimize the validity of this study's alliance index.

Aim II

Because prior research has linked intense emotionality with instability in interpersonal relationships among individuals with BPD, the second aim of this study was to evaluate whether, or how, emotions relate to perceptions of the therapeutic alliance over time. We were particularly interested in 1) the association of alliance ratings with client affect during therapy sessions, and 2) whether difficulties regulating emotions would be associated with fluctuation in alliance

ratings over time. We hypothesized that client experience of positive emotions during therapy sessions would predict higher alliance ratings made by both client and therapist, as positive emotions are likely to occur in the context of, and facilitate, agreement and interpersonal understanding and connection. We also hypothesized that fluctuation (cumulative, session-to-session changes) in alliance ratings over time would be associated with client emotion regulation deficits, such that clients who experience greater degree of difficulty regulating emotions would also exhibit greater fluctuation in how they perceive the alliance.

Aim III

Finally, the third aim of the study was to evaluate whether alliance predicts engagement in therapy and dropout from DBT. We hypothesized that alliance ratings would be positively associated with client engagement as indexed by client attendance and completion of therapy tasks including diary cards and group skills homework. We also hypothesized that alliance ratings would negatively predict dropout from treatment. In addition, we were interested in exploring the relative predictive association of each other two alliance factors. With regard to this exploratory analysis, we made no predictions related to whether one factor would be more strongly related to engagement or dropout. It is possible that the Agreement factor of the alliance would be more strongly related to engagement in therapy because clients may be more likely to attend and comply with therapy when they are aligned with their therapist on explicit therapeutic goals and clearly understand how therapeutic interventions will help them get closer to their goals. Alternatively, it is possible that a strong bond between client and therapist would be a better predictor of client attendance and collaboration in sessions, and therefore, it is possible that the Relationship factor would have a stronger predictive relationship for client engagement and dropout. It is also possible that weakness in either factor of the alliance may result in

decreased engagement and greater likelihood for dropout, regardless of whether the other factor is strong.

Chapter III: Methodology

Participants

Participants were 55 adults with BPD ($M_{age} = 29.89$, $SD = 9.51$, range 18—59) enrolled in a treatment program at the DBT Clinic at Rutgers University between September 2010 and September 2015, who attended at least two individual therapy sessions. The predominantly female sample ($n = 44$, 80%) reported Caucasian (69.1%), Hispanic (5.5%), African (3.6%), Asian (3.6%), Middle Eastern (1.8%), other (1.8%), and multiple (12%) racial and ethnic backgrounds. The majority of the sample was unemployed or a full-time student (60%), with 23.6% of the sample working part-time, and 16.4% of the sample employed full-time. Half the sample (50%) earned less than \$20,000 per year. Nearly a quarter of the sample (23.6%) lived with a partner or spouse.

Procedure

Members of the community expressed interest in a 6-month DBT treatment study by calling the clinic and completing an initial screening assessment over the telephone. Potential participants then came to the clinic where they provided informed consent and completed interviews assessing eligibility, psychological diagnoses, and baseline measures (pretreatment assessment). In order to participate in the larger study, individuals were required to be at least 18 years of age, meet DSM-IV-TR criteria for BPD, live within commuting distance of the clinic, consent to video recordings of assessments and therapy sessions, and could not concurrently receive other treatment with the exception of psychiatric medication management. A subset of the sample ($n = 16$) were recruited as part of a study in which they received access to an adjunctive smartphone application that provided interactive coaching in DBT skills (Rizvi, Hughes & Thomas, 2016). This subset was subjected to the following additional inclusion

criteria: a recent history of suicide or self-harm behaviors defined as two or more instances of either NSSI or attempted suicide in the last five years, with one instance occurring in the six months prior to seeking treatment, no prior completion of 6 months or more of DBT, and agreement to carry a mobile device installed with the *DBT Coach* application. Exclusion criteria for all participants were: IQ below 70, non-English speaking, primary psychotic disorder, current substance withdrawal requiring medical management, or life-threatening eating disorder.

Participants completed additional assessments at three months (mid-treatment) and at the end of the six-month DBT program (post-treatment), for which they were compensated up to \$60. The alliance measure (see below) was completed by clients and therapists six times over the course of treatment: at the end of each of the first four individual sessions, at mid-treatment and again at post-treatment. Clients and therapists also completed a state-based measure of positive and negative affect at the beginning and end of therapy sessions; only client affect ratings reported at the end of the first four sessions are included in this study. Clients were informed that therapists would not have access to forms completed at therapy sessions, which clients placed in a manila envelope and returned to the therapist. Data were collected in accordance with IRB approved procedures.

Therapists. Treatment was provided by 18 therapists (n female = 16, 88.89%; $M_{age} = 27.89$, $SD = 3.72$). Therapists included an expert in DBT who completed doctoral training under the supervision of Linehan. The remaining 17 psychotherapists were graduate students in clinical psychology who had completed a semester-long graduate-level course in DBT. Ten of the graduate student therapists (55.55%) had also attended a 2-week, intensive DBT training. Concurrent to providing treatment for this study, all therapists participated in 1 hour of didactic training weekly. Therapists treated an average of 3.05 clients ($SD = 1.35$, range 1—6).

Treatment. Treatment entailed 6 months of comprehensive DBT consisting of weekly individual therapy (1 to 1.5 hours), weekly group skills training (2 hours), and as-needed telephone coaching. The standard course of treatment consisted of 24 group sessions and approximately 24 individual sessions. There was some variability in the number of individual sessions offered to clients, with a maximum number of 33 individual sessions. Clients who did not attend 4 consecutive individual therapy sessions or 4 consecutive skills groups prior to completing the 24-week treatment were defined as dropouts. This attendance rule is standard in DBT and was communicated to clients prior to premature termination. Study therapists participated in weekly consultation team (2 hours). Graduate student therapists participated in weekly supervision with doctoral-level psychologists considered expert in DBT.

Assessment Domains and Measures

Sample characteristics. At pretreatment assessment, psychological diagnoses defined by the DSM-IV-TR (APA, 2000) were evaluated using the Structured Clinical Interview for DSM-IV Axis I and Axis II Disorders (SCID-I; First, Gibbon, Spitzer & Williams, 1996; and SCID-II; First, Gibbon, Spitzer, Williams & Benjamin, 1997). The SCID is a semi-structured interview widely used for assessing all five DSM-IV-TR axes with good reliability (Segal, Hersen & Van Hasselt, 1994; Williams, Gibbon, First, Spitzer, Davies, Borus et al, 1992). The Global Axis of Functioning (GAF) score, which rates overall patient functioning from 0 to 100, was used as an index of severity. Demographic data were collected via a face-valid measure.

Working Alliance Inventory-Short Form (WAI; Horvath & Greenberg, 1989; Tracey & Kokotovic, 1989). Therapeutic alliance was assessed at the end of each of the first four therapy sessions, at mid-treatment, and at post-treatment, with the WAI. The WAI is a self-report measure consisting of 12 items rated from 1 (*never*) to 7 (*always*) that is a short form of

client and therapist versions of the 36-item Working Alliance Inventory (Horvath & Greenberg, 1986). The WAI is a widely used and well-validated measure of alliance. The three theoretical subscales have been compressed into two subscales through factor analyses (Andrusyna et al., 2001; Falkenström et al., 2015). The resulting subscales consist of 9 items measuring agreement on treatment goals and tasks (Agreement), and 3 items measuring level of affective, trusting bond characterized by mutual understanding (Relationship). Sample items for each subscale are: “My treatment provider and I agree about the steps to be taken to improve my situation” (Agreement); and “My treatment provider and I trust one another” (Relationship). The present study used the overall WAI for primary hypothesis testing and the subscales for secondary, exploratory analyses.

