

# Therapeutic Alliance and Treatment Adherence in Two Interventions for Bulimia Nervosa: A Study of Process and Outcome

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The relationship between therapeutic alliance, therapist adherence to treatment protocol, and outcome was analyzed in a randomized trial of cognitive-behavioral therapy (CBT) and interpersonal psychotherapy for bulimia nervosa. Independent observers rated audiotapes of full-length therapy sessions. Purging frequency was the primary outcome variable. There were no significant therapist or Therapist  $\times$  Treatment effects on outcome. Although results showed high levels of alliance and adherence across treatments, CBT was associated with greater adherence. Across treatments and time points, better adherence was associated with enhanced alliance. Treatment condition and baseline purging frequency, but not adherence, predicted outcome. Early alliance predicted posttreatment purging frequency. In temporal analyses, prior symptom change assessed early in treatment was significantly related to subsequent adherence at midtreatment.

*Keywords:* therapeutic alliance, treatment adherence, bulimia nervosa, cognitive-behavioral therapy, interpersonal psychotherapy

Both technical and relational factors have been shown to contribute to treatment effects in psychotherapy research, although controversy continues about their relative contribution to outcome. A commonly held view is that the therapist-patient relationship may be more important than specific techniques (Beitman, Gold-

fried, & Norcross, 1989). In cognitive-behavioral therapy (CBT), although an effective therapist-patient relationship is viewed as fundamentally important for therapeutic success (O'Leary & Wilson, 1987; Wilson, Fairburn, & Agras, 1997), specific techniques have been shown to be more potent predictors of treatment outcome in studies of depression (DeRubeis & Feeley, 1990; Feeley, DeRubeis, & Gelfand, 1999) and of bulimia nervosa (BN; Wilson et al., 1999). A previous analysis of the data from the randomized controlled study examined here, using the mediational analysis described by Kraemer, Wilson, Fairburn, and Agras (2002), showed that a patient self-report measure of the therapeutic alliance was not a mediator of treatment outcome in either CBT or interpersonal psychotherapy (IPT; Wilson, Fairburn, Agras, Walsh, & Kraemer, 2002). A goal of this report is to examine the comparative effects of rater-assessed therapeutic alliance and treatment techniques on outcome.

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It is also widely believed that treatment outcome is more a function of individual therapist differences than any technique or school of therapy (Luborsky et al., 1986; Messer & Wampold, 2002). In general, however, studies of manual-based therapies have provided little support for this view (Crits-Christoph & Mintz, 1991). In these latter studies, all therapists were explicitly trained to achieve a specific level of competence in administering

manual-based interventions. Rare reports of a significant therapist effect can be found in the early behavior therapy literature (Janoun, Munby, Catalan, & Gelder, 1980; Mathews et al., 1976). Nevertheless, in current evidence-based CBT protocols, no main therapist effect would be predicted, provided that demonstrably effective methods are competently implemented by therapists who have developed a positive therapeutic alliance (Wilson, 1998).

In studies of various forms of psychotherapy, including CBT, measures of the therapeutic alliance have been consistently correlated with outcome (Castonguay, Goldfried, Wisner, Raue, & Hayes, 1996; Connors, Carroll, DiClemente, Longabaugh, & Donovan, 1997; Horvath & Symonds, 1991; Krupnick et al., 1996). One of the initial goals of manual-based CBT is to establish a positive therapeutic alliance (Meichenbaum & Turk, 1987; Wilson et al., 1997). In the treatment of BN, Treasure et al. (1999) found that therapeutic alliance was positively associated with change in binge eating and purging frequencies in CBT. Wilson et al. (1999) found that alliance did not predict end-of-treatment binge eating and purging frequencies but did predict remission status.

To understand the effect of the therapeutic alliance on outcome requires the temporal analysis of treatment change. A correlation of alliance, measured at one point in time, with outcome does not necessarily establish the alliance as a mechanism of change. Temporal analysis is required to untangle whether the therapeutic alliance predicts symptom change or, alternatively, whether prior symptom change predicts relational factors. Patients may attribute their success to the therapist, which would facilitate a positive alliance. Similarly, therapists may feel more positively toward a patient who is responding to treatment and behave in a manner that fortifies the relationship. Conversely, patients and therapists alike might become frustrated by a lack of progress and experience a resulting strain in their interactions.

In research that has controlled for symptom change prior to measurement of the therapeutic alliance, alliance no longer predicts outcome (Feeley et al., 1999; Gaston, Marmar, Gallagher, & Thompson, 1991). Some studies have even shown the reverse—namely, symptom improvement preceding increases in the alliance (DeRubeis & Feeley, 1990; Wilson et al., 1999). Tang and DeRubeis (1999) completed detailed analyses of treatment sessions preceding and following “sudden gains” in cognitive therapy for depression. The pattern of findings showed an improvement in the therapeutic alliance subsequent to, but not prior to, the sudden improvement in depression. Other studies, however, have shown a different pattern of results. In their analysis of psychodynamic therapy, Barber, Connolly, Crits-Christoph, Gladis, and Siqueland (2000) found that the alliance predicted subsequent reductions in depressive symptoms, even when prior change in depression was partialled out. Early changes in depression were unrelated to early levels of alliance, but later in treatment, reductions in depressive symptoms predicted better alliance. Similarly, Klein et al. (2003) showed that early alliance predicted subsequent improvement in depressive symptoms even after controlling for prior improvement in their study of the cognitive-behavioral analysis system of psychotherapy.

In the present study, we predicted that consistent with traditional analyses and findings, alliance would predict final treatment outcome. The primary goal of this study was to go beyond this and examine temporal analyses of intersession change in alliance and outcome in the treatment of BN. We predicted that the following

pattern would emerge: In CBT for BN, as in studies of CBT for depression (Tang & DeRubeis, 1999), prior symptom change would be more likely to precede change in the therapeutic alliance than vice versa. In contrast, relational factors would precede change in IPT, which is characterized by a greater focus on interpersonal issues and less structured techniques than CBT. Klein et al. (2003) attributed their finding of the alliance predicting outcome to the focus on interpersonal problems and processes in their psychotherapy.

