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Patient-Therapist Convergence in Alliance and Session Progress Ratings as Predictors of Outcome in Psychotherapy for Generalized Anxiety Disorder

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PATIENT-THERAPIST CONVERGENCE IN ALLIANCE AND SESSION PROGRESS RATINGS AS PREDICTORS OF OUTCOME IN PSYCHOTHERAPY FOR GENERALIZED ANXIETY DISORDER

A Thesis Presented

by

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ABSTRACT

PATIENT-THERAPIST CONVERGENCE IN ALLIANCE AND SESSION PROGRESS RATINGS AS PREDICTORS OF OUTCOME IN PSYCHOTHERAPY FOR GENERALIZED ANXIETY DISORDER

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The degree to which patients and their therapists align over time on their perceptions of therapeutic processes and intermediary outcomes has generally been regarded as an important element of effective psychotherapy; however, few studies have examined empirically the influence of such dyadic convergences on ultimate treatment outcomes. This study examined (a) whether early treatment convergences in patient-therapist alliance and session progress ratings were associated with subsequent worry and distress reduction (and final posttreatment level) in psychotherapy for generalized anxiety disorder (GAD), and (b) whether treatment type and the initial (session 1) levels of perceived alliance and session progress moderated these associations. Data derived from a clinical trial in which patients with severe GAD were randomly assigned to receive either 15 sessions of cognitive-behavioral therapy (CBT; $n = 43$) or 4 sessions of motivational interviewing (MI) followed by 11 integrative CBT-MI sessions ($n = 42$). Patients and therapists rated the alliance and session progress after each session. Patients rated their worry and distress multiple times throughout treatment. Dyadic multilevel modeling revealed, as predicted, that alliance convergence over the first half of therapy

was associated with greater subsequent worry (p = .03) and distress (p = .01) reduction. Additionally, the combination of low initial patient-rated alliance and early divergence was associated with the worst trajectory for the distress outcome (p = .04). Unexpectedly, session progress *divergence* had a near significant association with lower posttreatment worry (p = .05) and was significantly associated with more accelerated subsequent distress reduction (p = .03). Additionally, for patients who perceived their initial progress more positively, whether dyads converged or diverged in early session progress ratings affected the trajectories (though not the ultimate amount) of distress change (p = .02). These findings suggest that divergence of early patient-therapist alliance perspectives, especially when coupled with lower initial patient-rated alliance quality, may be an important marker for patient nonresponse and therapist responsiveness (e.g., use of alliance repair strategies). The findings on patient-therapist session progress convergence are less straightforward, though several possible implications are discussed.

Keywords: Patient-therapist convergence, alliance, session progress, generalized anxiety disorder, cognitive-behavioral therapy, motivational interviewing

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CHAPTER 1

INTRODUCTION

Social psychological research has demonstrated that convergence, or the process of two people becoming more similar over time on their perceptions or experiences, appears to be a general process occurring across different types of close relationships and at different levels of analysis. For example, relationship partners demonstrate convergence in their emotions (Anderson & Keltner, 2004; Anderson, Keltner, & John, 2003), attitudes and values (Acitelli et al., 2001), and perceptions of others (Kenny & Kashy, 1994). The pervasiveness of convergences in close relationships may point to their adaptive value; similar perceptions and experiences in relationships have been associated with greater perceived closeness, trust, and relationship satisfaction (Anderson & Keltner, 2004; Gonzaga, Campos, & Bradbury, 2007). Additionally, the degree of emotional convergence in couples has predicted whether that couple remained together six months later (Anderson & Keltner, 2004). This finding also seems to apply to friendship dyads, as emotional convergence was associated with the intention to maintain the friendship in the future (Anderson & Keltner, 2004). Thus, one general marker of a healthy close relationship is that over time individuals tend to converge in their emotions, perceptions, and attitudes, resulting in more lasting, cohesive, and satisfying relationships (Anderson & Keltner, 2004).

Inasmuch as psychotherapy is a social exchange tending toward a close relationship between patient and therapist, convergence may have a bearing on its success. Although convergence has rarely been studied directly in psychotherapy, the process of convergence, and its clinical importance, is reflected in the field's

longstanding focus on the therapeutic alliance. The alliance is an inherently dyadic construct reflecting patient-therapist agreement on the goals and tasks of therapy in the presence of a felt relational bond (Bordin, 1979). Thus, a quality alliance can be seen as reflecting a high degree of instrumental and emotional attunement. And, consistent with social psychological research, such attunement is not simply an achieved static state, but rather an evolving dyadic experience (Bordin, 1979, 1994). Therefore, a quality alliance would be one in which the patient-therapist dyad worked together in therapy to arrive at, over time, a more aligned (convergent) understanding of the therapeutic process and relationship (i.e., goal/task agreement and perceived bondedness). This increase in instrumental and emotional attunement squares with psychotherapy-specific convergence theories, which suggest that increases in dyadic attunement over time should promote treatment success (Pepinsky & Karst, 1964).

Indeed, there is substantial evidence that a quality therapeutic alliance, assessed from various perspectives, is associated with better treatment outcomes, explaining a robust 7.5% of outcome variance in the most recent meta-analysis (Horvath, Del Re, Flückiger, & Symonds, 2011). Although many studies examining the relation between alliance and outcome have failed to rule out reverse causation (i.e., that a quality alliance is a byproduct of improvement rather than a predictor of it), some more recent stringent examinations of the directional alliance-outcome association have found that the alliance predicts symptom change measured after the alliance, even when controlling for symptom change measured before the alliance (e.g., Arnow, et al., 2013; Falkenström, Granström, & Holmqvist, 2014). Such findings suggest that alliance generates symptom change, rather than merely reflecting a consequence of it. On the whole, the large

research base provides compelling evidence for the clinical importance of the patient-therapist alliance (Muran & Barber, 2010). Yet, this research tells us surprisingly little about the role of the patient-therapist alliance when truly measured at the dyadic level; that is, there has been a mismatch between the way the alliance is conceptualized and the predominant way it is measured (Laws et al., 2016).

The vast majority of alliance-outcome studies have assessed the relationship from one perspective at a time (i.e., patient, therapist, or observer; Elvins & Green, 2008) and at only one or a few time points (Horvath et al., 2011). This non-dyadic measurement of the collaborative aspects of the alliance is especially problematic given that actual agreement between patients and therapists on target problems (at the dyad level) has been shown to be unrelated to the agreement component of the alliance as rated by patients and therapists separately (at the individual level; Busseri & Tyler, 2004). This finding suggests that dyadic agreement may differ from individually-perceived agreement. Thus, most alliance studies obscure the dyad, failing to provide an accurate test of the influence of genuine dyadic agreement at the instrumental (perceived goal/task agreement) and emotional (perceived bondedness) levels. Even fewer studies have examined how both perspectives change over time (i.e., convergence).

Studies that have measured both alliance perspectives have generally found that although both are associated with outcome (Horvath et al., 2011), patients' and therapists' ratings are only moderately associated with each other (see Tryon, Blackwell, & Hammel, 2007 for a meta-analytic review). Moreover, variability in patient and therapist alliance ratings has been shown to be more attributable to the unique patient-therapist dyad than to the person of the therapist (Marcus, Kashy, & Baldwin, 2009). These

findings suggest that unique information may be gained by studying the alliance at the dyad level.

The few studies that have examined the alliance dyadically have done so in a variety of ways. Some have straightforwardly tested whether similarity in patient and therapist alliance ratings at one particular point in time (also referred to as *attunement* or *congruence*) is predictive of treatment outcome. For example, in one study of various psychotherapeutic treatments for various disorders, early similarity between patients and therapists' ratings of goal agreement (one alliance element) was associated with early adaptive change (Long, 2001). Other studies have looked more complexly at alliance attunement and outcome. For example, in an investigation of diverse treatments for diverse disorders, the interaction between early alliance *level* and early patient-therapist alliance *attunement* predicted outcome; for dyads with high quality alliances (as rated independently by patients and therapists), greater similarity/attunement in patient-therapist alliance ratings was related to greater symptom reduction (Marmarosh & Kivlighan, 2012). This result suggests that outcome may be most positively influenced when both partners independently rate the alliance as high *and* agree on this rating dyadically.

Still other studies have examined *changes* in the similarity of patient and therapist alliance ratings over the course of therapy (i.e., dyadic convergence). In a naturalistic study of 270 dyads in which patients with a variety of problems were primarily treated with psychodynamic therapy, similarity in patient and therapist alliance ratings increased significantly over time (greater convergence); however, the authors did not report the relation between convergence and outcome (Hersoug, Høglend, Monsen, & Havik,

2001). To my knowledge, only one study has used dyadic analyses to examine patient-therapist alliance rating convergence over treatment and its association with ultimate treatment outcome. Specifically, Laws et al. (2016) examined this question with patients receiving either cognitive-behavioral analysis system of psychotherapy (CBASP) or brief supportive psychotherapy (BSP) for chronic depression. Patient-therapist alliance ratings evidenced increased convergence over time, which was associated with a steeper reduction in depressive symptoms and lower depression level at termination. Additionally, patient-therapist alliance convergence significantly predicted depression level at follow-up, controlling for patient-rated alliance level and depression level at the end of treatment. (This analysis preserved temporal precedence between the convergence variable and the outcome variable, rendering it more likely that convergence preceded subsequent improvement rather than the other way around.) The Laws et al. findings provided initial evidence that patients and therapists do tend to converge in their alliance perceptions as therapy progresses, and that this convergence is associated with favorable patient outcome. Of course, the association between convergence in patient-therapist alliance ratings and outcome requires replication. In addition, Laws et al.'s findings must be considered preliminary in that convergence was only significantly associated with lower pharmacotherapist-rated depression scores; it was not associated with outcome when depression was assessed by raters blind to treatment condition.

To date, research on dyadic attunement in psychotherapy has largely focused on the alliance. Yet, consistent with general attunement/convergence theories, it seems likely that the importance of patient-therapist similarity is not limited to agreement on perceptions of alliance quality, but likely also generalizes to agreement on concrete

extensions of the alliance (such as aligned perspectives on the effectiveness of the tasks in which the patient and therapist are engaged to accomplish the agreed upon therapy goals). Presumably, then, it would also be important for patients and their therapists to align on ratings of session-by-session progress, or helpfulness.

The link between session progress, or the general helpfulness of a session (as rated from one perspective), and ultimate treatment outcome has been well established. Unsurprisingly, higher patient-perceived session progress at a given time point has been related to better posttreatment outcome in varied treatments for varied conditions (Bernard, Schwartz, Oclatis & Stiner, 1980; Kolden, 1996; Mallinckrodt, 1993; Watson & Greenberg, 1996). Additionally, session evaluations have been associated with alliance quality (Kivlighan, Marmarosh, & Hilsenroth, 2014; Mallinckrodt, 1993), which, as noted, is a consistent predictor of outcome (Horvath et al., 2011). Thus, given its direct relation with adaptive processes and outcomes, it makes sense to examine further session progress as a dyadic construct; like the alliance construct, it may be that patient-therapist attunement (at a given time) or convergence (across time) on this variable explains additional, and possibly more, outcome variance than progress rated by only one dyad member at one point in time. To my knowledge, though, no research has examined whether alignment between patient-therapist views of session progress changes over therapy, and if such a change (convergence/divergence) is associated with outcome (as suggested by convergence theories). However, some parallels can be drawn to one study that found that patient-therapist convergence in recall of important session events increased significantly over time, and that such increased convergence was associated with greater reduction in interpersonal problems (Kivlighan & Arthur, 2000).

To the extent that patient-therapist perceptual convergence has a bearing on treatment process and outcome, it may be important to consider clinical contexts in which it is especially salient. It is plausible that patient-therapist convergence may be particularly important for patients who are more resistant to or ambivalent about change, thereby creating a greater possibility for misattunement to occur between patients and their therapists. For example, patients with generalized anxiety disorder (GAD) are characterized by high change ambivalence and higher rates of resistance compared to other disorders (Borkovec & Roemer, 1995; Westra, 2004). Some researchers have suggested that such resistance can be conceptualized as limited collaboration between patients and therapists (i.e., misattunement or low convergence; Aviram & Westra, 2011); moreover, these same authors found that early patient resistance predicted poorer treatment engagement and outcomes among patients with GAD. Thus, it seems highly relevant to examine the process of dyadic convergence in the context of treatments for GAD.

Thus, the goals of present study were to examine whether patient-therapist dyads exhibit convergence in their ratings of alliance and session progress over time, and whether such convergences were associated with treatment outcome in psychotherapy for GAD. The context for the study included patients who received either cognitive-behavioral therapy (CBT) or CBT integrated with motivational interviewing (MI), an intervention that focuses on reducing change ambivalence/treatment resistance and increasing intrinsic motivation for change (Miller & Rollnick, 2002). Consistent with previous research (Hersoug et al., 2001; Laws et al., 2016), I predicted that patients and their therapist would rate their alliance and session progress more similarly as their

relationship progressed. Also consistent with the limited extant literature (Laws et al., 2016), I predicted that greater early treatment convergence in patient-therapist alliance and session progress ratings would be associated with more positive subsequent outcomes (i.e., worry and global distress reduction). I examined early alliance and session progress convergence in the prediction of subsequent worry and distress in order to preserve temporal precedence and have greater faith that convergence preceded subsequent improvement rather than the other way around.

Additionally, I examined whether treatment condition (CBT vs. MI-CBT) or average initial levels (of the alliance and session progress) moderated the relation between the early convergence variables and the subsequent outcomes. Given that no prior research has examined moderators of convergence-outcome findings, these analyses were exploratory. Different interactive effects were conceivable. Because of MI's focus on increasing collaboration and reducing resistance (Aviram & Westra, 2011), it is possible that the expected positive associations between the convergence variables and outcomes could be stronger in MI-CBT vs. CBT only patients; that is, when the treatment explicitly focuses on collaboration, actually experiencing convergent perceptions of the relationship and progress over time may have stronger effects on subsequent outcome. Alternatively, it is plausible that convergence will be most important for outcome when a treatment does not explicitly address ambivalence; that is, in CBT, it could be that lack of convergence (which, as noted, could be conceived as a type of resistance) and the absence of the MI approach to address such lack could be particularly disruptive to treatment effectiveness. Again, this moderator analysis was exploratory, and aimed at clarifying these rival possibilities. Finally, based on Marmarosh and Kivlighan's (2012)

finding that alliance level moderated the relation between similarity in patient-therapist alliance ratings (at one point in time) and symptom change, it could be that for dyads in the present study with higher early alliance quality, greater early convergence in patient-therapist alliance ratings would relate to greater subsequent worry and distress reduction. I explored this interaction too.

CHAPTER 2

METHOD

2.1 Dataset Overview

Data for the present study were derived from a randomized controlled trial comparing the efficacy of 15 CBT sessions or 4 MI sessions followed by 11 integrative MI-CBT sessions for GAD (Westra, Constantino, & Antony, 2016). The trial involved two sites, York University and Ryerson University, with both treatments conducted at each site. Participants were matched between conditions for treatment outcome expectations. The few baseline variables for which the groups differed by chance (see below) were accounted for in the primary outcome analyses. Briefly, the treatment groups did not differ in their rates of change on worry or global distress across the acute treatment phase. However, MI-CBT patients evidenced significantly more improvement than CBT patients on these primary outcome variables from posttreatment through 1-year follow-up. Also across the follow-up period, patients in the MI-CBT group demonstrated greater clinically significant change in terms of assessor-rated diagnostic status, as well as reliable and clinically relevant reduction in worry and global distress (see Westra et al., 2016). Attrition was fairly low across both treatment conditions. During the active treatment phase, there were 10 dropouts in CBT (23%) and 4 in MI-CBT (10%). As noted, the present novel analyses of these archived trial data focused on the prediction of the self-reported continuous outcomes (worry, global distress) from the convergence variables (alliance, session progress), while also addressing treatment condition and early level of alliance and session progress as possible moderators of the convergence-outcome relations.

2.2 Participants

2.2.1 Patients. Eighty-five participants (age 16 or older) meeting *Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition, Text Revision* (*DSM-IV-TR*; American Psychiatric Association, 2000) criteria for principal GAD were randomly assigned to treatment condition (*n*s = 43 and 42 for CBT and MI-CBT, respectively). Only those with high worry severity (a score of ≥ 68 on the Penn State Worry Questionnaire [PSWQ]; Meyer, Miller, Metzger, & Borkovec, 1990) were included in the study, as baseline severity differentiated patients who did and did not respond favorably to the addition of a MI pretreatment in a pilot study (Westra, Arkowitz, & Dozois, 2009) prior to the present trial. In order to increase external validity, participants with most comorbid diagnoses were accepted in the trial (81% had at least one comorbid condition). Patients on antidepressant medication were also included provided that their dose had been stable for 3 months prior to the study and they agreed to remain on their current dose throughout the study (n = 20). Exclusion criterion included (a) engaging in any concomitant psychotherapy, (b) benzodiazepine use, and (c) meeting criteria for any of the following co-occurring conditions: psychotic or bipolar disorders, substance dependence within the last 6 months, cognitive impairment, or severe suicidal ideation.

Table 1 presents descriptive statistics for the entire sample by treatment condition. The treatment groups did not differ significantly at baseline on measures of self-reported symptom severity (i.e., worry, global distress) or on any demographic variables other than gender; the CBT condition had significantly more women (n = 41 vs. n = 34) and fewer men (n = 2 vs. n = 8) than the MI-CBT condition, $\chi^2(1) = 4.24$, $p = .039$. The two conditions also differed on medication status; significantly more patients in CBT (n = 14)

than MI-CBT (n = 6) were on antidepressant medication, χ^2 (1) = 3.94, p = .047. Additionally, patients in the CBT condition reported significantly higher motivation at baseline than patients in the MI-CBT condition as assessed by the 12-item Change Questionnaire (CQ; Miller & Johnson, 2008), t(83) = -2.55, p = .013.[1]

2.2.2 Therapists. Twenty-two trainees self-selected into condition, providing *either* CBT or MI-CBT. This nesting within condition was designed to control for allegiance and crossover effects. There were 13 female therapists in the CBT alone condition (12 doctoral candidates in clinical psychology and one postdoctoral psychologist) who saw between 1 and 7 cases each (median of 5). These therapists had no formal training in MI, and 92% endorsed cognitive-behavioral as their primary orientation. There were 9 female therapists in the MI-CBT condition (eight doctoral candidates in clinical psychology and one postdoctoral psychologist) who saw between 3 and 14 cases each (median of 5). Of these therapists, 56% endorsed integrative as their primary orientation, 22% endorsed client-centered, and 22% endorsed cognitive-behavioral. Across both treatment conditions, therapists were on average 28.54 years old (*SD* = 2.77 years), and they averaged 276.08 hours of clinical experience (*SD* = 371.62 hours). The therapists did not significantly differ between conditions in terms of age or amount of clinical experience.

