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Author manuscript

*J Psychother Integr.* Author manuscript; available in PMC 2025 December 13.

## Therapeutic Relationship in Group Cognitive Behavior Therapy, Yoga, and Stress Education for Generalized Anxiety Disorder

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Disclosures: Sat Bir S. Khalsa serves as director of research for the Kundalini Research Institute which promotes the practice of Kundalini Yoga.

## Abstract

Numerous relationship process variables are positively associated with psychotherapy outcomes, but less is known about the therapeutic relationship in mind-body interventions (e.g., yoga). This study examined components of the therapeutic relationship (alliance, credibility/expectations) for patients with generalized anxiety disorder randomized to 12-weeks of group Kundalini Yoga (yoga), cognitive behavior therapy (CBT), or stress education (SE) in groups of 3–6. 147 participants (71% women,  $M_{age}=33.2\pm 13.3$ ) completed the Working Alliance Inventory (WAI) and Credibility and Expectancy Questionnaire (CEQ) (yoga:  $n=56$ , CBT:  $n=65$ , SE:  $n=26$ ) and outcome measures of worry, anxiety, and depression. WAI included subscales of goal, task, and bond. ANOVA assessed differences in WAI and CEQ scores by treatment at midpoint (Week 6) and endpoint (Week 12). Longitudinal linear mixed effects models assessed effects of midpoint WAI by treatment on self-report outcomes. Mean WAI and CEQ scores were significantly higher for CBT than SE by midpoint. The largest differences in WAI subscale scores compared to SE were in task for both CBT and yoga. No significant differences emerged between CBT and yoga. WAI at midpoint was not a significant predictor of midpoint to posttreatment change in worry, anxiety, or depression, nor was the effect of WAI on change in these outcomes different between treatment groups. Results suggest patient ratings of relationship process variables were similar between yoga and CBT, but different from SE in group treatment for anxiety, and that components of the relationship may be optimized within yoga by augmenting goal and task, perhaps by borrowing elements from CBT-based treatments.

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## Introduction

The therapeutic relationship, traditionally defined as the feelings and attitudes expressed between therapist and client (Gelso & Carter, 1985, 1994), has been a significant focus of clinical and theoretical research in psychotherapy for decades (Norcross & Lambert, 2018). While the degree and means by which the therapeutic relationship itself impacts treatment outcomes is difficult to measure, consensus exists among clinicians and researchers of diverse theoretical orientations that the therapeutic relationship is an essential common ingredient to successful outcomes (Norcross & Lambert, 2018). Regardless of the instrumental methods (i.e. treatment interventions) used, all forms of psychotherapy are relational in nature (Safran & Muran, 2000). Little is known, however, about the role of the relationship in emerging psychotherapeutic treatments not classically considered as clinical interventions, such as yoga. Yoga instructor teaching characteristics have been discussed and examined with a view to determining those that may be associated with the best yoga student outcomes (Reeves et al., 2022). Of note, higher positive engagement with a yoga instructor has been associated with more positive experiential outcomes (i.e. Tranquility, Revitalization; Park et al., 2020).

The therapeutic alliance (sometimes referred to as working or helping alliance; hereafter simply as ‘alliance’) originated in classical psychoanalytic theory as a primary mechanism through which therapeutic change occurs and is arguably the most researched relationship element. Associations of alliance strength as conceptualized by Bordin (1979) and outcomes have been observed across a range of distinct treatment approaches and problem areas. The most widely used measure of alliance is the Working Alliance Inventory (WAI; Horvath

