# The Alliance-Outcome Relationship in Cognitive Therapy for Depression: Do We Know For Whom It Matters Most?

Research Thesis

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**Abstract**

Previous research suggests the alliance-outcome relationship is moderated by key client characteristics. We examined maladaptive personality traits and prior episodes of depression as moderators of the alliance-outcome relationship in a sample of 126 clients participating in a 16-week course of cognitive therapy for depression. Outcome was either modeled as regressed change from mid- treatment to post-treatment (i.e., a change through post-treatment approach) or as within-client session-to-session changes across the first several sessions (i.e., a within-client session-to-session approach). In the within-client session-to-session approach, the alliance-outcome relationship was stronger among clients reporting fewer maladaptive personality traits, which was contrary to previous studies. In the change through post-treatment approach, the alliance-outcome relationship was stronger for those who had more prior episodes, which was also in contrast to prior research. We place our findings in the context of those in the literature, discussing how methodological and analytic differences may have played a role in the diverging findings. We highlight how different analytic approaches allow for different interpretations and how greater attention to this may be needed as the field works to integrate findings from studies of moderators of process-outcome relations.


*Keywords:* therapeutic alliance, cognitive therapy, depression, maladaptive personality traits, prior episodes of depression.

# The Alliance-Outcome Relationship in Cognitive Therapy for Depression: Do We Know For Whom It Matters Most?

Depression disrupts the lives of hundreds of millions of people globally (Moussavi et al., 2007). Diagnostically, the cardinal symptoms of depression are a persistent depressed mood and loss of interest in all or nearly all activities. Such symptoms must be accompanied by other symptoms, such as sleeping and eating disturbances and difficulty concentrating (American Psychiatric Association, 2013). As depression is so pervasive and disruptive, it is important to understand and be able to treat it as effectively as possible.

Cognitive therapy (CT) is a well-established psychotherapeutic treatment for depression (Strunk, Adler, & Hollon, 2017). The theory behind CT asserts that depression is caused and maintained by negative thoughts about the self, the world, and the future (Beck, Rush, Shaw, & Emery, 1979). The purpose of CT is for clients to re-evaluate such thoughts by examining the evidence for and against them, in an effort to come to more accurate conclusions. CT demonstrates symptom reduction superior to control conditions and comparable with other major psychotherapies and antidepressant medication (Cuijpers et al., 2013). However, as is true for all currently available treatments for depression, a substantial portion of clients do not respond to CT (Cuijpers et al., 2014). In addition, despite a number of studies attempting to address this issue, the mechanisms of change behind CT remain unsettled (Cuijpers, Reijnders, & Huibers, 2019).

The psychotherapy process variable that has been studied the most is likely the therapeutic alliance, which encompasses the relationship between therapist and client and their agreement on the tasks and goals of treatment (Bordin, 1979). Similar to previous estimates, the most recent meta-analysis (including 295 studies) found that the alliance was significantly associated with better therapeutic outcomes, with an average correlation of .28 (Flückiger, Del Re, Wampold, & Horvath, 2018). However, this study combined estimates not only from different client populations and treatments, but also from studies that utilized different methodological and analytic approaches.

One common strategy among such studies has been to examine the alliance-outcome relationship by operationalizing outcome as symptom change from pre-treatment to post-treatment, with a mid-treatment alliance score serving as a predictor. With this approach, it is possible that any relation identified would not be due to the alliance predicting subsequent symptom change, but to the relation of the alliance and symptom change prior to the alliance assessment. A number of previous studies have shown that the alliance is predicted by prior symptom change (DeRubeis & Feeley, 1990; Feeley, DeRubeis, & Gelfand, 1999; Strunk, Brotman, & DeRubeis, 2010; Webb, Beard, Auerbach, Menninger, & Björgvinsson, 2014).

One way to avoid this issue of reverse causation is by assessing symptoms and alliance scores at the same session, with outcome operationalized as symptom change from that session to post-treatment (e.g., Lorenzo, DeRubeis, & Webb, 2014). For ease of reference, we call this analytic strategy the "change through post-treatment" approach. A change through post-treatment approach allows researchers to predict subsequent symptom change across the course of treatment. In addition, a change through post-treatment approach may capture any delayed effects of the alliance-outcome relationship (i.e., the alliance takes multiple sessions to affect depressive symptoms). A number of studies examining the alliance-outcome relationship using a change through post-treatment approach have reported significant alliance-outcome relationships (e.g., Barber, Connolly, Crits-Christoph, Gladis, & Siqueland, 2000; Barber et al., 1999; De Bolle, Johnson, & De Fruyt, 2010; Klein et al., 2003; Krupnick et al., 1996; Lorenzo et al., 2014;

Lorenzo et al., 2017), but others have not (e.g., Barber et al., 2001; Crits-Christoph, Gibbons, Hamilton, Ring-Kurtz, & Gallop, 2011; DeRubeis & Feeley, 1990; Feeley et al., 1999). Generally, these effects appear to be more modest than those reported in meta-analyses of the alliance-outcome relationship not limited to the prediction of subsequent symptom change (Barber, 2009).

An alternative to the change through post-treatment approach is to examine alliance scores and symptoms across a series of successive sessions, using a "session-to-session" approach to model the relations of interest. Like the change through post-treatment approach, a session-to-session approach allows researchers to predict subsequent symptom change. Unlike the change through post-treatment approach, the session-to-session approach is intended to specifically capture any immediate effects of the alliance on outcome (i.e., alliance in one session contributes to lower depressive symptoms at the next session). Applications of such an approach are recent, but a number of research groups have now reported using such an approach. A number of studies from these groups have found that the alliance predicts session-to-session symptom change (e.g., Constantino et al., 2017; Cronin, Brand, & Mattanah, 2013; Falkenström, Ekeblad, and Holmqvist, 2016; Falkenström, Granström, & Holmqvist, 2013; Rubel, Rosenbaum, & Lutz, 2017; Zilcha-Mano, Muran, Eubanks, Safran, & Winston, 2018; Zilcha-Mano et al., 2016), but some studies have failed to find such an effect (Strunk et al., 2010; Strunk, Cooper, Ryan, DeRubeis, & Hollon, 2012; Sasso, Strunk, Braun, DeRubeis, & Brotman, 2016). Each analytic strategy offers a distinct perspective on the alliance-outcome relationship. But, as we describe next, the session-to-session approach can offer some key inferential benefits not available to those using the change through post-treatment approach.

