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Expectancies, working alliance, and outcome in transdiagnostic and single diagnosis treatment for anxiety disorders: An investigation of mediation

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Abstract

Patients' outcome expectancies and the working alliance are two psychotherapy process variables that researchers have found to be associated with treatment outcome, irrespective of treatment approach and problem area. Despite this, little is known about the mechanisms accounting for this association, and whether contextual factors (e.g., psychotherapy type) impact the strength of these relationships. The primary aim of this study was to examine whether patient-rated working alliance quality mediates the relationship between outcome expectancies and pre- to post-treatment change in anxiety symptoms using data from a recent randomized clinical trial comparing a transdiagnostic treatment (the Unified Protocol [UP]; Barlow et al., 2011a; Barlow, Sauer-Zavala, et al., in press) to single diagnosis protocols (SDPs) for patients with a principal heterogeneous anxiety disorder ($n = 179$). The second aim was to explore whether cognitive-behavioral treatment condition (UP versus SDP) moderated this indirect relationship. Results from mediation and moderated mediation models indicated that, when collapsing across the two treatment conditions, the relationship between expectancies and outcome was partially mediated

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by the working alliance ($B = .037$, $SE = .05$, 95% CI [.005, .096]). Interestingly, within-condition analyses showed that this conditional indirect effect was only present for SDP patients, whereas in the UP condition, working alliance did not account for the association between expectancies and outcome. These findings suggest that outcome expectancies and working alliance quality may interact to influence treatment outcomes, and that the nature and strength of the relationships among these constructs may differ as a function of the specific cognitive-behavioral treatment approach utilized.

Keywords

outcome expectancies; working alliance; transdiagnostic; cognitive-behavioral therapy; mediation

Introduction

Research has demonstrated that cognitive-behavioral therapies (CBT) are highly effective across a wide variety of problem areas (Lambert, 2013; Nathan & Gorman, 2015). In addition, the effects of CBT have been shown to be durable (Hollon & Beck, 2013) and more cost-effective than alternative treatments for psychological problems, including medication (Chiles, Lambert, & Hatch, 1999; McHugh et al., 2007). Although individuals will, on average, benefit more from CBT than no treatment, there remains significant room for improving both response rates and knowledge about the process of change in CBT (Kazdin & Blase, 2011).

Psychotherapy researchers categorize process variables as falling into one of three, non-mutually exclusive, domains: participant, relationship, and technical variables (Castonguay & Beutler, 2006). Depending on the context, variables within each of these categories can be considered common or unique to a theoretical orientation or problem area. Common factors are treatment variables that predict and/or are important for understanding therapeutic change, yet are not directly tied to a specific treatment approach or model. For example, the working alliance (generally judged from the client's perspective) has been considered the "flagship" common factor (Castonguay, Constantino, Boswell, & Kraus, 2010). The causal importance of the alliance in psychological treatments continues to be a focus of debate (Crits-Christoph, Connolly Gibbons, Hamilton, Ring-Kurtz, & Gallop, 2011); however, the most recent meta-analysis of the working alliance-outcome relationship in psychotherapy demonstrated a consistent small-to-moderate correlation between the alliance and outcome. Specifically, more positive working alliance scores were shown to be associated with better treatment outcomes (Horvath, Del Re, Flückiger, & Symonds, 2011). This association has also been observed across a range of distinct treatment approaches and problem areas.

Drawing the conclusion that the alliance may be an important element of psychotherapy irrespective of the approach or primary diagnosis does not imply that the nature or impact of the alliance is independent of context, nor does it assume that the alliance-outcome association exists in a vacuum. The so-called "next generation" of alliance research has emphasized the importance of interactions between alliance and other potentially important process variables, both common and unique, as well as technical and relational (e.g.,

attachment; see Zack et al., 2015). Treatment outcome expectancy has been proposed as one such variable that can be theoretically linked to both the working alliance and treatment outcomes and is worthy of further study in this context (Boswell, Constantino, & Anderson, 2016).

Treatment outcome expectancies (or expectations) characterize a prognostic belief about the degree to which one will benefit from a current or forthcoming treatment (Constantino, Glass, Arnkoff, Ametrano, & Smith, 2011). Outcome expectancies are evoked in any therapeutic context, and early treatment outcome expectancies can be considered an important individual difference variable. Psychotherapy-related expectations, which patients often possess when arriving for treatment, have long been considered potent common factors that can shape experiences, perceptions, motivations, and outcomes (Constantino, 2012; Frank, 1961; Goldfried, 1980; Goldstein, 1962; Greenberg, Constantino, & Bruce, 2006; Kirsch, 1985; Montgomery & Bovbjerg, 2004; Rutherford, Wager, & Roose, 2010; Weinberger & Eig, 1999).