& Greenberg, 1989), which includes subcomponents of goal (consensus on therapeutic aims), task (belief in usefulness of the activities in the therapy) and bond (mutual trust, respect, and emotional connection). Therapeutic alliance continues to be supported as “demonstrably effective” in empirical evaluations of the therapeutic relationship-outcome evidence across diagnoses and theoretical orientations (Norcross & Lambert, 2018). A recent meta-analysis of 295 studies (based on several similar alliance measures) examined the link between alliance strength and positive outcomes and found a small to medium overall weighted average effect size ( $r=0.28$ ) (Flückiger et al., 2018). This meta-analysis examined a range of diagnostic groups, including anxiety disorders, for which the effect of alliance on outcomes was in the small range ( $r_{\text{adjusted}} = .24, k = 23$ ). Furthermore, no significant differences in aggregate effect sizes of the alliance-outcome relationship were found by treatment type among cognitive-behavioral therapy, interpersonal psychotherapy, psychodynamic psychotherapy, humanistic therapy, counseling, and unspecified/eclectic treatments. These findings are largely consistent with effect sizes found in previous meta-analyses (Horvath & Bedi, 2002:  $r = .21, k = 100$ ; Horvath et al., 2011:  $r = .28, k = 190$ ; Martin et al., 2000:  $r = .22, k = 79$ ). A recent meta-analysis of alliance in group therapy (Alldredge et al., 2021) also found alliance and patient improvement were correlated ( $r=.17$ ); however, in contrast with studies of alliance in individual therapy, Alldredge et al. found that the most significant moderator of the alliance-outcome association was treatment approach, whereby alliance predicted outcomes more robustly in psychodynamic/interpersonal group settings than in CBT-based ones. Overall, there remains a need to better understand how alliance and its impact differs among group interventions.

Treatment credibility and expectancy are additional elements of the therapeutic relationship that refer to “how believable, convincing, and logical the treatment is,” and the extent to which patients believe that improvements will be achieved (Kazdin, 1979, p. 82). Meta-analyses of both constructs have shown consistently small, but statistically significant associations between early outcome expectation and credibility and more favorable posttreatment outcomes across treatment types (Norcross & Lambert, 2018). Recent research has focused on interactions between such process variables and symptom improvement to elucidate the role they play in treatment. For example, Sauer-Zavala et al. (2018) found that outcome expectancies and working alliance quality may interact to influence treatment outcomes, and that the nature and strength of the relationships among these process variables may differ as a function of the specific treatment approach.

According to the International Association of Yoga Therapists, a therapeutic relationship is fundamental to the provision of yoga as a therapeutic treatment (2020), and the therapeutic alliance has been suggested as a construct for collecting feedback on the relationship (Laurence, 2010). However, few clinical trials exist to evaluate the therapeutic relationship in yoga treatment with psychotherapeutic instruments designed to measure the construct (Telles, 2024), and still fewer in which yoga is provided as a treatment for a psychiatric condition. Uebelacker et al. (2018) found that expectancy significantly predicted improved depression outcomes in yoga treatment compared to a Health Education control group, while treatment preference did not predict symptom change. Brenes et al., (2021) found that adherence, satisfaction, and therapeutic alliance were comparable across preference and randomized CBT or yoga groups of older adults.

As psychotherapeutic approaches broaden to incorporate increasingly popular mind-body interventions, such as yoga, features of therapeutic relationship within such interventions remain poorly understood. As of 2022, the CDC's National Health Interview Survey indicated that 16.8% of the U.S. adult population had practiced yoga within the past year (Davies et al, 2024). A recent meta-analysis found yoga to be a safe and promising option for individuals with elevated anxiety, producing a large, short-term reduction in anxiety when compared with active interventions (e.g. relaxation, psychosocial programs) (Cramer et al., 2018). As yoga is beginning to be recognized as a possible evidence-based psychotherapeutic approach with effectiveness for anxiety (Simon et al., 2021), examining the role of relationship elements common to other forms of psychotherapy in yoga treatment may help guide its potential consideration in clinical implementation of yoga.

The current study aimed to understand differences in three components of the therapeutic relationship (alliance, treatment credibility and expectations) in a randomized controlled trial (RCT) of group Kundalini Yoga (yoga), CBT, or a stress education class (SE, an active control condition) for generalized anxiety disorder (GAD) and the impact of alliance on outcomes. In the primary study, Simon and colleagues (2021) found that Kundalini Yoga, which includes postures and exercises, breathing practices, relaxation and meditation, and CBT were each significantly more effective than stress education (response rates: yoga 54.2%, CBT 70.8%, SE 33.0%) as group treatments for GAD (Simon et al., 2021), although a noninferiority test did not find yoga to be as effective as CBT for improving anxiety severity. Given the comparatively limited research on the therapeutic relationship within yoga treatment using structured relationship measures, our primary aim was to examine working alliance, and treatment credibility and expectancy amongst the group interventions to understand relationship quality in this emerging treatment compared to an established treatment, CBT. We further aimed to explore what may account for any differences through analysis of working alliance subcomponents of goal, task and bond of self-reported working alliance ratings. Finally, we aimed to examine the potential impact of working alliance on treatment outcomes. We hypothesized that self-reported measures of alliance, treatment credibility and expectancy would be greater for both yoga and for CBT compared to SE at treatment midpoint (week 6), and that greater alliance at midpoint would predict lower self-reported anxiety, worry, and depression for yoga and for CBT when compared to SE at endpoint (week 12).