## Parsing Out Variation

When using the change through post-treatment approach, any significant alliance-outcome relation might be attributable to a third variable. Using a session-to-session approach allows researchers to mitigate the effects of many of these confounds by disaggregating within- and between-client effects (Curran & Bauer, 2011; Wang & Maxwell, 2015). Within-client effects refer to the variation occurring within an individual over repeated measurements, whereas between-client effects refer to the variation occurring across individuals. Separating both types of variation allows us to examine change on an individual level by using within-client scores. Disaggregation also allows us to remove any stable, between-client characteristics inherent in the raw score by calculating a within-client score. One common method for calculating within-client scores involves person mean-centering the variables of interest. Between-client scores are often calculated as the average of the individual's score across assessment points (Curran & Bauer, 2011).

Another critical consideration in examining the alliance-outcome relationship is that there is increased recognition that the importance of process measures such as the alliance are likely to vary across clients (Lorenzo & DeRubeis, 2018). Researchers have recently begun examining the effects of potential moderators on the alliance-outcome relationship, with at least two key moderators having now been examined across multiple studies.

## Moderators of the Alliance-Outcome Relationship

One moderator of interest is maladaptive personality traits, which have been operationalized as the presence of Axis II symptoms, based on DSM-IV criteria in recent studies (De Bolle et al., 2010; Falkenström et al., 2016; Lorenzo et al., 2014). These studies tend to find that maladaptive personality traits significantly moderate the alliance-outcome relationship (De

Bolle et al., 2010; Falkenström et al., 2013; Falkenström et al., 2016; see Lorenzo et al., 2014 for an exception).

Studying clients undergoing combined pharmacotherapy and psychotherapy for depression, De Bolle and colleagues (2010) found the presence of a comorbid personality disorder moderated the association between alliance and outcome when using a change through post-treatment approach examining subsequent symptom change at three months and six months past baseline. For clients who had a personality disorder, the alliance was more strongly related to positive outcomes than for those without a personality disorder. In a study examining clients with a range of issues in a primary care setting, Falkenström and colleagues (2013) found the endorsement of personality problems moderated the association between within-client alliance and next-session outcomes using a session-to-session approach. For clients endorsing personality problems, there was a stronger alliance-outcome relation, compared to those who did not endorse personality problems. In a study examining both interpersonal psychotherapy (IPT) and CT for depression, Falkenström and colleagues (2016) found the presence of a personality disorder moderated the relationship between client-reported (but not therapist-reported) within-client alliance and next-session depressive symptom change using a session-to-session approach. For clients with a personality disorder there was a stronger alliance-outcome relationship. Using observer-rated alliance scores within the context of CT for depression, Lorenzo and colleagues (2014) found the number of self-reported personality disorder traits failed to moderate the alliance-outcome relationship using a change through post-treatment approach. Thus, in three of these four studies, there is evidence that indications of a personality disorder moderated the alliance-outcome relationship with a stronger relation being observed among those with a personality disorder or greater characteristics of a personality disorder.

For those with personality disorders, there are often difficulties in forming or maintaining meaningful interpersonal relationships (American Psychiatric Association, 2013). As such, clients with maladaptive personality traits may be more likely to react positively to the presence of a strong therapeutic relationship. For those without maladaptive personality traits, there is likely much less conflict or difficulty in their personal relationships. As such, for clients without maladaptive personality traits, the therapeutic relationship may be less distinctive from other relationships and therefore less likely to lead to symptom relief.

Another client characteristic that has been studied as a moderator of the alliance-outcome relationship is the number of prior episodes of depression a person has experienced. Several studies have found that prior episodes significantly moderate the alliance-outcome relationship (Falkenström et al., 2016; Lorenzo et al., 2014; Lorenzo et al., 2017; but, see Constantino et al., 2017 for an exception).

Using a change through post-treatment approach, Lorenzo and colleagues (2014) found for those with fewer prior episodes (i.e., 0 - 2) the alliance predicted more positive outcomes. For those with greater prior episodes (i.e., 3 or more), the alliance failed to predict symptom change. In a study examining both CT and short-term psychodynamic supportive psychotherapy (SPSP) for depression, Lorenzo and colleagues (2017) found the role of prior episodes differed by treatment condition when using a change through post-treatment approach examining subsequent symptom change at week 5 of treatment, week 10 of treatment, and the end of treatment. For clients participating in CT, the alliance-outcome relationship was significant for those with 0 or 1 prior episodes, whereas the alliance-outcome relationship was non-significant for those with 2 or more prior episodes. For SPSP, the alliance-outcome relationship did not appear to vary as a function of number of prior episodes. Using a within-client session-to-session approach, Falkenström and colleagues (2016) found that the relationship between client-rated (but not therapist-rated) alliance and depressive symptom change was stronger in magnitude for those with 0 to 2 prior episodes, compared to those with 3 or more prior episodes, who experienced a weaker, but still significant alliance-outcome relationship. Studying clients undergoing IPT for depression, Constantino and colleagues (2017) failed to find a moderating effect of prior episodes on the alliance-outcome relationship. Thus, three of these four studies found some evidence of prior episodes as a moderator of the alliance-outcome relationship, with evidence of such moderation being strongest when examined in patients participating in CT. Findings suggest those with less recurrent depression may be more responsive to positive interpersonal interactions, whereas those with more recurrent depression may be more responsive to other aspects of treatment (Lorenzo et al., 2014).