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS was used to assess degree of emotion dysregulation at pretreatment. The DERS is a 36-item self-report measure assessing frequency of emotion dysregulation across six domains, entailing lack of emotional awareness and clarity, difficulties accepting emotions, and difficulties regulating behaviors. Items are rated on a 1 (*almost never*) to 5 (*almost always*) scale. The DERS yields a total score for emotion dysregulation. Sample items include “When I’m upset, I feel ashamed at myself for feeling that way,” and “When I’m upset, I believe there is nothing I can do to make myself feel better.” Scores range from 36 to 180. Scores of 100 and above are considered indicative of significant difficulties regulation emotion. The DERS has been validated among a non-clinical sample of adult undergraduate students (Gratz & Roemer, 2004) and psychiatric inpatients (Fowler, Charak, Elhai, Allen, Frueh & Oldham, 2014) with good construct validity and excellent internal consistency.

Work and Social Adjustment Scale (WSAS; Mundt, Marks, Shear, & Greist, 2002).

The WSAS was used to assess degree of psychosocial impairment. The WSAS is a simple, self-report measure of general impairment comprised of five items representing domains of adaptive functioning (work, home management, social leisure, private leisure, and relationships). Each item is rated on a 9-point scale ranging from 0 (*not at all a problem*) to 8 (*very severely impaired*). Ratings on all items were pooled into a total score ranging between 0 and 40, with higher scores indicative of higher self-reported impairment. The WSAS has demonstrated good internal consistency (Cronbach's α ranging between .70 and .90), sensitivity to change, and validity (Mundt et al., 2002).

Suicidal behaviors measures. Lifetime history of self-injurious and suicidal behaviors was assessed at pretreatment via structured interview. Two instruments were used: the Suicide Attempt Self-Injury Interview (SASII; Linehan, Comtois, Brown, Heard, & Wagner, 2006) for the 25 participants who participated from September 2010 until February 2013, and the Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock, Holmberg, Photos, & Michel, 2007) for subsequent participants. Items on the SASII and the SITBI that assessed lifetime frequency of non-suicidal self-injury (NSSI) and suicide attempts were matched to yield measures of baseline suicide attempts and self-harm. The SASII has demonstrated very good interrater reliability (median intraclass correlation coefficient .96), and adequate validity (Linehan et al., 2006). The SITBI has demonstrated excellent interrater reliability ($r = 1.0$), good test-retest reliability over a six-month period (intraclass correlation coefficient .44), and good concurrent validity (Nock et al., 2007).

Beck Depression Inventory-II (BDI-II; Beck, Ward, Mendelson, Mock & Erbaugh, 1961). BDI-II is a widely-used self-report measure of depressive symptom severity that exhibits

excellent psychometric properties (Wang & Gorenstein, 2013). The BDI-II assesses common symptoms of depression on a 4-point rating scale encapsulating frequency and intensity of symptoms in the last two weeks. This study used BDI-II scores reported at pretreatment; participants also completed the BDI-II at mid- and post-treatment.

Positive and Negative Affect Scale (PANAS; Watson, Clark & Tellegen, 1988). At the end of each of the first four sessions, clients reported state-level, positive and negative affect on the PANAS. The PANAS consists of 10 items assessing positive affect (PA) and 10 items assessing negative affect (NA). Each item is rated on a five-point Likert scale (1 = *not at all*; 5 = *extremely*). The PA emotion terms were: interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, and active. The NA emotion terms were: distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, and afraid.

Diary cards. Diary cards (Linehan, 1993) are a method for clients to record self-monitoring of daily affect and target behaviors. The completion of diary cards in-session was recorded by checking “Yes” in response to “Completed in session?” The number of times a client had filled out the diary card was tracked by responses to the question, “How many times did you fill this out?” As part of the engagement measure (described below), diary cards were coded on a 3-point Likert scale (0 = *no homework*, 1 = *partial homework* and 2 = *full homework completion*). Diary cards that were missing or indicated as having been filled out in-session were coded 0 because completion in-session is an indicator of non-adherence to the tasks of therapy. Diary cards were coded 1 = *partially completed* if clients indicated they had filled out the card only once during the week, or they logged information for four or fewer days of the week. Diary cards with five or more days filled out received a score of 2.

Therapy session notes. Clinical notes documented attendance at each individual session.

Group attendance and homework log. Group attendance and homework completion were coded at each group by the co-leader based on the client's presence and reported homework. For each attended group, clients received a homework score of 0 (*no homework*), 1 (*partial homework completion*) or 2 (*full homework completion*).

Chapter IV: Analytic Strategy

A chief aim of the current study was to translate the relatively large alliance research base to a treatment modality for which there is comparatively less empirical data on the alliance.

Aim I

The first aim of the current study was to describe the course of the therapeutic alliance from the client and therapist perspective during DBT. Descriptive analyses were used to report the mean, standard deviation, and range of WAI ratings made by clients and therapists at each of the 6 assessments. A paired t-test comparing client alliance scores to their therapist's ratings was used to compare informant perspectives. Several methods were used to describe the course of the alliance over time, including simple comparisons and correlations. For a more in-depth examination of within-person change over time as measured by all 6 assessments, a fluctuation score was created by summing the absolute difference from one assessment to the next. This fluctuation index reflects the total successive change in alliance over time.

Aim II

The second aim of this study was to examine the association between indices of emotion dysregulation and emotional experience with the quality of alliance ratings and their fluctuation over time. Linear regression was used to examine whether DERS predicted alliance fluctuation. To study the effect of client affect on client and therapist perceptions of the alliance, hierarchical linear modeling (HLM) was used. HLM was well-suited to this research question because alliance and affect were repeatedly measured at each of the first four sessions, and the data therefore had a hierarchical structure in which session ratings were nested within clients. As a result, individual observations were not independent of each other, and the session-by-session ratings of any client were more similar to each other than randomly selected ratings. These

hierarchical data violate the assumption of independent observations made by traditional statistical methods, but may be handled appropriately using multilevel modeling. HLM analyses have the additional advantage of modeling incomplete data across time, which allowed for the inclusion of all available data rather than excluding dyads with missing assessment points. To analyze the present data set, a two-level HLM was used, partitioning the total variability in alliance ratings into two components: variance within each client-therapist dyad at Level 1, and between client-therapist dyads at Level 2. Two models were run: a model with client WAI as the outcome variable, and a model with therapist WAI as the outcome variable. For each equation, end-of-session positive affect and negative affect were entered as predictor variables.

Aim III

The final aim of this study was to examine the predictive association of alliance on engagement and dropout.

Independent variable: client and aggregated alliance scores. In the prediction equations, one of the questions that we faced at the outset was how to operationalize alliance given the multitude of ways alliance has been operationalized in the literature. We were particularly interested in alliance changes over time, and variability in the data from one assessment to the next suggested that alliance was unlikely to be adequately captured by selecting a single assessment point's values. Following the recommendation of Crits-Christoph and colleagues (2011), alliance was defined as the mean from four assessments of the alliance, rated at sessions 2, 3, 4 and mid-treatment (typically week 13). Scores from session 1 were not included because the quality of alliance is generally believed to develop over the course of the first few sessions (Horvath, Gaston & Luborsky, 1993), session 1 scores are more susceptible to pre-treatment factors and therefore contain greater error than subsequent ratings, and most extant

studies measure the alliance beginning around session 3 (e.g., Webb et al., 2009). We used two alliance variables: client alliance and aggregated alliance, in which we added client and therapist scores at each of the four assessment points before averaging.