If specific technical factors are critical change agents, appropriate therapist adherence to manual-based therapy protocols should result in optimal outcomes. As with therapeutic alliance, however, it is also conceivable that early symptomatic improvement may result in better therapist adherence. If a patient is doing well, the treatment may simply be easier to administer, and this would be recorded as good adherence. Moreover, early success may reinforce therapists' belief in the treatment's efficacy and thus encourage them to adhere closely to the therapy protocol. As with the therapeutic alliance, temporal analyses of change are required.

Findings on the association of therapist adherence with outcome are mixed. In IPT for depression, therapist adherence to treatment protocol is strongly associated with better outcome (Frank, Kupfer, Wagner, McEachran, & Cornes, 1991; Spanier, Frank, McEachran, Grochocinski, & Kupfer, 1996). Studies of other treatments have not found increased adherence to be a positive predictor of outcome (Carroll, Nich, & Rounsaville, 1997). Ideally, adherence to a manual-based treatment protocol is done skillfully (Jacobson & Hollon, 1996). There is some evidence to suggest that rigid adherence may be counterproductive (Castonguay et al., 1996). Stiles and Shapiro (1994) argued that therapists' selective application of techniques based on ever-varying patient needs is a better predictor of outcome than degree of adherence to prescribed therapy techniques. Studies that have examined intersession change also show mixed findings. DeRubeis and Feeley (1990) found that early in treatment, adherence to the technical aspects of CBT predicted symptom change subsequent to Session 2 but was not predicted by improvement prior to this session. One third of the way through treatment, this variable was predicted by prior change but was not predictive of subsequent change. Later in treatment, no relationship was seen between this variable and prior symptom change. A replication of this study (Feeley et al., 1999) confirmed the early treatment finding. A study of therapist adherence in supportive-expressive dynamic psychotherapy for depression (Barber, Crits-Christoph, & Luborsky, 1996) found that early change in depression (from intake to Session 3) predicted subsequent (Session 3) adherence to supportive-expressive interventions. We predicted that overall, adherence would predict final treatment outcome in this study. We also conducted exploratory analyses to examine the bidirectional relationship between adherence and intersession symptom change in CBT and IPT.

A common criticism of manual-based treatment is that it may undermine the therapist-patient relationship (Addis & Krasnow, 2000; Strupp & Anderson, 1997). However, the available evidence contradicts this assertion. Research has shown that manual-based CBT is associated with high therapeutic alliance ratings not only in highly controlled efficacy studies but also in effectiveness research (Addis, Wade, & Hatgis, 1999; Carroll et al., 1997; Wilson, 1998). We predicted that adherence to manual-based treatment would be positively correlated with therapeutic alliance.

The present article reports an investigation of the relationship between therapeutic alliance and therapist adherence to treatment protocol and their effects on intersession symptom change and end-of-treatment outcome in CBT and IPT for BN. A unique emphasis of this study is the bidirectional effects of intersession changes in therapeutic alliance and BN symptoms. This report represents a secondary data analysis from a randomized controlled trial in which the two most promising psychological interventions for BN were compared and in which strong evidence was found in support of the superiority of CBT over IPT (Agras, Walsh, Fairburn, Wilson, & Kraemer, 2000). As a review, the current hypotheses were as follows:

1. Treatment, adherence, and alliance would all be predictors of end-of-treatment outcome in both CBT and IPT.
2. Treatment would account for more of the variance in outcome than the therapeutic alliance.
3. There would be no therapist effects on outcome.
4. (a) Prior alliance would predict subsequent intersession symptom change in IPT, whereas (b) prior symptom change would predict subsequent alliance in CBT.
5. Levels of adherence and alliance would be relatively high in both treatments and across sessions, and adherence and alliance would be positively correlated at each session and in each treatment.

## Method

### Source

We conducted a randomized multisite trial at two university-based medical centers comparing CBT and IPT in the treatment of BN. Two-hundred twenty patients with BN, purging type, were randomly assigned to 19 sessions of individual CBT or IPT over a 20-week period. Exclusion criteria included psychosis, current anorexia nervosa, and concurrent treatment. A full description of eligibility, study design, participant flow, and posttreatment and follow-up data were reported elsewhere (Agras et al., 2000). In summary, intent-to-treat analyses revealed that CBT was significantly superior to IPT in reducing binge eating, vomiting, and dietary restraint at posttreatment in both intent-to-treat and completer analyses. Of importance, CBT also achieved more rapid improvement than IPT. Among treatment completers, 45% of patients in CBT ceased binge eating and vomiting compared with 8% of patients who received IPT. The two treatments did not differ on measures of body shape and weight concerns, self-esteem, or interpersonal adjustment. No significant differences were found between treatments or sites on a measure of independently rated treatment adequacy, which assessed the following dimensions: supportive encouragement, conveyance of expertise, communication style, therapeutic involvement, warmth, rapport, empathy, and formality.

### Patient Sample

Participants were women meeting diagnostic criteria for BN according to the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., rev.; DSM-III-R; American Psychiatric Association, 1987) upon entrance to the study; in addition, these patients used self-induced vomiting as their primary method of purging and engaged in this behavior at least twice per week (for more details, see Agras et al., 2000). Of the 220 patients, 154 (70%) completed treatment, 57 (26%) dropped out of the trial, and 9 (4%)

were withdrawn for clinical reasons. A randomly selected subset ( $n = 81$ : 41 participants at Columbia University and 40 participants at Stanford University) of these 154 treatment completers with intact audiotaped sessions composed the sample analyzed here. A random number table was used to generate this subset of completers. This study was restricted to treatment completers to permit a complete temporal analysis of the bidirectional effects of process and outcome over a full course of treatment. In other words, the inclusion of dropouts would have yielded different subsamples for various segments of the temporal analyses and limited our ability to interpret patterns across time. This design choice is consistent with similar research from the depression literature (Feeley et al., 1999).