## This Study

Our primary analyses examined potential moderators of the alliance-outcome relationship using two analytic approaches: the change through post-treatment approach and the session-to-session approach. As described above, these approaches vary in the time period over which they test possible effects and in their ability to parse within- and between-client variability. The change through post-treatment approach examines subsequent symptom change, focusing on the cumulative effects of variables over a large portion of treatment. A session-to-session approach can also be used to examine subsequent symptom change, but focuses on the immediate effects of variables from one session to the next. Using the session-to-session approach, we report findings for raw, within-client, and between-client scores. In using this approach, the tests of greatest interest are those using within-client data, as any alliance-outcome relation identified using within-client data would not be attributable to any stable between-client confounds. We have no specific predictions for between-client data.

Three hypotheses were examined using each of our analytic approaches. First, stronger alliances are hypothesized to predict greater symptom reduction. As discussed earlier, a number of studies using both approaches have reported significant alliance-outcome relationships. Second, maladaptive personality traits are hypothesized to moderate the alliance-outcome relationship in both approaches. Specifically, greater alliances are hypothesized to predict greater symptom reductions for those endorsing higher scores on maladaptive personality traits (e.g., De Bolle et al., 2010; Falkenström et al., 2013; Falkenström et al., 2016). Third, prior episodes are hypothesized to moderate the alliance-outcome relationship in both approaches. Specifically, greater alliances are hypothesized to predict greater symptom reductions for those with fewer prior episodes (Falkenström et al., 2016; Lorenzo et al., 2014; Lorenzo et al., 2017).

# Method

## Participants

Clients were 126 adults with depression who enrolled in a naturalistic study of CT. Of the clients, 59% (*n* = 74) were female. The mean age was 31.7 (*SD* = 13.35, range = 18-70). With regard to the race and ethnicity of the sample, 8% (*n* = 10) identified as Asian, 7% (*n* = 9) as African American, 2% (*n* = 3) as Hispanic, and 83% (*n* = 104) as Caucasian. One-fourth of clients (*N* = 31) were married or co-habiting. Of the clients, 34.1% (*n* = 43) were currently taking psychiatric medication.

Inclusion criteria were: (a) diagnosis of major depressive disorder (MDD) based on criteria from the DSM-IV-TR (First, Spitzer, Gibbon, & Williams, 2002); (b) willing and able to give informed consent; and (c) 18 years of age or older. Exclusion criteria were: (a) current Axis

I disorder other than MDD if it was considered to be the predominant aspect of clinical presentation and required treatment other than the one being offered; (b) history of bipolar disorder or any psychotic disorder; (c) history of substance dependence in the last six months; (d) indication of secondary gain (e.g., court-ordered treatment); and (e) current suicide risk or significant intentional self-harm sufficient to preclude treatment on an outpatient basis.

**Measures**

**Depressive symptoms.** Depressive symptoms were assessed by the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a 21-item self-report measure that asks respondents to indicate how they were feeling during the past week. Each item is rated from 0 to 3, with higher scores indicating more severe depressive symptoms. The BDI-II was administered before every session. When a client dropped out, we used the last available BDI-II score as the outcome in the change through post-treatment approach, following the approach of Lorenzo and colleagues (2014). Cronbach's alpha was consistently excellent in the first six sessions, ranging from .90 to .94, and fared similarly at the end of treatment ($\alpha$ = .96).

**Alliance.** The alliance was assessed by the shortened form of the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989). The WAI is a 12-item self-report measure with items scored on a seven-point Likert scale, with higher scores indicating a stronger alliance. Clients completed the WAI before each of the first five sessions. Cronbach's alpha was consistently excellent, ranging from .93 to .97.

**Maladaptive personality traits.** Maladaptive personality traits were assessed by the Personality Inventory for DSM-5- Brief Form (PID; Krueger, Derringer, Markon, Watson, & Skodol, 2013). The PID is a 25-item self-report measure assessing five personality traits associated with disorder: antagonism, detachment, disinhibition, negative affect, and psychoticism. Each item was rated from 0 to 3, with higher scores indicating higher levels of the personality trait. Clients completed the PID before or during the intake assessment. Total scores were found to be reliable and of clinical utility in field trials (Krueger et al., 2013), and have demonstrated adequate internal consistency (Fossati, Somma, Borroni, Maffei, Markon, & Krueger, 2015). The PID total score achieved good internal consistency in the current sample ($\alpha$ = .83).

**Prior episodes.** Prior episodes of depression were assessed within the Structured Clinical Interview for the DSM-IV, module J (SCID-1; First et al., 2002) at the intake assessment. Clients were asked to recall any possible prior episodes of depression. Diagnostic criteria for MDD were assessed for each prior episode discussed, with a maximum of five assessed. If the client had experienced five or more prior episodes ($n$ = 3), clients were labeled as having five prior episodes.

## Procedure

After a preliminary eligibility assessment was conducted via phone screening, an intake appointment was scheduled, at which full inclusion and exclusion criteria were assessed. Clients were offered therapy sessions twice a week for the first four weeks of treatment. Afterwards, therapists and clients collaboratively decided whether and when to switch to weekly sessions. After week 12, sessions were offered weekly for all clients. Sessions lasted 50 to 60 minutes.

Five graduate students under the supervision of Daniel R. Strunk, Ph.D., served as the study’s therapists and assessors. Therapists were randomly assigned to clients with two constraints. First, the number of clients assigned was determined by the number of openings in each therapist’s case load. Second, a client could not be assigned the therapist who conducted the client’s intake assessment.