To systematically examine the nature and strength of the outcome expectation-posttreatment outcome link, Constantino et al. (2011) conducted a meta-analysis of psychotherapy studies published in English through 2009. To be included in this analysis, studies had to investigate a bivariate correlation between client-rated expectation at baseline or session 1 and a posttreatment symptom measure not referenced as a follow-up assessment. The resulting meta-analytic sample included 8,016 clients from 46 distinct clinical samples. The analysis revealed a small, but statistically significant association between more optimistic early outcome expectation and more favorable posttreatment outcomes ($d = .24$). Moreover, there was no moderating effect on this association of treatment orientation (CBT or other), primary diagnosis (depression, anxiety, substance, or other), treatment mode (individual, group, or other), study design (comparative trial, open trial, or naturalistic), or publication date (before 2000 or 2000-2009); thus, this association appears to be pantheoretical, pandiagnostic, and pancontextual. The apparent robustness of the outcome expectation-treatment outcome link has been further supported in studies published after 2009 (e.g., Price & Anderson, 2012; Thompson-Hollands, Bentley, Gallagher, Boswell, & Barlow, 2014; Tsai, Ogrodniczuk, Sochting, & Mirmiran, 2014; Webb, Kertz, Bigda-Peyton, & Björgvinsson, 2013). For example, Thompson-Hollands et al. (2014) found that more positive outcome expectations were associated with better anxiety, depression, and functioning outcomes in a randomized controlled trial (RCT) of the Unified Protocol (UP; Barlow et al., 2011a; Barlow, Sauer-Zavala, et al., in press) for diverse principal anxiety disorders.

There is emerging evidence to suggest that there may be certain conditions for which positive outcome expectancies may be particularly important for outcomes. For example, in an RCT comparing the effectiveness of a transdiagnostic Internet-based maintenance treatment (TIMT) to a treatment-as-usual (TAU) control group following inpatient psychotherapy for mental illness, there was a pronounced advantage across a 3-month follow-up period for TIMT for participants with high positive outcome expectation. Although TIMT was generally beneficial, these results suggest that online interventions may be especially so for clients who believe that treatment will help them.

Despite the relatively consistent outcome expectation–treatment outcome correlation, little is known about the mechanisms accounting for this effect in psychotherapy studies. In what limited empirical work has been conducted on potential mechanisms, the working alliance has emerged as a promising candidate. Several studies (of diverse treatments and patients samples) have demonstrated an association between higher pre- or early-treatment outcome expectation and better alliance quality (e.g., Connolly Gibbons et al., 2003; Constantino, Ametrano, Vîsl , & Overtree, 2014; Constantino, Arnow, Blasey, & Agras, 2005; Joyce & Piper, 1998; Patterson, Uhlin, & Anderson, 2008; Tsai et al., 2014), and still others have formally demonstrated that alliance quality serves as at least a partial mediator of the association between pre- or early-treatment outcome expectation and posttreatment outcome (Abouguendia, Joyce, Piper, & Ogradniczuk, 2004; Gaudiano & Miller, 2006; Johansson, Høglend, & Hersoug, 2011; Joyce, Ogradniczuk, Piper, & McCallum, 2003; Meyer et al., 2002). These findings suggest that pessimistic outcome beliefs may interfere with successful formation and maintenance of the working relationship, which in turn might relate to poorer treatment outcomes.

For example, one study explored the dynamic relationships between outcome expectancy and working alliance. In the context of CBT for generalized anxiety, session 1 outcome expectation moderated the negative association between client-rated alliance ruptures and post-rupture outcome expectation (Westra, Constantino, & Aviram, 2011). Specifically, ruptures had a more potent adverse influence on post-rupture expectations of therapy for clients who started therapy with a more pessimistic (versus optimistic) efficacy expectation. This finding suggests that early pessimistic outcome expectancy may be a risk factor for demoralization vis-à-vis perceived tensions in the working relationship.

Specific Aims

As noted, Thompson-Hollands et al. (2014) observed positive expectancies to be associated with better symptom and functioning outcomes in a small randomized trial of the UP (Farchione et al., 2012). The present study utilized data from a recently completed, large RCT that compared a transdiagnostic CBT protocol (UP) to published, empirically supported single diagnosis CBT protocols (SDPs) for diverse principal anxiety disorders and comorbid conditions (Barlow et al., under review). As compared to the earlier RCT referenced above (Farchione et al., 2012), in addition to a larger sample that compared two specified CBT conditions and the assessment of early treatment outcome expectancies, the most recent trial (Barlow et al., under review) included assessment of the working alliance.

This present study had multiple aims. The primary aim was to test if the association between patient outcome expectancies and post-treatment outcome is mediated by the quality of the working alliance, as rated by the patient. The second aim was to test if the indirect effect of expectancy on treatment outcome through the quality of the working alliance is moderated by treatment condition. That is, is the strength of the observed mediation effect a function, at least in part, of receiving the UP or an SDP? We anticipated that positive outcome expectancies and working alliance ratings would be associated with positive treatment outcome. In addition, we anticipated that the association between expectancies and outcome would be partially mediated by working alliance quality. Given the absence of existing

research, we did not propose *a priori* directional hypotheses regarding the moderating effect of treatment condition.