## Methods

### Study Design

This study is a secondary analysis of data from a randomized, 3-arm, parallel-group trial to evaluate the efficacy of Kundalini Yoga and CBT compared with SE for individuals with primary GAD (Efficacy of Yoga vs Cognitive Behavioral Therapy vs Stress Education for the Treatment of Generalized Anxiety Disorder: A Randomized Clinical Trial.). Detailed methods (Hofmann et al., 2015) and outcomes (Simon et al., 2021) are published elsewhere.

## Participants

A total of 226 adults age 18 or older with a primary DSM-5 GAD diagnosis were randomized for study treatment. Exclusion criteria are described in detail elsewhere (Hofmann et al., 2015). Briefly, patients were excluded for current posttraumatic stress disorder, substance use disorders, eating disorders, suicidal ideation (Columbia Suicide Severity Rating Scale >3), mental disorder due to a medical or neurocognitive condition, lifetime psychosis, bipolar disorder, or developmental disorders. Patients having completed more than 5 yoga or CBT sessions in the past 5 years were also excluded. Psychotropic medications at stable doses for at least 6 weeks prior to randomization were allowed.

## Interventions

The 3 interventions were matched for time and practitioner contact (facilitated by two instructors per randomized group) and delivered in groups of 3–6. Each treatment included twelve, weekly 120-minute sessions and 20 minutes of daily homework. Credible rationales for efficacy of each treatment for targeting anxiety were provided. The KY protocol included yoga theory, philosophy, physical postures and exercises, breathing and relaxation exercises, meditation, and mindfulness practices (Hofmann et al., 2015). The 20-minute home practice included physical exercises for flexibility and tension release paired with coordinated breathing and mind-body awareness. The same exercises were assigned through the intervention to promote mastery. All instructors were certified in Kundalini Yoga and trained and supervised by an expert co-investigator (SBK), who is a certified instructor. The CBT protocol for GAD included 5 core treatment modules (psychoeducation, cognitive restructuring, progressive muscle relaxation, worry exposures, and in-vivo exposure exercises) administered by masters or doctoral level psychologists. The CBT protocol included targeting of metacognitions (i.e., worrying about worrying) but no explicit mindfulness or breathing elements (Hofmann et al., 2015). CBT homework assignments were based on the specific skill learned in that week's session. The SE protocol is a standardized control condition that has been used as that includes lectures and discussion about the physiological and psychological effects of stress; effects of lifestyle behaviors (i.e. alcohol, caffeine, diet, exercise), and resilience factors (Hoge et al., 2013). Modules included education regarding the immune system and stress in the brain, sleep and time management, and the impacts of stress on longevity. SE homework included 20-minute audiotapes with information about nutrition and positive perspectives on lifestyle and emotions. All CBT and SE instructors were trained for certification and supervised by expert co-investigators (SGH for CBT; EH for SE). Only the CBT protocol included GAD-specific psychoeducation and interventions (as opposed to “anxiety” more broadly).