Patients in the current sample ( $n = 81$ ) had a mean age of 28.86 years ( $SD = 6.83$ ) and a mean body mass index (BMI) of 23.20 ( $SD = 4.69$ ). Over the month prior to admission, their mean purging frequency according to the Eating Disorder Examination (12th ed.; EDE; Fairburn & Cooper, 1993) was 42.79 episodes ( $SD = 41.55$ ); their mean 7-day computer recall of purging was 12.68 episodes ( $SD = 17.05$ ). Mean lifetime duration of binge eating was 12.62 years ( $SD = 7.36$ ); mean lifetime duration of purging was 11.04 years ( $SD = 6.52$ ). The mean baseline EDE subscale scores were as follows: Restraint, 3.35 ( $SD = 1.38$ ); Shape Concern, 3.34 ( $SD = 1.32$ ); Weight Concern, 2.98 ( $SD = 1.61$ ); and Eating Concern, 2.28 ( $SD = 1.21$ ).

### Therapists

Therapists in the trial, all of whom were experienced in the treatment of eating disorders, underwent extensive training in the two interventions prior to the start of the study and received weekly supervision thereafter to ensure that therapies were administered in a standardized fashion. Across the two sites, eight clinicians participated in the study: one psychiatrist and seven PhD clinical psychologists. All therapists administered both CBT and IPT.

### Treatments

CBT and IPT are manual-based, empirically supported psychological interventions for BN. Each treatment modality has three phases and is administered in 19 individual outpatient sessions over the course of 20 weeks.

**CBT.** CBT (Fairburn, Marcus, & Wilson, 1993) directly targets the core features of this disorder—namely, binge eating, inappropriate compensatory behaviors, and excessive concern with body shape and weight. In the first stage (Sessions 1 to 8), the goals of treatment are to establish rapport, to orient the patient to the cognitive model of BN, to educate patients about weight regulation and about the adverse physiological effects of their behaviors, and to help patients establish a regular pattern of eating and an appropriate weight monitoring schedule. In the second stage of CBT (Sessions 9 to 16; Fairburn et al., 1993), the focus shifts to reducing shape and weight concerns and dieting behavior, and identifying precipitants to remaining binge-purge episodes. Stage III (Sessions 17 to 19) is devoted to maintenance planning and relapse prevention. The therapist's style in CBT is a blend of directiveness and the Socratic method (Fairburn et al., 1993).

**IPT.** IPT was originally developed for the treatment of depression (Klerman, Weissman, Rounsaville, & Chevron, 1984) and was later modified for use in the treatment of BN (Fairburn et al., 1991). In IPT, the focus is on interpersonal difficulties in the patient's life. The connection between these problems and the development and maintenance of the eating disorder is identified at the beginning of treatment but only implied thereafter; for the majority of the therapy, the symptoms of BN are never explicitly addressed. In contrast to CBT, the IPT therapist's style is active but nondirective (Fairburn, 1997).

The first stage of IPT (Sessions 1 to 4; Fairburn, 1997) is devoted to explaining the rationale of the therapy to the patient, identifying specific

interpersonal problem areas currently affecting the patient, and choosing which of these areas to focus on for the remainder of treatment. The four typical interpersonal problem domains are role disputes, role transitions, interpersonal deficits, and unresolved grief. Interpersonal precipitants of current binge eating episodes are highlighted during Stage I. The second and third stages of IPT for bulimia correspond to these phases in the original IPT for depression. The therapist shifts to a backseat role and encourages the patient to take the lead in facilitating change in the interpersonal realm. The therapist's role involves keeping the patient aware of the time frame of treatment and focused on the problem areas, clarifying issues raised by the patient (without being interpretive), and pushing for change without providing specific suggestions. Stage III covers maintenance of interpersonal gains and relapse prevention.

### Assessment

**Outcome.** The frequency of purging (self-induced vomiting and laxative misuse), derived from the EDE, was used as the primary end-of-treatment outcome measure in this study. The EDE is a semistructured interview consisting of four subscales (Shape Concern, Weight Concern, Restraint, and Eating Concern), a Global Score, and several individual items covering other eating disorder symptomatology, such as binge eating (labeled in the EDE as "objective bulimic episodes"; OBEs).<sup>1</sup> The assessment time frame of the EDE is the previous 28 days. This measure was administered at evaluation and 1 week after the final session.

A paramount goal of this study was to assess intersession symptom change and conduct analyses of the bidirectional, temporal relationships between alliance and outcome. For this purpose, weekly purging frequencies, obtained by recall biweekly throughout the course of treatment, were used here as the primary measure of outcome (symptom status) at baseline; at Sessions 6, 12, and 18; and at termination. This information was recorded by patients on a computerized self-report form. In the original study (Agras et al., 2000), purging was selected for regular self-report measurement throughout the course of treatment. The EDE is a lengthy (longer than 1 hr) investigator-based interview with a 1-month time frame, and it was therefore not feasible to use it to collect biweekly symptom data with this method. Research indicates that once a diagnosis of BN has been established with rigorous interview methods, self-report instruments can be used for repeated assessment of progress (Loeb, Pike, Walsh, & Wilson, 1994) in the context of a clinical trial. More generally, there is particular congruity between self-report and interview methods for less ambiguous BN symptoms such as vomiting, relative to binge eating (Fairburn & Beglin, 1994), which is highly vulnerable to idiosyncratic self-definitions (Beglin & Fairburn, 1992; Gleaves, Williamson, & Barker, 1993).

