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J Consult Clin Psychol. 2015 June ; 83(3): 637–642. doi:10.1037/ccp0000021.**Therapeutic alliance in a randomized clinical trial for bulimia nervosa****Erin C. Accurso¹, Ellen E. Fitzsimmons-Craft^{1,2}, Anna Ciao¹, Li Cao³, Ross D. Crosby^{3,4}, Tracey L. Smith⁵, Marjorie H. Klein⁶, James E. Mitchell^{3,4}, Scott J. Crow^{7,8}, Stephen A. Wonderlich^{3,4}, and Carol B. Peterson^{7,8}**¹The University of Chicago, Chicago, IL, USA²University of North Carolina, Chapel Hill, NC, USA³Neuropsychiatric Research Institute, Fargo, ND, USA⁴University of North Dakota School of Medicine and Health Sciences, Fargo, ND, USA⁵Baylor College of Medicine, Houston, TX, USA⁶University of Wisconsin, Madison, WI, USA⁷University of Minnesota Medical School, Minneapolis, MN, USA⁸The Emily Program, Minneapolis, MN, USA**Abstract**

Objective—This study examined the temporal relation between therapeutic alliance and outcome in two treatments for bulimia nervosa (BN).

Method—Eighty adults with BN symptoms were randomized to 21 sessions of integrative cognitive-affective therapy (ICAT) or enhanced cognitive-behavioral therapy (CBT-E). Bulimic symptoms (i.e., frequency of binge eating and purging) were assessed at each session and post-treatment. Therapeutic alliance (Working Alliance Inventory) was assessed at sessions 2, 8, 14, and post-treatment. Repeated-measures analyses using linear mixed models with random intercepts were conducted to determine differences in alliance growth by treatment and patient characteristics. Mixed-effects models examined the relation between alliance and symptom improvement.

Results—Overall, patients in both treatments reported strong therapeutic alliances. Regardless of treatment, greater therapeutic alliance between (but not within) subjects predicted greater reductions in bulimic behavior; reductions in bulimic behavior also predicted improved alliance. Patients with higher depression, anxiety, or emotion dysregulation had a stronger therapeutic alliance in CBT-E than ICAT, while those with more intimacy problems had greater improvement in therapeutic alliance in ICAT compared to CBT-E.

Conclusions—Therapeutic alliance has a unique impact on outcome, independent of the impact of symptom improvement on alliance. Within- and between-subject effects revealed that changes in alliance over time did not predict symptom improvement, but rather that individuals who had a stronger alliance overall had better bulimic symptom outcomes. These findings indicate that therapeutic alliance is an important predictor of outcome in the treatment of BN.

Keywords

bulimia nervosa; psychotherapy; therapeutic alliance; between-subject effects

Therapeutic alliance is a frequently studied common factor in psychotherapy that consistently predicts patient improvement across clinical problems and psychotherapies (Castonguay, Constantino, & Holtforth, 2006), with an effect size of .28 in a recent meta-analysis (Horvath, Del Re, Flückiger, & Symonds, 2011). Most definitions of therapeutic alliance converge on several aspects of this construct, including the affective bond between the patient and therapist, as well as their agreement on therapeutic tasks and goals (Bordin, 1979).

However, untangling the alliance-outcome relation is complex because there are several potential contributors—patients, therapists, and their interaction (i.e., match), and determining temporal precedence is complex. While therapeutic alliance may predict symptomatic outcome, symptom change may also predict alliance (DeRubeis, Brotman, & Gibbons, 2005). Recent research suggests that therapist variability in alliance is more important in predicting outcome than patient variability (Baldwin, Wampold, & Imel, 2007; Del Re, Flückiger, Horvath, Symonds, & Wampold, 2012; Zuroff, Kelly, Leybman, Blatt, & Wampold, 2010). In addition, research suggests that alliance temporally precedes symptom improvement (Falkenström, Granström, & Holmqvist, 2014; Zilcha-Mano, Dinger, McCarthy, & Barber, 2013) and that prior symptom reduction can also precede alliance improvement (Falkenström et al., 2014).