**Dropout.** Clients were considered dropouts if they unequivocally stated they wanted to discontinue treatment or missed sessions for a period of four or more consecutive weeks. Therapists with clients who missed sessions worked with clients to get them re-engaged in treatment. Of the 126 clients, 17% ($n$ = 21) were dropouts. Of these dropouts, one client discontinued prior to attending session one, and two discontinued after attending session one. Six dropouts terminated treatment prior to week four, but after completing at least two sessions. Twelve dropouts terminated treatment after week 4.

## Analytic Plan

### Analyses.

Prior to running session-to-session analyses, we disaggregated within- and between-client components of the WAI (Wang & Maxwell, 2015). Within-client scores were calculated for each client by mean-centering WAI scores. Between-client scores for each client were calculated as the average WAI score across the first five sessions.

We examined each variable for non-normality. In the change through post-treatment approach, WAI scores exhibited non-normality. In the session-to-session approach, raw and within-client WAI scores exhibited non-normality. To transform change through post-treatment WAI scores and raw session-to-session WAI scores to meet normality assumptions, the scale was reverse-scored, a square root transformation was applied, and was then multiplied by -1. To transform within-client session-to-session WAI scores to meet normality assumptions, outliers at three or more standard deviations were Winsorized, which occurred in 14 instances.

We first examined the relation of the alliance and outcome with two analytic strategies. In the change through post-treatment approach, we examined the prediction of end-of-treatment BDI-II in a multiple regression model. The predictors were session 3 BDI-II scores and session 3

WAI scores. Session 3 scores were chosen to replicate previous work (Lorenzo et al., 2014). In the session-to-session approach, we examined the prediction of next-session BDI-II for the first five sessions of treatment in a repeated-measures regression model. The predictors were current-session BDI-II scores and a variant of WAI scores (raw, within-client, or between-client). Both BDI-II and WAI were mean-centered.

Using these approaches, we then examined maladaptive personality traits and prior episodes of depression as moderators of the relationship between alliance and outcome. In the change through post-treatment approach, the predictors were: session 3 BDI-II scores, session 3 WAI scores, the potential moderator, and the interaction of session 3 WAI scores and the potential moderator. In the session-to-session approach, the predictors were: current-session BDI-II scores, a variant of WAI scores (raw, within-client, or between-client), the potential moderator, and the interaction of a variant of WAI scores and the potential moderator. All predictors, other than the interaction term, were mean-centered. For each analysis, we report the unstandardized beta (*b*) and the standardized beta (*β*).

The Johnson-Neyman technique (Johnson & Neyman, 1936) was used to identify values of the moderator for which the relationship between predictor and outcome were significant (i.e., regions of significance). For each significant interaction, we reported the cut-off points and the percentage of the sample within the region of interest.

# Results

## Descriptive Analyses

Descriptive statistics and correlations of process and outcome variables are provided in Table 1. Maladaptive personality traits significantly correlated with intake BDI-II, indicating those endorsing more maladaptive personality traits also tended to have higher intake BDI-II scores. Descriptive statistics for within-client WAI scores were also calculated. As within-client scores are person mean-centered, the average within-client WAI score was 0 (average *SD* = 4.09; range of SDs = 0 - 17.43).

We also examined the magnitude of symptom change across treatment (see Table 2). We first examined the magnitude of change from pre-treatment to post-treatment, conducting a paired sample *t*-test between intake BDI-II and post-treatment BDI-II, excluding dropouts. Scores decreased an average of 21.5 points ($SD = 9.98$, $t(96) = 18.84$, $p < .0001$, 95% CI [18.87, 23.31], $g = 2.15$). The magnitude of symptom change was similar to previous trials reporting pre-post symptom change (Strunk & DeRubeis, 2001). To examine the magnitude of the change involved in the change through post-treatment approach, we conducted a paired-sample *t*-test between third-session BDI-II and end-of-treatment BDI-II, using last observation carried forward methods when participants dropped out. Scores decreased an average of 11.8 points ($SD = 10.4$, $t(121) = 12.51$, $p < .0001$, 95% CI [9.92, 13.65], $g = .96$). To examine the magnitude of change involved in the sessions included in the session-to-session approach, we conducted a paired-sample *t*-test between first-session BDI-II and sixth-session BDI-II. Scores decreased an average of 5.63 points ($SD = 9.28$, $t(115) = 6.53$, $p < .0001$, 95% CI [3.92, 7.33], $g = .47$). The primary models of interest in this study examine the variability in symptom change either from session 3 through the end of treatment or in session-to-session intervals across early sessions.

**Alliance Predicting Symptom Change**

As shown in Table 3, the change through post-treatment approach showed that session 3 alliance scores predicted greater depressive symptom reductions from session 3 to the post-treatment assessment. In the session-to-session approach, within-client alliance scores failed to predict next-session symptom change. Raw alliance scores also failed to predict next-session symptom change. There was a non-significant trend for between-client alliance to predict next-session symptom change.

**Moderation by Maladaptive Personality Traits**

As shown in Table 4, in the change through post-treatment approach the interaction testing maladaptive personality traits as a moderator of the alliance-outcome relationship was not significant.

In the session-to-session approach, the interaction of within-client alliance scores and maladaptive personality traits was significant. As shown in Figure 1, this interaction was driven by the alliance being related to positive outcomes more strongly for clients who reported low levels of maladaptive personality traits. Using the Johnson-Neyman technique, 25 and 39 were identified as cut-off points outside of which the alliance-outcome relationship was significant. For those with scores at or below 25 on the PID ($n$ = 41, 32.8% of the sample), stronger alliances predicted greater next-session depressive symptom reduction. Quite unexpectedly, for those with scores at or above 39 on the PID ($n$ = 26, 20.8% of the sample), the alliance predicted *less* symptom improvement (or in some instances worsening) at the next session. For those with scores on the PID in between 26 and 38, the alliance-outcome relationship was non-significant. The interaction of raw alliance scores and maladaptive personality traits was non-significant. The interaction of between-client alliance scores and maladaptive personality traits was also non-significant.