**Therapeutic alliance.** A modified version of the Vanderbilt Therapeutic Alliance Scale (VTAS; Hartley & Strupp, 1983) from the Krupnick et al. (1996) study was used to assess patient and therapist contributions to the therapeutic alliance. The VTAS (and its accompanying rating manual) was revised by Krupnick et al. to be more compatible with nonpsychodynamic treatments and was factor analyzed to identify alliance dimensions in the new version. The revisions to the original measure included deleting seven items specifically applicable to psychodynamic therapy and modifying the remaining items to better assess alliance in CBT, IPT, and pharmacotherapy. New decision rules and examples were provided in the manual to assist raters in applying the items to the study interventions. In the current study, the VTAS was completed by independent raters and was subjected to a principal-components analysis to obtain alliance factors applicable to the BN sample.

The principal-components analysis of the revised VTAS, based on the complete sample from the first wave of audiotape ratings (see below), yielded a two-factor solution (Patient factor and Therapist factor) similar to the results of the factor analysis obtained in the Krupnick et al. (1996) study. These two factors were validated with the complete sample from the second wave of audiotape ratings (see below) and used as the alliance

scales for all further analyses. Values of factor loadings for individual items after promax rotation are available on request.

**Therapist adherence to treatment protocol.** Adherence was assessed by measuring the degree to which therapists followed the designated manual for each psychological intervention—and, in addition, avoided contaminating a therapy with techniques specific to the alternative treatment. The measures of protocol adherence were derived using original and modified items from two sources: (a) the Minnesota Therapy Rating Scale (MTRS; DeRubeis, Hollon, Evans, Evans, & Bemis, 1982), a 50-item Likert-type scale designed to discriminate CBT and IPT for depression, and (b) the Therapy Rating Scale (Wagner, Frank, & Steiner, 1992), a 27-item Likert-type scale based on the MTRS and devised to distinguish between maintenance IPT and maintenance medication clinic for depression. In addition, new items were developed to address CBT and IPT as they are applied in the treatment of BN and to target various phases of each therapy. The two resulting protocol adherence measures were completed by independent raters. The measures' respective mean scores were used for data analyses.

**Covariates.** Baseline EDE purging frequency and treatment assignment were entered as covariates in the regression models as appropriate (described later). In addition, we considered the potential impact of patients' baseline (Week 2, following randomization and first two treatment sessions) perceptions of the suitability of their treatment assignment and their expectations of improvement on alliance and adherence. These data were assessed in the original study (Agras et al., 2000) by asking patients to rate suitability and expectancy dimensions along a 10-point visual analogue scale ranging from "not at all" (1) to "extremely" (10) in response to the questions "How suitable do you think this treatment is for your problems?" and "How successful do you think your treatment here will be?" respectively.

### Audiotape Rating

The three raters were advanced doctoral students in clinical psychology. Three full-length sessions per patient ( $n = 81$ ) were analyzed, yielding a sample of 243 tapes. These sessions, Sessions 6, 12, and 18, were selected to capture data from the corresponding early, middle, and later phases of each intervention. When a tape from a particular session was missing or inaudible, the tape from an adjacent session was used.

Audiotape ratings were conducted in two waves: First, tapes from the Columbia site were rated, followed by tapes from the Stanford site. Interrater reliability was established at each stage. A random selection of 24 tapes from the Columbia site (sampling across the two treatments, three sessions, and 4 therapists) was initially scored by all three raters. The variables analyzed were the original VTAS scales (Patient factor, Therapist factor, and Patient-Therapist Interaction factor), the CBT Adherence scale, and the IPT Adherence scale. When a variable's intraclass correlation coefficient (average raters) failed to meet or exceed the accepted standard of .70, a secondary analysis was conducted to determine which items significantly contributed to the discrepancies between raters. The raters then arrived at a consensus score for such data points. Items that did not contribute uniquely to the overall reliability were temporarily removed. For items not posing a reliability problem, the mean score of the three raters was applied. The remainder of the tapes were then divided among the three raters. Rater meetings were held periodically to maintain consistency in the scoring style. The entire process was repeated with a random sample of 24 tapes from the Stanford site.

Intraclass correlation coefficients were calculated in two-way mixed models with absolute agreement (to take mean differences between raters

<sup>1</sup> The EDE subscale scores and OBE frequency were examined as additional end-of-treatment outcome measures in a set of parallel, exploratory analyses reported in subsequent footnotes.



into account in the error variance) and 95% confidence intervals. In the Columbia wave, the final average rater intraclass correlation coefficients derived from the first 24 tapes rated by all three raters were as follows: VTAS Therapist factor, .76; VTAS Patient factor, .87; VTAS Therapist–Patient Interaction factor, .82; CBT Adherence scale, .78; IPT Adherence scale, .78. The final single-rater intraclass correlation coefficients derived from these tapes were as follows: VTAS Therapist factor, .51; VTAS Patient factor, .67; VTAS Therapist–Patient Interaction factor, .60; CBT Adherence scale, .55; IPT Adherence scale, .55. Interrater reliability was reestablished for the Stanford wave of tape ratings, which took place 6 months later. Initial results indicated rater drift for one rater, who was therefore excluded from the second wave of tape ratings. The final average rater intraclass correlation coefficients derived from the first 24 Stanford tapes rated by the remaining two raters were as follows: VTAS Therapist factor, .92; VTAS Patient factor, .73; VTAS Therapist–Patient Interaction factor, .68; CBT Adherence scale, .85; IPT Adherence scale, .83. The final single-rater intraclass correlation coefficients derived from these tapes were as follows: VTAS Therapist factor, .84; VTAS Patient factor, .58; VTAS Therapist–Patient Interaction factor, .52; CBT Adherence scale, .74; IPT Adherence scale, .70.