For both conditions, therapists were trained extensively through a combination of workshops and pilot case feedback. The trial principal investigator, an expert in MI and CBT, conducted training and case supervision for the MI-CBT therapists. A trial co-

[1] The CQ is not a variable per se in the present study; rather, given its known influence on the outcome variables of worry and global distress (Westra et al., 2016), its effects were residualized out of the outcome variables (see results section below).

investigator, an expert in CBT, together with a postdoctoral fellow specializing in CBT (under the co-investigator's supervision) conducted CBT training (for both groups) and supervised the CBT alone therapists. Therapists were required to show competent treatment delivery (based on supervisor assessment after repeated video review of therapy sessions and supervisor completion of the relevant treatment competence measures) with at least one pilot patient prior to the start of the trial in order to be deemed proficient. Supervision of study cases consisted of supervisor video review and weekly individual supervision meetings.

2.3 Treatments

2.3.1 CBT. The CBT condition consisted of 15 weekly (50 min) sessions and was delivered according to Barlow and colleagues' CBT for GAD manuals (e.g., Coté & Barlow, 1992; Craske & Barlow, 2006; Zinbarg, Craske, & Barlow, 2006). This treatment, which has well-established efficacy (Borkovec, Newman, Pincus, & Lytle, 2002), addresses worry and other features of anxiety with both cognitive (e.g., self-monitoring of thoughts, challenging distorted cognitions) and behavioral (e.g., relaxation training, worry exposure) techniques. Strategies for managing resistance were manualized for this study based on recommendations made by cognitive therapy experts for addressing homework noncompliance and other treatment challenges (e.g., Beck, 2005). These techniques differed significantly from techniques for managing resistance in MI (described below) in that therapists were instructed to respond in a much more directive manner. For example, CBT therapists were encouraged to challenge resistance explicitly, revise cognitive distortions that are thought to underlie resistance, actively problem solve obstacles to patient compliance, and provide psychoeducation.

2.3.2 MI-CBT. The MI-CBT condition consisted first of 4 weekly (50 min) sessions of "pure" MI based on Miller and Rollnick's (2002) MI manual adapted for anxiety (Westra, Arkowitz, & Dozois, 2009; Westra & Dozois, 2003, 2006). MI focuses on reducing ambivalence about worry through therapists' expression of empathy and validation, "rolling with resistance," and enhancing self-efficacy. MI is a person-centered therapy that embraces core values, such as patient autonomy, empathy, collaboration, and evocation. After these 4 initial MI-only sessions, patients in this condition received 11 weekly (50 min) sessions of CBT for GAD based on the same manualized protocol used in the CBT only condition. However, in addition to providing traditional CBT for GAD, therapists in this condition were trained to shift back into MI to address moments of patient resistance. Methods for responding to resistance differed substantially from the CBT condition. Most notably, MI therapists were encouraged to resist challenging or confronting resistance directly, and instead were instructed to validate resistance as an expression of understandable ambivalence about change. Working from a place of empathy and understanding of the patient's perspective, therapists attempted to evoke patients' internal motivation for change through techniques such as siding with the resistance and using open-ended questions to elicit arguments for change from patients themselves.

2.3.3 Relapse prevention. Given high relapse rates for patients with GAD (Rodriguez et al., 2006), a relapse prevention component was added to *both* treatments. This manual was adapted from Whiteside et al.'s (2007) relapse prevention program for GAD; it involves teaching patients to recognize and manage cognitive worry cues and to create and practice relapse prevention plans.

2.3.4 Therapist protocol delivery. Discriminant validity for the treatment conditions was calculated using a randomly selected subset of 20% of sessions for each therapist in each condition (sampled from different therapy phases). As Westra et al. (2016) reported, therapist protocol delivery, as rated by trained observers, was appropriately different between conditions on key components of MI and CBT. Therapists in the MI-CBT condition showed greater adherence to MI techniques on the Motivational Interviewing Treatment Integrity Code (MITI; Moyers, Martin, Manuel, Hendrickson, & Miller, 2005) compared to therapists in the CBT condition. MI-CBT therapists evidenced higher MI spirit (effect sizes ranged from d = 2.18, 95% CI: 1.62-2.69 to d = 3.09, 95% CI: 2.43-3.68) and empathy (effect sizes ranged from d = 2.64, 95% CI: 2.03-3.19 to d = 3.22, 95% CI: 2.55-3.83) compared to CBT therapists. Similarly, therapists in the CBT alone condition showed higher competence in delivery "pure" CBT techniques as per the Cognitive Therapy Rating Scale (CTRS; Young & Beck, 1980) than therapists in the MI-CBT group both early (d = 2.57, 95% CI: 1.97-3.12) and late (d = 0.87, 95% CI: 0.41-1.30) in therapy. That CBT competence scores were lower in MI-CBT is attributable to a measurement artifact. As noted, the CTRS assesses "pure" CBT competence and was not designed to accommodate deviations from it, such as those necessitated in the purposefully integrated treatment. Such MI deviations, while reflecting fidelity to the integrative MI-CBT approach, also represented substantive moments of departure from straight CBT, which would produce lower CTRS scores from blind observers.

2.4 Measures

2.4.1 Outcome Variables.

2.4.1.1 Worry. To assess worry, the cardinal feature of GAD, patients completed the PSWQ (Meyer et al., 1990; see Appendix A), a widely used 16-item questionnaire. The 5-point scale ranges from 1 to 5, with higher scores reflecting more severe worry (range = 16 to 80). The PSWQ has shown high internal consistency and reliability, as well as convergent and discriminant validity (Brown, Antony, & Barlow, 1992; Meyer et al., 1990). In the present study, the PSWQ demonstrated excellent internal consistency (Cronbach's alpha) throughout treatment (average α = .95).

2.4.1.2 Global distress. To assess global distress, patients completed the Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995; see Appendix B), a widely used 21-item questionnaire recommended for inclusion in the assessment of GAD given that it may be a better measure of the tension and persistent arousal characteristic of GAD than other commonly used measures of somatic arousal (e.g., Campbell & Brown, 2002). The 4-point scale ranges from 0 to 3, with higher total scores reflecting more severe distress (range = 0 to 63). Subscale scores for depression, anxiety, and stress can be calculated (7 items per scale; score range 0 to 21). The DASS demonstrates good reliability and validity, and is a better discriminator between anxiety and depression than many other commonly used measures (Antony, Bieling, Cox, Enns, & Swinson, 1998; Lovibond & Lovibond, 1995). The factor structure of the measure has been replicated in non-clinical (Lovibond & Lovibond, 1995) and clinical (Brown, Chorpita, Korotitscw, & Barlow, 1997) samples. In the present study, the DASS total score demonstrated excellent internal consistency (Cronbach's alpha) throughout treatment (average α = .92). As my interest was in global distress as an outcome variable, I used the total score in my analyses.

2.4.2 Predictor and Moderator Variables.

2.4.2.1 Alliance. To assess the quality of the therapeutic alliance, patients and therapists completed their respective versions of the Working Alliance Inventory-Short Form (WAI-S; Horvath & Greenberg, 1989; Tracey & Kokotovic, 1989; see Appendices C and D), a widely used 12-item measure based on Bordin's (1979) conceptualization of the alliance as consisting of patient-therapist agreement on treatment goals, agreement on treatment tasks, and an affective bond. The 7-point scale ranges from 1 to 7, with higher total scores reflecting a better alliance (range of 12 to 84). The WAI is well validated, with good internal consistency and strong evidence of convergent, discriminant, and predictive validity (Elvins & Green, 2008). In the present study, the WAI-S total score demonstrated excellent internal consistency (Cronbach's alpha) throughout treatment for both the patient (average α = .85) and therapist (average α = .87) versions. As is typical for the WAI-S, the total score and the subscales were highly intercorrelated (rs = .56 to .93; all ps < .001); thus, I used only the total score in the present analyses.

To assess patient and therapist convergence in perceptions of alliance quality across therapy (the dyadic level predictor variable), I estimated the differences between patients' and therapists' alliance ratings at each session (starting at session 2) using a difference score model (Lyons & Sayer, 2005; see results section below for further details). Also, both patient- and therapist-rated initial alliance levels (at session 1) were examined as moderators in this study.

2.4.2.2 Session progress. To assess session progress, patients and therapists completed their respective versions of the Session Progress Scale (SPS; Kolden, 1991;

1993a; 1993b; 1996; see Appendices E and F), a brief 4-item questionnaire that assesses the overall impact or helpfulness of an individual therapy session. The SPS is derived from a more comprehensive measure of therapeutic progress, the Therapist Session Report (TSR; Orlinsky & Howard, 1966; 1986). Previous research has found that the 4 items can be aggregated to create a total score, which represents the overall helpfulness of a session. Total SPS scores can range from 4 to 25, with lower scores indicating *greater* session progress (note that for 1 item, the scale range is from 1 to 7, whereas for the other 3 items it is 1 to 6). For the present study, I transformed all 4 items to range from 1 to 7, resulting in a total score that can range from 4 to 28. The SPS has shown high internal consistency (Kolden, 1991) and strong test-retest reliability (Kolden & Howard, 1992). Additionally, both the SPS and the TSR demonstrate predictive validity in that they have related to psychotherapy outcome (Kolden, 1991, 1993a; Kolden & Howard, 1992). In the present study, the SPS total score demonstrated good internal consistency (Cronbach's alpha) throughout treatment for both the patient (average α = .82) and therapist (average α = .75) versions.

To assess patient and therapist convergence in perceptions of session progress across time (the dyadic level predictor variable), I estimated the differences between patients' and therapists' session progress ratings at each session using a difference score model (Lyons & Sayer, 2005; see results section below for further details). Also, both patient- and therapist-rated session progress levels (at session 1) were examined as moderators in this study.

2.5 Procedure

Trial participants responded to community advertisements posted in the greater Toronto area. After responding, potential participants were phone screened. If eligible, a trained graduate assessor administered the *Structured Clinical Interview for DSM-IV-TR Axis I Disorders* (SCID-I; First, Spitzer, Gibbon, & Williams, 1996) to consenting participants to determine diagnostic eligibility and assess other clinical features. Eligible patients were then randomized to treatment across the two sites. The randomization protocol was administered at a neutral third site by a co-investigator uninvolved in site procedures and therapist training, and blind to patient clinical features (other than the matching variables of outcome expectation and worry severity). The PSWQ was administered at baseline, after every session, and at posttreatment. The DASS was administered at baseline, after sessions 6, 10, and 14, and at posttreatment. Both the therapist and patient versions of the WAI-S and SPS were administered after every session. The institutional review boards at the two data collection sites approved the trial.

2.6 Data Analytic Plan

For my data analyses, I used the hierarchical linear modeling program (HLM7; Raudenbush, Bryk, & Congdon, 2011) because of its ability to statistically control for both the correlation between each dyad's alliance and session progress scores and the correlation among the measurements of each construct over time. Moreover, because HLM takes into account information from all individuals in the sample when calculating parameter estimates, it is robust in handling missing data at level-1 (i.e., the repeated measures over time). Thus, HLM mimics a modified intention-to-treat approach, retaining patients in any longitudinal analysis who had at least one score on a measure

administered more than one time. Effect sizes were calculated by evaluating the additional percent variance explained with the addition of predictors (a pseudo r^2). My primary data analytic plan consisted of three main steps that are described sequentially throughout the results section.

CHAPTER 3

RESULTS

3.1 Creating the Convergence/Divergence Predictor Variables

The first step for generating the main predictor variables of patient-therapist convergence in alliance and session progress over time was to create discrepancy scores representing the gap or difference between patients' and their therapists' ratings of the alliance/session progress at each session. To do this, I created a discrepancy indicator variable, which was then used as the sole predictor in my discrepancy models (described in detail below). In short, this variable was coded therapists = 0.5 and patients = -0.5 to ensure that a 1-unit change in this variable would represent the gap or difference between patients' and their therapists' ratings of the alliance/session progress at each session (i.e., the slope), and that each model's intercept would reflect the dyad-level average (i.e., the expected value of alliance/session progress when patient-therapist discrepancy is equal to zero). Additionally, to address the issue of limited information on which the model can generate discrepancy (i.e., only two perspectives through which the model can fit a line), and to avoid model identification problems, three alliance measurements (i.e., the Goals, Tasks, and Bond subscales of the WAI) and each of the four SPS items were used for each dyad member at each measurement session (Cano, Johansen, & Franz, 2005). To generate these dyad discrepancy scores, I fit 2-level difference score models. To give one example, depicted below is the model equation used to estimate the alliance session 2 dyad average and discrepancy (the session progress models were identical in structure).

Level 1

$$\text{WAI}ij = \beta_{1j}(\text{S2 WAI average}) + \beta_{2j}(\text{S2 WAI discrepancy indicator}) + r_{ij}$$

Level 2

$\beta_1 = \gamma_{10} + u_1$
$\beta_2 = \gamma_{20} + u_2$

At level 1, WAIij represents the alliance score i (i = 1 ... 6 parallel scores per dyad) for dyad j at a given session (in this case, session 2), which was predicted from each dyad's average alliance level (β_1) and the discrepancy between each dyad member's scores (β_2). At level 2, these coefficients (i.e., the dyad-level averages and discrepancy scores) dropped down to be predicted by the average alliance level (γ_{10}) and average alliance discrepancy score (γ_{20}) for all dyads in the sample. Random effects at level 2 (u_1 and u_2) allowed each dyad's alliance averages and discrepancies to vary from the estimated sample averages. This model was repeated for each session from 2 through 8 and for even numbered sessions from 10 through 14 (i.e., sessions 2, 3, 4, 5, 6, 7, 8, 10, 12, and 14 were estimated).

Post-estimation coefficients (in HLM, Empirical Bayes or EB estimates) representing the estimated discrepancy score for each patient-therapist dyad at each session were output from each model's HLM level 2 residual file. These HLM derived EB estimates were then used as the outcome variable in our models testing change in alliance and session progress similarity/discrepancy over time (i.e., convergence/divergence).

3.2 Examining Patient-Therapist Alliance Convergence

3.2.1 Descriptive evidence of alliance convergence. The mean WAI discrepancy scores (absolute values) for patients and therapists at each session are presented in Figure 1. The mean discrepancies between patient and therapist ratings of the alliance were largest early in treatment (*M* discrepancy for session 1 = 12.78, *SD* = 8.62) and smaller

later in treatment (*M* discrepancy for session 14 = 9.12, *SD* = 7.19), suggesting that, on average, patients' and therapists' alliance ratings became more similar over time, reflecting a pattern of convergence. Moreover, patient-therapist convergence (i.e., decrease in discrepancy) appeared steepest during the first half of treatment and seemed to level off during the second half of treatment.

3.2.2 Estimating alliance discrepancies at each session. The series of 2-level difference score models (described above) indicated significant discrepancy, on average, and significant variability around the average discrepancy in patient-therapist alliance ratings at each session. Empirical Bayes (EB) discrepancy estimates were output from each model's HLM level-2 residual file to be used as the outcome variable in the models testing change in alliance similarity/discrepancy over time (see below).

3.2.3 Estimating alliance discrepancy change over time (i.e., convergence/divergence). Prior to fitting our convergence models (i.e., change in alliance discrepancy), the EB discrepancy scores required transformation. Given the coding of the discrepancy indicator, dyads in which patients rated the alliance higher than their therapist received a negative discrepancy score, while dyads in which the therapist had a higher alliance rating received a positive discrepancy score. Although on average patients' alliance ratings were higher than therapists' ratings at each session, there were 33 dyads for which the therapists rated the alliance higher at one or more sessions (meaning that for 52 dyads, the patient rated the alliance higher at every session). Additionally, there were 27 dyads whose discrepancy scores changed from positive to negative across time (e.g., a patient rated the alliance higher at session 2 and his/her therapist rated it higher at session 4), rendering it impossible to meaningfully model the

rate of change in discrepancy for these dyads. As the primary question of this study was to test for convergence/divergence in patient-therapist alliance ratings (i.e., increases/decreases in dyad-level discrepancy over time), I used the absolute value of the HLM-derived EB discrepancies obtained for each measurement occasion to address the problem of changing signs (Laws et al., 2016). Because this transformation resulted in positively skewed distributions, I performed a square root transformation to correct this skew.

These square root-transformed (absolute value) EB discrepancy scores for sessions 2, 4, 6, 8, 10, 12, and 14 were used as the outcome in a model that tested alliance similarity change across treatment. In this model, time was rescaled to capture the total change over the entire therapeutic period (Bolger & Laurenceau, 2013); that is, the value of the first session (session 2) was set to 0, and the value of the final session (session 14) was set to 1, with the intervening weeks spaced equally across the 0 to 1 interval. Thus, the linear slope parameter represented change in discrepancy across the entire psychotherapy period for the average dyad.

Results indicated that alliance discrepancy significantly decreased over the course of psychotherapy (see Table 2, column 1). Specifically, the average alliance discrepancy at session 2 was estimated as 1.73 ($p < .001$), which decreased significantly by the end of psychotherapy ($\gamma_{10} = -.14$, $p = .04$). Although most dyads showed a pattern of increasing similarity in alliance ratings (i.e., convergence), there was significant variability in discrepancy change; in fact, some dyads ($n = 17$) became more discrepant (i.e., a pattern of divergence) in their alliance ratings across therapy. Figure 2 displays the rate of change in discrepancy across treatment on average (Panel A) and the variability around

the average (Panel B). Next, based on descriptive evidence suggesting that convergence appeared steepest early in treatment and leveled off later in treatment, I tested a quadratic model of alliance convergence/divergence across treatment (see Table 2, column 2); results indicated that there was no significant curvilinear pattern to alliance discrepancy change, on average (γ_{20} = .09, p = .61), no significant between-dyad variability in the rate of acceleration in alliance discrepancy change across treatment (τ_{22} = 0.17, p > .50), and the quadratic model was not a better fit to the data than the linear model, $\chi^2(4) = 2.77$, p > .5.