## Measures

**Working Alliance Inventory.** Alliance was measured at treatment midpoint (week 6) and endpoint (week 12) with the patient-rated version of the Working Alliance Inventory-Short (WAI-S; Tracey & Kokotovic, 1989). The WAI consists of 12 items, 10 positively and 2 negatively worded, rated on a 7-point Likert-type scale divided into three subscales of 4 items each: goal (commitment to therapeutic outcomes, agreement about goals of therapy; e.g., the patient believes the therapist understands the patient's real problems and what

changes would be good for them), task (agreement on what is important for the patient to work on; the patient believes in the usefulness of the activities in the therapy), and bond (mutual trust and respect between the patient and therapist; the patient feels appreciated and supported by the therapist and feels confident in the therapist's ability to help) (Bordin 1979, 1994). Total scores range from 12 to 84, with subscales ranging from 4 to 28. Higher scores indicate better working alliance. The WAI is the most commonly used measure of alliance in meta-analyses (Alldredge et al., 2021; Flückiger et al., 2018) and has shown the best psychometric properties among measures of alliance strength (Falkenstrom et al., 2015). Internal consistency of the WAI in this sample was very good (Cronbach's alpha= .94).

**Outcome Expectations and Treatment Credibility.** Outcome expectations refers to client predictions of how they will respond to therapy (Constantino, Arnkoff, Glass, Ametrano, & Smith, 2011), while treatment credibility is defined as a client's perceptions and beliefs about a treatment's suitability, effectiveness, and plausibility (Deville & Borkovec, 2000). This study used the Credibility and Expectancy Questionnaire, a 6 question, self-report Likert scale rating, which has demonstrated good face validity, high internal consistency within each factor, and good test-retest reliability. It contains three items each that pertain to the Credibility and Expectancy subscales respectively (CEQ; Borkovec & Nau, 1972; Devilly & Borkovec, 2000). Internal consistency of the CEQ in this sample was very good (Cronbach's alpha= .92).

**Self-reported outcome measures.** Self-report measures included the Beck Anxiety Inventory (BAI), Beck Depression Inventory-II (BDI), and Penn State Worry Questionnaire (PSWQ). The BAI is a 21-item inventory with scores ranging from 0 to 63 designed to measure severity of anxiety symptoms in psychiatric populations. The BDI is also composed of 21-items with the same score range, and is designed to measure severity of depressive symptoms in psychiatric populations. The PSWQ is a 15-item measure of worry with total scores ranging from 16 to 80. Self-report measures were administered at baseline, treatment midpoint (week 6), and post-treatment (Week 12, primary endpoint). Internal consistency of the BAI and BDI in this sample was very good (Cronbach's alpha= .91; .93). Internal consistency of the PSWQ was poor (Cronbach's alpha= .59).

## Data Analysis

Potential differences in mean WAI scores, WAI subscale scores (goal, task, and bond), and CEQ subscales at treatment midpoint (Week 6) and endpoint (Week 12) by treatment arm (CBT, yoga, SE) were examined with ANOVA with Tukey post hoc tests. Longitudinal linear mixed effects models were performed to assess for effects of midpoint WAI on BAI, PSWQ, and BDI outcomes by treatment arm. Midpoint WAI (mean centered), treatment arm (reference group: SE) and time were included as predictors. Time was centered at Week 12. All significance tests were two-tailed ( $p < .05$ ). Analyses were completed in SPSS Version 25.

## Results

### Baseline characteristics and dropout

A total of 147 participants (71% women,  $M$  age=33.2±13.3; 13% Hispanic/Latino; 87% not Hispanic/Latino; 79.6% White, 4.8% Black/African American, 8.8% Asian/Pacific Islander, 4.8% Other, 2% more than one race) completed the WAI and CEQ at week 6 and were included in analyses (yoga: n=56, CBT: n=65, SE: n=26). Dropout largely occurred prior to Week 6 and was as follows: yoga: n=31 (33.3%), CBT: n=17 (18.9%), SE=11 (25.6%); differences in dropout among groups did not reach significance ( $F(2, 225)=2.50, p=.084$ ). Dropout after Week 6 was: n=16 for yoga, n=12 for CBT, and n=14 for SE.