## Results

### Preliminary Analyses

*Comparison of included versus excluded participants.* Analyses were conducted to assess whether the subset of patients studied here ( $n = 81$ ) differed from those from the original sample excluded from the current study ( $n = 139$ ). Independent  $t$  tests were conducted with baseline continuous variables (EDE purging frequency, 7-day computer recall of purging, the four EDE subscales, duration of binge eating, duration of purging, BMI, and age), and chi-square values were calculated for baseline dichotomous variables (history of anorexia nervosa, major depression, substance abuse, and personality disorders). Patients included in the present study, compared with excluded patients, exhibited lower mean scores on the EDE Shape Concern subscale ( $M = 3.34$ ,  $SD = 1.32$ , vs.  $M = 3.98$ ,  $SD = 1.27$ , respectively),  $t(218) = 3.53$ ,  $p < .001$ ; Weight Concern subscale ( $M = 2.98$ ,  $SD = 1.61$ , vs.  $M = 3.57$ ,  $SD = 1.32$ , respectively),  $t(218) = 2.92$ ,  $p < .005$ ; and Eating Concern subscale ( $M = 2.28$ ,  $SD = 1.21$ , vs.  $M = 2.88$ ,  $SD = 1.48$ , respectively),  $t(218) = 3.10$ ,  $p < .005$ . Conversely, included patients had a longer history of purging than excluded patients ( $M = 11.04$ ,  $SD = 6.52$ , vs.  $M = 9.17$ ,  $SD = 6.85$ , respectively),  $t(218) = -1.99$ ,  $p < .05$ .

*Baseline variable comparison by treatment and site.* To determine whether any pretreatment differences existed within the current sample ( $n = 81$ ), a series of treatment (CBT vs. IPT) by site (Columbia vs. Stanford) factorial analyses were conducted. Analyses of variance (ANOVAs) were performed with baseline continuous variables, and logistic regressions were conducted with baseline dichotomous variables (listed earlier). There were no significant main or interaction effects of site and treatment at the  $p < .05$  level on any of the baseline variables examined. Where there were effects that approached significance ( $p > .05$  and  $< .10$ ), effect sizes ranged from small to medium. Thus, the baseline treatment and site differences found in the original sample ( $N = 220$ ; Agras et al., 2000) were not replicated in the subset of patients from the present study.

*Determination of suitability and expectancy as covariates.* We considered the potential impact of patients' baseline perceptions of

suitability and expectancy of their treatment assignment on alliance and adherence by first conducting correlational analyses between Week 2 suitability and expectancy ratings and adherence, VTAS Therapist factor, and VTAS Patient factor at Sessions 6, 12, and 18. Pearson correlation coefficients revealed that only VTAS Patient factor was significantly correlated with suitability and expectancy. Specifically, expectancy was significantly correlated with VTAS Patient factor at Session 6 ( $r = .26$ ,  $p < .05$ ), and suitability with VTAS Patient factor at Sessions 12 ( $r = .23$ ,  $p < .05$ ) and 18 ( $r = .27$ ,  $p < .05$ ). We therefore entered suitability and expectancy as covariates in the analyses for Hypothesis 4B, in which patient contribution to the alliance was examined as a dependent variable in the temporal analyses.

### Main Analyses

*Hypothesis 1:* Treatment, adherence and alliance would all be predictors of end-of-treatment outcome in both CBT and IPT.

*Hypothesis 2:* Treatment would account for more of the variance in outcome than the therapeutic alliance.

To test these hypotheses, we regressed outcome (posttreatment EDE purging frequency)<sup>2</sup> on its baseline counterpart, treatment, adherence, VTAS Therapist factor, and VTAS Patient factor. Because adherence and the two alliance components were assessed at three points in time, we used the method of orthogonal polynomials (Cohen & Cohen, 1983) to enter each of the three independent variables as a set of three trend components (i.e., level, linear trend, and quadratic trend). We chose this method to avoid problems of multicollinearity, as scores of each independent variable were highly correlated across the three time points. In the method of orthogonal polynomials, the trend components are less correlated with one another. In a second step, we added interactions between treatment and each component of alliance and adherence to the model.

The main effects (Step 1) model accounted for 65.8% of the outcome variance,  $F(11, 68) = 11.89$ ,  $p < .0001$ . However, none of the trend components of adherence and alliance were significant, with each accounting for less than 1% of unique variance. The six trend components of the two alliance factors accounted together only for 2.5% of unique variance, incremental  $F(6, 68) = 0.911$ ,  $p > .10$ . The only significant ( $p < .001$ ) effects were obtained for treatment (7.3% of unique variance) and for baseline EDE purging frequency (40.7% of unique variance). The treatment effect indicated that individuals in IPT had 12.82 more purging episodes per month (nearly 1 standard deviation greater) than individuals in CBT. None of the treatment by alliance or treatment

<sup>2</sup> We also conducted parallel analyses examining other EDE outcome measures pertinent to BN, including termination OBE (binge eating) frequency and the four EDE subscales: Restraint, Shape Concern, Weight Concern, and Eating Concern. We used the corresponding baseline values of these variables as covariates in the regression models.

by adherence interactions were significant, each accounting for 1% or less of unique variance.<sup>3</sup>

Given the a priori concern that early improvement may affect alliance later in treatment, and the fact that previous research has emphasized the importance of early alliance and adherence, we also conducted parallel analyses examining only early (Session 6) process variables as predictors of final outcome (posttreatment EDE purging frequency). We regressed outcome on its baseline counterpart, treatment, and Session 6 adherence, VTAS Therapist factor, and VTAS Patient factor. In the second step, we added interactions between treatment and each component of alliance and adherence to the model. The main effects (Step 1) model accounted for 64.7% of the outcome variance,  $F(5, 74) = 27.15, p < .0001$ . Significant effects were obtained for Session 6 VTAS Therapist factor (2.0% of unique variance,  $p < .05$ ), for baseline EDE purging frequency (44.0% of unique variance,  $p < .0001$ ), and for treatment (7.4% of unique variance,  $p < .0005$ ). None of the treatment by alliance or treatment by adherence interactions were significant, each accounting for less than 1% of unique variance.