To test for alliance similarity change across the first half of treatment, the aforementioned model was repeated using the transformed EB discrepancy scores for sessions 2 through 8 as the outcome, with time rescaled to represent change across the first half of psychotherapy. (Thus, the linear change coefficient in this model represented the average change in alliance discrepancy across the first half of treatment.) See Table 2, column 3 for the results, which indicated that alliance discrepancy at session 2 was estimated as γ_{00} = 1.78 (p < .001), which decreased significantly by session 8 (γ_{10} = -.14, p = .01). Similar to convergence/divergence patterns across the entire psychotherapy period, although most dyads also showed a pattern of increasing similarity in alliance ratings (i.e., convergence) across the first half of treatment, there was marginally significant variability in discrepancy change; although all dyads became less discrepant (i.e., convergent) in their alliance ratings across the first half of therapy, dyads varied in the amount of convergence. Figure 3 displays the rate of change in discrepancy across the first half of treatment on average (Panel A) and the variability around that average (Panel B). Again, based on a visual inspection of the data, I tested a quadratic model of early

alliance convergence/divergence (see Table 2, column 4); results indicated that there was no significant curvilinear pattern to early alliance discrepancy change (γ_{20} = -.01, p = .94), no significant variability in the rate of acceleration in alliance discrepancy change (τ_{22} = 0.20, p = .45), and the quadratic model was not a better fit to the data than the linear model, $\chi^2(4) = 1.21$, $p > .5$. From the aforementioned linear model (i.e., early linear change in alliance discrepancy), EB coefficients of each dyad's estimated *change* in discrepancy were output for use as predictors in the final analyses.

Additionally, due to additional inherent nesting in the data (i.e., multiple patients nested within a single therapist), I ran an unconditional 3-level model to examine the amount of variability in early alliance convergence/divergence that was accounted for by the therapist. At level-1, the average discrepancy at session 2 and change in alliance discrepancy was modeled for patient j at time i seen by therapist k. At level-2, these averages and discrepancies dropped down to be predicted by the average alliance discrepancy at session 2 for therapist k and the average rate of change in discrepancy for therapist k. Random effects at level-2 allowed each patient to vary around their therapist's average intercept and slope. At level-3, therapists' alliance discrepancies at session 2 and their average rate of change in alliance discrepancy across their caseloads were predicted by the average session 2 alliance discrepancy and average rate of change in discrepancy across all of the therapists in the sample. Random effects at level-3 allowed each therapist to vary around the average therapist's intercept and slope.

Level-1 Model

$$WAI_{ijk} = \pi_{0jk} + \pi_{1jk}*(TIME_{ijk}) + e_{ijk}$$

Level-2 Model

$\pi_{0jk} = \beta_{00k} + r_{0jk}$
$\pi_{1jk} = \beta_{10k} + r_{1jk}$

Level-3 Model

$\beta_{00k} = \gamma_{000} + u_{00k}$
$\beta_{10k} = \gamma_{100} + u_{10k}$

Results of this model (see Table 3) indicated that the average therapist alliance discrepancy at session 2 was estimated as $\gamma_{000} = 1.75$ ($p < .001$), which decreased significantly by session 8 ($\gamma_{100} = -.02$, $p = .02$). Additionally, level-2 random effects indicated that there was significant within-therapist variability (i.e., between-patients within a therapist's caseload) from their own average rate of change in alliance discrepancy ($p = .02$), but an examination of the level-3 random effects indicated that there was no significant between-therapist variability in the rate change in alliance discrepancy ($p > .5$). From this model, I calculated an intraclass correlation (ICC) to determine the variability in session 2 discrepancies (intercept) and rates of change in discrepancy across the first half of treatment (slope) that was accounted for by the therapist. Unsurprisingly, approximately 51.94% of the variability in the dyad-level discrepancy scores was due to the therapist. However, only 4.96% of the variability in the rate of change in alliance discrepancy over time (slope) was due to therapists, suggesting that about 95% of the variability in these discrepancy slopes was unique to each dyad. In other words, even though each therapist saw multiple patients, the correlation between two patients' rates of change in discrepancy who were seen by the same therapist was only about .05. Thus, I retained the EB coefficients of each dyad's estimated change in discrepancy from the 2-level model to preserve as much variability in these slopes as possible for their use as predictors in our subsequent analyses. Additionally, the 2-level

model had a much higher reliability estimate compared to the 3-level model, suggesting that the EB coefficients from this model would make more reliable predictors.

3.3 Testing Early Alliance Convergence as a Predictor of Worry and General Distress

Prior to testing the primary alliance research questions, I examined descriptive statistics and intercorrelations between all relevant predictors/moderators (i.e., early alliance convergence/divergence, patient- and therapist-rated session 1 alliance, and treatment condition) and the baseline covariates of worry and distress (see Table 4). All of the variables appeared relatively normally distributed (skewness values ranged from -0.37 to .18). Intercorrelations between predictors were low to moderate (*r*s range from -.14 to .36), suggesting no problematic collinearity.

I next tested whether rate of change in alliance discrepancy from session 2 through 8 predicted subsequent change in outcome (i.e., change in outcome from session 9 through 15).[2] At level 1, I modeled within-patient change in outcome (i.e., worry or distress) using a linear growth curve model, characterized by two parameters (intercept and slope). Time was rescaled (from 0 to 1) so that the linear change coefficients would reflect change in worry and general distress, respectively, across the second half of treatment (Bolger & Laurenceau, 2013). I then centered the time variable at posttreatment (session 15) so that the model intercepts would reflect posttreatment worry and distress.

[2] Given the known influence of baseline medication status, motivation, and site in interaction with medication status on the outcome variables of worry and global distress (see Westra et al., 2016), I followed the same strategy as Westra et al. of residualizing out the effects of these three baseline variables on each of the two outcomes. Thus, the outcome variables in the present study represent the variability in worry and general distress not accounted for by these predictors.

This model was estimated twice: once using the PSWQ scores, and once using the DASS scores as the outcomes.

At level 2 in these models, the EB early alliance discrepancy slope estimates (i.e., convergence/divergence from sessions 2 through 8) generated from the previous analyses were entered as predictors of subsequent change in outcome across treatment (outcome slopes) and posttreatment outcome (outcome intercepts). (Additionally, I added initial symptom severity, treatment condition, and patient and therapist session 1 alliance levels as covariates given that bivariate correlations indicated that these variables might have a bearing on outcome.) The general model equation was as follows:

Level-1 Model

$$\text{Outcome}_{ij} = \beta_{0j} + \beta_{1j}*(\text{TIME}_{ij}) + r_{ij}$$

Level-2 Model

$$\beta_{0j} = \gamma_{00} + \gamma_{01}*(\text{treatment group}_j) + \gamma_{02}*(\text{initial symptom severity}_j) + \gamma_{03}*(\text{patient WAI}_j) + \gamma_{04}*(\text{therapist WAI}_j) + \gamma_{05}*(\text{early alliance convergence}_j) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}*(\text{treatment group}_{jj}) + \gamma_{12}*(\text{initial symptom severity}_j) + \gamma_{13}*(\text{patient WAI}_j) + \gamma_{14}*(\text{therapist WAI}_j) + \gamma_{15}*(\text{early alliance convergence}_{jj}) + u_{1j}$$

Finally, to examine the exploratory convergence by moderator questions, I first created three interaction terms (i.e., the cross-products of session 1 patient-rated alliance, session 1 therapist-rated alliance, and treatment condition with early alliance convergence).[3] Next, I fit three separate models that included all main effects and the relevant convergence by moderator interaction term to test whether there was a

[3] As Aiken and West (1991) have recommended, the main effects for all interactions were mean-centered prior to creating the respective interaction term.

significant interactive effect on change in outcome over time or on posttreatment outcome. Additionally, baseline symptom severity was included in these models as a covariate. We fit these interaction models twice: once using the PSWQ scores, and once using the DASS scores as the outcomes. The general alliance interaction model equation was as follows:

Level-1 Model

$$\text{Outcome}_{ij} = \beta_{0j} + \beta_{1j}*(TIME_{ij}) + r_{ij}$$

Level-2 Model

$$\beta_{0j} = \gamma_{00} + \gamma_{01}*(\text{initial symptom severity}_j) + \gamma_{02}*(\text{early alliance convergence}_j) + \gamma_{03}*(\text{moderator}_j) + \gamma_{04}*(\text{convergence by moderator interaction}_j) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}*(\text{initial symptom severity}_j) + \gamma_{12}*(\text{early alliance convergence}_j) + \gamma_{13}*(\text{moderator}_j) + \gamma_{14}*(\text{convergence by moderator interaction}_j) + u_{1j}$$

3.3.1 Worry results. Results of the unconditional linear model of worry indicated that the average worry level at session 15 was estimated to be -10.57[4] ($p < .001$), and the average change in worry was negative and significant ($\gamma_{10} = -10.87$, $p < .001$). Additionally, random effects indicated that there was significant variability in posttreatment worry level and change in worry over the second half of treatment ($ps < .001$).

Next, I fit an unconditional quadratic model to the data (see Table 5, column 1). Results indicated that the average worry level at session 15 was -11.58 ($p < .001$), the average change in worry was negative and significant ($\gamma_{10} = -18.89$, $p < .001$), and the average rate of acceleration/deceleration in the rate of change in worry was negative and

[4] Recall that the outcome variables are residualized scores, allowing their coefficients to be negative.

significant (γ_{20} = -8.18, p = .01). Additionally, random effects indicated that there was significant variability in posttreatment worry level (p < .001) and change in worry (p = .007), but not in the rate of acceleration/deceleration in the rate of change in worry (p = .29). However, because the Wald statistic is a conservative test and can underestimate the amount of variability in a parameter, I calculated a modified ICC, which revealed that about 10% of the variability in worry was curvilinear. This suggested that patients might vary significantly in their rates of acceleration/deceleration. Additionally, a model comparison test revealed that the quadratic model fit the data significantly better than the linear model, $\chi^2(4) = 12.62$, p = 0.01. Thus, I retained the quadratic model in all subsequent analyses focused on predicting worry.

I next added early alliance convergence to the model as a predictor (see Table 5, column 2). As expected, increased discrepancy (i.e., divergence) in early alliance ratings was marginally significantly associated with greater posttreatment worry (γ_{01} = 74.61, p = .08), significantly associated with a smaller reduction in worry across the second half of treatment (γ_{11} = 168.40, p = .03), and associated with a positively accelerated worry change trajectory (γ_{21} = 139.80, p = .03; see Figure 4). Put another way, decreases in early alliance discrepancy (i.e., early alliance convergence) were associated with a greater reduction in worry and a negatively accelerated change trajectory resulting in lower posttreatment worry compared to patients with an increase in early alliance discrepancy (i.e., early alliance divergence). The model with alliance convergence in it was a marginally significantly better fit to the data than the unconditional quadratic model, $\chi^2(3) = 6.59$, p = 0.09. Compared with the unconditional quadratic worry model, the model with early alliance convergence resulted in a 3.99% reduction in unexplained

variance in posttreatment worry, a 12.34% reduction in unexplained variance in subsequent worry reduction, and a 23.63% reduction in the rate of variability in acceleration/deceleration in the rate of worry change. Next, I added the covariates to the model; the above associations held even when controlling for treatment condition, patient and therapist ratings of session 1 alliance, and baseline worry (see Table 5, column 3).

3.3.2 Moderators.

3.3.2.1 Patient-rated session 1 alliance. Results indicated that patient-rated session 1 alliance and early alliance convergence did not interact to predict posttreatment worry (γ_{04} = -3.99, p = .37), subsequent change in worry (γ_{14} = 3.52, p = .67), or rate of acceleration/deceleration in worry (γ_{24} = 7.68, p = .27), controlling for baseline worry (see Table 6). Also, the model with the patient session 1 alliance by convergence interaction term was not a significantly better fit to the data than the model with only the main effects and covariate, $\chi^2(3) = 3.68$, p = .30.

3.3.2.2 Therapist-rated session 1 alliance. Similarly, therapist-rated session 1 alliance and early alliance convergence did not interact to predict posttreatment worry (γ_{04} = -2.11, p =.65), subsequent change in worry (γ_{14} = -11.02, p =.20), or rate of acceleration/deceleration in worry (γ_{24} = -6.77, p = .35), controlling for baseline worry (see Table 7). Also, the model with the therapist session 1 alliance by convergence interaction term was not a significantly better fit to the data than the model with only the main effects and covariate, $\chi^2(3) = 2.18$, $p > .50$.

3.3.2.3 Treatment condition. Finally, treatment group and early alliance convergence did not interact to predict posttreatment worry (γ_{04} = -50.46, p =.56), subsequent change in worry (γ_{14} = -236.81, p =.16), or rate of acceleration/deceleration in

worry (γ_{24} = -123.83, p = .39), controlling for baseline worry (see Table 8). Also, the model with the treatment by convergence interaction term was not a significantly better fit to the data than the model with only the main effects and covariate, $\chi^2(3) = 3.39$, p = .34.

3.3.3 General distress results. Results of the unconditional linear model of general distress indicated that the average distress level at session 15 was estimated to be -3.79 (p = .002), and the average change in distress from session 10 to 15 was negative and significant (γ_{10} = -5.33, p < .001; see Table 9, column 1). Additionally, random effects indicated that there was significant variability in posttreatment distress level and change in distress (ps < .001). (Unlike with worry, I did not fit a quadratic model to the distress variable, as there were only three measurements occasions available after session 8.)

I next added early alliance convergence to the model as a predictor (see Table 9, column 2). As expected, increased discrepancy (i.e., divergence) in early alliance ratings was significantly associated with greater posttreatment distress (γ_{02} = 60.96, p = .015) and with a smaller decrease in distress from session 10 to 15 (γ_{11} = 69.83, p = .01). Put another way, early decreases in alliance discrepancy (i.e., convergence) were associated with lower posttreatment distress and steeper reductions in distress (see Figure 5). The model with early alliance convergence was a significantly better fit to the data than the unconditional model, $\chi^2(2) = 9.38$, p = .009. Compared with the unconditional distress model, the model with early alliance convergence resulted in an 8.79% reduction in unexplained variance in posttreatment distress level, and a 17.88% reduction in unexplained variance in subsequent distress reduction. The above associations held even

when controlling for treatment condition, patient and therapist ratings of session 1 alliance, and baseline distress (see Table 9, column 3).

3.3.4 Moderators.

3.3.4.1 Patient-rated session 1 alliance. Results indicated that patient-rated session 1 alliance and early alliance convergence interacted to marginally significantly predict posttreatment distress (γ_{04} = -4.15, p =.09) and to significantly predict subsequent distress change (γ_{14} = -5.43, p =.04), controlling for baseline distress (see Table 10). This interactive effect appeared to be primarily driven by differences between patient-therapist dyads who were characterized by both low patient-rated session 1 alliance levels and low alliance convergence; patients in these dyads, actually showed a slight *increase* in distress across the second half of treatment (see Figure 6). In contrast, dyads that were characterized by any other combination of these variables (i.e., low alliance convergence/high patient-rated alliance, high alliance convergence/low patient-rated alliance, and high alliance convergence/high patient-rated alliance) all showed relatively equal rates of distress reduction across the second half of treatment. The model with the patient-rated session 1 alliance by early alliance convergence interaction was a marginally significantly better fit to the data than the model with only the two main effects and covariate, $\chi^2(2) = 4.96$, p = .08. Compared to the model with the main effects and covariate (i.e., early convergence/divergence, patient session 1 alliance, and baseline distress), the model with the interaction term resulted in a 4.87% reduction in unexplained variance in posttreatment distress level, and a 14.78% reduction in unexplained variance in subsequent distress reduction.

3.3.4.2 Therapist-rated session 1 alliance. In contrast, therapist session 1 alliance and early alliance convergence did not interact to predict posttreatment distress (γ_{04} = -3.13, p = .22) or subsequent change in distress (γ_{14} = -2.84, p = .31), controlling for baseline distress (see Table 11). The model with the therapist session 1 alliance by early alliance convergence interaction term was not a significantly better fit to the data than the model with only the main effects and covariate, $\chi^2(2) = 0.14$, $p > .5$.

3.3.4.3 Treatment condition. Finally, treatment group and early alliance convergence did not interact to predict posttreatment distress (γ_{04} = -27.73, p = .57) or subsequent change in distress (γ_{14} = -63.28, p = .26), controlling for baseline distress (see Table 12). The model with the treatment group by early alliance convergence interaction term was not a significantly better fit to the data than the model with only the main effects and covariate, $\chi^2(2) = 1.31$, $p > .5$.

3.4 Evidence of Patient-Therapist Session Progress Convergence

3.4.1 Descriptive evidence of session progress convergence. The mean session progress discrepancy scores (absolute value) for patients and therapists at each session are presented in Figure 7. The mean discrepancies between patient and therapist ratings of session progress were smallest early in treatment (*M* discrepancy for session 1 = 3.87, *SD* = 2.84) and larger later in treatment (*M* for session 14 = 4.99, *SD* = 3.20), suggesting that, on average, patients' and therapists' progress ratings became more discrepant over time, reflecting a pattern of divergence. Moreover, patient-therapist divergence (i.e., increase in discrepancy) appeared steepest during the first half of treatment and seemed to level off during the second half of treatment.

3.4.2 Estimating session progress discrepancies at each session. The series of 2-level difference score models (completed above for the alliance variable and replicated here for session progress) indicated significant discrepancy, on average, and significant variability around the average discrepancy in patient-therapist session progress ratings at each session. EB discrepancy estimates for each patient-therapist dyad at each session were output from each model's HLM level-2 residual file to be used as the outcome variable in the models testing change in session progress similarity/discrepancy over time.

3.4.3 Modeling session progress discrepancy change over time (i.e., convergence/divergence). Prior to fitting our convergence models, the EB discrepancy scores required transformation. Given the coding of the discrepancy indicator, dyads in which patients rated session progress higher than their therapist received a negative discrepancy score, while dyads in which the therapist had a higher session progress rating received a positive discrepancy score. Although on average patients' session progress ratings were lower than therapists' ratings at each session (recall that on the SPS, lower scores reflect greater progress), there were 21 dyads with negative discrepancies (i.e., the patient rated the session as less helpful compared to his or her therapist, at one or more sessions). Additionally, there were 20 dyads whose discrepancy scores changed from positive to negative across time, rendering it impossible to meaningfully model the rate of change in discrepancy for these dyads. Thus, as with the alliance, I used the absolute value of the HLM-derived EB discrepancies obtained for each measurement occasion to address the problem of changing signs (Laws et al., 2016). Unlike the transformation of

the alliance discrepancies, this transformation did not result in substantially skewed distributions (skewnesses all < .6), so no further transformation was required.

These absolute value EB discrepancy scores for sessions 2, 4, 6, 8, 10, 12, and 14 were used as the outcome in a model that tested session progress similarity change across treatment. In this model, time was rescaled to capture the total change over the entire therapeutic period (Bolger & Laurenceau, 2013). Thus, the linear slope parameter represented change in discrepancy across the entire psychotherapy period for the average dyad.