Research has examined the alliance-outcome relation across a variety of psychiatric diagnoses but infrequently focused on this relationship in bulimia nervosa (BN). Therapeutic alliance may be particularly important in the treatment of this disorder given that interpersonal problems in BN are associated with symptom maintenance (Arcelus, Haslam, Farrow, & Meyer, 2013). Various studies suggest that alliance predicts improvements in binge eating (Treasure et al., 1999) and purging (Constantino, Arnow, Blasey, & Agras, 2005; Treasure et al., 1999) across multiple therapies, but other studies find less clear associations (Loeb et al., 2005; Wilson et al., 1999). Several methodological and statistical differences may contribute to discrepant findings, including different perspectives on alliance (i.e., self-rated versus observer-coded); measurement (early versus mid-treatment, single versus repeated measures); and analysis (e.g., controlling for baseline values versus change scores). Given that improved symptoms in BN can lead to improved alliance (Wilson et al., 1999), temporal analysis that controls for prior symptom improvement is critical. In addition, it is necessary to account for the nested structure of treatment data (i.e., time nested within individuals, who are nested within therapists) to accurately examine the impact of alliance on outcome in the context of time, individual differences, and therapist effects.

Thus, this study examined the temporal relation between alliance and outcome in two BN treatments—integrative cognitive affective therapy (ICAT) or enhanced cognitive behavioral therapy (CBT-E). Both treatments are similar in their emphasis on establishing and maintaining a strong therapeutic alliance for treatment engagement. The main aim was

to examine the bidirectional relation between alliance and bulimic symptoms. Secondary aims were to a) examine differences in alliance over time between treatments and b) identify clinical characteristics that predicted alliance or moderated the effect of treatment on alliance.

Method

Participants

Additional details of this two-site randomized clinical trial design and treatments are provided in the main outcome report (Wonderlich et al., 2014). Eighty adults with DSM-5 BN (APA, 2013) and partial BN (i.e., same criteria as DSM-5 with subjective rather than objective binge eating episodes) were randomized to ICAT or CBT-E. Briefly, ICAT is a new treatment based on the idea that emotional states serve as proximal antecedents of BN behavior and that BN behavior regulates emotional states. Interventions focus on identifying cues for binge eating and managing binge urges, normalizing eating patterns with meal planning, and modifying behavioral reactions to cues which elicit negative emotion (Wonderlich et al., 2014). In contrast, CBT-E is a recently updated but established treatment that employs psychoeducation, self-monitoring, and behavioral exposure to normalize eating patterns and modify cognitive biases, particularly over-evaluation of shape and weight (Fairburn, 2008). Four psychologists (two per site) delivered both treatments in 21 50-min sessions over 19 weeks.

Participants on a stable dose of antidepressant medication for at least 6 weeks could be included. Exclusion criteria included pregnancy or lactation, body mass index (BMI) < 18, lifetime bipolar or psychotic disorder, current substance use disorder, medical or psychiatric instability, and current psychotherapy. Written informed consent was obtained from all participants. The institutional review boards at each site approved this study.

Measures

At baseline, trained interviewers determined eating disorder diagnosis (Eating Disorder Examination: EDE) (Fairburn, 2008) and comorbid psychiatric diagnoses (Structured Clinical Interview for DSM-IV Axis I Disorders – Patient Version: SCID-I/P; First et al., 2002). The EDE also provided a measure of initial eating disorder symptoms (EDE global score). Additional measures at baseline assessed depressive symptoms (Beck Depression Inventory: BDI; Beck et al., 1961), anxiety symptoms (Spielberger Trait Anxiety Inventory: STAI (Spielberger et al. 1970), emotion dysregulation (Difficulties in Emotion Regulation Scale: DERS; Gratz & Roemer, 2004), and personality pathology (Dimensional Assessment of Personality Pathology, Basic Questionnaire: DAPP-BQ; Livesley & Jackson, 2009). Patients reported on therapeutic alliance at sessions 2, 8, 14, and post-treatment, which occurred the week after the last session (Working Alliance Inventory: WAI; Horvath & Greenberg, 1986). Bulimic symptoms (i.e., frequency of binge eating episodes and purging episodes) were assessed through weekly written patient recalls at each session, post-treatment, and treatment follow-up (32 weeks).