*Hypothesis 3: There would be no therapist effects on outcome.*

To test this hypothesis, we conducted a  $2 \times 8$  (treatment by therapist) analysis of covariance with the baseline EDE purging frequency as a covariate.<sup>4</sup> The main effect of therapist was not significant ( $p > .10$ ) and accounted for only 2% of the variance. The treatment by therapist interaction was also not significant ( $p > .10$ ) and accounted for 5.4% of the variance.

*Hypothesis 4A: Prior alliance would predict subsequent intersession symptom change in IPT.*

To test this hypothesis, we conducted hierarchical regression analyses. Within these analyses, we also explored the possible impact of prior adherence on subsequent intersession symptom change. Because both alliance and adherence are potentially related to symptom change, we decided to look at the role of each variable while controlling for the other. In the first step, we regressed symptoms at Session 12 onto treatment, symptoms at Session 6, adherence at Session 6, and alliance at Session 6. In a second step we added interactions between treatment and adherence and alliance to the model. We repeated both steps by regressing symptoms at Session 18 onto treatment, symptoms at Session 12, adherence at Session 12, and alliance at Session 12, and symptoms at Session 20 onto treatment, symptoms at Session 18, adherence at Session 18, and alliance at Session 18.

Symptoms at Session 6 accounted for 88.4% of the symptom variance at Session 12. A significant treatment by symptoms interaction ( $p < .0001$ ), accounting for 1.2% of unique variance, indicated that symptoms at Session 12 were more strongly related to symptoms at Session 6 in IPT than in CBT. All other predictors were not significant ( $p > .10$ ), with each accounting for less than 0.5% of variance. Symptoms at Session 12 accounted for 58.0% of symptom variance at Session 18. In addition, treatment was a significant predictor ( $p < .005$ ) and accounted for 4.2% of symptom variance at Session 18. Participants in IPT had 3.15 more weekly purging episodes than participants in CBT at Session 18.

All other predictors were not significant ( $p > .10$ ), with each accounting for less than 1% of unique variance. Symptoms at Session 18 accounted for 74.2% of the symptom variance at Session 20. A significant treatment by symptoms interaction ( $p < .001$ ), accounting for 2.1% of unique variance, indicated that symptoms at Session 20 were more strongly related to symptoms at Session 18 in IPT than in CBT. None of the other predictors were significant, with each accounting for less than 1% of unique variance.

*Hypothesis 4B: Prior symptom change would predict subsequent alliance in CBT.*

To test this hypothesis, we conducted hierarchical regression analyses. In the first step, we regressed alliance at Session 6 onto treatment and symptom improvement from baseline to Session 6. In a second step, we added the treatment by symptom change interaction. In each step, we also entered baseline suitability and expectancy as covariates when the VTAS Patient factor was the dependent variable. We repeated both steps for (a) alliance at Session 12 by regressing it onto treatment, alliance at Session 6, and symptom improvement from Session 6 to Session 12, and for (b) alliance at Session 18 by regressing it onto treatment, alliance at Session 12, and symptom improvement from Session 12 to Session 18.

VTAS Therapist and Patient factors at Session 6 were not predicted by treatment, by prior symptom change, or by their interaction, even when we controlled for baseline suitability and expectancy. In both cases, prior symptom change and symptom change by treatment interactions accounted for 1.5% or less of unique variance. VTAS Patient factor at Session 12 was only predicted by Patient factor at Session 6 (13.6% of variance,  $p < .005$ ). The treatment by symptom change interaction was significant ( $p < .01$ , 8.7% of unique variance), indicating that there was no relationship between symptom change and alliance in CBT ( $b = -0.01, ns$ ) but that improvement in symptoms predicted greater patient contribution to the alliance in IPT ( $b = -0.06, p < .01$ ). VTAS Therapist factor at Session 12 was only predicted by Therapist factor at Session 6 (18.5% of variance,  $p < .005$ ). Neither prior symptom change ( $p > .05$ , 3.7% of unique variance) nor the treatment by symptom change interaction ( $p > .05$ , 3.6% of unique variance) was a significant predictor of VTAS Therapist factor at Session 12. Finally, VTAS Patient factor at Session 18

<sup>3</sup> Results were the same for OBE frequency. For the EDE Restraint subscale, the level trend (the average across time points) for VTAS Patient factor was also significant, indicating that higher overall patient contribution to alliance predicts better outcome (e.g., a reduction) in dietary restraint. In addition, the interaction between treatment and this trend was significant in that this effect was stronger for CBT than for IPT. For the EDE Shape Concern and Eating Concern subscales, the baseline values and the level trends for VTAS Patient factor were significant. For the EDE Weight Concern subscale, baseline value, treatment, and the level trend for VTAS Patient factor were significant. Detailed data are available on request.

<sup>4</sup> We again conducted parallel analyses with additional BN outcome variables (OBE frequency and the four EDE subscales, with baseline values as covariates). Results were identical to purging. Detailed data are available on request.

was only predicted by Patient factor at Session 12 (19.4% of variance,  $p < .001$ ), and VTAS Therapist factor at Session 18 was only predicted by Therapist factor at Session 12 (18.7% of variance,  $p < .005$ ). In both cases, prior symptom change and treatment by symptom change interactions accounted for 2.5% or less of unique variance ( $p > .10$ ).

In a parallel set of hierarchical regression analyses, we explored the possible impact of prior symptom change on subsequent inter-session adherence ratings. In the first step, we regressed adherence at Session 6 onto treatment and symptom improvement from baseline to Session 6. In a second step, we added the treatment by symptom change interaction. We repeated both steps for (a) adherence at Session 12 by regressing it onto treatment, adherence at Session 6, and symptom improvement from Session 6 to Session 12, and for (b) adherence at Session 18 by regressing it onto treatment, adherence at Session 12, and symptom improvement from Session 12 to Session 18.