Results indicated that session progress discrepancy significantly increased over the course of psychotherapy (see Table 13, column 1). Specifically, the average session progress discrepancy at session 2 was estimated as 1.22 ($p < .001$), which increased significantly by the end of psychotherapy ($\gamma_{10} = .14$, $p = .03$). Although most dyads showed a pattern of increasing discrepancy in session progress ratings (i.e., divergence), there was marginally significant variability in discrepancy change ($p = .05$); in fact, some dyads ($n = 16$) became more similar (i.e., a pattern of convergence) in their session progress ratings across therapy. Figure 8 displays the rate of change in session progress discrepancy across treatment on average (Panel A) and the variability around the average (Panel B). Next, similar to the alliance data, I tested a quadratic model of session progress convergence/divergence across treatment (see Table 13, column 2); results indicated that there was no significant curvilinear pattern to session progress discrepancy change, on average ($\gamma_{20} = -0.22$, $p = .28$), no significant between-dyad variability in the rate of acceleration in session progress discrepancy change across treatment ($\tau_{22} = 0.19$, $p > .50$),

and the quadratic model was not a better fit to the data than the linear model, $\chi^2(4) = 3.34$, $p > .5$.

To test for session progress similarity change across the first half of treatment, the aforementioned model was repeated using the absolute value EB discrepancy scores for sessions 2 through 8 as the outcome, with time rescaled to represent change across the first half of psychotherapy. Results indicated that session progress discrepancy increased significantly across the first half of psychotherapy. Session progress discrepancy at session 2 was estimated as $\gamma_{00} = 1.24$ ($p < .001$), which increased significantly by session 8 ($\gamma_{10} = .12$, $p = .04$). However, although there was significant variability in discrepancy at session 2 ($p < .001$), there was no significant variability around the rate of change in discrepancy across the first half of treatment ($p > .5$). Because of this, based on a visual inspection of the data, I examined change in session progress discrepancy from sessions 2 through 5, as this period appeared to capture the greatest amount of change in patient-therapist session progress discrepancy (see Table 13, column 3). Results indicated that session progress discrepancy at session 2 was estimated as $\gamma_{00} = 1.20$ ($p < .001$), which increased significantly by session 5 ($\gamma_{10} = .20$, $p = .008$). Additionally, there was significant variability in discrepancy at session 2 ($p < .001$) and in the rate of change in discrepancy from sessions 2 through 5 ($p = .008$). Figure 9 displays the rate of change in session progress discrepancy from session 2 through 5 on average (Panel A) and the variability around the average (Panel B). From the aforementioned linear model (i.e., linear change in session progress discrepancy from session 2 through 5), EB coefficients of each dyad's estimated change in discrepancy were output for use as predictors in the primary analyses.

Additionally, due to the additional inherent nesting in the data, I ran an unconditional 3-level model to examine the amount of variability in early session progress convergence/divergence (again, sessions 2 through 5 for this variable) that was accounted for by the therapist. (Other than the time period used, the structure of this model was identical to the 3-level alliance discrepancy model described above.)

Level-1 Model

$$SPS_{ijk} = \pi_{0jk} + \pi_{1jk}*(TIME_{ijk}) + e_{ijk}$$

Level-2 Model

$$\pi_{0jk} = \beta_{00k} + r_{0jk}$$

$$\pi_{1jk} = \beta_{10k} + r_{1jk}$$

Level-3 Model

$$\beta_{00k} = \gamma_{000} + u_{00k}$$

$$\beta_{10k} = \gamma_{100} + u_{10k}$$

Results of this model (see Table 14) indicated that the average therapist session progress discrepancy at session 2 was estimated as $\gamma_{000} = 1.16$ ($p < .001$), which increased non-significantly by session 5 ($\gamma_{100} = 0.07$, $p = .42$). Additionally, level-2 random effects indicated that there was significant within-therapist variability (i.e., between-patients in a given therapist's caseload) from their own average rate of change in session progress discrepancy ($p < .001$), but an examination of the level-3 random effects indicated that there was no significant between-therapist variability in the rate change in discrepancy ($p > .5$). An ICC revealed that aproximately 11.61% of the variability in the dyad-level discrepancy scores was due to the therapist (intercept), and only 3.19% of the variability in the rate of change in session progress discrepancy over time was due to therapists

(slopes), suggesting that about 97% of the variability in these discrepancy slopes was unique to each dyad. In other words, even though each therapist saw multiple patients, the correlation between two patients' rates of change in discrepancy who were seen by the same therapist was only about .03. Thus, I retained the EB coefficients of each dyad's estimated change in discrepancy from the 2-level model for their use as predictors in our subsequent analyses. (As with the alliance discrepancy models, the 2-level model of session progress discrepancy change was also a more reliable model than the 3-level model, suggesting that the 2-level model might produce more reliable EB discrepancy change estimates.)

3.5 Testing Early Session Progress Convergence as a Predictor of Worry and General Distress

Prior to testing the primary session progress research questions, I examined descriptive statistics and intercorrelations between all relevant predictors/moderators (i.e., early progress convergence/divergence, patient- and therapist-rated session 1 progress, and treatment condition) and the baseline covariates of worry and distress (see Table 15). All of the variables appeared relatively normally distributed (skewness values ranged from -0.21 to .12). Intercorrelations between predictors were low to moderate (*r*s range from -.43 to .36), suggesting no problematic collinearity.

I next tested whether rate of change in session progress discrepancy from session 2 through 5 predicted subsequent change in outcome (i.e., change in outcome from session 6 to session 15). At level 1, I modeled within-patient change in outcome (i.e., worry or distress) using a linear growth curve model, characterized by two parameters (intercept and slope). Time was again rescaled (from 0 to 1) so that the linear change

coefficients would reflect change in worry and general distress, respectively, from session 6 through 15. I then centered the time variable at posttreatment (session 15) so that the model intercepts would reflect posttreatment worry and distress. This model was estimated twice: once using the PSWQ scores, and once using the DASS scores as the outcomes.

At level 2 in these models, the EB early session progress discrepancy slope estimates (i.e., convergence/divergence from sessions 2 through 5) generated from the previous analyses were entered as predictors of subsequent change in outcome across treatment (outcome slopes) and posttreatment outcome (outcome intercepts). (Additionally, I added initial symptom severity, treatment condition, and patient and therapist session 1 progress levels, and therapist-rated as covariates given that bivariate correlations indicated that these variables might have a bearing on outcome.) The general model equation was as follows:

Level-1 Model

$$\text{Outcome}_{ij} = \beta_{0j} + \beta_{1j}*(\text{TIME}_{ij}) + r_{ij}$$

Level-2 Model

$$\beta_{0j} = \gamma_{00} + \gamma_{01}*(\text{treatment group}_j) + \gamma_{02}*(\text{initial symptom severity}_j) + \gamma_{03}*(\text{patient SPS}_j) + \gamma_{04}*(\text{therapist WAI}_j) + \gamma_{05}*(\text{early SPS convergence}_j) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}*(\text{treatment group}_{j\,j}) + \gamma_{12}*(\text{initial symptom severity}_j) + \gamma_{13}*(\text{patient SPS}_j) + \gamma_{14}*(\text{therapist SPS}_j) + \gamma_{15}*(\text{early SPS convergence}_{j\,j}) + u_{1j}$$

Finally, to examine the exploratory convergence/divergence by moderator questions, I first created three interaction terms (i.e., the cross-products of session 1 patient-rated progress, session 1 therapist-rated progress, and treatment condition with early session progress convergence). Again, the main effects for all interactions were

mean-centered prior to creating the interaction terms. Next, I fit three separate models that included all main effects and the relevant convergence by moderator interaction term to test whether there was a significant interactive effect on change in outcome over time or on posttreatment outcome. Additionally, baseline symptom severity was included in these models as a covariate. I fit these interaction models twice: once with the PSWQ as the outcome measure, and once with the DASS as the outcome measure. The general session progress interaction model equation was as follows:

Level-1 Model

$$\text{Outcome}_{ij} = \beta_{0j} + \beta_{1j}*(TIME_{ij}) + r_{ij}$$

Level-2 Model

$$\beta_{0j} = \gamma_{00} + \gamma_{01}*(\text{initial symptom severity}_j) + \gamma_{02}*(\text{early session progress convergence}_j) + \gamma_{03}*(\text{moderator}_j) + \gamma_{04}*(\text{convergence by moderator interaction}_j) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}*(\text{initial symptom severity}_j) + \gamma_{12}*(\text{early session progress convergence}_j) + \gamma_{13}*(\text{moderator}_j) + \gamma_{14}*(\text{convergence by moderator interaction}_j) + u_{1j}$$

3.5.1 Worry results. As the previous worry models suggested that a quadratic model best captured the shape of patients' worry change, I first fit an unconditional quadratic model to the data (see Table 16, column 1). Results indicated that the average worry level at session 15 was -11.02 ($p < .001$), the average change in worry from session 6 to 15 was negative and significant ($\gamma_{10} = -20.71$, $p < .001$), and the average rate of acceleration/deceleration in the rate of change in worry was nonsignificant and negative ($\gamma_{20} = -5.44$, $p = .15$). Additionally, random effects indicated that there was significant variability in posttreatment worry level ($p < .001$), change in worry ($p = .007$), and in the rate of acceleration/deceleration in rate of change in worry ($p < .001$). Thus, I retained the quadratic model in all subsequent analyses predicting worry.

I next added early session progress convergence/divergence to the model as a predictor (see Table 16, column 2). Unexpectedly, increased discrepancy (i.e., divergence) in early session progress ratings was marginally significantly associated with lower posttreatment worry (γ_{01} = -16.11, p = .05), non-significantly associated with a smaller subsequent reduction in worry across sessions 5 through 15 (γ_{11} = 2.01, p = .91), and non-significantly associated with a positively accelerated change trajectory (γ_{21} = 14.05, p = .38; see Figure 10). The model with session progress convergence/divergence in it was not a better fit to the data than the unconditional quadratic model, $\chi^2(3) = 4.91$, p = 0.18. Compared with the unconditional worry model, the model with early session progress convergence resulted in a 4.91% reduction in the unexplained variance in posttreatment worry. Next, I added our covariates to the model; session progress convergence/divergence was no longer significantly associated with posttreatment worry when controlling for treatment condition, patient and therapist ratings of session 1 progress, and baseline worry (see Table 16, column 3).

3.5.2 Moderators.

3.5.2.1 Patient-rated session 1 session progress. Results indicated that patient-rated session 1 progress and early convergence did not interact to predict posttreatment worry (γ_{04} = 0.03, p = .99), subsequent worry change (γ_{14} = -5.69, p = .38), or rate of acceleration/deceleration in worry (γ_{24} = -6.17, p = .28), controlling for baseline worry (see Table 17). The model with the patient session 1 progress by convergence interaction term was not a significantly better fit to the data than the model with only the main effects and covariate, $\chi^2(3) = 1.36$, $p > .50$.

3.5.2.2 Therapist-rated session 1 session progress. Similarly, therapist-rated session 1 progress and early convergence did not interact to predict posttreatment worry (γ_{04} = 0.43, p = .91), subsequent worry change (γ_{14} = -1.54, p = .85), or rate of acceleration/deceleration in worry (γ_{24} = -2.72, p = .71), controlling for baseline worry (see Table 18). The model with the treatment by convergence interaction term was not a significantly better fit to the data than the model with only the main effects and covariate, $\chi^2(3) = 0.40$, $p > .50$.

3.5.2.3 Treatment condition. Finally, treatment group and early session progress convergence did not interact to predict posttreatment worry (γ_{04} = -15.19, p = .32), subsequent change in worry (γ_{14} = -6.05, p = .83), or rate of acceleration/deceleration in worry (γ_{24} = 11.70, p = .73), controlling for baseline worry (see Table 19). The model with the treatment by convergence interaction term was not a significantly better fit to the data than the model with only the main effects and covariate, $\chi^2(3) = 1.10$, $p > .50$.

3.5.3 General distress results. Results of the unconditional linear model of distress indicated that the average distress level at session 15 was estimated to be -3.86 (p = .002), and the average change in distress from session 6 to 15 was negative and significant (γ_{10} = -9.18, $p < .001$). Additionally, random effects indicated that there was significant variability in posttreatment distress level and change in distress ($ps < .001$). Next, I fit an unconditional quadratic model to the data (see Table 20, column 1). Results indicated that the average posttreatment distress level was estimated to be -3.79 (p = .002), the average change in distress was negative and significant (γ_{10} = -9.51, p = .04), and the average rate of acceleration/deceleration in the rate of change in distress was negative and nonsignificant (γ_{20} = -0.40, p = .93). Additionally, random effects indicated

that there was significant variability in posttreatment distress, rate of change in distress at posttreatment, and rate of acceleration/deceleration in rate of change in distress (*ps* < .001); see Table 20, column 1). A model comparison test revealed that the quadratic model was a marginally significantly better fit to the data than the linear model, $\chi^2(4) = 7.33$, $p = .12$. Thus, I retained the quadratic model in all subsequent analyses focused on predicting of distress.

I next added early session progress convergence to the model as a predictor (see Table 20, column 2). Counter to our hypotheses, increased discrepancy (i.e., divergence) in early session progress ratings was not associated with posttreatment distress ($\gamma_{01} = -1.04$, $p = .84$) or with distress reduction from session 6 through posttreatment ($\gamma_{11} = 24.72$, $p = .20$). However, also counter to our hypotheses, increased discrepancy was associated with a positively accelerated change trajectory ($\gamma_{21} = 40.09$, $p = .03$; see Figure 11), suggesting that, on average, patient-therapist dyads who became less similar (more discrepant) in their session progress ratings had a faster subsequent reduction in distress. The model with early session progress convergence in it was a significantly better fit to the data than the unconditional quadratic model, $\chi^2(3) = 9.89$, $p = 0.02$. Compared with the unconditional quadratic distress model, the model with early session progress convergence resulted in a 16.29% reduction in the rate of variability in acceleration/deceleration in the rate of distress change. Next, I added our covariates to the model; early session progress convergence remained a significant predictor of the rate of acceleration/deceleration in distress change even when controlling for treatment condition, patient and therapist ratings of session 1 progress, and baseline distress (see Table 20, column 3).

3.5.4 Moderators.

3.5.4.1 Patient-rated session 1 session progress. Results indicated that patient-rated session 1 progress and early convergence interacted to marginally significantly predict subsequent change in distress (γ_{14} = -13.02, p =.06) and to significantly predict the rate of acceleration/deceleration in distress change (γ_{24} = -15.28, p =.02), controlling for baseline distress (see Table 21). However, the interaction term did not predict posttreatment distress (γ_{04} = 0.36, p = .84). In other words, the interaction of patient-rated session 1 progress was not associated with different overall levels of distress at posttreatment, rather it was associated with different during-treatment change trajectories (i.e., the interaction impacted the *pattern* of patients' distress change). Higher patient-rated session progress (indicating that the session was *less* helpful) combined with *either* convergence or divergence resulted in distress change trajectories that appeared roughly linear and resulted in the least overall distress change by posttreatment (see Figure 12). For patients with low session progress (indicating that the session was *more* helpful), those with lower levels of session progress divergence had a positively accelerated change trajectory, whereas patients with higher levels of divergence had a negatively accelerated change trajectory. However, as depicted in Figure 12, both of these change trajectories resulted in approximately equal distress change by posttreatment. The model with the patient-rated session 1 progress by early convergence interaction was a marginally significantly better fit to the data than the model with only the two main effects and covariate, $\chi^2(3) = 5.79$, p = .12. Compared to the model with the main effects and covariate (i.e., early convergence, patient session 1 progress, and baseline distress), the model with the interaction term resulted in an 14.36% reduction in the unexplained

variance in subsequent distress reduction, and a 20.68% reduction in the unexplained variance in the rate of acceleration/deceleration in distress change.

3.5.4.2 Therapist-rated session 1 session progress. In contrast, therapist-rated session 1 progress and early convergence did not interact to predict posttreatment distress (γ_{04} = -1.18, p = .61), subsequent change in distress (γ_{14} = -1.80, p = .80), or rate of acceleration/deceleration in distress change (γ_{24} = 0.30, p = .97), controlling for baseline distress (see Table 22). The model with the therapist-rated session 1 progress by convergence interaction term was not a significantly better fit to the data than the model with only the main effects and covariate, $\chi^2(3) = 0.51$, $p > .50$.

3.5.4.3 Treatment condition. Finally, treatment group and early session progress convergence did not interact to predict posttreatment distress (γ_{04} = -2.08, p = .84), subsequent distress change (γ_{14} = 50.83, p = .20), or rate of acceleration/deceleration in distress (γ_{24} = 34.36, p = .37), controlling for baseline distress (see Table 23). The model with the treatment by convergence interaction term was not a significantly better fit to the data than the model with only the main effects and covariate, $\chi^2(3) = 5.40$, p = .14.

3.6 Therapist Effects on Worry and General Distress

I did not examine therapist effects on worry or general distress outcomes as Westra et al. (2016) reported that less than 1% of the variability in patients' posttreatment worry/distress and during-treatment rates of change in worry/distress were accounted for by the therapist.

CHAPTER 4

DISCUSSION

The goals of this study were to examine patterns of patient-therapist convergence in their ratings of alliance and session progress throughout treatment, and to test whether greater convergence on these variables was associated with treatment outcome across two psychotherapies (MI-CBT and CBT) for GAD. The results for the alliance convergence models and the session progress models are summarized and discussed in turn.

4.1 Alliance Convergence

As predicted, patients and their therapists became, on average, more similar in their ratings of their alliance quality, both over the early part of treatment (early alliance convergence) and the entirety of treatment. Moreover, greater early alliance convergence (sessions 2-8) was associated with greater subsequent reductions in worry (sessions 9-15) and general distress (sessions 10-15), as compared to dyads that evidenced less early alliance convergence (or who experienced early alliance divergence). Although these associations did not differ based on the therapists' initial alliance perception or the treatment condition, the association between alliance convergence and subsequent distress (but not worry) reduction differed depending on patients' initial alliance perception; the combination of a low initial patient-perceived alliance and the subsequent experience of low alliance convergence (or even divergence) may particularly hinder distress reduction.