Method

Participants

Participants in the present study were drawn from a large sample ($N = 223$) of treatment-seeking individuals at the Center for Anxiety and Related Disorders at Boston University (CARD) who participated in a trial comparing two active treatment conditions and a waitlist control condition; only active treatment participants ($n = 179$) were included in the present study. The study was approved by a university institutional review board (IRB) and written informed consent was obtained prior to any research activity. Recruitment was designed to be broadly inclusive, with few exclusion criteria. Individuals were eligible for the study if they were 1) assigned a principal (most interfering and severe) diagnosis of panic disorder, with or without agoraphobia (PD/A), generalized anxiety disorder (GAD), obsessive-compulsive disorder (OCD), or social anxiety disorder (SOC), as assessed using the Anxiety Disorders Interview Schedule (ADIS; see description below); 2) 18 years or older; 3) fluent in English; and 4) able to attend all treatment sessions and assessments. Following long-standing procedures in our clinical trials, individuals taking psychotropic medications at the time of enrollment were required to be stable on the same dose for at least six weeks prior to enrolling in the study, and to maintain these medications and dosages during treatment. Exclusion criteria consisted primarily of conditions that required prioritization for immediate or simultaneous treatment that could interact with the study treatment in unknown ways: specifically, a current diagnosis of bipolar disorder, schizophrenia, schizoaffective disorder, or organic mental disorder; current high suicide risk, or; recent (within three months) history of substance abuse or drug dependence, with the exception of nicotine, marijuana, and caffeine. Individuals were also excluded if they previously received at least eight sessions of CBT within the past five years.

Measures

Anxiety Disorders Interview Schedule (ADIS; Dinardo, Brown, & Barlow, 1994; Brown & Barlow, 2014)—Diagnostic assessments were conducted by study evaluators blinded to condition allocation. Patients were assessed for current DSM diagnoses using the ADIS. The ADIS is a semi-structured clinical interview that focuses on DSM diagnoses of anxiety, mood, somatic symptom, and substance use disorders, with screening for other disorders. Diagnoses are assigned a clinical severity rating (CSR) on a scale from 0 (no symptoms) to 8 (extremely severe symptoms), with a rating of 4 or above (definitely disturbing/disabling) representing the clinical threshold for DSM diagnostic criteria. Due to the introduction of DSM-5 partway through the trial, 168 patients (75%) were assigned diagnoses based on DSM-IV criteria and 55 patients (25%) were assigned diagnoses based on DSM-5 criteria. To standardize clinical severity ratings across these phases, an additional rating was assigned to overall PD/A symptoms for those patients diagnosed according to DSM-5, despite the separation of panic disorder and agoraphobia in DSM-5.

Credibility/Expectancy Questionnaire (CEQ; Devilly & Borkovec, 2000)—To assess outcome expectations, patients indicated how much they thought that they would improve by the end of the treatment period on an 11-point scale (from 0% to 100% in 10-point intervals). This cognitively based item, part of the Credibility/Expectancy Questionnaire (CEQ; Devilly & Borkovec, 2000), has been used as a measure of outcome expectancy on its own (e.g., Borkovec et al., 2002; Vogel, Hansen, Stiles, & Götestam, 2006), possesses good face validity, and has been shown to predict treatment outcome (e.g., Borkovec et al., 2002; Price, Anderson, Henrich, & Rothbaum, 2008). The CEQ was administered after session 2 to ensure that the treatment rationale and initial introduction of the treatment plan had been delivered.

Working Alliance Inventory-Short Form (WAI-S; Tracey & Kokotovic, 1989)—The WAI was developed to assess three dimensions of the therapeutic relationship as conceptualized by Bordin (1979)—client and therapist (a) agreement on goals (goals), (b) agreement on how to achieve these goals (tasks), and (c) affective relationship (bond). The original 36-item questionnaire is rated using a 7-point Likert scale, with items mapping on to a global alliance dimension as well as the goal, task, and bond component subscales. Confirmatory factor analysis by Tracey and Kokotovic (1989) created a 12-item short version of the WAI by taking the four items that loaded most strongly on each of the three factors and retaining the same structure and subscales as the longer version. Busseri and Tyler (2003) evaluated the interchangeability of the WAI and the WAI-S in a direct comparison study and found equally good test–retest reliability, concurrent validity, and predictive validity for therapeutic improvement with both measures. The WAI-S may thus actually be preferable to the WAI, given its greater ease of administration and equally strong psychometric properties. The WAI was administered after sessions 4, 8, and 12 in the trial, and the total score was used in all analyses. Coefficient alpha for this sample was $\alpha = .84$.