Neither prior symptom change ( $p > .10$ , 1.2% of unique variance) nor the treatment by symptom change interaction ( $p > .10$ , 1.7% of unique variance) was a significant predictor of adherence at Session 6. Only treatment was significant ( $p < .05$ , 5.3% of unique variance) indicating that adherence at Session 6 was 0.44 points lower in IPT than in CBT. Adherence at Session 12 was significantly predicted by adherence at Session 6 ( $p < .0001$ , 25.0% of unique variance) and by prior symptom change ( $p < .05$ , 4.3% of unique variance). The latter indicated that greater improvement in symptoms from Session 6 to Session 12 was associated with greater adherence at Session 12. The treatment by prior symptom change interaction was not significant ( $p > .10$ ) and accounted for less than 1% of unique variance. Adherence at Session 18 was only predicted by adherence at Session 12 ( $p < .001$ , 16.6% of unique variance). All other effects were nonsignificant ( $p > .10$ ), with each accounting for 1% or less of unique variance.

*Hypothesis 5:* Levels of adherence and alliance would be relatively high in both treatments and across sessions, and adherence and alliance would be positively correlated at each session and in each treatment.

To examine these hypotheses, we conducted three separate  $2 \times 8 \times 3$  (treatment by therapist by session) ANOVAs, with repeated measures on session, plus correlational analyses.

The grand mean for adherence was 5.28 on a scale ranging from 1 to 7. A significant main effect of treatment ( $p < .0001$ ), accounting for 7.7% of the between-subjects variance, indicated that adherence was higher in CBT than in IPT ( $M = 5.52$  vs.  $M = 5.03$ ) across all sessions. A significant main effect of therapist ( $p < .0001$ ) accounted for 62.2% of the between-subjects variance. Across therapists, adherence values ranged from 3.80 to 5.71. All other effects were not significant ( $p > .05$ ).

The grand mean for VTAS Therapist factor was 4.35 on a scale ranging from 0 to 5. A significant main effect of time ( $p < .05$ ), accounting for 4.6% of the within-subjects variance, indicated that scores on Therapist factor increased slightly from Session 12 to Session 18 ( $M = 4.28$  at Session 6,  $M = 4.29$  at Session 12,  $M = 4.47$  at Session 18). A significant main effect of therapist ( $p < .0001$ ) accounted for 53.3% of the between-subjects variance. Across therapists, VTAS Therapist factor values ranged from 3.69

to 4.63. A significant treatment by therapist interaction ( $p < .005$ ), reflecting greater therapist variability in IPT than in CBT, accounted for 13.2% of the between-subjects variance. All other effects were not significant ( $p > .05$ ).

The grand mean for VTAS Patient factor was 4.24 on a scale ranging from 0 to 5. A significant main effect of therapist ( $p < .01$ ) accounted for 21.5% of the between-subjects variance. Across therapists, VTAS Patient factor values ranged from 3.91 to 4.54. All other effects were not significant ( $p > .05$ ).

Correlations between adherence and the two alliance factors were computed for each session and each treatment group. They are shown in Table 1. All were significant at the  $p < .01$  level. Variance shared ( $r^2$ ) between the three variables ranged from .15 to .69.

## Discussion

Consistent with results from other manual-based, randomized controlled trials (Addis et al., 1999), high levels of therapeutic alliance were found. Therapist adherence to the two manual-based treatments was also high, and raters correctly identified the therapy being conducted in 100% of the tapes. These findings most likely reflect the careful selection, training, and continuing supervision of therapists in this efficacy trial. Therapist effects were significant for alliance and adherence. For alliance measures, the absolute ratings of these variables across therapists were high, and the ranges small; for adherence, values across therapists ranged from moderate to high. CBT was associated with higher levels of adherence at all time points. Because we did not find a treatment by prior change interaction for adherence, despite having found that symptom improvement from Sessions 6 to 12 was associated with better adherence at Session 12, we cannot conclude that it was that CBT's greater efficacy contributed to increased adherence. An

Table 1  
*Correlations Between Adherence and Alliance by Session and Treatment*

Process variable	Adherence	Patient factor	Therapist factor
Session 6			
Adherence		.58	.65
Patient factor	.55		.55
Therapist factor	.63	.83	
Session 12			
Adherence		.39	.56
Patient factor	.51		.65
Therapist factor	.74	.66	
Session 18			
Adherence		.43	.64
Patient factor	.46		.62
Therapist factor	.65	.70	

*Note.* Correlations for cognitive-behavioral therapy are in the lower triangles; those for interpersonal psychotherapy are in the upper triangles. All correlations were significant at the  $p < .01$  level. Shared variance ( $r^2$ ) ranged from .15 to .69.

alternative hypothesis is that CBT contains more specific, concrete techniques to which it is easier to adhere.

Correlations between alliance and therapist adherence indicate a strong, positive relationship between these two measures. Variance shared between alliance and adherence ranged from .15 to .69. These findings clearly show that therapist adherence to the techniques of manual-based treatment is not inconsistent with a positive therapeutic alliance. That a strong therapeutic alliance can be achieved in manual-based treatment is a finding not limited to controlled efficacy studies. Addis et al. (1999) described an effectiveness study at a community mental health center in which patient ratings of the therapeutic alliance in manual-based treatment were higher than those in "treatment as usual." It is possible that the high level of correlation between alliance and adherence could in part be explained by a potential lack of independence in their measurement, in that the same raters coded both process constructs.

No treatment effects were found in the two VTAS factors, indicating CBT and IPT are associated with similar levels of therapeutic alliance. However, the significant Therapist  $\times$  Treatment interaction for the VTAS Therapist factor suggests that IPT may be more susceptible than CBT to variability in the therapist's contribution to the alliance. There was no parallel interaction for the VTAS Patient factor.