That patients and their therapists converged over time in their alliance perceptions replicated the findings of two previous studies (Hersoug et al., 2001; Laws et al., 2016). Together, these results support Bordin's (1979) notion that an adaptive patient-therapist

alliance is characterized by increasing patient-therapist instrumental attunement (goal/task agreement) and emotional attunement (shared bond). Moreover, the present results extend prior work by examining more extensively the timeframe and shape of patient-therapist alliance convergence; that is, I examined session-by-session alliance convergence both in an early phase and across the full treatment, whereas Hersoug et al. and Laws et al. examined the alliance more sporadically. With these more frequent alliance measurements, I found that the greatest amount of patient-therapist convergence occurred early in treatment; in fact, the average change in alliance discrepancy across the first half of treatment was approximately equivalent to the average change in alliance discrepancy across all of therapy (i.e., γ_{10} = -.14 in both models). Perhaps this is not surprising; when two people enter into a novel relationship, it may take time to start perceiving their dyadic field in an attuned manner. However, it appears that patients and therapists, at least on average, can come to see their relationship more similarly rather efficiently. Such attunement, then, may be a malleable dyadic process early, whereas later such attunement appears more stable (perhaps because of there being less room to converge after the early formative stage).

Notably, there was little evidence that the degree of patient-therapist early alliance convergence differed depending on the person of the therapist; that is, the vast majority of convergence variability (i.e., about 95%) was accounted for by the unique therapy dyad. Thus, achieving alliance *convergence* may depend more on the specific dyad and their interactions than on the general attunement-fostering skill of the therapist. Interestingly, this finding is consistent with previous research that examined the alliance separately from both patient and therapist perspectives (but not their convergence), and

found that variability in these ratings was more attributable to the unique patient-therapist dyad than to the contributions of particular therapists (Marcus et al., 2009).

Moreover, the dyadic process of early alliance convergence predicted subsequent during-treatment reductions in worry and distress. This relation between convergence and positive outcome replicates the one previous study that examined this association (but in a sample of patients receiving treatment for chronic depression; Laws et al., 2016). The present findings also extend Laws et al.'s findings, not only to the treatment of GAD, but also by adding temporal precedence between the predictor (early alliance convergence from session 2-8) and subsequent worry and distress reduction (from session 9-15 and 10-15, respectively) during the acute treatment period. (As previously noted, this temporal precedence affords greater confidence that convergence precedes subsequent improvement rather than the reverse.) Additionally, these associations held even when controlling for initial patient- and therapist-rated alliance quality, suggesting that they were not merely capturing a main effect of early alliance. Although the precise mechanisms through which patient-therapist alliance convergence affects improvement remain unknown, there are several possible explanations.

First, it could simply be that the process of becoming more aligned with one's therapist on emotions, perceptions, and attitudes represents a novel, corrective experience for the patient who has not historically experienced such convergences in other important relationships (Castonguay & Hill, 2012). As Anderson and Keltner (2004) have argued, such convergence is one marker of healthy close relationships. Thus, such a healthy relational experience with one's therapist, perhaps irrespective of the goals, tasks, and strategies of the treatment (or at least as a complement to them), may help to directly

alleviate suffering. This may be particularly true when the lack of such convergences contributes to the etiology of one's presenting concerns. Although speculative, one could consider this to be the case for patients with GAD given that this condition has been associated with interpersonal dysfunction in general (Newman, Crits-Christoph, & Szkodny, 2013), a bevy of interpersonal themes in worry content (Roemer, Molina, & Borkovec, 1997), and less secure attachment (Newman, Llera, Erickson, Przeworski, & Castonguay, 2012)—all of which could be related to a lack of experienced convergence, or healthy attunement, in important relationships. When experiencing convergence with a therapist, a person with GAD might, at least in part, be experiencing attachment that is more synchronous. And, again, this could help alleviate suffering in itself. Thus, a clinical implication would be for therapists to assess dyadic alliance convergence via routine alliance monitoring on parallel alliance instrumentation. With the knowledge gained from such ongoing assessment, therapists and their patients can strive to increase, achieve, and maintain convergence over time (perhaps through direct metacommunication about elements of their relationship on which they diverge; for a review of strategies that might explicitly foster agreement on different alliance facets see Constantino, Castonguay, Zack, & DeGeorge, 2010).

Second, social psychological research points to several positive general relational experiences that result from greater dyadic convergence, including more perceived closeness/trust/relationship satisfaction, greater intention to stay in the relationship, and longer actual relationship tenures (e.g., Anderson & Keltner, 2004). It is plausible that these positive relational experiences in general could also translate directly to therapy-specific experiences in the form of secure attachment to the therapist, motivation for

treatment, and treatment engagement, respectively, all of which have been associated with positive treatment outcomes (e.g., Levy, Ellison, Scott, & Bernecker, 2011; Lombardi, Button, & Westra, 2014; Kazantzis, Whittington, Dattilio, 2010, respectively). The notion here is that greater dyadic convergence might give rise to adaptive intermediate outcomes in the psychotherapy process, and in this vein, future research should examine possible mediational pathways from early alliance convergence to, for example, higher treatment engagement, which may in turn predict adaptive treatment outcome.

Third, alliance convergence might just very specifically be about the patient-therapist alliance construct. The process of becoming more aligned could be capturing healthy therapeutic alliance development; that is, as a patient and therapist start perceiving their relational field in a more attuned manner, they may have achieved a favorable condition (of well-aligned trust, security, and direction) that supports the challenging "work" of therapy. In this sense, early alliance convergence might be a precondition for the more technical elements of psychotherapy to take hold. This would again reflect a mediational pathway to be tested: from early alliance convergence to, for example, more frequent worry exposure, which may in turn predict adaptive treatment outcome.

Finally, as Laws et al. (2016) suggested, increases in patient-therapist alliance discrepancies over time (i.e., divergence) could be negatively associated with treatment outcomes because they are capturing alliance ruptures, or breakdowns/tensions in the collaborative patient-therapist relationship (Safran & Muran, 2006). However, dyadic divergence might be capturing a special type of rupture that is different from the more

typically observed confrontation and withdrawal ruptures when measured from one person's perspective (i.e., patient, therapist, or observer). Specifically, a pattern of increasing alliance discrepancy (measured dyadically) could reflect an unnoticed rupture that is continuing to worsen over time (i.e., an alliance pattern characterized by increasing *misattunement*, even if there is not overt confrontation or withdrawal). If indeed such divergence were a form of alliance rupture, it would make sense that it would relate to poorer treatment outcome just like other forms of tension/rupture (Eubanks-Carter, Muran, & Safran, 2010). As a concrete example, both patient and therapist will possess their own perceptions of their alliance; the patient could believe that they have a very trusting relationship and high agreement on the tasks and goals of treatment, whereas the therapist might also believe they have a high level of task/goal agreement, but perceive relational trust as low. Both partners, of course, likely believe that they perceive the relationship accurately and could be unaware that they differ on the trust element. Over time, if the patient continues to believe the relationship is becoming more and more trusting and emotionally close, whereas the therapist sees it as stagnant (a pattern of *divergence*), this would represent a subtle and likely unnoticed relational misattunement that could, like any alliance rupture or misalignment, be toxic. This type of rupture, though, would likely go unnoticed without dyadic measurement of said attunement. An implication of this for both clinical work and future research is that routine dyadic alliance monitoring is key for heightening awareness to this potentially nuanced rupture manifestation. With such awareness, the dyad can work toward greater convergence over time, which in this frame might represent a specific form of rupture repair (and rupture

repair in general has been associated with better treatment outcomes; Safran, Muran, & Eubanks-Carter, 2011).

The present study's exploratory moderator analyses provide additional information on the circumstances under which alliance convergence/divergence is associated with treatment outcomes. First, the alliance convergence by treatment group moderator analyses suggested that the convergence-outcome association *did not* differ depending on treatment type (MI-CBT vs. CBT alone). This finding suggests that alliance convergence might represent an adaptive relational process that occurs across different types of therapies (i.e., a common factor), including those that are more directive (i.e., CBT) and those that incorporate more client-centered or non-directive strategies in the face of patient resistance (i.e., MI-CBT). This common factor notion was also supported in the previous study that examined alliance convergence in relation to outcome across two treatments for chronic depression (Laws et al., 2016).

Second, the convergence/divergence-treatment outcome association also did not differ depending on the therapists' initial perceptions of alliance quality. Perhaps for therapists, it matters more for outcome that they become increasingly attuned to their patient's perceptions of the alliance over time and it matters less how positively they initially view the level of their alliance quality. In contrast, I found some evidence (albeit preliminary) that the association between dyadic alliance convergence and subsequent distress reduction differed depending on the *patient's* initial perception of the alliance; for dyads in which patients perceived the initial alliance (session 1) as being low quality, the degree to which these dyads converged or diverged mattered a great deal for patient outcomes. Specifically, if these dyads subsequently *converged*, then patients tended to

achieve roughly comparable outcomes to dyads with higher quality initial patient-perceived alliances. However, if these dyads subsequently *diverged,* patients actually got *more* distressed, on average. Thus, a combination of low initial patient-perceived alliance quality and high patient-therapist alliance divergence could be an important prognostic marker for poor patient distress outcomes.

Recall that Marmarosh and Kivlighan (2012) also found an interactive effect of early alliance quality and similarity/attunement in patient-therapist alliance ratings (at one point in time) on patient outcomes. Specifically, they found that alliance similarity was more strongly associated with outcome for high versus low patient-perceived alliance dyads. In the present study, I found that the experience of alliance convergence or divergence mattered most for dyads with low versus high patient-perceived alliance. Although these findings differ somewhat, they both provide preliminary support for the notion that the associations between both patient-therapist alliance discrepancy and outcome and alliance discrepancy change (convergence/divergence) and outcome may depend on the patient's initial perceptions of alliance quality. Thus, although we have called for the importance of dyadic level alliance measurement, the fact that such measurement continues to capture the patient's individual alliance perspective remains valuable clinical information. For example, it may be that the use of alliance rupture-repair strategies could be especially indicated for dyads that also feature low early patient-perceived alliance quality in addition to a pattern of alliance divergence. Alternatively, a pattern of alliance convergence, as noted above, could be a signal for therapists to capitalize on their highly attuned collaborative bond with their patients (no

matter the patient's early perception of alliance quality) by engaging in specific change interventions.

However, this interactive effect must be interpreted with some caution, as it was only found to influence distress reduction, but not worry reduction. Although it remains unknown why this interactive association was not found for both outcomes in this study, there could be statistical reason; that is, there may have been power constraints for the worry outcome given the inclusion of a quadratic parameter (which was not included in the distress models). Or, the effect for worry could be smaller, thus requiring more power to detect it. Alternatively, it could indeed be that the interactive effect differs depending on the type of outcome (e.g., general, inclusive distress versus the specific symptom of worry), which requires further investigation.

4.2 Session Progress Convergence

Counter to my prediction, patients and their therapists became, on average, more dissimilar in their ratings of session progress, both over the early part of treatment (early session progress divergence) and the entirety of treatment. Moreover, and also unexpectedly, greater early session progress *divergence* (sessions 2-5) was associated with lower posttreatment (session 15) worry and a faster subsequent reduction in distress (sessions 6-15), as compared to dyads that evidenced less early session progress divergence (or who experienced early session progress convergence). None of the associations between session progress divergence and the various patient outcomes differed based on the therapists' initial session progress perception or the treatment condition. However, initial patient-rated session progress and early session progress convergence/divergence interacted to marginally predict subsequent change in distress

and to significantly predict the rate of acceleration/deceleration in distress change. For dyads in which patients perceived more progress in the initial session, subsequent session progress convergence related to a positively accelerated distress change trajectory (i.e., they showed more distress over part of therapy before evidencing a reduction later); for the same dyads in which patients perceived more progress in the initial session, subsequent session progress divergence related to a negatively accelerated distress change trajectory (i.e., they showed a faster decrease in distress before leveling off). In brief, for those dyads with patients reporting high initial session progress and either subsequent progress convergence or divergence, distress scores ended up in comparable place by the end of treatment; however, the trajectories to get there were notably different. There was no interactive effect of initial session progress and subsequent session progress convergence/divergence on the worry outcomes.

Although the finding that most patient-therapist dyads diverged over time in their ratings of session progress was unpredicted (in light of general attunement/convergence theories and prior research on alliance convergence), there are several plausible (though certainly tentative) explanations. First, perhaps patients generally tend to see their progress as increasing over time, whether or not their therapist also sees this pattern. This pattern might accurately reflect progress, or it could be a mechanism to reduce cognitive dissonance (Festinger, 1957). If the latter, it might understandably reflect a general pattern of therapists tending to be more cautious than their patients when evaluating progress—what Atzil-Slonim et al. (2015) termed a "better safe than sorry" pattern. If the former, a second explanation for the divergence pattern might simply reflect that therapists are not very accurate in perceiving actual progress in their patients (though

there remains the question of what is the "truth" when it comes to progress). Finally, another reason the present session progress findings do not square with general attunement/convergence theories is that session progress is not a true relational variable (whereas the alliance is). Of course, all of these speculations are tentative at best and require replication and further clarification.

Consistent with the alliance models in this study, there was little evidence that the degree of patient-therapist early session progress divergence differed depending on the person of the therapist. Session progress divergence may depend more on the specific dyad than on the therapist's specific contribution to misattunement.

With regard to predicting outcome, there was some evidence that early session progress divergence was associated with lower posttreatment worry; however, this finding was no longer significant when patient- and therapist-rated initial session progress were in the model. When all three predictors were included, only *patient*-perceived initial session helpfulness predicted posttreatment worry, suggesting that (at least for posttreatment worry level) initial patient perceptions of session helpfulness are more predictive of ultimate patient outcome than either therapist initial perceptions or subsequent early progress convergence/divergence.

Although counter to my prediction, the finding that patients in dyads that diverged in their session progress ratings tended to evidence a faster subsequent *decrease* in distress may actually make intuitive sense when you consider the direction of the divergence and who is doing the diverging. Descriptive information showed that patients perceived greater session progress than their therapist at each session in the vast majority of dyads. Thus, increased session progress discrepancy likely reflected *increasing*

positivity in patients' session progress perceptions over time, which would understandably relate to their self-reported lower distress (especially if the therapists lack of similar progress optimism simply reflected the aforementioned "better safe than sorry" pattern, which has been shown to be clinically beneficial; Atzil-Slonim et al., 2015). However, future research should directly test (inferentially) the prediction of outcome from both (a) which dyad member was diverging, and (b) the direction of the discrepancy (i.e., which dyad member rated session progress more positively).

It is important reiterate, though, that early session progress convergence/divergence failed to predict most outcomes in this study. There may be several reasons for this. First, the lack of association may be an artifact of the construct used in the present study; that is, it may be more important for patients and therapists to converge on their *experience* of the session, rather than on their *evaluation* of its helpfulness. In fact, this notion could explain the reason that Kivlighan and Arthur (2000) found that greater patient-therapist *convergence* in their ratings of important session events (i.e., experiences within the session) was associated with decreases in interpersonal problems. Taking it further, the difference between experience and evaluation also seems consistent with research on existential isolation, or the feeling of separateness that results from feeling alone in one's subjective experience (Pinel, Long, Landau, & Pyszczynski, 2004; Yalom, 1980). People high in existential isolation feel as though no one truly understands them at their core, an experience that has been shown to correlate with mental health problems, such as anxiety, depression, alienation, loneliness, and interpersonal dependency (Costello & Long; 2014). This research suggests that heightening subjective convergence, what Pinel et al. (2004) have termed "I-sharing,"

may counteract experiences of existential isolation, promote prosocial behavior, and help alleviate mental health suffering. In other words, perhaps dyadic convergence only relates to adaptive relational outcomes when dyads are converging or diverging on their subjective experiences, but not when they are converging or diverging on more objective evaluations like session progress. If this were accurate, though further research is required, it would be important for clinicians to promote experiences of I-sharing (subjective convergence) in session for which Pinel, Bernecker, and Rampy (2015) discuss several possible strategies.

A second, but related, plausible reason why early session progress divergence failed to predict most outcomes in this study could be that session progress is less of a true dyadic variable than alliance (which did predict most outcomes), so patient-therapist agreement on progress is less important. Finally, and on a more methodological note, the failure of session progress convergence/divergence to predict most outcomes could largely be an artifact of the SPS's low variability. In fact, recall that low variability in the session progress convergence/divergence variable restricted this study's analyses to focusing on sessions 2-5 (rather than the first half of treatment, as with the alliance). Thus, future studies should use a different measure of session progress in order to determine more definitively whether session progress convergence/divergence is important for patient outcomes.

Even with these limitations in mind, the present study's exploratory moderator analyses provide some additional information about the circumstances under which early session progress convergence/divergence is associated with treatment outcomes. Although treatment group and therapist-rated initial session progress did not moderate the

early session progress convergence/divergence-outcome associations, patient-rated initial session progress did. For dyads in which patients perceived their initial session as more helpful, progress convergence was associated with a pattern of getting worse before getting better with regard to distress; for these same types of high progress dyads, progress divergence was associated with a pattern of getting less distressed quickly then leveling off. However, both of these combinations resulted in roughly equivalent *levels* of patient distress at posttreatment. Thus, it is possible that for patients who initially perceive a high degree of helpfulness or progress, dyadic convergence may be a marker for a more challenging treatment period, whereas dyadic divergence may be a marker for speedier improvement. One reason for this unexpected finding could relate to *who* is doing the "converging." Because this finding was only observed for patients who initially perceived their session as very helpful, it could be that for these dyads convergence represents a movement toward their therapists' more negative perceptions. However, this notion requires testing.

4.3 Limitations

This study had several notable limitations. First, the creation of the convergence/divergence variables required that I run a large number of models, increasing the likelihood of Type I error. Second, the way I created the convergence variables made it impossible to tell which dyad member is "doing" the converging or diverging, and whether this matters for outcomes. Third, it is possible that the relatively small number of therapists in the present study limited my ability to detect therapist effects both on the convergence/divergence variables and on the treatment outcomes. Fourth, both of the significant moderator findings were only present for distress outcomes

(and not replicated for the worry outcome). Finally, the findings currently have limited generalizability beyond patients with severe GAD receiving a form of CBT or integrative CBT (though the alliance convergence findings are generally consistent with prior research on patients with chronic depression; Laws et al., 2016).

4.4 Conclusion

To conclude, the present findings add to the as yet scarce literature in suggesting that convergence in therapists' and patients' ratings of the alliance may be associated with better psychotherapy outcome (in temporal sequence). This result now holds across two types of treatment for chronic depression and the present two treatments for GAD; thus, it may be a common facilitative process worthy of wider investigation and clinical attention. Such investigation should continue to capitalize on, and attempt to improve, true dyadic level analysis. Doing this, though, requires assessing the alliance both from the more traditional individual perspectives (especially given that early patient-rated alliance served as a moderator in the present analyses), as well as from both patient and therapist perspectives in parallel across time. With enough replication of results, and the findings to date do suggest something potentially unique and clinically useful about longitudinal alliance convergence, this dyadic variable could represent another clinically vital layer of monitoring and feedback to which clinicians needs to be responsive. Finally, it may be that convergence/divergence may be most important for truly relational constructs, such as the alliance, as the present findings were less expansive and conclusive for session progress convergence/divergence. As noted, though, it may still be important for patients and therapists to align on subjective experiences within sessions, but more direct measurement of such alignment (beyond retrospective accounts of

progress) are likely needed. With such advancements in dyadic level relational process, researchers can continue to explicate predictors and mechanism of therapeutic change.