Hamilton Anxiety Ratings Scale (HARS; Hamilton, 1959)—The HARS was used to assess anxiety symptoms and was administered in accordance with the Structured Interview Guide for the Hamilton Anxiety (SIGH-A; Shear, Vander Bilt, & Rucci, 2001). This commonly used measure has demonstrated good levels of interrater and test-retest reliability, as well as convergent validity with similar clinician rated and self-report measures of anxiety symptoms (Shear et al., 2001). Independent clinical evaluators received extensive training on the SIGH-A and had to demonstrate acceptable levels of reliability prior to their participation in the trial.

Procedure

A detailed description of the procedures, including randomization and participant flow, can be found in Barlow et al. (under review). Patients were randomized by principal diagnosis (PD/A, GAD, OCD, and SOC), following a 2:2:1 allocation ratio to UP, SDP, and waitlist control study conditions, respectively. The present study focuses on participants who were randomized to either the UP or SDP condition. Following baseline assessment and randomization, patients in the UP and SDP conditions received between 12 and 16, 50-90 minute (see below) sessions of weekly individual treatment.

Unified Protocol (Barlow et al., 2011a, b; Barlow, Farchione, et al., in press; Barlow, Sauer-Zavala, et al., in press)—The UP consists of six core treatment modules: a) psychoeducation on the adaptive nature of emotions; b) increasing mindful emotion awareness; c) increasing cognitive flexibility; d) identifying and preventing patterns of emotion avoidance; e) increasing awareness and tolerance of emotion-related physical sensations, and; f) interoceptive and situational emotion-focused exposures. The six core modules are preceded by a module focused on enhancing motivation, readiness for change, and treatment engagement. A final module consists of reviewing progress over treatment and developing relapse prevention strategies. Treatment and session length of the UP were matched to the SDPs for each principal diagnosis (in accordance with the guidelines described below).

Single Diagnosis Protocols (SDPs)—The SDP treatment protocols included: Managing Social Anxiety: A Cognitive-Behavioral Therapy Approach – 2nd edition (MSA-II; Hope, Heimberg, & Turk, 2006); Mastery of Anxiety and Panic – 4th edition (MAP-IV; Barlow & Craske, 2007); Mastery of Anxiety and Worry – 2nd edition (MAW-II; Zinbarg, Craske, & Barlow, 2006); and Treating Your OCD with Exposure and Response (Ritual) Prevention Therapy – 2nd edition (Foa, Yadin, & Lichner, 2008). As recommended by the treatment developers, the MSA, MAW, and OCD protocols were conducted over the course of 16 sessions, whereas the MAP-IV was conducted over 12 sessions. All treatments were administered in an individual format and treatment sessions lasted approximately 50-60 minutes, with the exception of the OCD treatment protocols, which were 80-90 minutes for both UP and SDP conditions.

Therapists and Treatment Integrity

Therapists for the study included doctoral students in clinical psychology with two to four years of experience, postdoctoral fellows with five to six years of experience and licensed psychologists with ten or more years of experience. Each therapist administered both types of treatment. Initial training and certification in the treatment protocols utilized procedures employed in clinical trials at CARD over the last 20 years (Barlow, 2000). Twenty percent of treatment sessions were randomly selected and rated for adherence and competence by raters associated with development of the specific treatments. Treatment fidelity scores were good to excellent ($M = UP = 4.44$ out of 5; $SDPs = 4.09$ out of 5).

Data Analysis and Missingness

All analyses were conducted using SPSS version 20.0.0. Pearson correlations were obtained to capture relationships between study variables (outcome expectancy, working alliance, and treatment outcomes). The mediation (Figure 1) and moderated mediation (Figure 2) models were evaluated with the PROCESS macro developed by Hayes (2013). In this approach, effects are assessed with bias corrected bootstrap confidence intervals that are significant when the upper and lower bound of the bias corrected 95% confidence intervals (CI) does not contain zero. We began with a simple mediation (PROCESS model 4) to assess for an indirect effect of outcome expectancy (independent variable) on session 4 to post-treatment change in anxiety symptoms (dependent variable) through working alliance (the mediator) within our full sample, controlling for early change in anxiety symptoms (pre-treatment to

session 4). Then, we formally tested moderated meditation using PROCESS model 58 (Figure 2) as a means to explore whether the simple mediation pathways differed as a function of treatment condition. For all analyses, we used bootstrapping with 10,000 samples.

Given that any case with a missing value on variables of interest is excluded from analyses using PROCESS, it was important to consider treatment of missing data in this investigation. For scales that utilize a total score (i.e., HARS, WAI-S), mean imputation was used such that the average of completed items was substituted for missing items, as long as no more than 30% of items on a given scale were missing, in the calculation of the total score (Ake, 2005; Fox-Wasylyshyn & El-Masri, 2005; Roth, Switzer, & Switzer, 1999). Following these procedures, no cases were missing HRS total scores at baseline, 59 cases were missing data on this variable at post-treatment, and 51 cases were missing WAI-S total scores. These imputation procedures could not be implemented for the CEQ, as a single item was used; 26 cases were missing item 4 from the CEQ. Chi-square tests revealed that number of missing cases on each study variable did not differ as a function of condition or sex ($p > .05$). Additionally, independent sample t-tests were conducted to examine whether number of missing cases differed as a function of baseline severity (ADIS CSR) and age. There were no significant differences for any of these tests, with the exception of age on the number of missing post-HARS scores ($t = 2.3, p = .02$); on average, individuals with missing data on this variable tended to be older ($M = 33.34$ years) than those with complete data ($M = 29.34$).