Dependent variables: Overall engagement, weekly engagement and dropout.

Treatment engagement was measured as overall engagement in treatment, defined as the sum of client attendance and homework completion scores. To better differentiate engagement from dropout, each client's mean weekly engagement was also evaluated by controlling for the number of weeks in treatment.

Client attendance was indexed by a count of client attendance to individual and group sessions as recorded by therapy notes and group attendance logs, and tallied in a review of each client's clinical file.

A score for completion of standard homework over the course of treatment was calculated for each participant. Standard homework in DBT consists of two weekly assignments: a diary card introduced by the fourth individual therapy session, and skills worksheets assigned by group leaders. As described above in Methodology, each client was given a weekly rating for the level of completion of these two homework assignments. Ratings consisted of 0 (*no homework*), 1 (*partial homework*) and 2 (*full homework completion*), such that each week a client could receive a total homework completion score ranging from 0 (no diary card or skills homework) to 4 (full completion scores for both diary card and skills worksheets).

Prediction equations. Multiple regression analyses were used to assess the predictive relationship between alliance and the two outcome variables. Two indices of the alliance were used: client-WAI and aggregated client and therapist-WAI that pooled alliance ratings from the client and therapist perspective. Multiple regression analyses examining the alliance subscales

were conducted to explore the relative contribution of the two alliance subscales, Agreement and Relationship, on treatment engagement and dropout.

Chapter V: Results

Pretreatment Severity

All participants met criteria for BPD. As is typical for individuals with BPD, the mean number of current DSM-IV-TR Axis I diagnoses was 2.71 ($SD = 1.83$, range 0—6). The most common comorbid diagnoses were major depressive disorder (52.73%), generalized anxiety disorder (45.45%), and social anxiety disorder (36.36%). The mean pretreatment BDI score was 29.49 ($SD = 13.13$), indicating severe depression. The sample also met criteria for a mean number of .87 ($SD = .82$) personality disorders other than BPD. The most common personality disorders were avoidant (32.7%), paranoid (20%) and obsessive-compulsive (16.4%). Difficulties regulating emotion were evident, as measured by the DERS ($M = 119.64$, $SD = 21.12$). Client functioning at pretreatment, as measured by the GAF score ($M = 47.91$, $SD = 7.50$), was indicative of serious psychological symptoms and impairment in social and occupational functioning.

Participants reported a median of 2 lifetime suicide attempts ($M = 11.53$, $SD = 28.90$, range = 0 to 151). The median number of lifetime NSSI instances was 15 ($M = 440.96$, $SD = 1369.01$, range=0 to 7500). At pretreatment, 15 participants (27.3%) reported having made a suicide attempt in the past six months and 28 participants (50.9%) reported at least one instance of NSSI in the past six months.

Treatment Engagement, Completion, and Premature Termination

Forty (72.73%) of the 55 clients in this study completed the six-month treatment program. Fifteen clients prematurely terminated treatment after a mean of 14.13 weeks ($SD = 5.19$, range 6—22). Results from t-tests and chi-square analyses indicate that treatment completers and dropouts did not differ on demographic variables or measures of baseline

severity used in this study. Treatment engagement data are presented in Table 1. Treatment completers attended a mean of 23.73 individual sessions (range 17—33) and 18.83 skills groups (range 11—23). Homework completion ranged from 12 to 32 diary cards ($M = 22.40$). Among dropouts, the mean number of individual therapy sessions attended was 7.67 (range 2—16) and the mean number of skills groups attended was 5.4 (range 0—12). Clients who dropped out of treatment completed a mean of 3.93 diary cards, with a range from 0 to 13 diary cards completed.

Table 1
Means and SDs of Treatment Engagement Data for Completers and Dropouts

	Completers (n = 40)		Dropouts (n = 15)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Weeks in Treatment	26.18	2.17	14.13	5.19
Sessions Attended	23.73	3.27	7.67	3.66
Skills Groups Attended	18.83	2.47	5.40	3.16
Diary Card Count	22.40	4.31	3.93	3.53
Diary Card Completion Score (0-64)	40.75	8.33	6.87	6.88
Group Homework Completion Score (0-48)	28.65	7.50	4.40	3.64
Mean Weekly Diary Card Completion Score (0-2)	1.82	.18	1.25	.82
Mean Group Homework Completion Score (0-2)	1.51	.31	.77	.58

Missing Data. There were a total of 582 ratings of the alliance, with 289 client ratings and 293 therapist ratings. Twenty-four client-therapist dyads were missing WAI data from at least one of the six timepoints. Of these, nine dyads who completed treatment were missing data due to administration error (e.g., therapist or assessor forgot to provide forms, data were not collected because the session was conducted by telephone). Data were also missing for the 15 dyads who prematurely terminated treatment. Alliance data were not collected following dropout. Among dropouts, a mean of 1.73 assessments were missing per client.

Descriptives of the Alliance

Descriptive data of alliance scores are displayed in Table 2. The mean WAI across all timepoints was in the upper, positive end of the 1 to 7 rating scale for both clients and therapists. These mean ratings indicate that on average, clients and therapists *often* or *very often* viewed being in agreement with each other on the tasks and goals of therapy, and perceived mutual trust and liking in the relationship. One client's very low WAI ratings at 2 assessment points (scores of 1.00 and 1.92 on the 1 to 7 scale) were outliers. Analyses were conducted with and without this client. We chose not to exclude this case because her overall mean alliance rating was not an outlier and she was considered to be an example of the fluctuating alliance that may occur among BPD clients.

Table 2
*Means, Standard Deviations, and Ranges of
Working Alliance Inventory Scores (Untransformed)*

		<i>M</i>	<i>SD</i>	range	<i>N</i>
Session 1	Client	5.87	1.03	1.92—7	54
	Therapist	5.30	.76	3.5—6.92	55
Session 2	Client	5.80	.92	2.83—7	53
	Therapist	5.29	.75	3.83—7	54
Session 3	Client	5.96	.85	3.83—7	54
	Therapist	5.39	.83	2.92—6.58	54
Session 4	Client	5.86	1.05	3.83—7	48
	Therapist	5.51	.81	2.92—7	48
Mid-treatment	Client	5.88	1.23	1.00—7	42
	Therapist	5.14	.96	3.00—6.42	44
Post-treatment	Client	6.08	.93	3.67—7	38
	Therapist	5.62	.90	3.83—7	39

In general, the data were negatively skewed ($-.62$). Client data were distributed less normally than the overall dataset (skewness = -1.17 , kurtosis = 1.98), and exhibited a potential ceiling effect. Indeed, the median client WAI rating was 6.08 and the mode was the upper limit of a score of 7 on the WAI ($n = 37$). Figure 1 illustrates the distribution of client and therapist WAI scores with histograms for all timepoints combined.