APPENDIX A

MEASURES

Penn State Worry Questionnaire

Enter the number that best describes how typical or characteristic each item is of you, putting the number next to the item.

1	2	3	4	5
Not at all typical		Somewhat typical		Very typical

_____ 1. If I don't have enough time to do everything I don't worry about it.

_____ 2. My worries overwhelm me.

_____ 3. I don't tend to worry about things.

_____ 4. Many situations make me worry.

_____ 5. I know I shouldn't worry about things, but I just can't help it.

_____ 6. When I am under pressure I worry a lot.

_____ 7. I am always worrying about something.

_____ 8. I find it easy to dismiss worrisome thoughts.

_____ 9. As soon as I finish one task, I start to worry about everything else I have to do.

_____ 10. I never worry about anything.

_____ 11. When there is nothing more I can do about a concern, I don't worry about it any more.

_____ 12. I've been a worrier all my life.

_____ 13. I notice that I have been worrying about things.

_____ 14. Once I start worrying, I can't stop.

_____ 15. I worry all the time.

_____

_____ 16. I worry about projects until they are all done.

Depression Anxiety Stress Scales – 21 item version

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past week.* There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of time
3 Applied to me very much, or most of the time

1	I found it hard to wind down	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I experienced trembling (e.g., in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3
16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life was meaningless	0	1	2	3

WAI – Patient Version

On the following pages there are some sentences that describe some of the different ways a person might think or feel about his or her therapist (counselor). Please complete these ratings in terms of your experience with your therapist during the most recent session. As you read the sentences, mentally insert the name of your therapist (counselor) in place of the _____ in the text.

1	2	3	4	5	6	7
Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always

Use the above seven point scale for each item. If the statement describes the way you always feel (or think), circle the number '7'; if it never applies to you, circle the number '1'. Use the numbers in between to describe the variations between these extremes. This questionnaire is confidential; your therapist will not see your answers. Work fast; your first impressions are the ones we would like to see. Please don't forget to respond to every item.

_____ 1. _____ and I agree about the things I will need to do in therapy to help improve my situation.

_____ 2. What I am doing in therapy gives me new ways of looking at my problem.

_____ 3. I believe _____ likes me.

_____ 4. _____ does not understand what I am trying to accomplish in therapy.

_____ 5. I am confident in _____'s ability to help me.

_____ 6. _____ and I are working on mutually agreed upon goals.

_____ 7. I feel that _____ appreciates me.

_____ 8. We agree on what is important for me to work on.

_____ 9. _____ and I trust one another.

_____ 10. _____ and I have different ideas on what my problems are.

_____ 11. We have established a good understanding of the kind of changes that would be good for me.

_____ 12. I believe the way we are working with my problem is correct.

Therapist – WAI

Code #:_____ Session:_____

On the following pages there are some sentences that describe some of the different ways a person might think or feel about his or her client Please complete these ratings in terms of your experience with your client during this first portion of the session. As you read the sentences, mentally insert the name of your client in place of the _____ in the text.

1	2	3	4	5	6	7
Never	Rarely	Occasionally	Sometimes	Often	Very Often	Always

Use the above seven point scale for each item. If the statement describes the way you always feel (or think), circle the number '7'; if it never applies to you, circle the number '1'. Use the numbers in between to describe the variations between these extremes. Work fast; your first impressions are the ones we would like to see.

_____ 1. _____ and I agree about the things I will need to do in therapy to help improve his/her situation.

_____ 2. _____ and I both feel confident about the usefulness of our current activity in therapy.

_____ 3. I believe _____ likes me.

_____ 4. I have doubts about what we are trying to accomplish in therapy.

_____ 5. I am confident in my ability to help _____ .

_____ 6. We are working on mutually agreed upon goals.

_____ 7. I appreciate _____ as a person.

_____ 8. We agree on what is important for _____ to work on.

_____ 9. _____ and I have built a mutual trust.

_____ 10. _____ and I have different ideas on what his/her real problems are.

_____ 11. We have established a good understanding between us of the kind of changes that would be good for _____.

_____ 12. _____ believes the way we are working with his/her problem is correct.

Client Post-Session Impact

1. How do you feel about the session which you have just completed?
(Circle the one answer which best applies.)

THIS SESSION WAS:

1. Perfect
2. Excellent
3. Very good
4. Pretty good
5. Fair
6. Pretty poor
7. Very poor

2. How much progress do you feel you made in dealing with your problems this session?

1. A great deal of progress
2. Considerable progress
3. Moderate progress
4. Some progress
5. Didn't get anywhere this session
6. In some ways my problems seem to have gotten worse this session

3. How well do you feel that you are getting along, emotionally and psychologically, at this time?

I AM GETTING ALONG:

1. Very well; much the way I would like to.
2. Quite well; no important complaints
3. Fairly well; have my ups and downs.
4. So-so; manage to keep going with some effort
5. Fairly poor; life gets pretty tough for me at times.
6. Quite poorly; can barely manage to deal with things

4. How helpful do you feel your therapist was to you this session?

1. Completely helpful
2. Very helpful
3. Pretty helpful
4. Somewhat helpful
5. Slightly helpful
6. Not at all helpful

Therapist Post-Session Impact

1. How do you feel about the session which you have just completed?
(circle the one answer which best applies.)

THIS SESSION WAS:

1. Perfect
2. Excellent
3. Very good
4. Pretty good
5. Fair
6. Pretty poor
7. Very poor

2. How much progress do you feel your client made in dealing with his/her problems this session?

1. A great deal of progress
2. Considerable progress
3. Moderate progress
4. Some progress
5. Didn't get anywhere this session
6. In some ways his/her problems seem to have gotten worse this session

3. How well do you feel that your client is getting along, emotionally and psychologically, at this time?

HE / SHE GETTING ALONG:

1. Very well; much the way he/she would like to.
2. Quite well; no important complaints.
3. Fairly well; he/she has ups and downs.
4. So-so; manages to keep going with some effort
5. Fairly poor; life gets pretty tough for him/her at times.
6. Quite poorly; can barely manage to deal with things

4. How helpful do you feel you were to your client this session?

1. Completely helpful
2. Very helpful
3. Pretty helpful
4. Somewhat helpful
5. Slightly helpful
6. Not at all helpful

APPENDIX B

TABLES

Table 1

Participant Characteristics at Baseline by Treatment Condition

	CBT (n = 43)				MI-CBT (n = 42)			
Variables	*M*	*SD*	*n*	%	*M*	*SD*	*n*	%
Age	34.19	11.92			32.45	10.54		
Sex*								
Female			41	95.34			34	80.95
Male			2	4.65			8	19.05
Race								
Caucasian			32	74.42			31	73.81
Asian			5	11.62			6	14.29
Hispanic			2	4.65			1	2.38
Multiracial/other			4	9.30			4	9.52
Annual household income								
Less than 25,000			10	23.26			6	14.29
25,000-50,000			9	20.93			8	19.05
50,000-75,000			11	25.58			8	19.05
75,000-100,000			8	18.60			6	14.29
100,000 or more			5	11.63			13	30.95
Education								
High school or less			4	9.30			2	4.76
Some college/university			13	30.23			9	21.43
Completed college			18	41.86			19	45.24
Some graduate school			8	18.60			12	28.57
Marital status[a]								
Single			19	44.19			18	42.86
Cohabiting/married			23	54.76			24	57.14
On medication?*								
Yes			14	32.56			6	14.29
No			29	67.44			36	85.71
Outcome variables								
PSWQ	75.05	3.43			74.69	3.44		
DASS	32.59	11.84			29.19	10.76		
CQ*	107.23	8.76			101.60	11.50		

Note. *M* = mean; *SD* = standard deviation; PSWQ = Penn State Worry Questionnaire; DASS = Depression Anxiety Stress Scales; CQ = Change Questionnaire.
[a] Category sums to less than 43 for the CBT condition due to missing or unreported data.
* Groups differed significantly at baseline on this variable ($p < .05$; differences described in text)

Table 2

Parameter Estimates for Change in Alliance Discrepancy across the Entire Treatment Period and Early in Treatment.

	Convergence across treatment[a]		Quadratic convergence across treatment		Early alliance convergence[b]		Early quadratic convergence	
	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Fixed effects								
Session 2 WAI discrepancy, γ_{00}	1.73 (0.07)	< .001	1.74 (0.07)	< .001	1.78 (0.07)	< .001	1.77 (0.07)	< .001
Change in WAI discrepancy, γ_{10}	-.14 (0.07)	.035	-0.24 (0.20)	.25	-.14 (0.06)	.014	-0.13 (0.20)	.512
Curvilinear change in WAI discrepancy, γ_{20}	--	--	0.09 (0.18)	.61	--	--	-0.02 (0.19)	.94
Variance Components	Estimate	*p*	Estimate	*p*	Estimate	*p*	Estimate	*p*
Session 2 WAI discrepancy, τ_{00}	0.33	< .001	0.35	< .001	0.34***	< .001	0.31	< .001
Change in WAI discrepancy, τ_{11}	0.13	.001	0.60	.22	0.02[†]	.08	0.19	< .50
Curvilinear change in WAI discrepancy, τ_{22}	--	--	.17	> .50			0.20	.45
Level 1, σ^2	0.15		0.15		0.42		0.17	
Model fit statistics								
Model deviance (*df*)	761.02 (6)		758.25 (10)		810.80 (6)		809.59 (10)	
Model comparison test			$\chi^2(4) = 2.77$	> .50			$\chi^2(4) = 1.21$	> .50

Note. WAI = Working Alliance Inventory.

[a] The models examining convergence across treatment estimated change in alliance discrepancy across even sessions from session 2 through 14.

[b] The models examining early convergence estimated change in alliance discrepancy across sessions 2 through 8.

Table 3

Parameters for a 3-level Unconditional Model of Early Alliance Discrepancy Change

	Early alliance discrepancy change (session 2-8)
Fixed effects	Coefficient (*SE*)
Average session 2 WAI discrepancy, γ_{000}	1.75*** (0.11)
Average WAI discrepancy change, γ_{100}	-0.02** (0.13)
	Level-2 *df* = 62
Random effects	Level-3 *df* = 20
Level-2 intercept, r_0	0.15***
Level-2 slope, r_1	0.0006**
Level-3 intercept, u_{00}	0.16***
Level-3 slope, u_{10}	0.00003
Level 1, *e*	0.17
Deviance statistic (parameters)	782.46 (9)
Improvement in model fit	(not calculated)

Note. WAI = Working Alliance Inventory.
* $p = .05$. ** $p < .05$. *** $p < .001$.

Table 4

Descriptive Statistics and Intercorrelations of Predictors, Moderators, and Covariates for the Alliance Convergence/Divergence Models

Variable	*M*	*SD*	1	2	3	4	5	6
1. Baseline DASS	30.91	11.38	–					
2. Baseline PSWQ	74.87	3.42	.36***	–				
3. Treatment condition[a]	--	--	.17	.07	–			
4. Session 1 patient-rated WAI	70.38	9.49	.04	.36***	-.04	–		
5. Session 1 therapist-rated WAI	61.86	9.77	.15	.23*	.28**	.11	–	
6. Early WAI convergence/divergence (sessions 2-8)	-.14	.05	.12	.04	-.10	-.14	.16	–

Note. Sample sizes for the correlations vary due to two people missing alliance convergence data (range = 83-85); DASS = Depression, Anxiety, and Stress Scale; PSWQ = Penn State Worry Questionnaire; WAI = Working Alliance Inventory
[a] Treatment condition was coded as: MI-CBT = -0.5, CBT = 0.5.
*p< .05, **p < .01, ***p = .001.

Table 5

Early Alliance Convergence as a Predictor of Posttreatment Worry, Subsequent Worry Change, and Subsequent Acceleration/Deceleration in the Rate of Worry Change

	Unconditional model		**Early alliance convergence only model**		**Early alliance convergence and covariates model**	
Fixed Effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Posttreatment PSWQ (intercept), γ_{00}	-11.58 (1.98)	< .001	-11.58 (1.94)	< .001	-11.60 (1.89)	< .001
WAI divergence/convergence, γ_{01}	--	--	74.61 (41.41)	.075	75.55 (41.67)	.074
Baseline PSWQ, γ_{02}	--	--	--	--	0.08 (0.43)	.851
Treatment group, γ_{03}	--	--	--	--	3.44 (4.09)	.403
Therapist session 1 WAI, γ_{04}	--	--	--	--	-0.27 (0.21)	.215
Patient session 1 WAI, γ_{05}	--	--	--	--	-0.38 (0.22)	.094
Change in PSWQ (slope), γ_{10}	-18.89 (3.69)	< .001	-19.11 (3.61)	< .001	-19.42 (3.58)	< .001
WAI divergence/convergence, γ_{11}	--	--	168.40 (76.14)	.030	163.33 (77.87)	.039
Baseline PSWQ, γ_{12}	--	--	--	--	0.45 (0.82)	.587
Treatment group, γ_{13}	--	--	--	--	-6.44 (7.82)	.413
Therapist session 1 WAI, γ_{14}	--	--	--	--	-0.28 (.40)	.485
Patient session 1 WAI, γ_{15}	--	--	--	--	-0.14 (.42)	.734
Rate of acceleration/deceleration (curvature), γ_{20}	-8.18 (3.08)	.01	-8.41 (3.04)	.007	-8.54 (3.04)	.006
WAI divergence/convergence, γ_{21}	--	--	139.80 (63.93)	.032	138.82 (65.90)	.038
Baseline PSWQ, γ_{22}	--	--	--	--	0.26 (0.70)	.711
Treatment group, γ_{23}	--	--	--	--	-5.50 (6.64)	.410
Therapist session 1 WAI, γ_{24}	--	--	--	--	-0.16 (0.34)	.636
Patient session 1 WAI, γ_{125}	--	--	--	--	0.05 (0.34)	.878
Random effects	Variance component	*p*	Variance component	*p*	Variance component	*p*
PSWQ intercept, τ_{00}	293.58	< .001	281.85	< .001	264.65	< .001
PSWQ slope, τ_{11}	335.60	.007	294.19	.017	267.10	.014
PSWQ curvature, τ_{22}	70.37	.291	53.74	.396	45.57	.320
Level 1, σ^2	39.64	--	39.25	--	39.18	--
Model deviance (df)	3683.44 (10)	--	3676.84 (13)	--	3669.28 (25)	--

Note. PSWQ = Penn State Worry Questionnaire; WAI = Working Alliance Inventory

Table 6

Patient Session 1 Alliance by Early Alliance Convergence as a Predictor of Posttreatment Worry, Subsequent Worry Change, and Subsequent Acceleration/Deceleration in the Rate of Worry Change

	Main effects and covariate model		**Interaction model**	
Fixed effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Posttreatment PSWQ (intercept), γ_{00}	-11.59 (1.91)	< .001	-11.84 (1.92)	< .001
WAI divergence/convergence, γ_{01}	64.64 (41.28)	.12	53.05 (43.05)	.22
Baseline PSWQ, γ_{02}	-0.03 (0.43)	.94	-0.04 (0.43)	.94
Patient session 1 WAI, γ_{03}	-0.35 (0.22)	.12	-0.39 (0.22)	.09
Patient session 1 WAI by convergence, γ_{04}	--	--	-3.99 (4.43)	.37
Change in PSWQ (slope), γ_{10}	-19.12 (3.61)	< .001	-18.69 (3.68)	< .001
WAI divergence/convergence, γ_{11}	160.49 (77.31)	.04	177.09 (83.57)	.04
Baseline PSWQ, γ_{12}	0.32 (0.81)	.69	0.32 (0.82)	.70
Patient session 1 WAI, γ_{13}	-0.24 (0.41)	.57	-0.20 (0.42)	.64
Patient session 1 WAI by convergence, γ_{14}	--	--	3.52 (8.28)	.67
Rate of acceleration/deceleration (curvature), γ_{20}	-8.34 (3.04)	.008	-7.57 (3.09)	.02
WAI divergence/convergence, γ_{21}	138.74 (65.08)	.04	169.88 (70.29)	.02
Baseline PSWQ, γ_{22}	0.32 (0.81)	.69	0.18 (0.69)	.79
Patient session 1 WAI, γ_{23}	-0.02 (0.35)	.95	0.06 (0.35)	.87
Patient session 1 WAI by convergence, γ_{24}	--	--	7.68 (6.93)	.27
Random effects	Variance component	*p*	Variance component	*p*
PSWQ intercept, τ_{00}	270.53	< .001	267.77	< .001
PSWQ slope, τ_{11}	288.98	.01	304.70	.01
PSWQ curvature, τ_{22}	53.41	.34	59.39	.33
Level 1, σ^2	39.26	--	39.08	--
Model deviance (*df*)	3673.22 (19)	--	3669.55 (22)	--

Note. PSWQ = Penn State Worry Questionnaire; WAI= Working Alliance Inventory.

Table 7

Therapist Session 1 Alliance by Early Alliance Convergence as a Predictor of Posttreatment Worry, Subsequent Worry Change, and Subsequent Acceleration/Deceleration in the Rate of Worry Change

	Main effects and covariate model		**Interaction model**	
Fixed effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Posttreatment PSWQ (intercept), γ_{00}	-11.58 (1.92)	< .001	-11.43 (1.95)	< .001
WAI divergence/convergence, γ_{01}	82.91 (41.52)	.05	82.75 (41.47)	.05
Baseline PSWQ, γ_{02}	-0.18 (0.41)	.67	-0.14 (0.42)	.75
Therapist session 1 WAI, γ_{03}	-0.23 (0.21)	.27	-0.23 (0.21)	.26
Therapist session 1 WAI by convergence, γ_{04}	--	--	-2.11 (4.66)	.65
Change in PSWQ (slope), γ_{10}	-19.06 (3.60)	< .001	-18.39 (3.60)	< .001
WAI divergence/convergence, γ_{11}	0.35 (0.76)	.65	177.89 (75.73)	.02
Baseline PSWQ, γ_{12}	0.35 (0.76)	.65	0.59 (0.77)	.44
Therapist session 1 WAI, γ_{13}	-0.40 (0.38)	.30	-0.41 (0.38)	.29
Therapist session 1 WAI by convergence, γ_{14}	--	--	-11.02 (8.43)	.20
Rate of acceleration/deceleration (curvature), γ_{20}	-8.37 (3.03)	.007	-7.96 (3.05)	.01
WAI divergence/convergence, γ_{21}	146.54 (64.45)	.03	145.39 (64.15)	.03
Baseline PSWQ, γ_{22}	0.31 (0.64)	.63	0.46 (0.65)	.48
Therapist session 1 WAI, γ_{23}	-0.26 (0.32)	.43	-0.26 (0.32)	.42
Therapist session 1 WAI by convergence, γ_{24}	--	--	-6.77 (7.14)	.35
Random effects	Variance component	*p*	Variance component	*p*
PSWQ intercept, τ_{00}	275.51	<.001	274.81	<.001
PSWQ slope, τ_{11}	284.18	.01	263.67	.02
PSWQ curvature, τ_{22}	50.70	.35	44.76	.35
Level 1, σ^2	39.21	--	39.17	--
Model deviance (*df*)	3674.34 (19)	--	3672.16 (22)	--

Note. PSWQ = Penn State Worry Questionnaire; WAI= Working Alliance Inventory.