### Differences in total WAI and subscales by intervention

At treatment midpoint, mean WAI total scores did not significantly differ across treatment groups overall (ANOVA  $F(2, 144) = 2.80, p = .06$ : CBT: 65.2 (10.8), yoga: 63.3 (12.9), SE: 58.8 (11.4)). Post-hoc pairwise comparisons showed higher WAI scores at midpoint for CBT than SE (mean difference (MD)=6.44, 95%CI=[0.00, 12.88],  $p=.05$ ), but no significant differences between CBT and yoga ((MD)=1.95, 95%CI=[-3.11, 7.01],  $p=.63$ , or yoga and SE ((MD)=4.49, 95%CI=[-.41, .85],  $p=.243$ ). For WAI subscale scores at midpoint, the CBT group had higher mean scores in goal (MD=0.60, 95%CI=[0.03, 1.18],  $p=.04$ ) and task (MD=0.73, 95%CI=[0.00, 12.88],  $p=.05$ ) subscales than SE. Yoga was higher than SE on the task subscale, but the difference did not reach significance (MD=0.57, 95%CI= [-.03, 1.17],  $p=.066$ ). No significant differences were detected among the interventions for the bond subscale (all  $p > .05$ ).

At treatment endpoint, ANOVA showed significant differences in mean WAI scores between groups ( $F(2, 126) = 6.16, p = .003$ : CBT: 68.3 (11.0), yoga: 65.0 (12.0), SE: 58.4 (10.2)). Post-hoc comparisons showed significantly higher WAI scores for CBT than SE ((MD)=9.91, 95%CI=[3.17, 16.65],  $p=0.002$ ). WAI scores were higher for yoga than SE, but did not reach significance ((MD)=6.61, 95%CI=[-.42, 13.63],  $p=0.07$ ). There were no significant differences between WAI scores for CBT and yoga at endpoint ((MD)=3.30, 95%CI=[-1.89, 8.49],  $p=.29$ ). Task subscale scores at treatment endpoint were higher for CBT (MD=0.96, 95%CI=[0.37, 1.56],  $p<.001$ ) and yoga (MD=0.65, 95%CI=[0.03, 1.28],  $p=.038$ ) compared to SE. CBT continued to demonstrate higher scores than SE on the goal subscale (MD=0.73, 95%CI=[0.11, 1.34],  $p=.01$ ), with no significant differences between yoga and SE (MD=0.38, 95%CI=[-0.25, 1.00],  $p=.33$ ) or between CBT and yoga (MD=0.35, 95%CI=[-0.11, 0.81],  $p=.18$ ). At treatment endpoint, CBT participants had significantly higher bond scores than SE (MD=0.76, 95%CI=[0.12, 1.4],  $p=.01$ ), while yoga was higher than SE on bond, but the difference did not reach significance (MD=0.62, 95%CI= [-.03, 1.3],  $p=.06$ ).

### Outcome Expectations and Treatment Credibility

At treatment midpoint, means of both CEQ subscales (Credibility and Expectancy) were significantly different across treatment groups overall (Credibility: ANOVA  $F(2, 424) = 14.78, p > .001$ ; CBT: 20.62 (4.97), yoga: 18.52 (5.75), SE: 14.52 (5.36); Expectancy: ANOVA  $F(2, 233) = 8.25, p > .001$ ; CBT: 15.82 (5.12), yoga: 15.04 (5.53), SE: 11.36

(5.31)). Post-hoc pairwise comparisons showed higher Credibility scores for CBT than SE (mean difference (MD)=6.10, 95% CI=[3.39, 8.82],  $p<.001$ ), and for yoga than SE (MD=4.00, 95% CI=[1.23, 6.77],  $p=.002$ ), but no significant difference between CBT and yoga (MD=2.10, 95% CI=[-.11, 4.31],  $p=.068$ ). Likewise, post-hoc pairwise comparisons showed higher Expectancy scores for CBT than SE (MD=4.46, 95% CI=[1.76, 7.15],  $p<.001$ ), and yoga than SE (MD=3.68, 95% CI=[.93, 6.43],  $p=.004$ ), but not between CBT and yoga (MD=0.78, 95% CI=[-1.42, 2.97],  $p=1.00$ ). CEQ subscale scores and WAI total scores at week 6 were correlated (Credibility:  $r=.66$ ,  $p<.001$ ; Expectancy:  $r=.61$ ,  $p<.001$ ).

### **WAI as a contributing factor to outcomes**

WAI at midpoint was not a significant predictor of midpoint to posttreatment change in BAI, PSWQ, or BDI, nor was the effect of WAI on change in these outcomes different between treatment groups ( $p>.05$ ).