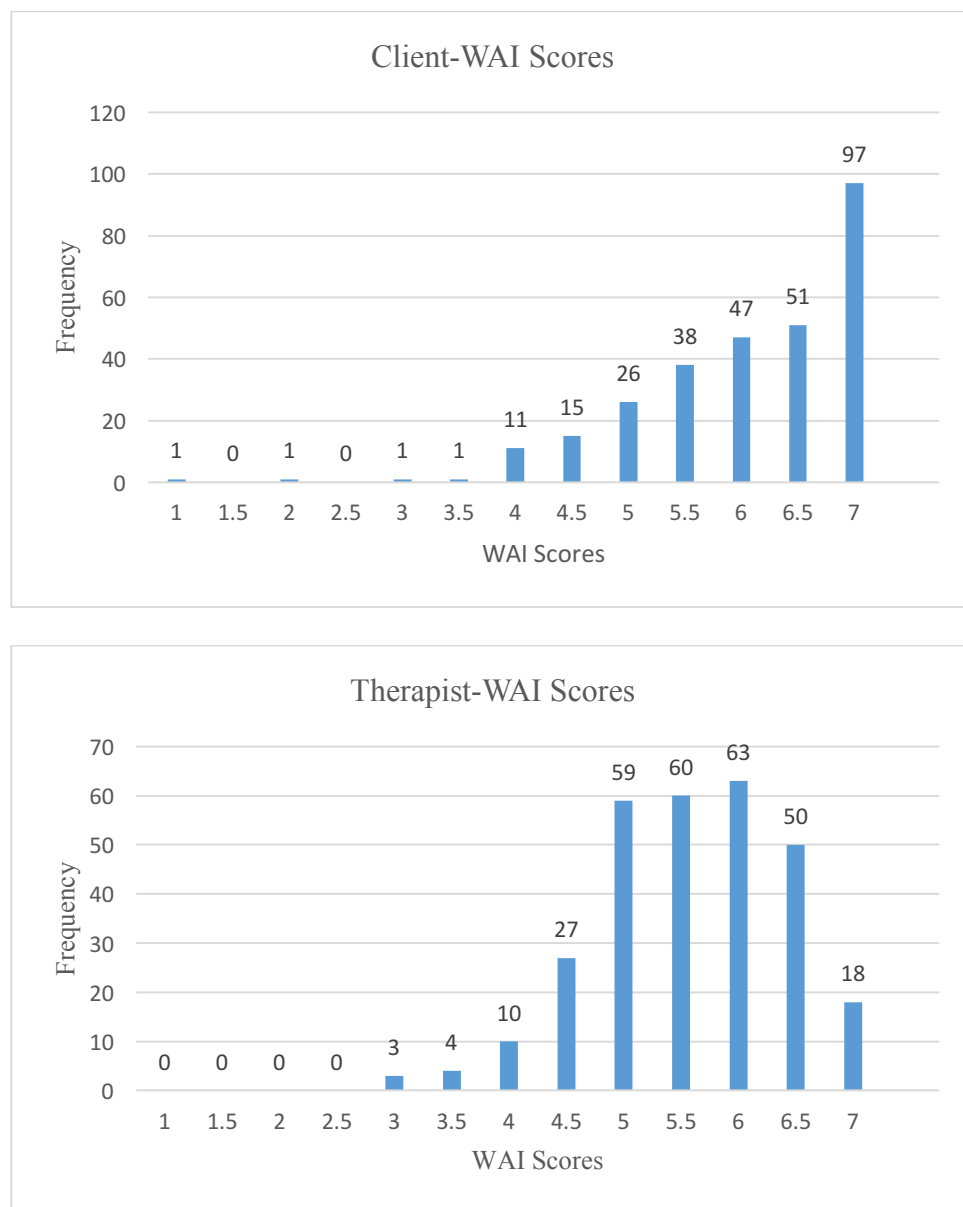


Figure 1. Histograms of Client and Therapist Working Alliance Scores (Untransformed)

To correct for this negative skew, alliance data were transformed using a *reflect and square root* transformation. In this method, 1 was added to the highest observed score (7). Each alliance score was then subtracted from this value, and the square root was taken to yield the transformed score. The transformed data demonstrated acceptable skew (skewness = .14), with considerable improvement in the normality of the client data (skewness = .62, kurtosis = -.09). The resulting variable was then reverse scored in order to restore the direction of alliance strength (such that high scores indicate stronger alliance and low scores indicate weaker alliance), and ease interpretation of analyses utilizing this measure of alliance. Transformed data are used in this study's linear regression equations predicting engagement and dropout from alliance. All descriptive data are untransformed. HLM analyses are not as susceptible to skew in the data and thus untransformed values were used. HLM analyses were repeated with transformed data; the direction and significance of results were unchanged.

In a paired sample t-test, clients rated the alliance significantly higher than their therapists did, $t(54) = 4.58, p < .001$. The correlation between the two informants' ratings of the alliance at the beginning of treatment (Sessions 1 – 4) was small ($r = .16, ns$), but was stronger later in treatment (mid and post-treatment scores) ($r = .36, p = .015$). The mean difference between therapist and client ratings at any timepoint was .51 ($SD = 1.16$) on the 7-point scale. The largest observed differences, however, were sizable; the range (-3.58 to 3.54) suggests a contrast of more than half the alliance scale between the two informants within a therapy dyad.

Chi square analysis was used to test for therapist effects. There were no statistically significant differences between therapists in the strength of alliance when therapist was considered as a nominal variable. There was an insufficient number of clients per therapist in

order to use other statistical methods to test for therapist-level effects (see Crits-Christoph et al., 2011).

Of the demographic and baseline variables investigated, two significant associations were found with alliance. There was a negative relationship between WSAS ratings and client-WAI, $r = -.35$, $p = .008$, such that client reports of greater impairment on the WSAS were associated with lower WAI-client scores. The effect size of this relationship was medium (Cohen, 1988). This association was not found for therapist-WAI scores. A statistically significant correlation was found between therapist-WAI and GAF score, $r = .31$, $p = .02$, such that higher pretreatment GAF scores were associated with higher therapist WAI ratings. This effect size was medium (Cohen, 1988), and this association was not found with client-WAI.

Effects of Time on Alliance

Change in alliance over time was investigated in a number of ways. A simple comparison of client-rated session one (S1) WAI and post-treatment WAI revealed that on average, there was minimal difference between these ratings, $M_{\text{difference}} = .19$. There was, however, considerable variability in this difference score, ranging from -2 to 2.42 , $SD = .92$. Of the 37 treatment completers who rated the alliance at both S1 and post-treatment, 67.57% of clients ($n = 25$) rated the alliance higher at post-treatment relative to S1, while 32.43% of clients ($n = 12$) rated the alliance lower at post-treatment relative to S1. Therapist WAI ratings followed a similar pattern. In the majority of therapy dyads (57.90%; $n = 22$), therapist-WAI ratings were higher at post-treatment relative to S1, while therapists in 13.15% of dyads made equivalent ratings ($n = 5$), and therapists in 28.95% of dyads ($n = 11$) rated the alliance lower at post-treatment relative to S1.

Although the difference between S1 and post-treatment WAI was minimal on average, the data suggest the alliance within each dyad was not stable throughout therapy. Further

examination of change in WAI over time revealed larger session-to-session successive differences than was evident when comparing the first and last ratings. The mean change between sequential assessments was .44 ($SD = .56$, range 0—3.25). Mean successive change and overall fluctuation data for clients and therapists are reported in Table 3.