Table 8

Treatment Condition by Early Alliance Convergence as a Predictor of Posttreatment Worry, Subsequent Worry Change, and Subsequent Acceleration/Deceleration in the Rate of Worry Change

	Main effects and covariate model		**Interaction model**	
Fixed Effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Posttreatment PSWQ (intercept), γ_{00}	-11.58 (1.94)	< .001	-11.70 (1.94)	< .001
WAI divergence/convergence, γ_{01}	76.14 (41.53)	.07	69.12 (43.20)	.11
Baseline PSWQ, γ_{02}	-0.28 (0.41)	.67	-0.25 (0.41)	.55
Treatment[a], γ_{03}	0.42 (3.90)	.92	0.33 (3.90)	.93
Treatment by convergence, γ_{04}	--	--	-50.46 (87.15)	.56
Change in PSWQ (slope), γ_{10}	-19.59 (3.56)	< .001	-20.39 (3.56)	< .001
WAI divergence/convergence, γ_{11}	156.54 (75.55)	.04	108.13 (82.12)	.19
Baseline PSWQ, γ_{12}	0.26 (0.73)	.73	0.45 (0.73)	.54
Treatment, γ_{13}	-8.73 (7.21)	.23	-9.66 (7.15)	.18
Treatment by convergence, γ_{14}	--	--	-236.81 (165.83)	.16
Rate of acceleration/deceleration (curvature), γ_{20}	-8.75 (3.02)	.005	-9.16 (3.04)	.003
WAI divergence/convergence, γ_{21}	130.93 (63.97)	.04	105.35 (70.57)	.14
Baseline PSWQ, γ_{22}	0.26 (0.62)	.68	0.36 (0.62)	.57
Treatment, γ_{23}	-6.34 (0.30)	.30	-6.82 (6.12)	.27
Treatment by convergence, γ_{24}	--	--	-123.83 (142.52)	.39
Random effects	Variance component	*p*	Variance component	*p*
PSWQ intercept, τ_{00}	280.15	< .001	279.24	< .001
PSWQ slope, τ_{11}	265.24	.02	241.32	.03
PSWQ curvature, τ_{22}	44.71	.38	38.27	.38
Level 1, σ^2	39.16	--	39.19	--
Model deviance (*df*)	3673.97 (19)	--	3670.59 (22)	--

Note. PSWQ = Penn State Worry Questionnaire; WAI= Working Alliance Inventory.
[a] Treatment group was dummy coded CBT = 0.5, MI-CBT = -0.5.

Table 9

Early Alliance Convergence as a Predictor of Posttreatment Distress and Subsequent Distress Change

	Unconditional model		**Early alliance convergence only model**		**Early alliance convergence and covariates model**	
Fixed Effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Posttreatment DASS (intercept), γ_{00}	-3.79 (1.19)	.002	-3.80 (1.15)	< .001	-3.83 (1.04)	< .001
WAI divergence/convergence, γ_{01}	--	--	60.96 (24.50)	.015	53.17 (23.13)	.024
Baseline DASS, γ_{02}	--	--	--	--	0.29 (0.09)	.002
Treatment group, γ_{03}	--	--	--	--	1.48 (2.28)	.518
Therapist session 1 WAI, γ_{04}	--	--	--	--	-0.21 (0.12)	.077
Patient session 1 WAI, γ_{05}	--	--	--	--	-0.26 (0.12)	.026
Change in DASS (slope), γ_{10}	-5.33 (1.32)	<.001	-5.49 (1.25)	< .001	-5.26 (1.20)	< .001
WAI divergence/convergence, γ_{11}	--	--	69.83 (26.42)	.010	78.44 (26.28)	.004
Baseline DASS, γ_{12}	--	--	--	--	-0.23 (0.11)	.041
Treatment group, γ_{13}	--	--	--	--	0.85 (2.65)	.751
Therapist session 1 WAI, γ_{14}	--	--	--	--	-0.14 (0.13)	.281
Patient session 1 WAI, γ_{15}	--	--	--	--	-0.05 (0.13)	.712
Random effects	Variance component	*p*	Variance component	*p*	Variance component	*p*
DASS intercept, τ_{00}	98.28	< .001	89.64	< .001	70.15	< .001
DASS slope, τ_{11}	72.59	< .001	59.61	< .001	50.34	< .001
Level 1, σ^2	29.94	--	30.06	--	30.10	--
Model deviance (*df*)	1642.54	--	1633.16 (8)	--	1605.12 (16)	--

Note. DASS = Depression, Anxiety, and Stress Scale; WAI= Working Alliance Inventory.

Table 10

Patient Session 1 Alliance by Early Alliance Convergence as a Predictor of Posttreatment Distress and Subsequent Distress Change

	Main effects and covariate model		**Interaction model**	
Fixed Effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Posttreatment DASS (intercept), γ_{00}	-3.83 (1.06)	< .001	-4.11 (1.05)	< .001
WAI divergence/convergence, γ_{01}	44.96 (23.05)	.06	32.42 (23.78)	.18
Baseline DASS, γ_{02}	0.28 (0.09)	.003	0.28 (0.09)	.002
Patient session 1 WAI, γ_{03}	-0.27 (0.11)	.02	-0.31 (0.11)	.008
Patient session 1 WAI by Convergence, γ_{04}	--	--	-4.15 (2.43)	.09
Change in DASS (slope), γ_{10}	-5.29 (1.20)	< .001	-5.79 (1.18)	< .001
WAI divergence/convergence, γ_{11}	73.03 (25.86)	.006	53.77 (26.90)	.049
Baseline DASS, γ_{12}	-0.24 (0.11)	.03	-0.24 (0.10)	.02
Patient session 1 WAI, γ_{13}	-0.05 (0.13)	.67	-0.11 (0.12)	.38
Patient session 1 WAI by Convergence, γ_{14}	--	--	-5.43 (2.66)	.04
Random effects	Variance component	*p*	Variance component	*p*
DASS intercept, τ_{00}	73.49	< .001	69.91	< .001
DASS slope, τ_{11}	51.62	< .001	44.00	< .001
Level 1, σ^2	30.16	--	30.29	--
Model deviance (*df*)	1608.49 (12)	--	1603.53 (14)	--

Note. WAI= Working Alliance Inventory; DASS = Depression, Anxiety, and Stress Scale.

Table 11

Therapist Session 1 Alliance by Early Alliance Convergence as a Predictor of Posttreatment Distress and Subsequent Distress Change

	Main effects and covariate model		**Interaction model**	
Fixed Effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Posttreatment DASS (intercept), γ_{00}	-3.81 (1.08)	< .001	-3.59 (1.08)	< .001
WAI divergence/convergence, γ_{01}	59.54 (23.35)	.01	58.90 (23.13)	.01
Baseline DASS, γ_{02}	0.29 (0.09)	.003	0.31 (0.09)	.002
Therapist session 1 WAI, γ_{03}	-0.22 (0.11)	.06	-0.22 (0.11)	.06
Therapist session 1 WAI by convergence, γ_{04}	--	--	-3.13 (2.55)	.22
Change in DASS (slope), γ_{10}	-5.34 (1.20)	< .001	-5.17 (1.20)	< .001
Alliance divergence/convergence, γ_{11}	78.45 (25.54)	.003	77.82 (25.33)	.003
Baseline DASS, γ_{12}	-0.22 (0.11)	.04	-0.21 (0.11)	.06
Therapist session 1 WAI, γ_{13}	-0.14 (0.13)	.28	-0.13 (0.13)	.30
Therapist session 1 WAI by convergence, γ_{14}	--	--	-2.84 (2.75)	.31
Random effects	Variance component	*p*	Variance component	*p*
DASS intercept, τ_{00}	76.27	< .001	74.41	< .001
DASS slope, τ_{11}	50.18	< .001	48.28	< .001
Level 1, σ^2	29.95	--	29.99	--
Model deviance (*df*)	1608.49 (12)	--	1608.64 (14)	--

Note. WAI= Working Alliance Inventory; DASS = Depression, Anxiety, and Stress Scale.

Table 12

Treatment Condition by Early Alliance Convergence as a Predictor of Posttreatment Distress and Subsequent Distress Change

	Main effects and covariate model		**Interaction model**	
Fixed Effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Posttreatment DASS (intercept), γ_{00}	-3.81 (1.10)	< .001	-3.87 (1.10)	< .001
WAI divergence/convergence, γ_{01}	52.04 (23.75)	.03	48.21 (24.65)	.05
Baseline DASS, γ_{02}	0.27 (0.10)	.006	0.27 (0.10)	.006
Treatment, γ_{03}	-0.85 (2.25)	.71	-0.88 (2.24)	.70
Treatment by convergence, γ_{04}	--	--	-27.73 (48.96)	.57
Change in DASS (slope), γ_{10}	-5.34 (1.21)	< .001	-5.55 (1.20)	< .001
Alliance divergence/convergence, γ_{11}	74.36 (25.74)	.005	62.11 (27.72)	.03
Baseline DASS, γ_{12}	-0.24 (0.11)	.03	-0.25 (0.11)	.02
Treatment, γ_{13}	-0.19 (2.48)	.94	-0.33 (2.46)	.90
Treatment by convergence, γ_{14}	--	--	-63.42 (55.34)	.26
	Variance component		Variance component	
Random effects		*p*		*p*
DASS intercept, τ_{00}	80.15	< .001	79.70	< .001
DASS slope, τ_{11}	51.54	< .001	48.97	< .001
Level 1, σ^2	30.01	--	30.03	--
Model deviance (*df*)	1614.07 (12)	--	1612.76 (14)	--

Note. WAI= Working Alliance Inventory; DASS = Depression, Anxiety, and Stress Scale

Table 13

Parameter Estimates for Change in Session Progress Discrepancy across the Entire Treatment Period and Early in Treatment.

	Convergence across treatment[a]		Quadratic convergence across treatment		Early convergence[b]	
Fixed effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Session 2 SPS discrepancy, γ_{00}	1.22 (0.06)	< .001	1.20 (0.07)	< .001	1.20 (0.06)	< .001
Change in SPS discrepancy, γ_{10}	.14 (0.07)	.031	0.36 (0.21)	.085	.20 (0.07)	.008
Curvilinear change in SPS discrepancy, γ_{20}	--	--	-0.22 (0.20)	.28	--	--
Random effects	Variance component	*p*	Variance component	*p*	Variance component	*P*
Session 2 SPS discrepancy, τ_{00}	0.25	< .001	0.22	< .001	0.22	< .001
Change in SPS discrepancy, τ_{11}	0.08	.054	0.19	> .50	0.13	.008
Curvilinear change in SPS discrepancy, τ_{22}	--	--	.19	> .50	--	--
Level 1, σ^2	0.19	--	0.18	--	0.16	--
Model fit statistics						
Model deviance (*df*)	819.10 (6)	--	815.76 (10)	--	523.92 (6)	--
Model comparison test	--	--	$\chi^2(4) = 3.34$	> .50	--	--

Note. SPS = Session Progress Scale.

[a] The models examining convergence across treatment estimated change in session progress discrepancy across even sessions from session 2 through 14.

[b] The models examining early convergence estimated change in session progress discrepancy across sessions 2 through 5.

Table 14

Parameters for a 3-level Unconditional Model of Early Session Progress Discrepancy Change.

	Early discrepancy change (session 2-5)
Fixed effects	Unstandardized coefficient (*SE*)
Average S2 SPS discrepancy, γ_{000}	1.16 (0.07)***
Average SPS discrepancy change, γ_{100}	0.07 (0.07)
	Level-2 *df* = 61
Random effects	Level-3 *df* = 19
Level-2 intercept, r_0	0.16***
Level-2 slope, r_1	0.21***
Level-3 intercept, u_{00}	0.02
Level-3 slope, u_{10}	0.007
Level 1, *e*	0.20
Deviance statistic (parameters)	571.99 (9)
Improvement in model fit	(not calculated)

Note. SPS = Session Progress Scale.
* $p < .05$. ** $p < .05$. *** $p < .001$.

Table 15

Descriptive Statistics and Intercorrelations of Predictors, Moderators, and Covariates for Session Progress Convergence/Divergence Models

Variable	*M*	*SD*	1	2	3	4	5	6
1. Baseline DASS	30.91	11.38	–					
2. Baseline PSWQ	74.87	3.42	.36**	–				
3. Treatment condition[a]	--	--	.17	.07	–			
4. Session 1 patient-rated SPS	12.08	3.04	.15	-.23*	.11	–		
5. Session 1 therapist-rated SPS	15.19	2.08	.06	-.19	-.30**	-.03	–	
6. Early SPS convergence/divergence (sessions 2-5)	.20	.23	.07	.06	-.21	-.43***	.11	–

Note. Sample sizes for the correlations vary due to two people missing session progress convergence data (range = 83-85); DASS = Depression, Anxiety, and Stress Scale; PSWQ = Penn State Worry Questionnaire; SPS = Session Progress Scale.
[a] Treatment condition was coded as: MI-CBT = -0.5, CBT = 0.5.
*p< .05, **p < .01, ***p < .001.

Table 16

Early Session Progress Convergence as a Predictor of Posttreatment Worry, Subsequent Worry Change, and Subsequent Acceleration/Deceleration in the Rate of Worry Change

	Unconditional model		**Early convergence only model**		**Early convergence and covariates model**	
Fixed Effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Posttreatment PSWQ (intercept), γ_{00}	-11.02 (1.92)	< .001	-11.01 (1.88)	< .001	-11.01 (1.80)	< .001
SPS divergence/convergence, γ_{01}	--	--	-16.11 (8.10)	.05	-8.99 (8.74)	.31
Baseline PSWQ, γ_{02}	--	--	--	--	0.16 (0.39)	.69
Treatment group, γ_{03}	--	--	--	--	-0.78 (3.83)	.84
Therapist session 1 SPS, γ_{04}	--	--	--	--	1.28 (0.94)	.18
Patient session 1 SPS, γ_{05}	--	--	--	--	1.62 (0.69)	.02
Change in PSWQ (slope), γ_{10}	-20.71 (4.17)	< .001	-20.79 (4.17)	< .001	-20.91 (4.05)	< .001
SPS divergence/convergence, γ_{11}	--	--	2.01 (17.65)	.91	-7.15 (19.08)	.71
Baseline PSWQ, γ_{12}	--	--	--	--	1.17 (0.89)	.19
Treatment group, γ_{13}	--	--	--	--	-9.95 (8.63)	.25
Therapist session 1 SPS, γ_{14}	--	--	--	--	2.41 (2.22)	.28
Patient session 1 SPS, γ_{15}	--	--	--	--	-0.18 (1.51)	.91
Rate of acceleration/deceleration (curvature), γ_{20}	-5.44 (3.74)	.15	-5.52 (3.72)	.14	-5.92 (3.59)	.10
SPS divergence/convergence, γ_{21}	--	--	14.05 (15.75)	.38	6.71 (16.82)	.69
Baseline PSWQ, γ_{22}	--	--	--	--	1.65 (0.79)	.04
Treatment group, γ_{23}	--	--	--	--	-9.54 (7.64)	.22
Therapist session 1 SPS, γ_{24}	--	--	--	--	1.41 (1.99)	.48
Patient session 1 SPS, γ_{125}	--	--	--	--	0.03 (1.33)	.99
Random effects	Variance component	p	Variance component	p	Variance component	p
PSWQ intercept, τ_{00}	279.05	< .001	265.37	< .001	240.31	< .001
PSWQ slope, τ_{11}	729.52	< .001	726.21	< .001	642.05	< .001
PSWQ curvature, τ_{22}	496.58	< .001	484.74	< .001	401.76	< .001
Level 1, σ^2	40.55	--	40.55	--	40.55	--
Model deviance (*df*)	5211.44 (10)	--	5206.52 (13)	--	5175.78 (25)	--

Note. PSWQ = Penn State Worry Questionnaire; SPS = Session Progress Scale.

Table 17

Patient-Rated Session 1 Progress by Early Session Progress Convergence as a Predictor of Posttreatment Worry, Subsequent Worry Change, and Subsequent Acceleration/Deceleration in the Rate of Worry Change

	Main effects and covariate model		**Interaction model**	
Fixed Effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Posttreatment PSWQ (intercept), γ_{00}	-11.03 (1.82)	< .001	-11.02 (2.02)	< .001
SPS divergence/convergence, γ_{01}	-7.36 (8.71)	.40	-7.35 (8.71)	.40
Baseline PSWQ, γ_{02}	0.03 (0.39)	.93	0.04 (0.40)	.93
Patient session 1 SPS, γ_{03}	1.59 (0.70)	.03	1.59 (0.71)	.03
Patient session 1 SPS by convergence, γ_{04}	--	--	.03 (2.94)	.99
Change in PSWQ (slope), γ_{10}	-20.64 (4.13)	< .001	-22.28 (4.53)	< .001
SPS divergence/convergence, γ_{11}	-1.73 (19.29)	.93	-3.17 (19.24)	.87
Baseline PSWQ, γ_{12}	0.77 (0.88)	.38	0.69 (0.88)	.44
Patient session 1 SPS, γ_{13}	-0.41 (1.55)	.79	-0.16 (1.56)	.92
Patient session 1 SPS by convergence, γ_{14}	--	--	-5.69 (6.50)	.38
Rate of acceleration/deceleration (curvature), γ_{20}	-5.63 (3.62)	.125	-7.42 (3.96)	.07
SPS divergence/convergence, γ_{21}	10.92 (16.86)	.52	9.40 (16.78)	.58
Baseline PSWQ, γ_{22}	1.35 (0.77)	.08	1.26 (0.77)	.11
Patient session 1 SPS, γ_{23}	-0.19 (1.35)	.89	0.09 (1.36)	.95
Patient session 1 SPS by convergence, γ_{24}	--	--	-6.17 (5.67)	.28
Random effects	Variance component	*p*	Variance component	*p*
PSWQ intercept, τ_{00}	247.37	< .001	247.33	< .001
PSWQ slope, τ_{11}	707.86	< .001	695.29	< .001
PSWQ curvature, τ_{22}	434.07	< .001	419.85	< .001
Level 1, σ^2	40.58	--	40.57	--
Model deviance (*df*)	5180.62 (19)	--	5179.26 (22)	--

Note. PSWQ = Penn State Worry Questionnaire; SPS = Session Progress Scale.