**Moderation by Prior Episodes**

As shown in Table 4, using the change through post-treatment approach, we found the interaction of session 3 alliance scores and prior episodes was significant. As shown in Figure 2, this interaction was driven the alliance being related to positive outcomes more strongly for clients who had a higher number of prior episodes. Using the Johnson-Neyman technique, we identified prior episode scores at or above 2 as the cut-off at which the alliance-outcome relationship was significant ($N$ = 42, 33.6% of the sample). For those with two or more prior episodes, the alliance predicted greater symptom reduction. For those with zero or one prior episode, the alliance-outcome relationship was non-significant.

In the session-to-session approach, no significant interaction occurred for within-client alliance scores and prior episodes, raw alliance scores and prior episodes, or between-client alliance scores and prior episodes.

# Discussion

Our findings appear to support the notion that the alliance-outcome relationship is moderated by key client characteristics. Interestingly, these relationships were often contrary to prior research. Using both the change through post-treatment and session-to-session analytic approaches, we examined three hypotheses. We discuss each in turn.

## Alliance Predicting Symptom Change

Our findings regarding the alliance-outcome relationship were mixed, with results differing across the two analytic strategies we used. In the change through post-treatment approach, the alliance predicted greater depressive symptom change. Although some failures to detect this relationship have been reported in the literature, a number of studies have reported similar effects (Barber et al., 2000; Barber et al., 1999; De Bolle et al., 2010; Klein et al., 2003; Krupnick et al., 1996; Lorenzo et al., 2014; Lorenzo et al., 2017). The alliance failed to predict outcome in the within-client session-to-session approach. Evidence for an alliance-outcome relationship in the within-client session-to-session approach would have given us greater confidence that the alliance actively contributed to outcomes. Our failure to detect a significant alliance-outcome relationship in the within-client session-to-session approach adds to the literature failing to find such a relation (Sasso et al., 2016).

Our findings in the change through post-treatment approach raise the possibility that the effects of the alliance may accumulate over the course of treatment to predict outcomes. Our failure to find a significant alliance-outcome relationship in the within-client session-to-session approach also lends credence to this idea. The rationale implicit in the change through post-treatment approach is either that the effects of session 3 alliance are quite important or that session 3 alliance scores may serve as a proxy for a tendency to have a higher or lower alliance across treatment. On the basis of a single alliance score, it would be unclear whether the alliance changed over the course of treatment. A relation of the alliance and outcome in the change through post-treatment approach might also reflect the role of stable, between-client characteristics. For example, clients who are better able to relate to others may form stronger alliances with their therapists. Such clients could go on to achieve better therapeutic outcomes either because of their high quality therapeutic relationships or for reasons unrelated to therapy (e.g., their tendency to have better relationships outside of therapy). There is some evidence in our study to support this notion, as between-client alliance in the session-to-session approach predicted outcome at the level of a non-significant trend. As we only examined alliance early on in treatment, however, it is unclear whether between-client alliance later in treatment may have predicted outcome in our sample.

The concern regarding the role of stable client characteristics can be addressed to a large degree by using the within-client session-to-session approach. Findings are mixed within this approach, but there are quite a few positive findings in the literature (Constantino et al., 2017; Cronin et al., 2013; Falkenström et al., 2016; Falkenström et al., 2013; Rubel et al., 2017; Zilcha-

Mano et al., 2018; Zilcha-Mano et al., 2016). These findings often examine the alliance-outcome relationship among multiple clinical populations, such as those suffering from depression, anxiety, or personality disorders. When examining CT for depression, the evidence for an alliance-outcome relationship has been less robust. Multiple studies have failed to find an alliance-outcome relationship despite what appear to be sample sizes comparable to the studies with positive findings mentioned above (Strunk et al., 2010; Strunk et al., 2012; Webb et al., 2014; see Falkenström et al., 2016 for an exception). As noted in Flückiger and colleagues (2018), the alliance-outcome relation tends to be small, so it is plausible that significant effects will not always be detected. Another explanation may be that alliance plays a smaller role on next-session symptom change in CT, compared to other treatments. However, Falkenström et al. (2016) compared IPT and CT for depression and failed to find significant differences in the alliance-outcome relationship across treatments.

**Moderation by Maladaptive Personality Traits**

Maladaptive personality traits moderated the alliance-outcome relationship in the session-to-session approach. This interaction was partly driven by within-client alliance predicting greater symptom change for those endorsing fewer maladaptive personality traits. It was also driven by the quite unexpected pattern of within-client alliances predicting *less* positive outcomes for those endorsing greater maladaptive personality traits. This moderating effect contrasts with previous work, in which stronger alliance-outcome relationships were found among clients with personality pathology using raw alliance (De Bolle et al., 2010) and within-client alliance (Falkenström et al., 2013; Falkenström et al., 2016). In our additional analyses, maladaptive personality traits failed to moderate the alliance-outcome relationship in the change through post-treatment approach. Taken together, our findings indicated the alliance-outcome relationship was significant for those endorsing few maladaptive personality traits and those endorsing many maladaptive personality traits, but the direction of the alliance-outcome relation was opposite of expectation for those with high levels of maladaptive personality traits.

What could account for these conflicting findings? Methodological differences may be at the heart of the issue. Unfortunately, there are a number of methodological issues to consider. Previous studies tended to use DSM-IV criteria to diagnose the presence of “personality pathology”, whereas our study utilized the PID, a measure assessing maladaptive personality traits not necessarily indicative of a personality disorder. There may be reason to expect differences in findings based on measure differences, as studies using the presence of a personality disorder as a moderator found significant effects (De Bolle et al., 2010; Falkenström et al., 2013; Falkenström et al., 2016), whereas Lorenzo and colleagues (2014) used the number of maladaptive personality traits as a moderator and failed to find a significant effect. In addition, our study only examined early-treatment sessions, so it is possible the nature of the alliance-outcome relationship changes over time, although whether and how this change occurs remains unclear.