Results

Preliminary analyses

Means and standard deviations for each study variable for the full sample, as well as for UP and SDP participants separately, can be seen in Table 1. To ensure that our outcome variable, change in anxiety symptoms from session 4 to post-treatment, was reliable in the present study, the reliability of this change score was calculated (r_{DD}) using the formula specified by King et al. (2006) and was found to be adequate across groups (full sample: $r_{DD} = .72$, UP: $r_{DD} = .71$, SDP: $r_{DD} = .71$). Confidence limits for effect size estimates comparing UP to SDP participants suggested that there were no significant differences between conditions on any study variables or possible covariates (e.g., number of comorbid diagnoses). Additionally, working alliance scores in session 4 were not significantly different from session 8 ($ES_{sg} = -.14 [-.31, .03]$) or session 12 ($ES_{sg} = .12 [-.09, .32]$) in the full sample, justifying the use of the session 4 measure in subsequent analyses. Observed mean expectancy scores were consistent with values reported in other CBT trials (e.g., Newman et al., 2011). The average WAI total score reflected moderately strong, positive alliances in both conditions. Correlations amongst study variables in the full sample and as a function of treatment condition can be seen in Table 2. All variables were significantly correlated with each other, with the exception of the relationship between working alliance and change in anxiety symptoms from session four to post-treatment in the UP condition.

^aAlthough change scores were once considered to be unreliable, recent research has demonstrated that they can be reliable measures of intraindividual change (King et al., 2006).

Mediation analyses^b—Next, we examined the mediational model depicted in Figure 1 using the SPSS PROCESS macro (Hayes, 2013); all analyses were conducted controlling for early change in anxiety symptoms (from pre-treatment to session 4). First, treatment expectancy (independent variable) significantly predicted session 4 patient-rated working alliance (mediator) ($B = .21$ [.08, .33], $p = .001$). When treatment expectancy and working alliance were simultaneously included in the model, treatment expectancy significantly predicted session four to post-treatment change in anxiety (outcome) ($B = .11$ [.003, .22], $p = .008$), whereas working alliance did not ($B = .14$ [-.03, .32], $p = .076$). This model, with both predictors, explained 18% of variance in pre- to post-treatment change in anxiety ($R^2 = .18$, $p = .0002$). Analysis from a bias-corrected bootstrap with 10,000 resamples (Hayes, 2013) revealed a significant indirect effect ($B = .03$, $SE = .02$, 95% CI [.003, .09]) of treatment expectancy on change in anxiety, through working alliance. Using the estimate described by Fairchild et al. (2009), the indirect effect accounted for 6% of the variance in change in anxiety symptoms ($R^2_{\text{med}} = .06$ [.004, .17]). Thus, working alliance partially mediated the relationship between positive treatment expectancy and change in anxiety symptoms.

Moderated mediation analyses—Next, we used the SPSS PROCESS macro to explore the possibility of moderated mediation; again, all analyses controlled for early change in anxiety symptoms (see Figure 2). First, we explored whether the path between treatment expectancy and working alliance (“a” path) was moderated by treatment condition. When included simultaneously in the model (controlling for early change in anxiety symptoms), neither treatment expectancy ($B = .009$ [-.36, .38], $p = .96$), treatment condition ($B = -12.01$ [-29.00, 4.97], $p = .16$), nor their interaction term ($B = .14$ [-.11, .39], $p = .250$) significantly predicted session 4 working alliance. We then explored whether the path between working alliance and change in anxiety symptoms (“b” path) was moderated by treatment condition and a similar pattern of relationships was revealed. When included simultaneously in the model, neither treatment expectancy ($B = .11$ [-.004, .22], $p = .06$) working alliance ($B = -.07$ [-.59, .45], $p = .79$), treatment condition ($B = -9.47$ [-33.16, 14.21], $p = .43$), nor their interaction term ($B = .14$ [-.18, .47], $p = .38$) were significant predictors of change in anxiety symptoms. Overall, the inferential test of moderated mediation was not statistically significant, $B = .05$, $SE = .042$, 95% CI (-.01, .15). Yet, the separate within group conditional indirect effect tests demonstrated that the conditional indirect effect was only significant for the SDP condition (UP: $B = .01$, $SE = .02$, 95% CI [-.02, .09]; SDP: $B = .07$, $SE = .03$, 95% CI [.01, .16]).