Table 3

Means and SDs of Fluctuation in Working Alliance Scores (Untransformed)

	Client		Therapist	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Session 1 to 2	.42	.39	.46	.43
Session 2 to 3	.44	.43	.43	.40
Session 3 to 4	.44	.58	.42	.40
Session 4 to Mid-treatment	.50	.75	.56	.54
Mid- to Post-treatment	.40	.57	.43	.47
Overall fluctuation	2.19	1.68	2.30	1.19

Effects of Emotion Indices on Alliance

There was no observed correlation between DERS and alliance fluctuation ($r = -.12$, ns), which suggests that general emotion dysregulation was not associated fluctuation in client alliance ratings. We next used HLM analyses to assess whether client state affect reported at the end of therapy sessions predicted alliance scores rated at the same time. Clients reported the full range of affective experience on the 10 to 50 scale for both NA ($M = 21$, $SD = 8.67$, range = 10—47) and PA ($M = 27.07$, $SD = 9.21$, range = 10—50). Because pre-treatment BDI scores were significantly correlated with client-reported negative affect on the PANAS, $r = .62$, $p < .001$, baseline BDI was entered as a covariate at Level 2. Client-WAI was significantly predicted by end-of-session positive affect, $\beta = .02$, $SE = 0.01$, $t = 2.35$, $p = .020$, such that more intense positive affect predicted higher client-WAI scores reported at the same time. Client positive affect did not predict therapist-WAI scores. Rather, therapist-WAI was significantly predicted by

end-of-session negative affect, $\beta = -.02$, $SE = .01$, $t = -2.26$, $p = .025$, such that client reports of more intense negative affect predicted lower therapist-WAI ratings. Negative affect did not predict client-WAI scores. Thus, client and therapist impressions of the alliance were differentially associated with positive emotion and negative emotion, respectively.

Client-rated Alliance Effects on Engagement and Dropout

Client and therapist alliance data for treatment completers and dropouts are displayed in Table 4, and graphically in Figure 2.

Table 4
Means and Standard Deviations of Working Alliance Scores of Treatment Completers and Dropouts (Untransformed)

		Completers			Dropouts		
		<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Session 1	Client	39	5.89	1.02	15	5.83	1.10
	Therapist	40	5.37	.78	15	5.11	.68
Session 2	Client	39	5.89	.93	14	5.53	.89
	Therapist	39	5.38	.8	15	5.06	.59
Session 3	Client	40	6.08	.76	14	5.62	1.03
	Therapist	40	5.38	.84	14	5.41	.83
Session 4	Client	37	5.97	1.03	11	5.50	1.08
	Therapist	37	5.58	.83	11	5.28	.72
Mid-treatment	Client	36	5.98	1.25	6	5.31	1.02
	Therapist	36	5.33	.93	8	4.28	.72
Post-treatment	Client	38	6.08	.93			
	Therapist	39	5.62	.90			

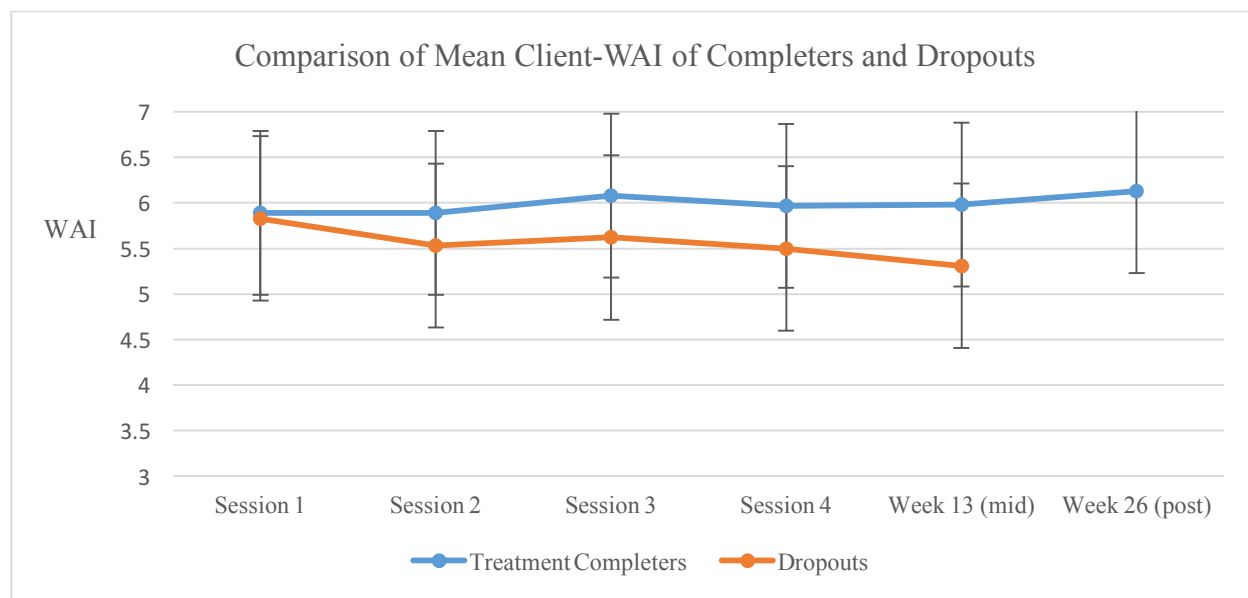


Figure 2. Mean WAI values rated by clients at sessions 1—4, mid-treatment and post-treatment. Treatment completers are shown in blue, and dropouts in orange.

Client-rated Alliance and Engagement. Client-rated alliance did not predict overall engagement in DBT, $F(1, 53) = 2.97$, *ns*. However, when the two alliance subscales were simultaneously entered into a multiple regression equation for exploratory analysis, the Agreement subscale was a significant predictor of engagement, $R^2 = .11$, $F(2, 52) = 3.08$, $t = 2.30$, $p = .026$, such that higher Agreement scores were associated with greater attendance and homework completion. The Relationship subscale did not predict engagement, $t = -1.28$, *ns*, meaning that the Relationship had no significant effect on engagement in treatment when effects of Agreement were controlled for.

Controlling for weeks in treatment, client-rated alliance did not predict average weekly engagement in DBT, $F(1, 53) = 1.72$, *ns*. When the two alliance subscales were again simultaneously entered in to a multiple regression equation, the Agreement subscale was related to mean weekly engagement at the trend-level, $R^2 = .11$, $F(2, 52) = 2.36$, $t = 1.95$, $p = .056$, such that higher Agreement scores were associated with greater likelihood of attending sessions and

completing homework during time in therapy. The Relationship subscale did not predict mean engagement, meaning that the Relationship had no significant effect on engagement when effects of Agreement were controlled for.

Client-rated Alliance and Dropout. Client-rated alliance did not predict dropout from DBT, $F(1, 53) = -3.45, ns$. However, when one participant whose WAI scores were statistical outliers at two timepoints was removed from the analysis, the results of the regression indicated that client-rated alliance explained 8.9% of the variance in dropout and significantly predicted dropout $R^2 = .09, F(1, 52) = -5.07, p = .029$. Higher alliance ratings were associated with treatment completion.

Effects of Aggregated Client and Therapist-rated Alliance on Engagement and Dropout

We repeated analyses using an aggregated measure of client and therapist-rated alliance. The regression results indicate aggregated alliance explained 9.7% of the variance in engagement, $R^2 = .10, F(1, 53) = 5.58, p = .022$, meaning that when client and therapist perspectives of the alliance were taken together, stronger alliance predicted higher attendance and homework completion. In parallel to the regression analysis examining the effect of client-rated alliance on dropout, the aggregate score did not predict dropout, $F(1, 53) = -3.80, ns$, however, with the outlier removed, aggregated alliance significantly predicted dropout from treatment, $R^2 = .09, F(1, 52) = -5.34, p = .025$. Higher alliance scores predicted treatment completion.