### **Discussion**

This study examined the role of working alliance in yoga compared to CBT and an active control as treatments for Generalized Anxiety Disorder. The randomized trial design reduced potential biases typically inherent when comparing clinical treatments for patients who self-select treatments. This study contributes to the emerging literature on the therapeutic relationship in yoga treatment and introduces a novel comparison of working alliance subcomponents between treatment modalities. Generally, alliance and CEQ scores between the three treatment arms followed a pattern similar to the pattern demonstrated by the primary outcome in the parent trial, with CBT showing strongest results, followed by yoga. The absence of significant differences in mean alliance scores between CBT and yoga at either treatment midpoint or endpoint is potentially indicative of comparable overall alliance strength for these two interventions delivered in a group format. Similar treatment expectancy and credibility scores between CBT and yoga as compared to the control condition support this similarity.

While no standardized cutoffs for good (vs. poor) alliance scores have been established, mean scores in the CBT group were significantly higher than SE at both midpoint and endpoint. WAI scores for yoga, however, were not significantly higher than for SE at midpoint. While they began to separate from SE after midpoint, this difference did not reach significance by endpoint (although the task subscale did). Analysis of WAI subscales provide insight into which components of the alliance may be targets for optimization in yoga.

High WAI scores at midpoint for CBT appear to be accounted for by the goal and task subscales, which were both significantly higher than in the control condition. This could be explained by early GAD-specific psychoeducation and collaborative goal setting and homework negotiation throughout treatment as part of the CBT protocol. At endpoint, all three subscales were significantly higher for CBT than SE. Although we were unable to conduct a detailed analysis of factors that led to increased alliance strength across treatment, one might hypothesize that these increases reflect the bi-lateral relationship between working alliance strength and symptom improvement that has been elucidated

in recent working alliance research. For example, a recent meta-analysis found that the relationship between alliance strength and symptom severity is often reciprocal in successful psychotherapy, whereby a strong alliance contributes to symptom improvement, which in turn, leads to stronger alliance, reflecting a positive upward spiral of higher alliance and lower symptoms (Flückiger et al., 2020). This relationship may explain the relative increase in bond strength from midpoint to endpoint within the CBT group. In the yoga group, by contrast, the only significant WAI subscale difference from SE occurred in the task subscale at treatment endpoint. This finding suggests that improving factors such as coordinated planning of distress reduction, mutual understanding of the large-scale changes that would benefit the patient, the techniques that will be used in treatment, and how those techniques will accomplish planned changes (task and goal subscales) earlier in treatment may represent good targets for alliance optimization in yoga as a group psychotherapeutic treatment.

While all three treatment conditions were matched for time and provider contact, some differing elements of the treatment protocols may have impacted relationship strength throughout treatment. For example, daily homework for the yoga group consisted of home practice of the same six yoga techniques throughout the duration of treatment with the goal of mastering the home practice by the end of treatment. For CBT treatment, by contrast, homework was “negotiated” at the end of each week’s session. This difference likely affected at least two components of the therapeutic relationship described by the APA task force as “demonstrably effective” (collaboration and goal consensus).

A recent large-scale clinical study found support for a two-factor structure of the WAI, in which the task and goal factors are collapsed into one (Falkenstrom et al., 2015). A theoretical assumption of the construct of the working alliance suggests that, while diverse approaches to psychotherapy may establish goals, tasks, and bond by different means, each should be strong in successful psychotherapy. While head-to-head CBT vs. yoga comparisons showed similarities in overall alliance strength in our sample, notable differences emerged between CBT and yoga in their comparisons with our control condition. Compared to SE, task and goal subscales were significantly higher for CBT by midpoint, but the gap in the task subscale between yoga and SE began to widen only at endpoint (and not to the point of significance). These differences compared to our control condition support adaptation of some treatment elements that likely contributed to early task and goal strength in CBT.

Clinically, adaptation of elements such as psychoeducation regarding the nature of GAD specifically, symptoms to be targeted, goal setting in terms of symptom improvement, and motivational enhancement may improve alliance as measured by the Goal subscale (pertaining to a patient’s confidence in the therapist’s understanding of the changes that would benefit the patient, commitment to therapeutic outcomes). The CBT treatment group spent the first two sessions on these elements, allowing for group members to share examples of “vulnerabilities” and “stressors” to ensure understanding and encourage participation. Elements of alliance measured by the task subscale (pertaining to the patient’s confidence in the usefulness of the work to be done, mutual engagement in specific

activities) may be targeted through dynamic homework negotiation, and provision of detailed treatment rationale.