Statistical analyses

Repeated-measures analyses using linear mixed models with an autoregressive (order 1) covariance structure and random intercepts were used to examine the bidirectional relation between alliance and bulimic symptoms with SPSS Version 22. Two separate models tested whether therapeutic alliance (at sessions 2, 8, 14, and post-treatment) predicted subsequent improvement in bulimic symptoms (at sessions 3–7, 9–13, 15–21, and treatment follow-up, using the average number of bulimic behaviors per week over the specified time period), controlling for bulimic behaviors episodes in the preceding week (at sessions 2, 8, 14, and post-treatment; see supplementary material for visual diagram). Models included a random intercept, random effects for time (centered at mid-treatment) and therapist, and fixed effects for treatment and therapeutic alliance. Therefore, the main effect for therapeutic alliance and its interaction with time were entered as both a within-subjects ($\text{alliance}_{\text{within-subjects}}$, person-mean centered around each person's individual trend-line as a time-varying covariate) and between-subjects variable ($\text{alliance}_{\text{between-subjects}}$, grand-mean centered person means—the intercept of each person's individual trend-line—as a time invariant covariate; Curran & Bauer, 2011).

Another mixed-effects model examined whether improvements in bulimic behavior earlier in treatment (measured as the difference between weekly number of binge eating and purging episodes at sessions 1, 8, and 14 and the average number of binge eating and purging episodes per week between sessions 2–7, 9–13, and 15–21) predicted subsequent improvement in alliance (measured at sessions 8, 14, and post-treatment). This model included a random intercept, random effects for time (centered at mid-treatment) and therapist, and fixed effects for treatment, average number of bulimic behaviors per week (entered separately as within-subjects centered covariates), and alliance at time points preceding the dependent variable.

Mixed-effects models were also used to examine differences in alliance over time between treatments (a) and to identify clinical characteristics that predicted alliance or moderated the effect of treatment on alliance (b). Baseline predictors of alliance included age, sex, BMI, eating disorder severity (EDE Global), anxiety symptoms (STAI), depressive symptoms (BDI), emotion dysregulation (DERS), lifetime substance abuse (SCID-I/P), and personality pathology (DAPP subscales, examined as a set). These predictors were examined in separate linear mixed models, including main effects and all two- and three-way interactions with treatment and time, with random intercepts and random effects for time and therapist.

Results

Participants were predominantly Caucasian (87.5%) females ($n = 72$, 90%) with a mean age of 27.3 ($SD = 9.6$), mean BMI of 23.9 ($SD = 5.5$), and mean EDE global score of 3.3 ($SD = 1.1$). The majority (72.5%, $n = 58$) met full threshold DSM-5 criteria for BN. There were no significant differences by treatment on any demographic or clinical characteristics at baseline.

What is the nature of the relation between alliance and bulimic symptoms?

Does therapeutic alliance predict reductions in bulimic symptoms?—After controlling for bulimic symptoms at a previous time point, several predictors of bulimic symptoms at a subsequent time point emerged (see Table 1). There was a significant main effect for between-subjects therapeutic alliance ($B = -0.100$, $SE = 0.029$, 95% CI $[-0.158, -0.042]$, $p = .001$), such that individuals with a stronger therapeutic alliance reported greater reductions in bulimic symptoms. There was no effect between time and between-subjects therapeutic alliance ($p = .98$), indicating that the relation between the alliance and bulimic symptom reduction remained constant over time. Time ($p = .97$), treatment ($p = .30$), therapist ($p = .11$), and within-subjects therapeutic alliance ($p = .51$) were not associated with reductions in bulimic symptoms.

Does symptom improvement predict improved alliance?—In the reverse model with alliance as the outcome, reductions in bulimic symptoms predicted improved alliance ($B = -0.346$, $SE = 0.152$, 95% CI $[-0.646, -0.046]$, $p = .024$), after controlling for prior alliance (see Table 2). There were no effects of time, treatment, or therapist on alliance (p s $> .06$).

Does alliance across time differ between treatments?

Early therapeutic alliance (session 2) was relatively high in both ICAT ($M = 222.53$, $SD = 19.84$) and CBT-E ($M = 220.08$, $SD = 19.27$) (possible range: $[36,252]$). In the model that included treatment, time, and their interaction as predictors, alliance remained stable across time ($B = 0.305$, $SE = 0.222$, 95% CI $[-0.133, 0.743]$, $p = .17$), and alliance strength did not differ overall ($B = -3.129$, $SE = 2.932$, 95% CI $[-8.902, 2.644]$, $p = .29$) or across time between treatments ($B = -0.400$, $SE = 0.319$, 95% CI $[-1.028, 0.229]$, $p = .21$).