While differences in methodology and analytic strategy may partially explain the discrepancy in findings, it remains baffling that stronger alliances predict worse outcomes for those with greater maladaptive personality traits. It is tempting to chalk up these discrepancies to sample or treatment differences. However, the sample composition of Falkenström and colleagues (2016) was similar to our own study, including clients with depression participating in CT. One way in which the sample might differ without our knowledge may have to do with maladaptive personality traits themselves. It is possible that our study had a different constellation of maladaptive personality traits than previous studies. We could not compare our study's sample with previous work, however, as not enough information was provided on what types of maladaptive personality traits existed within the study samples. Researchers may wish to examine the moderating effects of specific subsets of maladaptive personality traits on the alliance-outcome relationship.

Our findings suggest maladaptive personality traits may serve to moderate the within-client session-to-session alliance-outcome relationship. As we focused on within-client effects, we have increased confidence that these effects are not driven by between-client differences. As such, this significant relationship cannot be accounted for by any stable third variables. Despite this, it is best to interpret these findings with caution, as they conflict markedly with previous research.

**Moderation by Prior Episodes**

Prior episodes of depression moderated the alliance-outcome relationship in the change through post-treatment approach. Stronger alliances predicted greater symptom change for those with two or more prior episodes of depression. This finding contrasts with previous work, which has found evidence of the alliance-outcome relationship was limited to clients with fewer prior episodes of depression (Falkenström et al., 2016; Lorenzo et al., 2014; Lorenzo et al., 2017). Prior episodes failed to moderate the alliance-outcome relationship in the session-to-session approach. The literature is quite mixed on how prior episodes moderate the alliance-outcome relationship when examining session-to-session changes. One study reported a moderation effect unlike the one we reported (Falkenström et al., 2016), while another study failed to find evidence of such moderation (Constantino et al., 2017).

Prior to our study, we would have had little reason to expect differences in findings based on measure differences as the studies in the literature have used different conceptions of alliance and outcome measures and found similar effects. WAI scores (Constantino et al., 2017; Falkenström et al., 2016; Lorenzo et al., 2014) and the self-report Helping Alliance Questionnaire (Lorenzo et al., 2017) are among the different alliance measures used, whereas BDI-II (Constantino et al., 2017; Lorenzo et al., 2014; Falkenström et al., 2016) and the Hamilton Rating Scale for Depression (Lorenzo et al., 2017) were among the different outcome measures used.

Our findings suggest prior episodes of depression may serve to moderate a more cumulative, or delayed effect of alliance-outcome relationships. As findings were non-significant in the within-client session-to-session approach, we lacked additional evidence that could have bolstered the case that the alliance might causally contribute to outcome. In addition, these findings should be interpreted with caution, as they conflict with prior studies.

**Limitations**

Several limitations exist within our study. First, our sample may have lacked the power to test potential moderators. However, our sample was fairly large, compared with previous work. Our sample was the second largest among studies that examined one or more of the moderators of the alliance-outcome relationship we examined (with Falkenström et al., 2013 being the largest). It is worth noting that studies are rarely if ever designed to test these effects specifically, but that larger samples would yield more reliable estimates of the effects of interest. Second, session-to-session analyses only focused on sessions early in treatment. Only the change through post-treatment approach included changes occurring later on in treatment. It is unclear how our results might have differed if the session-to-session approach was utilized later in treatment. Third, the alliance was not experimentally manipulated in our study. Thus, despite the advantages of some of the analytic approaches we used, none of the approaches allows for definitive identification of causal effects.

### Future Directions

Future studies should attempt to recruit larger samples when examining client characteristics, as there is a potential need to examine moderator effects with more power. In addition, examining moderator effects across the full course of treatment with within-client session-to-session approaches would provide an opportunity to examine how predictive relationships might change over the course of treatment. Third, future studies should experimentally vary levels of the alliance. Previous work has examined therapies focused on improving the alliance (Muran, Safran, Eubanks, & Gorman, 2018; Zilcha-Mano et al., 2016), with initial evidence that these treatments improve the therapeutic alliance.

## Conclusion

Evaluating choices of methodology is essential in conducting analyses. Before deciding on analytic strategies, researchers should do their best to understand the benefits and limits of their potential approach and choose an approach that aligns with their research questions. If uncertainty exists in determining the proper analysis, employing multiple analytic strategies, if feasible, may facilitate a better understanding of the effects of interest. It is vital that researchers think critically about which strategies to use and decide on strategies before conducting analyses.

While we favor the use of within-client session-to-session approaches in our analyses, we note some uncertainty. Removing the confounds of stable, between-client characteristics is a valuable step towards understanding the alliance-outcome relationship more clearly. In addition, we tend to believe that alliance would exhibit immediate effects on outcome, rather than only exhibit effects that are evident over longer periods of time. As we only collected alliance scores early in treatment, however, our within-client session-to-session data cannot speak to the effects alliance has across longer periods. As such, the change through post-treatment approach was the only approach we used that included change in later portions of treatment as part of the symptom improvement to be predicted.

Our findings complicate the literature on moderators of the alliance-outcome relationship. Although previous findings are mixed, our conflicting findings are wholly unexpected. There is value in extending our knowledge of these moderators, as these discrepancies should either be resolved or more fully understood. In the future, we hope to see studies examining the alliance-outcome relationship with a methodological sophistication that leads us closer to answers about the reliability of moderators of the alliance-outcome relationship and what if any causal role the alliance plays in helping patients to achieve positive therapeutic outcomes.

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Table 1.