Homework negotiation, in particular, may be critical to Task subscale improvement, as it entails the therapist and patient deciding together how to implement interventions to maximize the effectiveness of the treatment. CBT consistently outperformed SE on this subscale, likely due to the inherent nature of homework negotiation involved in CBT practice. Interestingly, the difference in task subscale scores between the CBT and yoga arms did not reach significance, which may reflect agreement on the act of completing the yoga homework and some confidence in these tasks, despite the same prescribed yoga homework each week. This may be due to the variety of techniques practiced for homework that targeted distinct mechanisms and symptoms of generalized anxiety (i.e. breathing exercise to target somatic symptoms vs. meditations, which pertain to cognitive symptoms). Making the yoga homework negotiation process more collaborative, similar to a CBT process, may ensure that participants have regular opportunities to link those features of their anxiety presentation that are most prominent and pathogenic with corresponding yoga techniques. While clinically targeting these elements may not address all aspects of the differences observed in self-rated WAI scores over time, they may help address the fact that yoga did not differentiate earlier in treatment with the control on Goal and Task elements of alliance.

Findings regarding working alliance's relation with outcomes should be interpreted cautiously, as our sample was powered to detect medium effects sizes but not to detect smaller effect sizes. There is evidence that alliance quality may predict dropout (Flückiger et al., 2020), which could not be examined in the present study, as most dropout occurred before week 6 when alliance was first assessed. Moreover, mid and late treatment alliance ratings may be more confounded by prior symptom change when compared to early-rated alliance. Recent rigorous studies of alliance's impact on outcomes thus take a multi-layered approach to investigating this relationship to control for this complexity (Flückiger et al., 2020). Additionally, other relationship factors exist within group treatment that may impact outcomes, such as within-group member relationships (i.e., group cohesion; Alldredge et al., 2021). Each of these factors point to the need to collect alliance data earlier and more consistently throughout treatment to better understand its direct impact on treatment outcomes. Ideally, alliance data should be collected weekly in order to establish confidence in a causal relationship on treatment outcomes (Flückiger et al., 2020).

The finding that treatment credibility and expectations were similar for CBT and yoga compared to the SE control condition is also notable. While consideration of additional psychotherapy process variables may confound conclusions that may be drawn from working alliance scores alone, the similar pattern of credibility and expectancy among the CBT and yoga groups compared to the control group may be indicative of yoga's functioning as a psychotherapeutic treatment. Both treatment credibility and expectancy have been shown to be crucial to successful psychotherapy, and there is evidence that outcome expectancies and working alliance may interact to influence treatment outcomes. Sauer-Zavala et al. (2018), for example, found that working alliance partially mediates outcome expectancies. The present dataset was not powered to investigate this relationship,

but these considerations underscore the utility of understanding these process variables in emerging and popular treatments.

Findings from this secondary analysis of an RCT should be considered exploratory. In addition to the limitations described above, the delivery of yoga in the context of our GAD trial may not be fully representative of its delivery in the community, potentially impacting alliance quality. Also, this analysis did not control for possible interpersonal confounds, such as group cohesion (Alldredge et al., 2021). Future studies should investigate yoga in community settings, where mental health goals are not commonly clearly defined. Still, in this study, WAI goal subscale scores were uniquely strong for CBT vs. yoga, meaning those in the CBT group believed most strongly that their problems were well understood and that their assigned treatment was the right way to address them. Further evaluation of yoga instruction characteristics, instructor-student relationships, and yoga practice content may further elucidate working alliance in yoga.