What factors predict alliance or moderate the effect of treatment on alliance?

There were main effects for depression ($B = -0.752$, $SE = 0.174$, 95% CI $[-1.096, -0.409]$, $p < .0001$), anxiety ($B = -0.718$, $SE = 0.147$, 95% CI $[-1.008, -0.428]$, $p < .0001$), and emotion dysregulation ($B = -0.196$, $SE = 0.074$, 95% CI $[-0.341, -0.051]$, $p = .008$), indicating that therapeutic alliance was greater overall for patients with less depression, anxiety, and emotion dysregulation. There were also corresponding two-way interactions with treatment, indicating that the relationship between treatment type and alliance varied by level of depression ($B = 0.921$, $SE = 0.251$, 95% CI $[0.426, 1.416]$, $p = .0003$), anxiety ($B = 0.638$, $SE = 0.234$, 95% CI $[0.178, 1.098]$, $p = .007$), and emotion dysregulation ($B = 0.261$, $SE = 0.117$, 95% CI $[0.030, 0.492]$, $p = .027$). Specifically, individuals in CBT-E had similar levels of therapeutic alliance across levels of symptomatology (i.e., depression, anxiety, emotion dysregulation), whereas individuals in ICAT with low levels of symptomatology reported a stronger therapeutic alliance than those with high levels of symptomatology (see Figures 1–3). Finally, there was a three-way interaction between treatment, time, and DAPP-BQ Intimacy Problems, which revealed that differences in intimacy problems moderated the impact of treatment type on therapeutic alliance over the course of treatment ($B = 0.076$, $SE = 0.031$, 95% CI $[0.013, 0.138]$, $p = .019$). In CBT-E, individuals with high intimacy problems had growth in alliance over time while those with low intimacy problems had

deteriorations in alliance; in ICAT, individuals with high intimacy problems had lower initial alliance but greater growth in alliance, while those with low intimacy problems had high and stable alliance across time (see Figure 4). The main effects of age, sex, BMI, eating disorder severity, substance abuse history, and affective lability and their interactions with treatment ($ps > .07$) were not significant predictors of alliance; the effect of therapist on alliance level was also non-significant across models ($ps > .07$).

Discussion

This study found that patients with BN reported strong therapeutic alliances that were stable across time in two treatments. A stronger alliance predicted greater improvements in bulimic behavior. However, between-patient alliance (i.e., individuals' mean level of alliance across time) was what contributed to the alliance-outcome relation, rather than the within-individual alliance (i.e., individuals' change in alliance over time). Thus, individuals with stronger overall alliances had greater reductions in bulimic behavior. Additionally, greater reductions in bulimic behavior predicted improved therapeutic alliance. The bidirectional nature of the alliance-outcome relation is consistent with prior research in BN (Wilson et al., 1999).

Although therapists did not contribute to overall therapeutic alliance strength, certain patient characteristics were associated with a stronger alliance across time between treatments. Higher levels of depression, anxiety, and emotion dysregulation were associated with lower overall alliance. Further, each variable's interaction with treatment indicated that patients with higher symptomatology reported stronger overall therapeutic alliances in CBT-E, whereas those with lower symptomatology reported stronger overall therapeutic alliances in ICAT. Patients with high intimacy problems also had greater growth in alliance over time in ICAT than CBT-E, whereas those with low intimacy problems had deteriorating alliance in CBT-E (but stable alliance in ICAT). Greater alliance in CBT-E for individuals with high emotionality could be due to CBT-E's relatively more prescriptive, structured approach focused on accomplishing concrete tasks. This approach may have been experienced as more predictable and attainable for patients with this type of psychopathology, whereas the emotion-focused aspects of ICAT may have been more challenging. In contrast, individuals with low emotionality and intimacy problems may have enjoyed ICAT's focus on emotional states within the interpersonal context, which was approachable for these patients. For those with high intimacy problems in ICAT, lower initial alliance but greater growth in alliance over time may reflect greater initial difficulty with ICAT's emotional-interpersonal focus but easier engagement in these tasks over time.