Given the conflicting evidence supporting the notion that the indirect effect of expectancy predicting outcome through alliance was moderated by treatment condition (e.g., non-significant interaction effects vs. differentially significant indirect effects as a function of condition), we sought to further clarify the nature of these relationships by re-running our analyses using each subscale of the WAI (task, goal, and bond) as our mediator. There did not appear to be a significant indirect effect through WAI task for the UP condition ($B = .03$,

^bGiven the significant difference in number of missing values for post-treatment HARS scores as a function of age, we also ran the models reported in this section controlling for this. As values remained largely unchanged, we report only the uncontrolled models for brevity.

$SE = .03$, 95% CI [-.004, .13]) or the SPD condition ($B = .04$, $SE = .04$, 95% CI [-.02, .13]; further, the interactions terms between expectancy and treatment condition predicting WAI task ($B = .04$ [-.02, .15], $p = .12$) and between WAI task and treatment condition prediction outcomes ($B = -.20$ [-1.15, .75], $p = .67$) were also not significant. Similarly, for WAI goal, neither interaction term (expectancy x treatment condition predicting WAI goal: ($B = .02$ [-.06, .11], $p = .57$; WAI goal x treatment condition predicting outcome ($B = .45$ [-.54, 1.45], $p = .37$) was significant. In contrast, there was evidence for differential strength of the indirect effect between expectancy and outcome through WAI goal as a function of treatment condition, as this effect was significant in the SPD condition ($B = .04$, $SE = .03$, 95% CI [.0005, .12]) but not the UP condition ($B = .006$, $SE = .02$, 95% CI [-.02, .07]). The strongest case for moderated mediation can be made for the WAI bond subscale which evidenced a trend-level interaction term between WAI bond and treatment condition predicting outcomes ($B = .67$ [-.10, 1.45], $p = .08$), as well as a significant indirect effect for the relationship between expectancy and outcomes through WAI bond for the SPD condition ($B = .07$, $SE = .03$, 95% CI [.02, .17]), but not the UP condition ($B = .006$, $SE = .02$, 95% CI [-.03, .05]). The interaction term between expectancy and treatment condition predicting WAI bond was not significant ($B = .05$ [-.05, .15], $p = .35$).

Discussion

The present study examined the relationships among patients' early treatment outcome expectancies, ratings of working alliance, and treatment outcomes in the context of a RCT comparing two types of CBT protocols. Our first hypothesis, that the relationship between treatment expectancy and change in anxiety symptoms would be partially mediated by alliance ratings (collapsed across treatment conditions), was supported. Overall the two predictors accounted for 18% of the variance in anxiety outcomes, with the indirect effect accounting for just over one-third of the explained variance. This finding is consistent with and extends previous research on treatment expectancies, therapeutic alliance, and outcome (e.g., Johansson, Høglend, & Hersoug, 2011; Meyer et al., 2002) showing that outcome expectations are associated with a variety of individual characteristics and in-therapy behaviors that may contribute to patients' overall assessment of the working alliance (e.g., psychological mindedness; Constantino et al., 2016), hostility or affiliative behavior towards the therapist (e.g., Ahmed, Westra, & Constantino, 2012), and treatment outcome.

Subsequent analyses in the present study provided some evidence that the overall mediation effect was moderated by treatment condition, such that the SPD patients demonstrated a significant conditional indirect effect from expectancies to anxiety outcomes through alliance that was not present among the UP patients. That is, the effect of outcome expectancy on symptom change was observed to be more dependent on early treatment phase working alliance scores in the SDPs compared to the UP. With regard to the three working alliance dimensions (task, bond, goal), the strongest evidence in support of this indirect effect was for the working alliance bond. Given that our analyses examining the role of treatment condition were exploratory, these findings were somewhat surprising and warrants further commentary.

To our knowledge, this is the first such investigation of these particular mechanisms within the context of a controlled transdiagnostic-SDP comparison. As such, our offered interpretations should be considered tentative. Both the UP and SDPs are CBT-based and utilize similar treatment procedures (e.g., objective monitoring of emotional experiences, cognitive restructuring, *in vivo* and imaginal exposure). In addition, both approaches seek to target comparable mechanisms. However, there are relatively subtle differences in the early treatment rationales. Specifically, the UP is less focused on specific symptoms and more focused on the full range of emotions and factors that cut across common emotional disorders, such as emotion avoidance, affect and distress intolerance, and cognitive rigidity (Boswell, 2013). In contrast, SDPs target a more narrowly defined set of symptoms, behaviors, and stimuli (e.g., social interactions, panic sensations, or intrusive thoughts). Although speculative, this has two potential implications for the patient's experience of the treatment. First, the transdiagnostic cross-cutting rationale is an approach that focuses on the underlying issues that characterize the “whole patient.” Second, comorbidity is the rule rather than the exception and SDPs are, by definition, intended to target a single disorder. Consequently, UP patients may experience the “whole patient” rationale and approach more positively; whereas, SDP patients may struggle more with the relatively narrow focus on specific symptoms or a single diagnostic label and experience the therapist as missing the whole picture at times. This potential distinction may not directly impact early treatment outcome expectations (after session 2), yet it might have implications for the expectancy-outcome association vis-à-vis the development of the working alliance as treatment ensues. Concretely, the strength of the working alliance (and especially working alliance bond) may become more important in single-disorder focused treatment because it buffers against concerns that might be triggered by the relatively narrower, specific symptom focused SDP approach.