In conclusion, our analyses suggest that patient ratings of therapeutic relationship process variables were similar between yoga and CBT, but were higher than SE in our study of group treatments for anxiety, and may merit further examination for optimizing yoga as psychotherapy. We found no significant differences in alliance or CEQ scores between CBT and yoga. Comparisons of CBT and yoga alliance scores to those of the control condition suggest that alliance could be improved within yoga by clarifying goal and task agreement earlier in treatment, perhaps by adopting elements of collaboration and psychoeducation included in the CBT protocol reviewed above. Future studies may explore how these elements could be implemented in yoga treatment. Future work should also endeavor to collect alliance data more frequently throughout treatment to confirm these findings and understand in greater detail how alliance functions and how it could be improved in yoga as a psychotherapeutic treatment, including in other types of yoga.

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**Public Health Significance Statement**

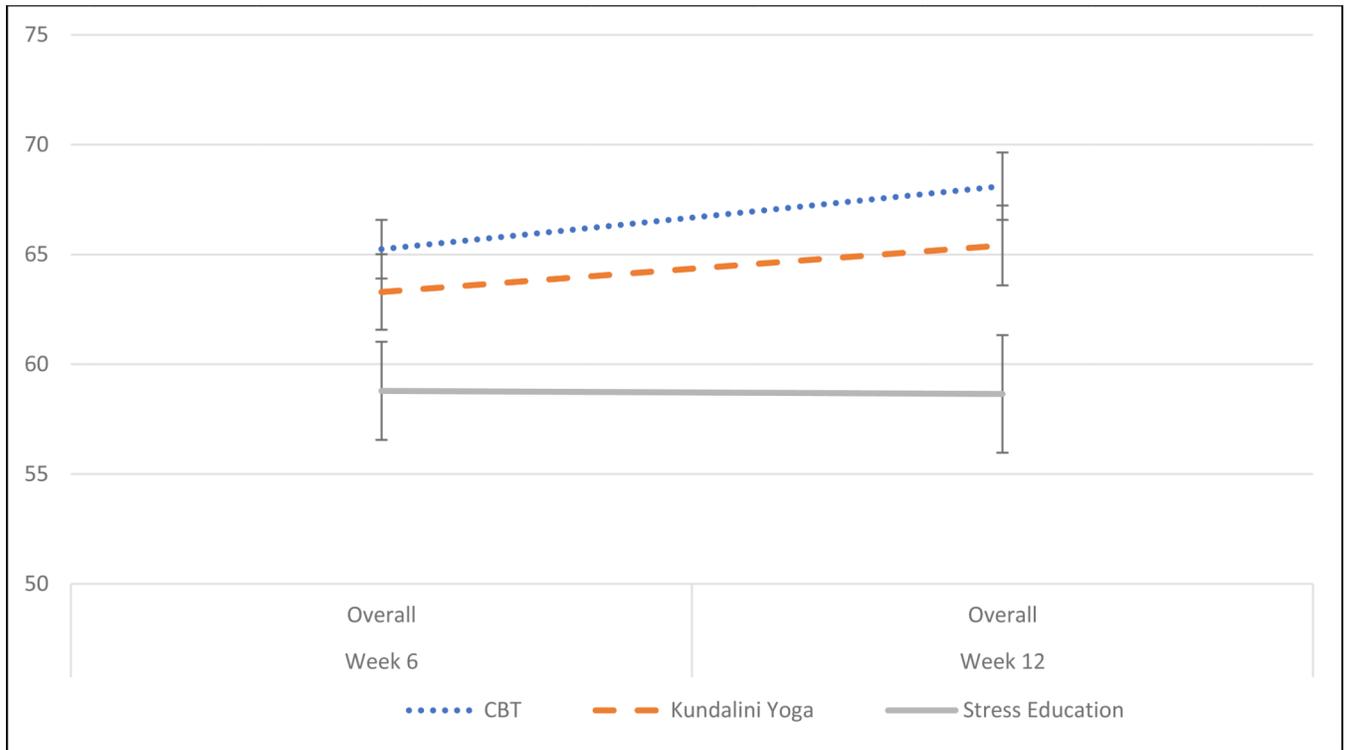
Considering yoga’s popularity among the general population, and recent examinations of its efficacy as a clinical treatment, understanding the therapeutic relationship in this novel context may facilitate implementation. This study suggests that defining goals and tasks of treatment may represent good targets for improving therapeutic relationship quality in yoga treatment.

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**Fig 1.**  
WAI overall means at week 6 vs. 12