Some patient characteristics were associated with greater alliance in CBT (high symptomatology); others were associated with greater alliance in ICAT (low symptomatology and intimacy problems). However, these results do not suggest that one therapeutic approach is superior to the other for particular individuals, and future analyses are needed to examine moderators of treatment outcome. These results are somewhat surprising given that only one other study of BN has found differences in alliance by patient characteristics (Constantino & Smith-Hansen, 2008); most others have found equivalent alliance across treatments (Loeb et al., 2005; Treasure et al., 1999; Wilson et al., 1999).

While this analysis provides some insight into patient and treatment characteristics that contribute to stronger patient-therapist alliances, it was limited in its ability to examine the impact of therapist characteristics or their interaction with patient characteristics on alliance. Although there was a significant therapist effect in this study, our small therapist sample limits the generalizability of this finding.

This study contributes to our understanding of the causal direction of the alliance-outcome relation. Strengths include the use of multilevel statistical models that examined the bidirectional, longitudinal relation between alliance and symptom improvement for adults with BN and partial BN across two treatments, thereby increasing the generalizability of the results. Additionally, these models accounted for between- and within-subject effects, as well as therapist effects. Despite unique methodology, this study was limited by its relatively modest sample size. Given only 80 patients and four therapists, the various possible patient-therapist combinations with respect to gender, race/ethnicity, and other personal characteristics are restricted, hindering a more thorough examination of alliance and therapist effects. Furthermore, the sample size restricted an examination of within- and between-therapist effects, which would have clarified how patient outcomes would differ based on therapists' tendency to form stronger or weaker alliances with their patients, on average. The clinical implications of this analysis are critical, given that therapist actions or characteristics may be driving the alliance-outcome effect. Although alliance was assessed four times (about six sessions apart), more frequent assessment would have enabled a more detailed study of the bidirectional alliance-outcome relation. In addition, this study relied on patient self-report, without evaluating therapist or observer perspectives on therapeutic alliance. Self-reported alliance was high with minimal within-patient variability, limiting its potential as a robust predictor of outcome. Finally, this recruited sample may be somewhat unique from "usual" patients who present for non-randomized clinical care with respect to motivation and willingness to engage in a manualized intervention.

Therapeutic alliance appears to be an important predictor of reduced bulimic behavior, which in turn preceded improvements in alliance. The alliance-outcome relation was due to between- rather than within-patient therapeutic alliance, but the small sample of therapists limited this study's ability to address the importance of patient versus therapist contributions to the alliance. Nevertheless, this study offers preliminary information about patient characteristics that may indicate the type of treatment in which a patient will feel most aligned with his/her therapist. Future research should examine how the therapist-patient interaction contributes to the alliance-outcome relation, as well as directly examine how particular patient characteristics may moderate the relation between treatment and outcome.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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Public health significance

This study highlights the importance of a strong therapeutic alliance for good treatment outcome in bulimia nervosa. Individuals' improvements in alliance over the course of treatment did not specifically predict subsequent symptom improvement, but individuals with stronger overall alliances had superior symptom reductions overall.