Effects of Aggregated Alliance Factors

We next conducted exploratory analyses examining the effects of the Agreement and Relationship subscales on client engagement and dropout.

In follow-up analyses with both subscales entered into multiple linear regression equations predicting engagement and dropout, the Agreement factor of the WAI again emerged as the only significant predictor of each outcome. The Agreement subscale of aggregated alliance significantly predicted overall engagement, $\beta = .451$, $t(54) = 2.09$, $p = .042$, while the Relationship subscale of aggregated alliance did not, $\beta = .224$, $t(54) = 1.04$, *ns*, meaning that after accounting for the Relationship factor, the Agreement factor of aggregated alliance was associated with higher client engagement in therapy.

Similarly, the Agreement subscale of aggregated alliance was a significant predictor of dropout, $\beta = .453$, $t(54) = -2.50$, $p = .016$, while the Relationship subscale of aggregated alliance was not, $\beta = .240$, $t(54) = 1.11$, *ns*. When controlling for Relationship, higher ratings of Agreement were associated with therapy completion. When controlling for Agreement, the Relationship subscale had no statistically significant effect on client engagement in therapy or dropout status.

Case Examples

To graphically illustrate client and therapist ratings of alliance factors within a dyad, two clients were randomly selected: one client from the 15 dropouts and one client from the 40 treatment completers. The two selected clients were treated by different therapists. Figures 3 and 4 illustrate the time course of these two dyads.

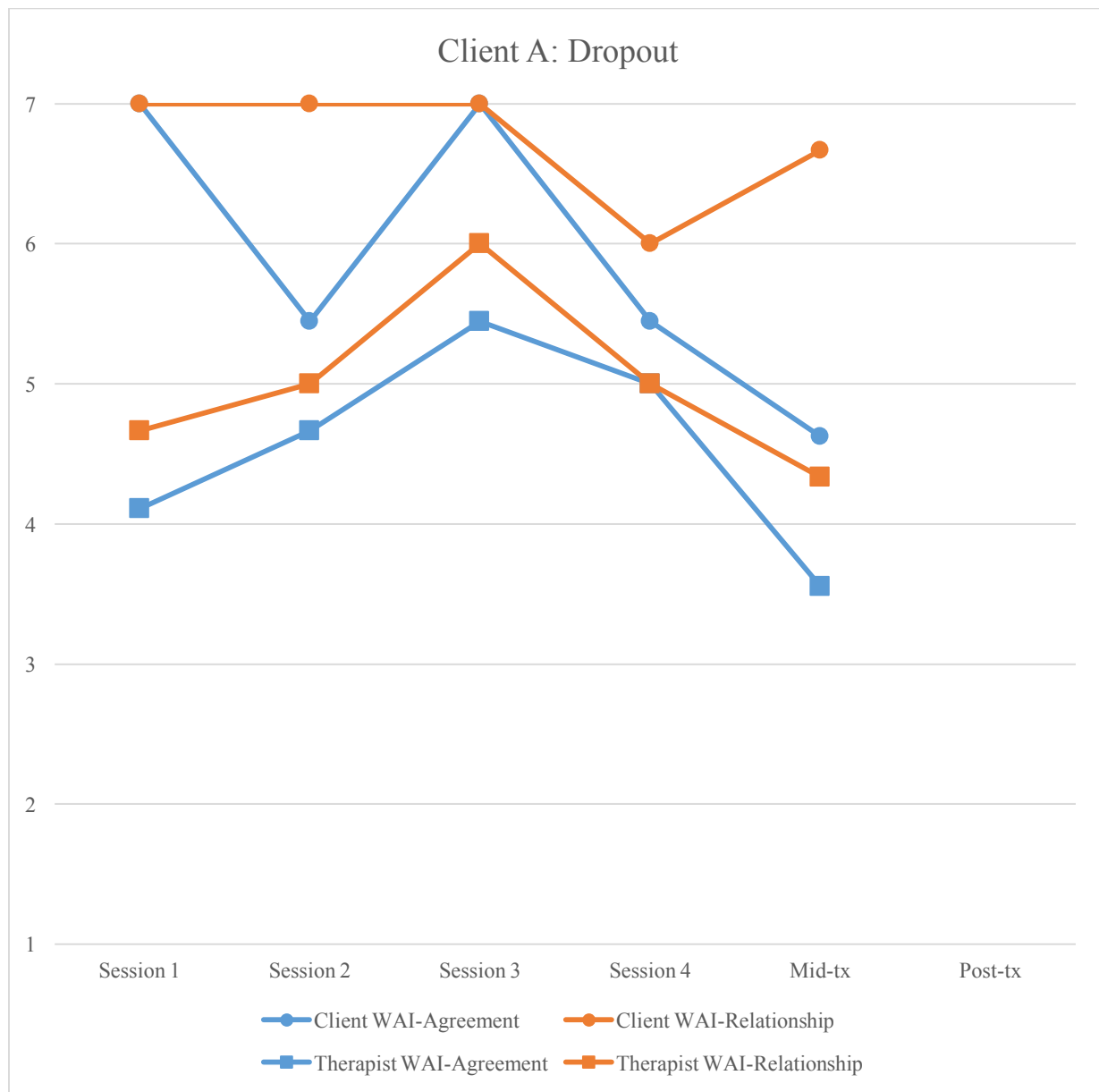


Figure 3. Client and therapist ratings of WAI-Agreement and WAI-Relationship over time in a sample dyad randomly selected from treatment dropouts.