*Correlations, Means, and Standard Deviations of Process and Outcome Variables.*

| | *M* | *SD* | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| 1. Alliance | 59.00 | 11.42 | - | | | |
| 2. Maladaptive personality traits | 30.74 | 10.09 | -0.05 | - | | |
| 3. Prior episodes | 1.19 | 1.32 | -0.06 | -0.09 | - | |
| 4. Intake BDI-II | 32.82 | 8.79 | 0.02 | 0.36*** | 0.16 | - |

*Note.* * $p < .05$, ** $p < .01$, *** $p < .0001$.

BDI-II = Beck Depression Inventory - II.

Table 2.

*Paired t-tests of BDI-II Scores Across Various Time Points.*

| | Earlier session | | Later session | | | | |
|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *t* | df | *g* |
| Change over Large Intervals | | | | | | | |
| Intake - post | 32.82 | 8.79 | 11.37 | 11.34 | 18.84*** | 96 | 2.15 |
| Session 3 -post | 24.95 | 12.09 | 13.13 | 12.46 | 12.51*** | 121 | 0.96 |
| Session 1 - 6 | 28.44 | 10.53 | 22.81 | 13.48 | 6.53*** | 115 | 0.47 |
| Successive sessions | | | | | | | |
| Session 1 - 2 | 28.44 | 10.53 | 26.61 | 11.56 | 3.28* | 122 | 0.17 |
| Session 2 - 3 | 26.61 | 11.56 | 24.95 | 12.09 | 3.07* | 121 | 0.14 |
| Session 3 - 4 | 24.95 | 12.09 | 24.01 | 12.39 | 1.51 | 119 | 0.08 |
| Session 4 - 5 | 24.01 | 12.39 | 24.16 | 13.19 | 0.21 | 118 | 0.01 |
| Session 5 - 6 | 24.16 | 13.19 | 22.81 | 13.48 | 1.76 | 115 | 0.10 |

*Note.* When examining differences from intake to post-treatment, only those with post-treatment scores were included. When examining differences from session 3 to post-treatment, last observation carried forward was using for any missing post-treatment scores.

* $p < .05$, ** $p < .01$, *** $p < .0001$.

Table 3.

*Alliance as a Predictor of Symptom Change.*

| | *b* | *β* | *SE* | *t* |
|---|---|---|---|---|
| Change Through Post-Treatment | -1.00 | -0.15 | 0.47 | -2.13* |
| Session-to-session: Raw | -0.13 | -0.02 | 0.10 | -1.34 |
| Session-to-session: Within | 0.16 | 0.01 | 0.33 | 0.48 |
| Session-to-session: Between | -0.03 | -0.02 | 0.02 | -1.79† |

*Note*. Each line shows a coefficient for alliance in a separate model.

† $p < .10$, * $p < .05$. *b* = Unstandardized beta. *β* = Standardized beta.

Table 4.

*Maladaptive personality traits as a moderator of the alliance-outcome relationship.*

| | *b* | *β* | *SE* | *t* |
|---|---|---|---|---|
| Change Through Post-Treatment | | | | |
| Alliance | -1.01 | -0.15 | 0.49 | -2.07* |
| Maladaptive personality traits | -0.09 | -0.07 | 0.09 | -0.98 |
| Interaction | 0.06 | 0.10 | 0.05 | 1.43 |
| Session-to-session: Raw | | | | |
| Alliance | -0.14 | -0.02 | 0.10 | -1.38 |
| Maladaptive personality traits | 0.01 | 0.01 | 0.02 | 0.86 |
| Interaction | 0.008 | 0.01 | 0.009 | 0.91 |
| Session-to-session: Within | | | | |
| Alliance | -0.02 | -0.01 | 0.05 | -0.39 |
| Maladaptive personality traits | 0.01 | 0.01 | 0.02 | 0.69 |
| Interaction | 0.02 | 0.06 | 0.006 | 3.25** |
| Session-to-session: Between | | | | |
| Alliance | -0.03 | -0.02 | 0.03 | -1.74 |
| Maladaptive personality traits | 0.01 | 0.01 | 0.02 | 0.78 |
| Interaction | 0.0005 | 0.004 | 0.001 | 0.34 |

*Note*. * $p < .05$, ** $p < .01$. $b$ = Unstandardized beta. $\beta$ = Standardized beta. BDI scores were included as predictors, but they are not presented here for ease of presentation.

Table 5.

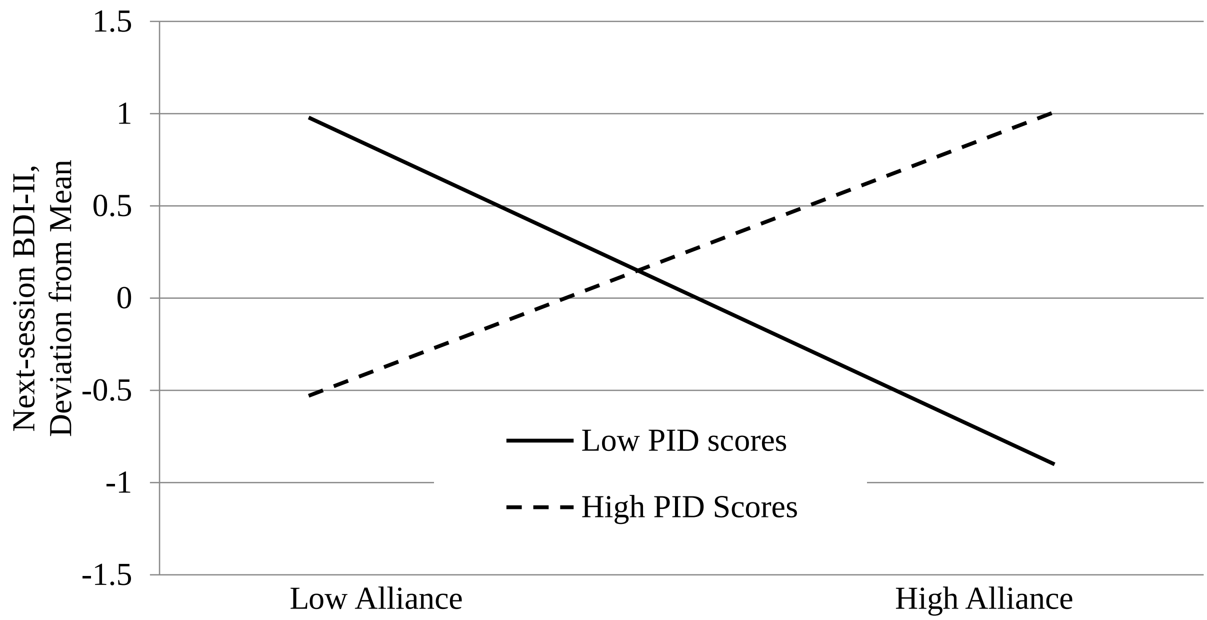
*Prior episodes of depression as a moderator of the alliance-outcome relationship.*