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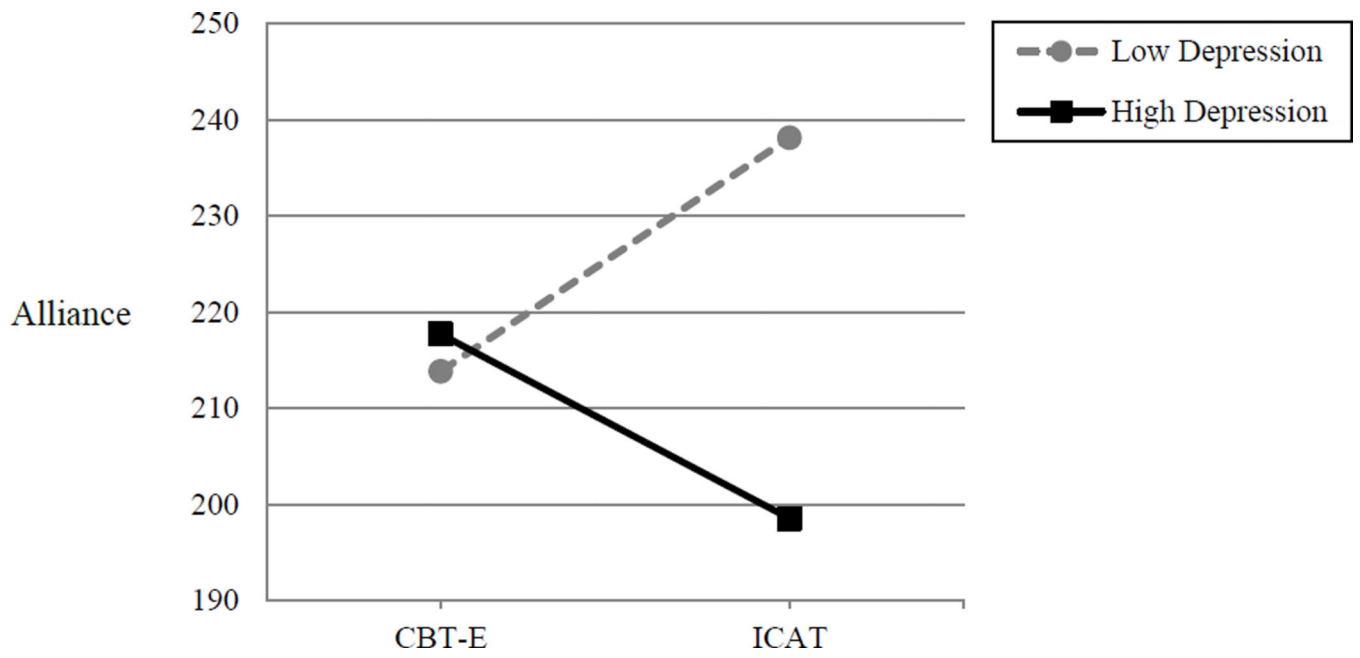


Figure 1. Level of alliance by treatment and level of depressive symptoms (high symptoms = 1SD above the mean, low symptoms = 1SD below the mean).