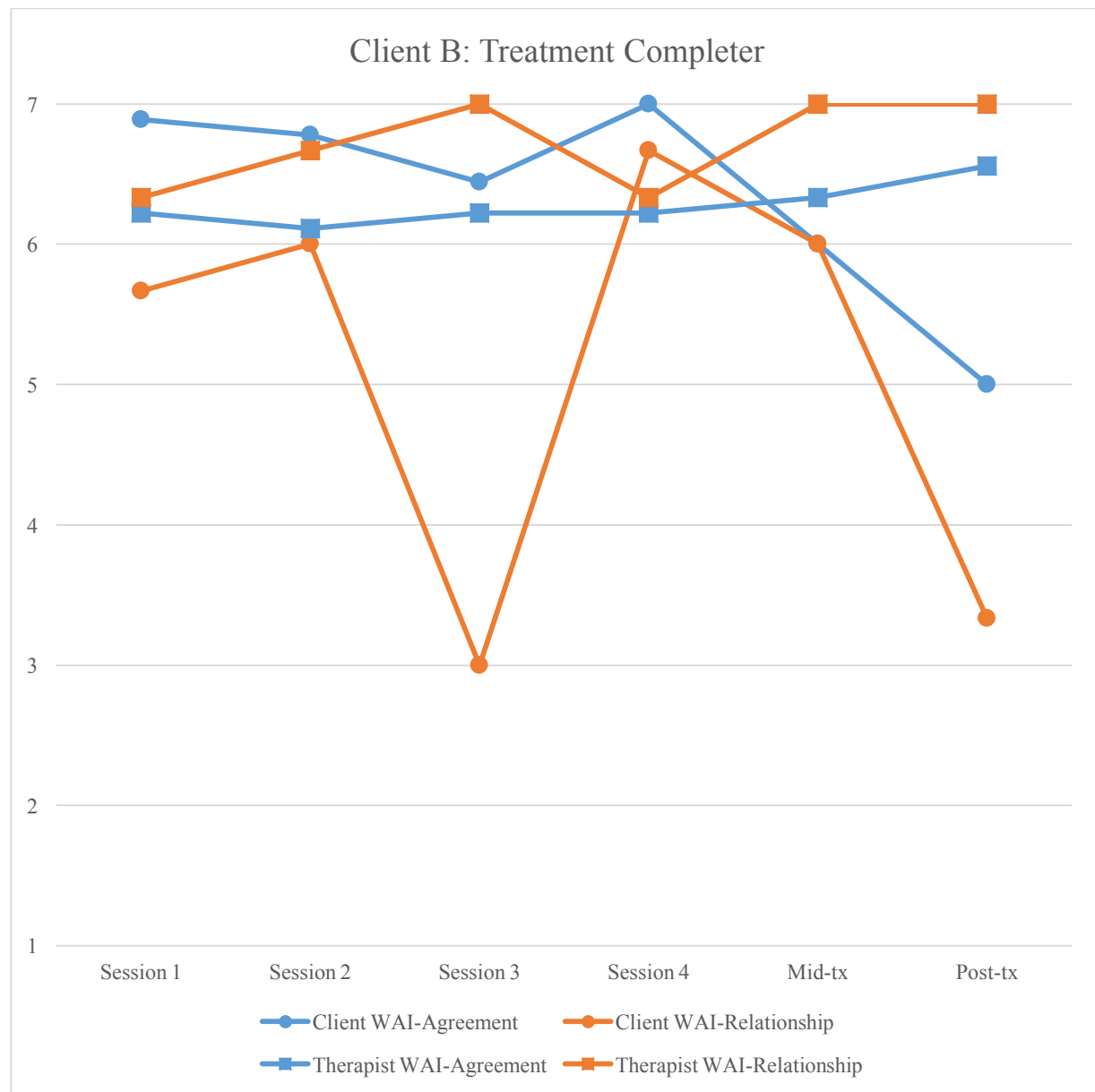


Figure 4. Client and therapist ratings of WAI-Agreement and WAI-Relationship over time in a sample dyad randomly selected from treatment completers.

These graphs visually demonstrate the dynamic process of alliance factors during DBT, as well as the nuance underlying measurement of the Agreement and Relationship factors over time within a dyad. Though these dyads were randomly selected, the graphical representation of their data illustrates that when comparing a dyad that resulted in dropout with a dyad that

completed treatment, alliance ratings do not appear markedly different in terms of overall strength, or degree of stability (or fluctuation) over time. The mean client-WAI scores for Client A and Client B were 5.90 and 6.27, respectively. While overall client alliance ratings are not markedly different in terms of overall strength, clear differences are observable between the two clients' ratings of the alliance factors. Client A, who dropped out following mid-treatment, rated the Relationship as consistently strong, however, her ratings of Agreement fluctuated, and decreased from session 3 to mid-treatment. On the other hand, Client B, who completed treatment, endorsed a more negative and unstable view of the Relationship but endorsed high ratings of Agreement across sessions 1 through mid-treatment, that then decreased from mid- to post-treatment. The additional data of therapist ratings adds complexity to the client ratings. The mean aggregated-WAI scores were 10.67 for Client A, and 12.63 for Client B. For Client B, her fluctuating view of the Relationship was balanced by her therapist's consistently positive alliance ratings, while for Client A, her therapist's ratings were consistently lower, in the moderate range. These case examples visually display the aggregated effect of both client and therapist perspectives of the alliance factors over time.

Chapter VII: Discussion

This study yielded several key findings that contribute to our understanding of the strength and trajectory of the alliance in DBT, the effects of state emotion and emotion dysregulation on alliance, and the association of alliance factors with engagement and dropout. This study's results may help sort out discrepancies between perspectives regarding the import of alliance factors in DBT.

Limitations

There are several limitations to this study. To begin, therapist effects are uncontrolled. This study was also limited by incomplete data for 9 treatment completers and 15 dropouts. Though a strength of this study was repeated measurement of the alliance, the small number of repeated observations limited statistical approaches, which led us to average ratings made at sessions 2, 3, 4 and mid-treatment for the regression analyses. While averaging several ratings is preferable to taking a single measurement, this approach risks losing meaningful information regarding the magnitude and direction of changes over time. The fluctuation measure captured change over time but only indexed degree of change over time, and not the direction of changes. The use of HLM for the state affect analyses allowed us to capture within and between case variability.

A general limitation of this study is the problem of using the same questionnaire repeatedly; as raters repeatedly interact with the same questions, they may interpret or relate to questions differently. The WAI asks how much of the time clients and therapists have been in agreement or perceived a strong bond. Future research would benefit from using a working alliance questionnaire designed for repeated administration, such as one recently developed that assesses the perception of alliance factors since the last assessment (Falkenström, Hatcher,

Skjulsvik, Larsson & Holmqvist, 2015), as opposed to repeatedly asking informants to take into account all preceding time in therapy. Finally, there is the possibility that important information was left out of this study's alliance assessment by using the WAI, which assesses the alliance between client and individual therapist. In DBT, the client also develops a working relationship with group leaders and group members. These therapeutic processes were not captured in the WAI assessment, which focused on the relationship between client and individual therapist. Future research assessing alliance in DBT may benefit from an alliance assessment of these different relationships.

Aim I: Alliance Trajectories

Ratings of the alliance early in treatment (typically around session 3 or 4) have traditionally been the focus of study when the alliance is tested as a predictor of later symptom change. Descriptive data reported in this study show that the alliance is susceptible to change during the course of therapy, and that the two alliance factors appear to fluctuate independently of each other. This study did not find that fluctuation in alliance scores was associated with emotion dysregulation, and clients were no more likely to exhibit fluctuation in their ratings than therapists were. This study's index of fluctuation was limited by the number of assessments. It is possible that fluctuation derived from a greater number of assessments would have captured shifts occurring between session 4 and mid-treatment, and in sessions after mid-treatment, and therefore yielded a more valid fluctuation index. A significant theoretical and empirical literature suggests that sizable shifts in alliance perceptions are clinically meaningful and common during the middle phase of therapy (e.g., Stiles et al., 2004). In our sample, the magnitude of change between sequential assessments ranged from 0 to 3.25. Larger shifts may represent relationship ruptures (decreases) and repairs (increases). Our data were limited by the small number of

observations, and we did not further explore dyads characterized by ruptures, or ruptures followed by repairs. This line of inquiry may be fruitful in identifying whether rupture-repair sequences are associated with improved outcome in DBT, as has been found in other treatments (Kivlighan & Shaunessy, 2000).

This study's results do not support the common presumption that forming a strong alliance is rare among clients with BPD, or that the therapeutic relationship is notably unstable among clients with BPD. To the contrary, mean alliance ratings in this study were high compared to what is generally reported among patients with depression, for whom mean WAI scores are typically around 4.3 out of 7 (Webb et al., 2009; Webb et al., 2011). Despite clinical lore, we found that extreme fluctuation was the exception rather than the mode in this sample. Furthermore, this study did not find evidence to suggest that a weak therapeutic relationship is negatively related to engagement and treatment completion. Rather, ratings of the Relationship factor of the alliance tended to be high, were no more likely to fluctuate than the Agreement factor, and were not associated with engagement or dropout.