| | *b* | *β* | *SE* | *t* |
|---|---|---|---|---|
| Change Through Post-Treatment | | | | |
| Alliance | -1.05 | -0.16 | 0.46 | -2.31* |
| Prior Episodes | 0.53 | 0.06 | 0.65 | 0.82 |
| Interaction | -1.08 | -0.21 | 0.34 | 3.16** |
| Session-to-session: Raw | | | | |
| Alliance | -0.12 | -0.02 | 0.10 | -1.22 |
| Prior Episodes | -0.09 | -0.009 | 0.13 | -0.66 |
| Interaction | -0.07 | -0.01 | 0.07 | -1.01 |
| Session-to-session: Within | | | | |
| Alliance | 0.002 | 0.0005 | 0.06 | 0.03 |
| Prior Episodes | -0.06 | -0.007 | 0.13 | -0.49 |
| Interaction | -0.01 | -0.005 | 0.04 | -0.30 |
| Session-to-session: Between | | | | |
| Alliance | -0.03 | -0.02 | 0.02 | -1.55 |
| Prior Episodes | -0.11 | -0.01 | 0.13 | -0.82 |
| Interaction | -0.02 | -0.02 | 0.01 | -1.48 |

*Note.* * < .05, ** p < .01. BDI scores were included as predictors, but they are not presented here for ease of presentation.

Figure 1.

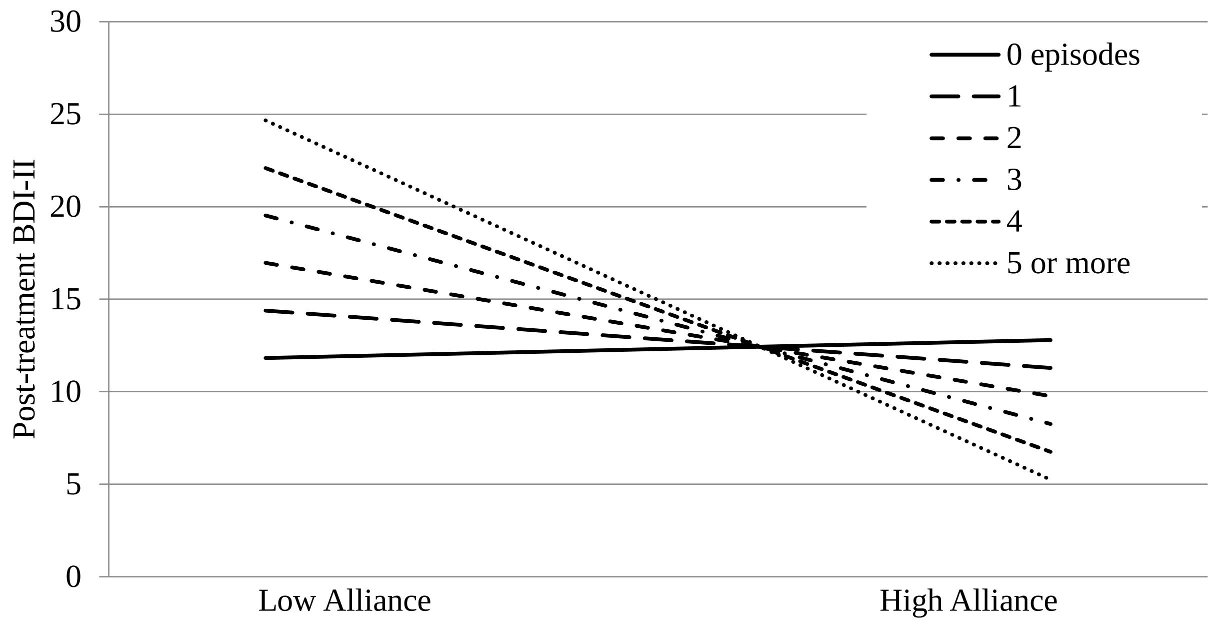
*Interaction of Within-client Alliance and Maladaptive Personality Traits in the Session-to-Session approach.*




*Note.* BDI-II = Beck Depression Inventory - II. PID = The Personality Inventory for DSM-5-Brief Form. Low and high values of within-client alliance scores are ± 1 SD (i.e., 4.09). Low and high values of PID scores are 20.65 and 40.83, respectively. Plotted points represent the average deviation from the mean of next-session BDI-II scores (M = 25.2), controlling for current-session BDI-II. All predictors were mean-centered.

Figure 2.

*Interaction of Alliance and Prior Episodes of Depression in the Change through Post-Treatment Approach.*




*Note.* BDI-II = Beck Depression Inventory - II. Plotted points represent the average BDI-II score at the end of treatment, controlling for session 3 BDI-II. All predictors were mean-centered.