It could also be that distinct early treatment procedures influence the observed between-condition differences in the relationship between working alliance (as assessed at session 4) and outcome. As previously noted, 1 of the 8 UP modules (typically delivered during sessions 2 to 3) is dedicated entirely to motivation enhancement, and includes two exercises specifically designed to foster motivation for change (a decisional balance and goal-setting). The other SDPs utilized in this trial either do not incorporate formal motivation enhancement procedures or include a single motivation exercise as one component of a broader introductory session. It is possible that greater explicit emphasis on motivation enhancement in the UP encourages patients to view their potential for progress during treatment as largely contingent on how much effort they put into treatment, thereby potentially reducing the impact of the therapist-client alliance on outcome (see Boswell, Bentley, & Barlow, 2015). During SDP treatment, with less explicit early emphasis on fostering motivation to change, the strength of the therapeutic alliance may be more critical to symptom change. This notion is speculative, however, especially given that skilled therapists are likely to incorporate motivational interviewing techniques to address ambivalence regardless of whether they are using a transdiagnostic or single-disorder approach. It is also possible that the effect of treatment expectancies in the UP is mediated by different variables that may be more relevant to or characteristic of the UP than SDPs. In this study, we intentionally focused on two established common factors in the literature.

Further studies to clarify the nature of the relationship between treatment expectancies and outcome during transdiagnostic, emotion-focused CBT are warranted.

This study had several limitations. First, although we used validated and well-established measures of both treatment expectancies and alliance, these measures are both self-report and could therefore be bolstered by observational or audio coding of actual treatment behaviors. Second, the sample consisted only of patients with four principal anxiety disorder diagnoses, and our results may not hold among other treatment-seeking samples. However, patients in the present study did receive a number of comorbid diagnoses at baseline, including other anxiety disorders, depressive disorders, and posttraumatic stress disorder, among others (Barlow et al., under review). Future research should explore the moderating role of comorbid diagnoses in the relationships between treatment condition, outcome expectancy, and working alliance. As noted above, it is possible that that individuals with co-occurring conditions may find SDPs less credible than the UP, driving the importance of working alliance as the mediator through which outcome expectancy exerts its effects on symptom improvement. Third, we focused this study on the relationship between process variables and *anxiety* outcomes specifically. Further studies examining whether the influence of expectancies and working alliance on outcomes differs as a function of the particular outcome examined are needed. Fourth, we were unable to determine a more precise potential causal link from outcome expectancies and working alliance to outcomes given the lack of experimental manipulation of our designated predictor and mediator variables; research on these constructs that provides information about causality by manipulating expectancies and/or the working alliance is needed. Additionally, given the timing of our assessments, we were unable to explore the mediating effect of dynamic change in working alliance in the relationship between treatment expectancy and outcomes; given that the working alliance between patient and therapist is not static, the impact of trajectories of change on this variable should be explored in future work. Finally, we excluded any cases with missing values on variables of interest in the present analyses. Although we tested for differences in missing data patterns as a function of treatment condition, sex, baseline severity, and age, these procedures for handling missing data are likely not as robust as other well-established imputation procedures (e.g., full information maximum likelihood [FIML]), and the strength of our findings should be tempered accordingly.

Conclusions

This study contributes to the extant literature on expectancy, working alliance, and outcome during CBT for anxiety. Specifically, our results provide further support for the notion that the relationship between outcome expectancies and post-treatment outcome is partially accounted for by the quality of the working alliance during CBT. The results also provide initial evidence that this mediating effect may be stronger during treatment within an SDP framework as compared to a transdiagnostic approach (UP). Future work is needed to shed more light on how and why these important process variables may function and interact differently in distinct treatment approaches for anxiety and related disorders. Findings from this line of research are likely to have meaningful clinical implications for therapists and psychotherapy researchers alike. For example, these results do not imply that the working alliance or that the expectancy-working alliance relationship is unimportant for treatment

outcome in transdiagnostic CBT. Rather, the quality of the working alliance appears to be particularly important when following SDP manuals with more complex cases. In addition, this highlights the need to routinely assess outcome expectancies and the quality of the working alliance in routine treatment (Constantino, Boswell, Bernecker, & Castonguay, 2013).