Aim II: Effects of Emotion Indices on Alliance

We found that alliance ratings made at the end of therapy sessions were significantly predicted by client state affect reported at the same time. Interestingly, client and therapist alliance ratings were uniquely associated with positive and negative affect, respectively. This finding suggests that the *experience* of positive and negative affect may have different implications for the alliance than the *perceived expression* of positive and negative affect. In line with Frederickson's broaden and build theory of positive emotions (2001), experiencing positive emotions may facilitate openness and social connection. Frederickson posits that positive emotions function to broaden attention that in turn enables one to build social and psychological

resources. The presence of positive emotions including activation, alertness, inspiration, and pride, appears to be important for a positive perception of the alliance, independent of the concurrent experience of strong, negative emotions. This finding is consistent with correlations consistently found between positive emotions in therapy and symptom improvement (Orlinsky et al., 1994).

On the other hand, the *expression* of negative emotions typically has negative effects on perceivers (e.g., Bell, 1978), and the unique association of more intense client negative affect with weaker therapist alliance ratings appears to suggest negative interpersonal effects of expressed negative emotion. However, experimental research also suggests that the expression of negative affect elicits increased helping behavior and relationship closeness (Graham, Huang, Clark & Helgeson, 2008). Of note, the HLM analyses included only data from the first four therapy sessions. During the beginning of therapy, first impressions of the alliance may be more susceptible to expressed negative emotion. Future research may explore whether the observed effects of negative emotion on therapist alliance hold later in treatment, when the interpersonal relationship is more established. The impact of displayed negative emotions on the therapist and therapeutic relationship is an area in which further research is needed.

Aim III: Effects of Alliance Factors on Engagement and Dropout

Engagement and Dropout. In line with extant research, about 27% of the clients in this sample dropped out of treatment. Four clients dropped out after four or fewer sessions, while the remaining ten dropouts terminated between sessions 8 and 16. We did not observe many clients who dropped out after one or two sessions. This finding may have been influenced in part by this research program's waitlist and extensive intake process, which consisted of three to four 3-hour assessments. Early dropout may also have been discouraged by the transparent discussion and

mutual negotiation of expectations for DBT during pretreatment. This study did not separately assess or consider other potential predictors or reasons for dropout. At least one participant dropped out due to a physical injury which prohibited travel to the clinic. Future research may consider other factors that may affect engagement and dropout, including cultural and logistical barriers, experiential and behavioral avoidance, and internalized stigma.

Attendance among treatment completers was high: treatment completers attended an average of approximately 91% of individual sessions and 72% of skills groups. It is possible that we observed a high rate of attendance because we used a six-month adaptation of comprehensive DBT, which decreased the burden and commitment for clients and decreased the likelihood of barriers to attendance by narrowing the window of time. It is also possible that the therapists in this study, as graduate students under supervision, were particularly motivated to encourage and reinforce client engagement. This study provides evidence that many individuals with BPD demonstrate high levels of commitment and follow-through in DBT.

The client who was an outlier on two alliance scores due to extremely low ratings raises interesting questions about the impact of other process variables not considered in this study, such as therapist use of commitment strategies and therapeutic interventions targeting TIBs, inter-session contact between therapist and client, and other psychological variables including shame and experiential and behavioral avoidance, as mentioned above. This client made the lowest alliance ratings at two timepoints, however, due to notable fluctuation, her alliance ratings were moderate at other timepoints. Her level of engagement was very low, yet she completed therapy. According to reports from her therapist, therapy repeatedly targeted TIBs and the therapist used a high degree of self-involving self-disclosure of the impact of the client's TIBs on the therapist. This case illustrates that, contrary to oversimplified evaluations of the alliance as a

static presence or absence of ‘liking’ for each other, the alliance is a dynamic process that may be influenced by a variety of client and therapist behaviors. Future research exploring the impact of therapist interventions targeting TIBs on therapy engagement would help further inform our understanding of these behaviors in the context of DBT.

Alliance Factors. We found that the Agreement aspect of the alliance was consistently associated with engagement and dropout, while overall client alliance was not. Relative to the Relationship factor, degree of agreement on the tasks and goals of therapy appears to be more important to client engagement in therapy. Agreement may predict engagement and dropout because, as has been proposed, the extent to which client and therapist are on the same page regarding the goals of therapy and the steps toward those goals, facilitates the client complying with therapy. There are a few potential reasons Relationship did not predict engagement or dropout. First, Relationship ratings tended to be high overall and thus there was less variability in the data. Second, the Relationship subscale consisted of only three items, which may have limited the internal consistency and reliability of this subscale. Nonetheless, the consistent association of Agreement with engagement and dropout suggests that as a therapist considers therapeutic tasks in session, agreement on the goals of therapy, orientation to treatment tasks, communicating a rationale, and eliciting commitment may be especially important for client engagement.

The lack of significant findings when utilizing client ratings of overall alliance, relative to the Agreement factor, as discussed above, and the aggregated measure of alliance, suggests that assessing overall client alliance is not sufficient to predict engagement or dropout. The finding that aggregating therapist and client alliance ratings together resulted in a better predictor variable runs counter to prior findings that a positive therapeutic relationship is most strongly

related with outcome when the client's perception is considered (Orlinsky et al., 1994). It is unclear why the aggregated index of therapist and client alliance ratings was a better predictor of engagement and dropout. There are several possible explanations. First, alliance rated by both partners in the therapeutic relationship may capture more of the true variation in the alliance by increasing reliability of the index and thereby revealing the association between alliance and engagement and dropout. Second, it is possible that therapist perceptions of the alliance influence therapist behaviors that then impact engagement and treatment retention. For example, a therapist who perceives a strong alliance with a client may be more committed to that client and deliver more effective interventions as a result of increased investment of emotion, time, preparation, and energy. In turn, the client may have a higher degree of engagement. In this way, it is possible that a stronger alliance may *cause* increased engagement through variation in therapist behaviors that then elicit client engagement. Third, it is possible that therapist alliance ratings may have been influenced by clients' prior attendance or homework completion. Thus, there may have been a reverse causation effect such that a client's demonstrated compliance with therapy early on may then cause the therapist to perceive a strong alliance. Based on our data, we cannot conclude whether aggregated alliance is a cause or a correlate of engagement and dropout. The predictive power when client and therapist ratings were aggregated suggests that, at the very least, the combination of client and therapists' evaluations of alliance may provide clinically relevant information regarding the client's likelihood to engage in therapy and complete treatment. Therapists may want to pay particular attention to observations related to the Agreement factor, and also take into consideration their own ratings of alliance.

Summary

In conclusion, this study examined client and therapist perceptions of the alliance over the course of 6 months of DBT. We found that client ratings tended to be high, and that therapist ratings were significantly lower than their clients' ratings. Alliance ratings were prone to within-person fluctuation from one session to the next, and the factors of Agreement and Relationship appeared to be relatively independent from each other. Our hypothesis that clients suffering from more severe emotion dysregulation would demonstrate greater fluctuation in alliance ratings was not supported. Clients were also not any more likely to demonstrate fluctuation in alliance ratings relative to therapists. Emotional experience during sessions, however, was associated with both client and therapist alliance ratings. Positive affect uniquely predicted client alliance, while negative affect uniquely predicted therapist alliance. The experience of positive emotions, especially activating emotions, may facilitate clients developing a positive view of the alliance, while negative emotions may cause therapists to perceive the alliance more negatively.

Our findings are in line with a shift in process research toward the perspective that clients are active participants in therapy who mutually influence the process of therapy in tandem with their therapist and the treatment interventions. The degree to which clients perceive being in agreement with their therapists regarding therapeutic goals and the tasks required to achieve those goals appears to be a factor associated with clients' engagement in therapy, and likelihood of dropping out of therapy. Variation in the strength of the affective bond between client and therapist appears to be unrelated to client engagement and dropout in DBT.

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