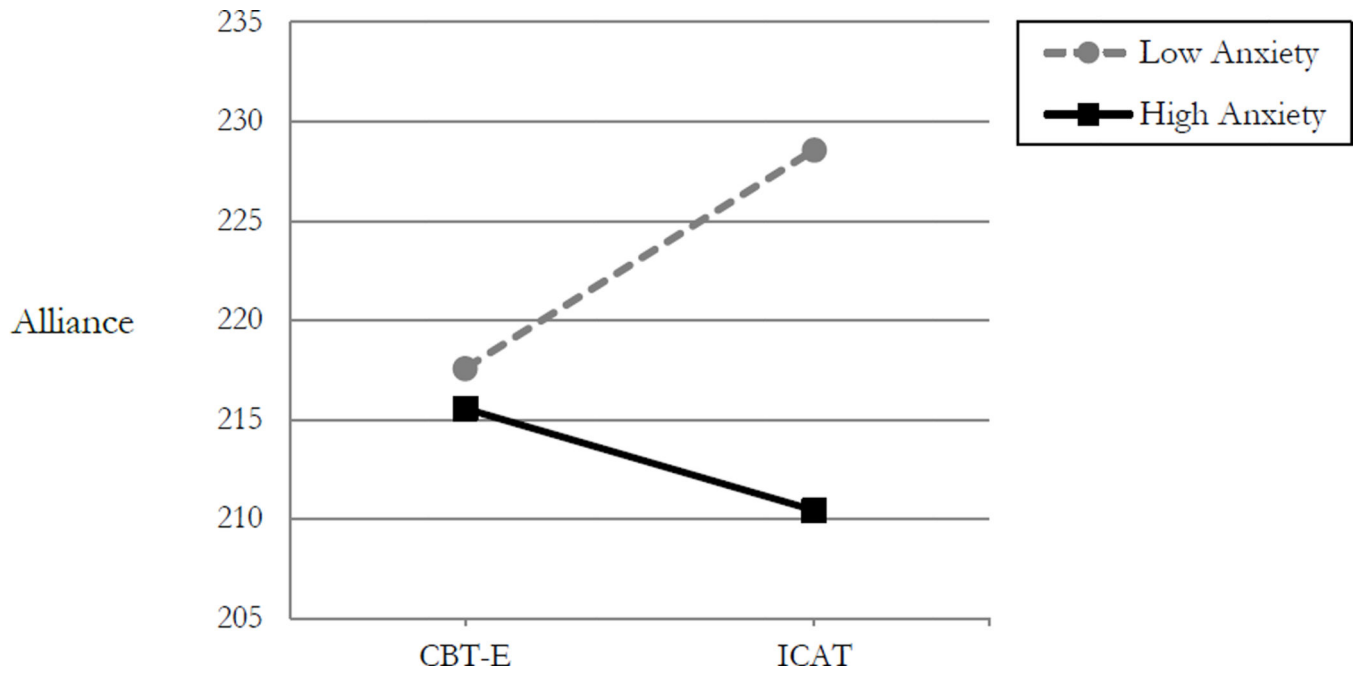


Figure 2. Level of alliance by treatment and level of anxiety symptoms (high symptoms = 1SD above the mean, low symptoms = 1SD below the mean).

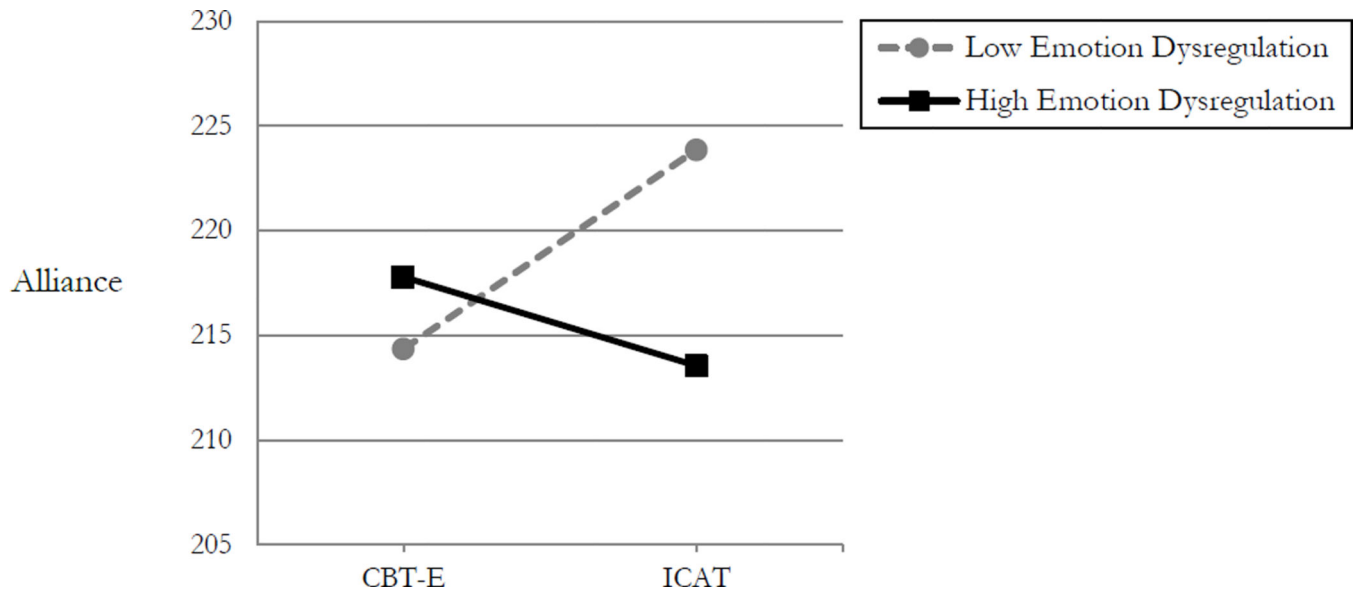


Figure 3. Level of alliance by treatment and level of emotion dysregulation (high dysregulation = 1SD above the mean, low dysregulation = 1SD below the mean).