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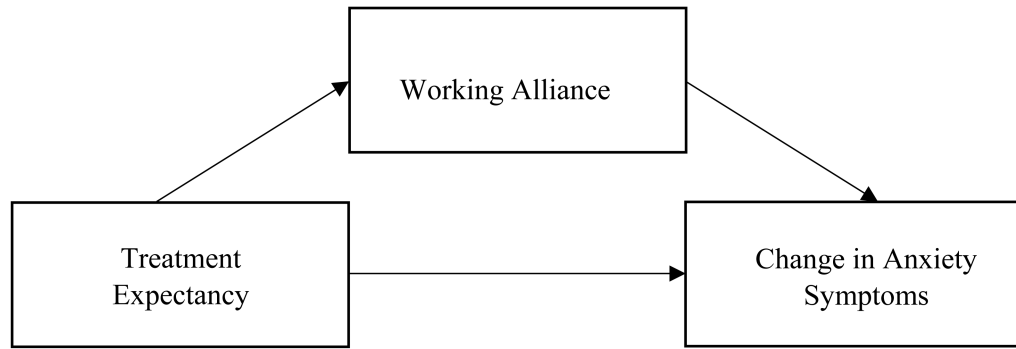


Figure 1. Simple mediation: The indirect effect of treatment expectancy on symptom improvement through working alliance

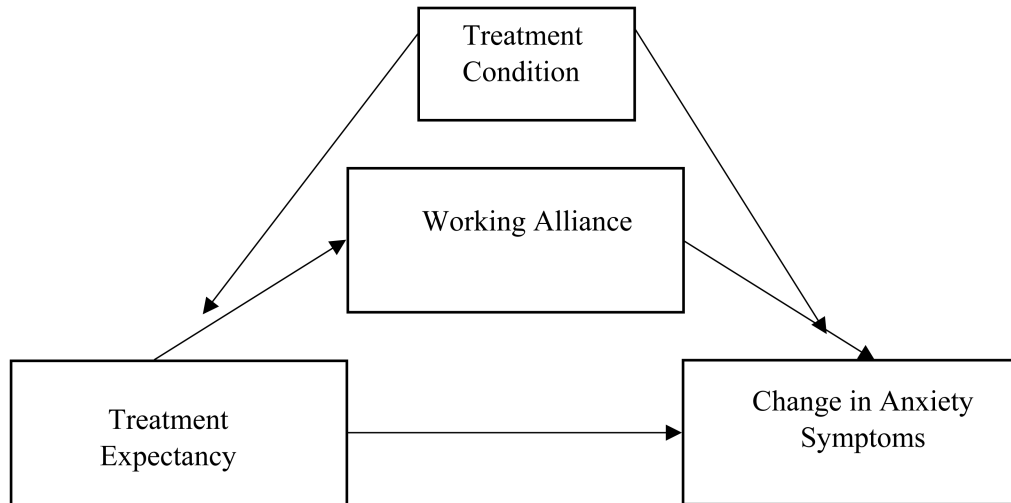


Figure 2. Moderated mediation: Treatment condition moderates the indirect effect of treatment expectancy on symptom improvement through working alliance

Table 1
Means and standard deviations for study variables as a function of treatment condition

	Full Sample	UP	SDP	Hedges g (95% CI)
Treatment Expectancy	66.80 (16.88)	65.71 (17.87)	67.89 (15.85)	-0.13 (-0.45, 0.19)
Working Alliance session 4	69.62 (10.44)	70.81 (09.96)	68.31 (10.87)	0.24 (-0.11, 0.59)
Working Alliance session 8	71.65 (09.33)	72.52 (09.26)	70.66 (09.38)	0.20 (-0.15, 0.55)
Working Alliance session 12	68.44 (08.67)	69.12 (08.77)	67.55 (08.56)	.10 (-0.26, 0.47)
Change in anxiety symptoms	6.62 (07.41)	6.07 (07.80)	7.23 (6.96)	.16 (-0.52, .21)
Number of comorbid diagnoses	2.27 (1.83)	2.22 (1.69)	2.32 (1.95)	t = .37, ns

Note: Treatment expectancy was measured with the C/EQ, working alliance was measured with the WAI, and session 4- to post-treatment change was calculated by creating change scores from session 4 and post-treatment HAS scores. Hedges g effect size compares UP and SDP conditions. Number of participants included in each analysis range from 120-153 for the full sample, 63-77 for UP, and 51-76 for SDP, due to deletion of cases with missing values.

Relationships amongst study variables for the full sample

Table 2

	Full Sample		UP		SDP	
	1.	2.	1.	2.	1.	2.
1. Treatment Expectancy	-	-	-	-	-	-
2. Working Alliance session 4	.42	-	.40	-	.47	-
3. Change in anxiety symptoms	.33	.28	.32	.21(ns)	.35	.38

Note: All relationships significant at the $p < .01$ level except when noted. Treatment expectancy was measured with the C/EQ, working alliance was measured with the WAI, and session 4- to post-treatment change was calculated by creating change scores from session 4 and post-treatment HAS scores. Number of participants included in each analysis range from 100-128 for the full sample, 53-77 for UP, and 47-61 for SDP, due to deletion of cases with missing values.