No therapist effect was found for outcome. This finding replicates a previous study of manual-based CBT for BN (Wilson et al., 1999) and is consistent with research showing that therapist effects on outcome were common in older studies without treatment manuals but unlikely in controlled clinical trials with treatment manuals (Crits-Christoph & Mintz, 1991). The latter provide explicit training of therapists, monitor their performance in ongoing supervision, and are guided by a detailed treatment manual and thereby reduce therapist variability. Therapist effects may be more likely to be observed in studies that evaluate less specific techniques than evidence-based CBT.

Therapeutic alliance across the three time points, without controlling for prior symptomatic change, did not predict final outcome in either treatment. Early (Session 6) therapist contributions to the therapeutic alliance did predict final outcome but contributed far less to the overall variance than treatment assignment, as predicted. This is consistent with previous research on BN (Wilson et al., 1999) showing that treatment assignment was a stronger predictor of outcome than ratings of the therapeutic alliance. When we controlled for prior symptom change in the temporal analyses, however, alliance did not predict subsequent intersession change in purging frequency. We had predicted that the therapeutic alliance would be linked to outcome in IPT given the emphasis on relational factors in that treatment. However, we cannot say whether, in the temporal analyses, prior therapeutic alliance might have been a significant predictor of subsequent intersession symptom change had alliance been assessed earlier, as post hoc analysis revealed that by Session 6, 65% of overall treatment improvement had already occurred (for CBT, 74%, and for IPT, 55%). In other words, in the absence of an earlier measure of alliance, we do not have the data to tease apart whether it was in fact symptom change prior to Session 6 that may best explain the finding that alliance at Session 6 predicts final outcome.

Contrary to our hypothesis, therapist adherence to treatment protocol was not significantly related to final outcome, adding to

the collection of mixed findings on this topic, as reviewed earlier. In the temporal analyses, prior adherence did not predict subsequent intersession symptom change. Failure to find a significant positive relationship between therapist adherence to a treatment protocol and therapeutic improvement could be attributable to several factors. First, in CBT, treatment manuals tend to be multicomponent packages of cognitive and behavioral techniques. It is unclear which of these various techniques are necessary or sufficient ingredients for change. The rating scale used in this study assessed the range of techniques that constitute the manual-based therapy. DeRubeis and Feeley (1990) examined distinct aspects of adherence and found that early in treatment, prior adherence to concrete CBT methods predicted subsequent symptom change, whereas abstract methods of CBT did not. Second, rating therapist adherence as done in this study assesses whether techniques were implemented, but not necessarily how competently or how appropriately given the therapeutic context. Achieving reliable means of rating therapist competence remains a challenge. It is plausible that more refined measures of skillfully implemented treatment would relate to outcome as Stiles and Shapiro's (1994) work on the selective application of therapeutic techniques has highlighted. Flexibility and judgment regarding what to do, when to do it, and of importance, what not to do under certain circumstances may ultimately contribute to outcome more than a crude measure of overall adherence. Third, it is possible that adherence may be a relevant predictor of outcome only if it falls below a minimally acceptable level. Differences above a "good enough" threshold may have little effect on outcome. Given the rigorous supervision and fidelity checks conducted in this study, a restricted range in adherence might have been anticipated, and, arguably, our original hypothesis was inappropriately applied to this particular sample. Fourth, as with alliance, we cannot say whether adherence might have been a significant predictor had it been assessed earlier, given the extent of early (by Session 6) therapeutic change.

Unlike the aforementioned prior studies of CBT for depression (Tang & DeRubeis, 1999) and BN (Wilson et al., 1999), in this study we did not find that prior symptom change predicted subsequent therapeutic alliance. We did find that in IPT, this relationship existed but only at midtreatment. Exploratory analyses revealed that prior symptom change predicted subsequent adherence at midtreatment, similar to findings by DeRubeis and Feeley (1990). It should be noted that prior symptom change accounted for less variance in therapist adherence at Session 12 than did adherence at Session 6.

The study has several limitations. First, in the interrater reliability analyses, although all but one average rater intraclass correlation coefficient exceeded the accepted cutoff of .70, the single-measures coefficients were generally below this standard. Second, the first assessment point did not occur until the sixth treatment session, by which time two thirds of therapeutic improvement had already occurred. This limits the conclusions that can be drawn from the temporal analyses. Third, this treatment study was an efficacy trial in which therapists were carefully selected and then rigorously trained and supervised. Hence, the results from this study may not generalize to more naturalistic clinical settings, where the range of therapist competence is likely to vary widely and where there might be little or no emphasis on therapist adherence to protocol. Future research should examine the relationship between the strength of the therapeutic alliance, therapist adher-



ence to specific treatment techniques, and clinical outcome in the context of effectiveness studies.

Finally, and most important, this sample represents a randomly selected subset ( $n = 81$ ) of the 154 treatment completers from the original treatment study (Agras et al., 2000), in which 220 participants were randomized. The focus was restricted to treatment completers to permit a detailed analysis of the bidirectional temporal relationships between process and outcome over the full course of treatment. Because the inclusion of dropouts would have yielded different subsamples for various segments of the temporal analyses, this decision permitted us to interpret patterns across time without the confound of nonrandom, inconsistent sampling. However, this decision sacrificed generalizability, in that our results can only be extrapolated to treatment completers, and we can draw no conclusions about how alliance, adherence, and outcome interactively operate across the full range of patients receiving CBT or IPT for BN. Future research could examine these variables with both completers and dropouts, especially in the critically important early stages of treatment while alliance is established and before attrition might occur. Moreover, although studies from the substance dependence literature (Barber et al., 2001; Raytek, McCrady, Epstein, & Hirsch, 1999) have found therapeutic alliance to predict retention, our a priori decision to exclude dropouts meant that we could not investigate the association between therapeutic alliance, therapist adherence, and attrition.

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