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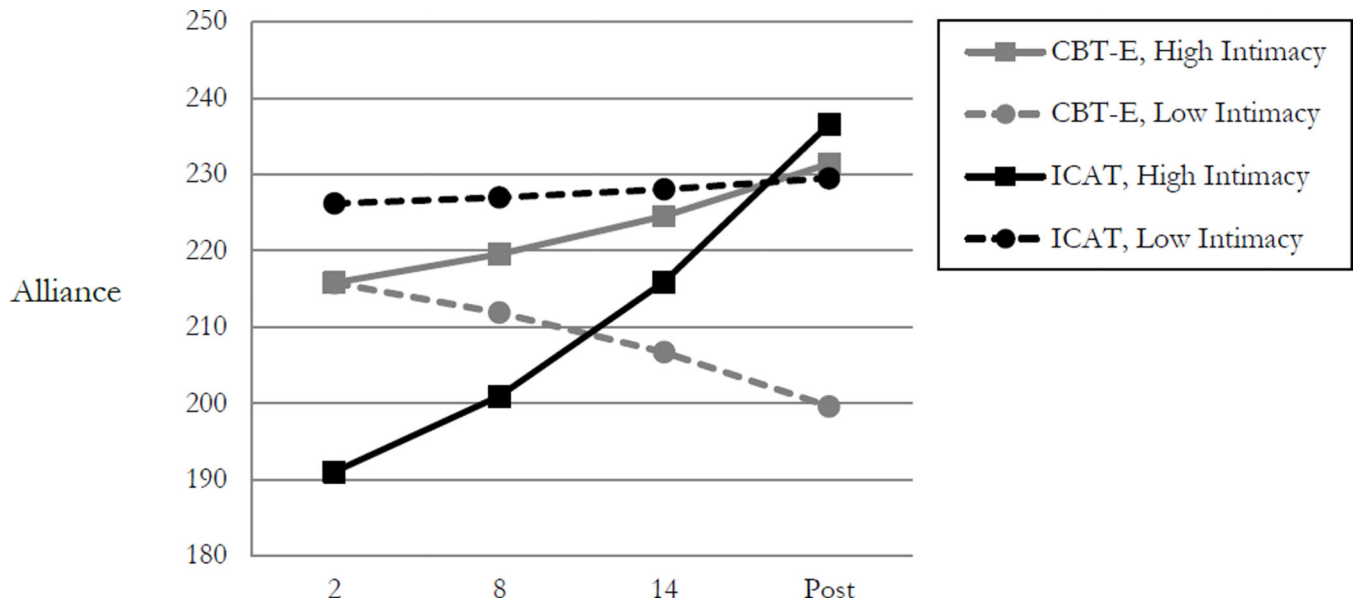


Figure 4. Growth in alliance over time by treatment and level of intimacy problems (high problems = 1SD above the mean, low problems = 1SD below the mean).

Table 1

The impact of therapeutic alliance on reductions in bulimic behavior.

Predictors	Estimate	SE	95% CI	<i>p</i>
Time	0.036	0.814	[-1.596, 1.667]	.965
Treatment	-1.266	1.222	[-3.678, 1.146]	.302
Therapist				.112
therapist 1 (v. 4)	3.455	1.630	[0.237, 6.672]	.036
therapist 2 (v. 4)	2.521	2.026	[-1.476, 6.519]	.215
therapist 3 (v. 4)	0.395	1.630	[-2.823, 3.613]	.809
alliance _{within-subjects}	-0.044	0.066	[-0.175, 0.087]	.507
alliance _{within-subjects} × time	0.005	0.009	[-0.013, 0.023]	.602
alliance _{between-subjects}	-0.100	0.029	[-0.158, -0.042]	.001
alliance _{between-subjects} × time	<0.001	0.004	[-0.007, 0.007]	.983
prior bulimic behavior	0.365	0.143	[0.083, 0.646]	<.001

Table 2

The impact of bulimic symptom reduction on improvements in therapeutic alliance.

Predictors	Estimate	SE	95% CI	P
Time	0.327	0.173	[-0.017, 0.671]	.062
therapist				.161
therapist 1 (v. 4)	5.784	2.649	[0.543, 11.026]	.031
therapist 2 (v. 4)	2.093	3.268	[-4.381, 8.567]	.523
therapist 3 (v. 4)	2.942	2.842	[-2.681, 8.565]	.303
treatment	2.121	1.918	[-1.674, 5.917]	.271
bulimic behavior	-0.346	0.152	[-0.646, -0.046]	.024
prior alliance	0.822	0.044	[0.736, 0.908]	<.0001

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