Table 18

Therapist-Rated Session 1 Progress by Early Session Progress Convergence as a Predictor of Posttreatment Worry, Subsequent Worry Change, and Subsequent Acceleration/Deceleration in the Rate of Worry Change

	Main effects and covariate model		**Interaction model**	
Fixed Effects	Coefficient (*SE*)	*P*	Coefficient (*SE*)	*p*
Posttreatment PSWQ (intercept), γ_{00}	-11.01 (1.85)	< .001	-11.03 (1.86)	< .001
SPS divergence/convergence, γ_{01}	-17.32 (8.09)	.04	-17.51 (8.27)	.04
Baseline PSWQ, γ_{02}	-0.05 (0.40)	.90	-0.05 (0.40)	.90
Therapist session 1 SPS, γ_{03}	1.29 (0.93)	.17	1.31 (0.95)	.17
Therapist session 1 SPS by Convergence, γ_{04}	--	--	0.43 (3.75)	.91
Change in PSWQ (slope), γ_{10}	-20.57 (4.09)	< .001	-20.41 (4.13)	< .001
SPS divergence/convergence, γ_{11}	-4.13 (17.63)	.82	-3.89 (17.87)	.83
Baseline PSWQ, γ_{12}	1.19 (0.86)	.17	1.22 (0.86)	.16
Therapist session 1 SPS, γ_{13}	3.18 (2.14)	.14	3.20 (2.15)	.14
Therapist session 1 SPS by Convergence, γ_{14}	--	--	-1.54 (8.14)	.85
Rate of acceleration/deceleration (curvature), γ_{20}	-5.40 (3.61)	.14	-5.17 (3.65)	.16
SPS divergence/convergence, γ_{21}	8.46 (15.59)	.59	9.21 (15.73)	.56
Baseline PSWQ, γ_{22}	1.61 (0.76)	.04	1.63 (0.76)	.04
Therapist session 1 SPS, γ_{23}	2.16 (1.91)	.26	2.12 (1.91)	.37
Therapist session 1 SPS by Convergence, γ_{24}	--	--	-2.72 (7.17)	.71
Random effects	Variance component	*P*	Variance component	*p*
PSWQ intercept, τ_{00}	258.15	< .001	258.04	< .001
PSWQ slope, τ_{11}	673.05	< .001	673.88	< .001
PSWQ curvature, τ_{22}	420.12	< .001	418.17	<.001
Level 1, σ^2	40.56	--	40.56	--
Model deviance (*df*)	5195.66 (19)	--	5195.25 (22)	--

Note. SPS = PSWQ = Penn State Worry Questionnaire; Session Progress Scale.

Table 19

Treatment Condition by Early Session Progress Convergence as a Predictor of Posttreatment Worry, Subsequent Worry Change, and Subsequent Acceleration/Deceleration in the Rate of Worry Change

	Main effects and covariate model		**Interaction model**	
Fixed Effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Posttreatment PSWQ (intercept), γ_{00}	-11.01 (1.87)	< .001	-11.38 (1.91)	< .001
SPS divergence/convergence, γ_{01}	-16.70 (8.28)	.05	-18.07 (8.39)	.03
Baseline PSWQ, γ_{02}	-0.15 (0.39)	.71	-0.20 (0.40)	.62
Treatment[a], γ_{03}	-1.81 (3.84)	.64	-1.89 (3.82)	.62
Treatment by convergence, γ_{04}	--	--	-15.19 (16.93)	.37
Change in PSWQ (slope), γ_{10}	-21.28 (4.05)	< .001	-21.51 (4.10)	< .001
SPS divergence/convergence, γ_{11}	-4.13 (17.44)	.81	-5.46 (18.05)	.76
Baseline PSWQ, γ_{12}	1.04 (0.83)	.22	1.00 (0.84)	.24
Treatment, γ_{13}	-12.99 (8.26)	.12	-12.98 (8.26)	.12
Treatment by Convergence, γ_{14}	--	--	-11.70 (36.51)	.75
Rate of acceleration/deceleration (curvature), γ_{20}	-6.09 (3.58)	.09	-6.18 (3.62)	.09
SPS divergence/convergence, γ_{21}	8.16 (15.36)	.60	7.29 (15.98)	.65
Baseline PSWQ, γ_{22}	1.53 (0.73)	.04	1.51 (0.74)	.05
Treatment, γ_{23}	-11.09 (7.28)	.13	-11.05 (7.28)	.13
Treatment by Convergence, γ_{24}	--	--	-6.05 (32.32)	.85
Random effects	Variance component	*p*	Variance component	*p*
PSWQ intercept, τ_{00}	263.69	< .001	260.92	< .001
PSWQ slope, τ_{11}	651.00	< .001	650.99	< .001
PSWQ curvature, τ_{22}	405.60	< .001	405.41	< .001
Level 1, σ^2	40.57	--	40.56	--
Model deviance (*df*)	5196.27 (19)	--	5195.17 (22)	--

Note. PSWQ = Penn State Worry Questionnaire; SPS = Session Progress Scale.
[a] Treatment group was dummy coded so that CBT = 0.5, MI-CBT = -0.5.

Table 20

Early Session Progress Convergence as a Predictor of Posttreatment Distress, Subsequent Distress Change, and Subsequent Acceleration/Deceleration in the Rate of Distress Change

	Unconditional model		**Early convergence only model**		**Early convergence and covariates model**	
Fixed Effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Posttreatment DASS (intercept), γ_{00}	-3.79 (1.20)	.002	-3.79 (1.20)	.002	-3.79 (1.10)	< .001
SPS divergence/convergence, γ_{01}	--	--	-1.04 (5.19)	.84	1.69 (5.43)	.76
Baseline DASS, γ_{02}	--	--	--	--	0.26 (0.10)	.01
Treatment group, γ_{03}	--	--	--	--	-0.98 (2.40)	.68
Therapist session 1 SPS, γ_{04}	--	--	--	--	0.80 (0.57)	.16
Patient session 1 SPS, γ_{05}	--	--	--	--	0.88 (0.42)	.04
Change in DASS (slope), γ_{10}	-9.51 (4.58)	.04	-10.16 (4.51)	.03	-10.31 (4.43)	.02
SPS divergence/convergence, γ_{11}	--	--	24.72 (19.14)	.20	29.49 (21.54)	.18
Baseline DASS, γ_{12}	--	--	--	--	-0.45 (0.41)	.28
Treatment group, γ_{13}	--	--	--	--	-10.31 (9.67)	.29
Therapist session 1 SPS, γ_{14}	--	--	--	--	-2.16 (2.38)	.37
Patient session 1 SPS, γ_{15}	--	--	--	--	0.13 (1.60)	.94
Rate of acceleration/deceleration (curvature), γ_{20}	-0.40 (4.50)	.93	-1.11 (4.35)	.80	-1.57 (4.29)	.72
SPS divergence/convergence, γ_{21}	--	--	40.09 (18.43)	.03	44.52 (20.77)	.04
Baseline DASS, γ_{22}	--	--	--	--	-0.17 (0.40)	.67
Treatment group, γ_{23}	--	--	--	--	-13.91 (9.39)	.14
Therapist session 1 SPS, γ_{24}	--	--	--	--	-3.46 (2.32)	.14
Patient session 1 SPS, γ_{125}	--	--	--	--	0.27 (1.54)	.86
Random effects	Variance component	p	Variance component	p	Variance component	p
DASS intercept, τ_{00}	94.83	< .001	94.93	< .001	74.76	< .001
DASS slope, τ_{11}	626.64	< .001	575.53	.001	516.63	.001
DASS curvature, τ_{22}	598.95	< .001	501.35	.001	448.76	.001
Level 1, σ^2	34.09	--	34.05	--	33.98	--
Model deviance (*df*)	5211.44 (10)	--	5206.52 (13)	--	2153.03 (25)	--

Note. DASS = Depression Anxiety and Stress Scale; SPS = Session Progress Scale.

Table 21

Patient Session 1 Progress by Early Session Progress Convergence as a Predictor of Posttreatment Distress, Subsequent Distress Change, and Subsequent Acceleration/Deceleration in the Rate of Distress Change

	Main effects and covariate model		**Interaction model**	
Fixed Effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Posttreatment DASS (intercept), γ_{00}	-3.81 (1.11)	< .001	-3.70 (1.23)	.004
SPS divergence/convergence, γ_{01}	3.01 (5.39)	.56	3.02 (5.39)	.58
Baseline DASS, γ_{02}	0.25 (0.10)	.01	0.26 (0.10)	.01
Patient session 1 SPS, γ_{03}	0.89 (0.42)	.04	0.87 (0.43)	.05
Patient session 1 SPS by Convergence, γ_{04}	--	--	.36 (1.79)	.84
Change in DASS (slope), γ_{10}	-9.59 (4.46)	.03	-13.39 (4.76)	.006
SPS divergence/convergence, γ_{11}	29.31 (21.30)	.17	26.31 (20.74)	.21
Baseline DASS, γ_{12}	-0.51 (0.41)	.21	-0.55 (0.40)	.17
Patient session 1 SPS, γ_{13}	0.13 (1.62)	.93	0.85 (1.62)	.60
Patient session 1 SPS by Convergence, γ_{14}	--	--	-13.02 (6.83)	.06
Rate of acceleration/deceleration (curvature), γ_{20}	-0.78 (4.34)	.86	-5.34 (4.59)	.25
SPS divergence/convergence, γ_{21}	44.58 (20.68)	.03	41.65 (19.92)	.04
Baseline DASS, γ_{22}	-0.29 (0.40)	.47	-0.35 (0.38)	.36
Patient session 1 SPS, γ_{23}	0.25 (1.57)	.88	1.08 (1.55)	.49
Patient session 1 SPS by Convergence, γ_{24}	--	--	-15.28 (6.56)	.02
Random effects	Variance component	*p*	Variance component	*p*
DASS intercept, τ_{00}	77.81	< .001	77.73	< .001
DASS slope, τ_{11}	549.38	< .001	470.47	.003
DASS curvature, τ_{22}	499.74	< .001	396.37	.003
Level 1, σ^2	34.05	--	34.05	--
Model deviance (*df*)	2161.69 (19)	--	2155.90 (22)	--

Note. DASS = Depression, Anxiety, and Stress Scale; SPS = Session Progress Scale.

Table 22

Therapist Session 1 Progress by Early Session Progress Convergence as a Predictor of Posttreatment Distress, Subsequent Distress Change, and Subsequent Acceleration/Deceleration in the Rate of Distress Change

	Main effects and covariate model		**Interaction model**	
Fixed Effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Posttreatment DASS (intercept), γ_{00}	-3.78 (1.13)	.001	-3.72 (1.13)	.002
SPS divergence/convergence, γ_{01}	-2.95 (4.91)	.55	-2.39 (5.02)	.63
Baseline DASS, γ_{02}	0.29 (0.10)	.004	0.28 (0.10)	.005
Therapist session 1 SPS, γ_{03}	0.89 (0.56)	.12	0.84 (0.57)	.15
Therapist session 1 SPS by Convergence, γ_{04}	--	--	-1.18 (2.28)	.61
Change in DASS (slope), γ_{10}	-10.10 (4.44)	.03	-10.01 (4.49)	.03
SPS divergence/convergence, γ_{11}	31.71 (19.42)	.11	32.55 (19.63)	.10
Baseline DASS, γ_{12}	-0.54 (0.40)	.18	-0.55 (0.40)	.17
Therapist session 1 SPS, γ_{13}	-1.31 (2.27)	.57	-1.39 (2.28)	.54
Therapist session 1 SPS by Convergence, γ_{14}	--	--	-1.80 (8.81)	.84
Rate of acceleration/deceleration (curvature), γ_{20}	-1.18 (4.32)	.79	-1.20 (4.37)	.79
SPS divergence/convergence, γ_{21}	47.25 (18.85)	.01	47.09 (19.04)	.02
Baseline DASS, γ_{22}	-0.30 (0.39)	.44	-0.30 (0.39)	.44
Therapist session 1 SPS, γ_{23}	-2.31 (2.21)	.30	-2.29 (2.22)	.31
Therapist session 1 SPS by Convergence, γ_{24}	--	--	0.30 (8.54)	.97
Random effects	Variance component	*p*	Variance component	*p*
DASS intercept, τ_{00}	80.48	< .001	80.10	< .001
DASS slope, τ_{11}	531.60	.001	530.32	.003
DASS curvature, τ_{22}	480.78	.001	480.43	.003
Level 1, σ^2	33.92	--	33.92	--
Model deviance (*df*)	2166.83 (19)	--	2166.32 (22)	--

Note. DASS = Depression, Anxiety, and Stress Scale; SPS = Session Progress Scale.

Table 23

Treatment Condition by Early Session Progress Convergence as a Predictor of Posttreatment Distress, Subsequent Distress Change, and Subsequent Acceleration/Deceleration in the Rate of Distress Change

	Main effects and covariate model		**Interaction model**	
Fixed Effects	Coefficient (*SE*)	*p*	Coefficient (*SE*)	*p*
Posttreatment DASS (intercept), γ_{00}	-3.78 (1.14)	.001	-3.84 (1.16)	.001
SPS divergence/convergence, γ_{01}	-3.04 (5.05)	.55	-3.23 (5.15)	.53
Baseline DASS, γ_{02}	0.31 (0.10)	.003	0.31 (0.10)	.003
Treatment[a], γ_{03}	-2.06 (2.37)	.39	-2.08 (2.37)	.39
Treatment by Convergence, γ_{04}	--	--	-2.08 (10.24)	.84
Change in DASS (slope), γ_{10}	-9.95 (4.43)	.03	-9.26 (4.41)	.04
SPS divergence/convergence, γ_{11}	25.81 (19.44)	.19	33.92 (20.02)	.09
Baseline DASS, γ_{12}	-0.44 (0.41)	.29	-0.46 (0.40)	.26
Treatment, γ_{13}	-7.41 (9.21)	.42	-7.51 (9.07)	.54
Treatment by Convergence, γ_{14}	--	--	50.83 (39.22)	.20
Rate of acceleration/deceleration (curvature), γ_{20}	-1.11 (4.32)	.80	-0.84 (4.33)	.85
SPS divergence/convergence, γ_{21}	39.48 (18.87)	.04	45.90 (19.61)	.02
Baseline DASS, γ_{22}	-0.18 (0.40)	.66	-0.21 (0.40)	.61
Treatment, γ_{23}	-9.25 (8.99)	.31	-9.47 (8.92)	.29
Treatment by Convergence, γ_{24}	--	--	34.36 (38.39)	.37
Random effects	Variance component	*p*	Variance component	*p*
DASS intercept, τ_{00}	82.56	< .001	82.45	< .001
DASS slope, τ_{11}	530.38	.001	484.68	.002
DASS curvature, τ_{22}	481.66	.001	461.90	.001
Level 1, σ^2	33.98	--	33.99	--
Model deviance (*df*)	2167.61 (19)	--	2162.21 (22)	--

Note. SPS = Session Progress Scale; DASS = Depression, Anxiety, and Stress Scale.
[a] Treatment group was dummy coded so that CBT = 0.5, MI-CBT = -0.5.

APPENDIX C

FIGURES

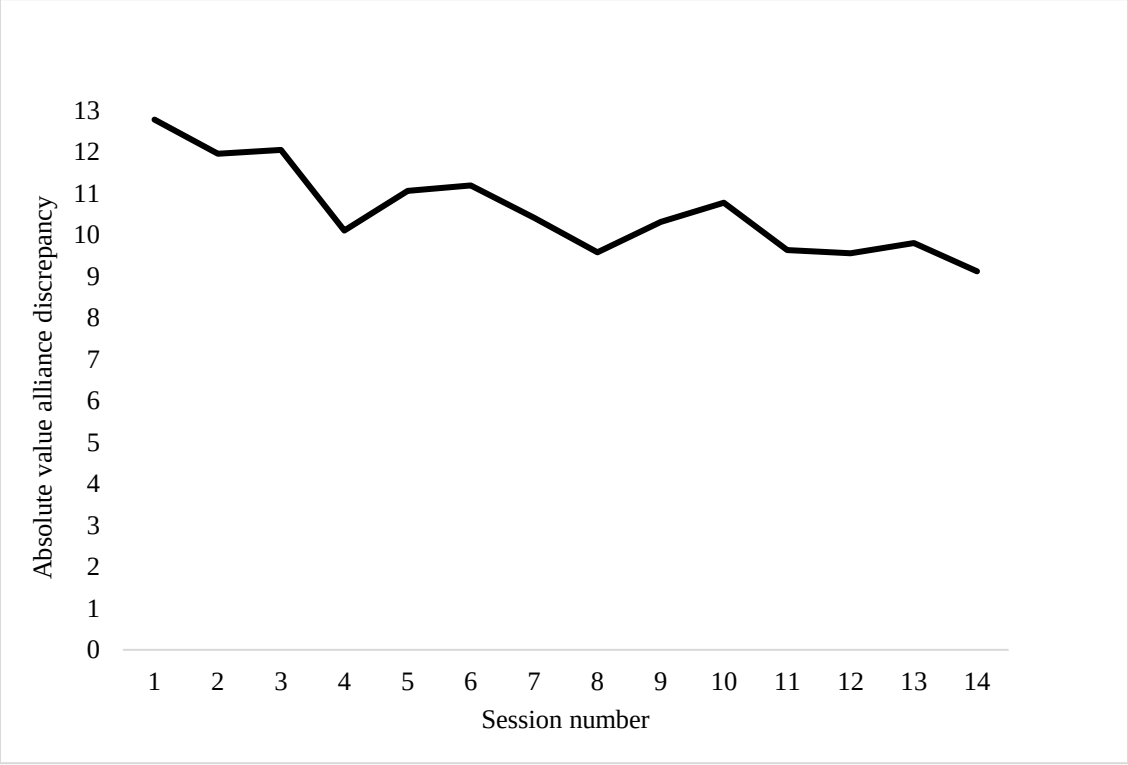


Figure 1. Differences between patient-therapist alliance scores across treatment.

Panel A

Panel B

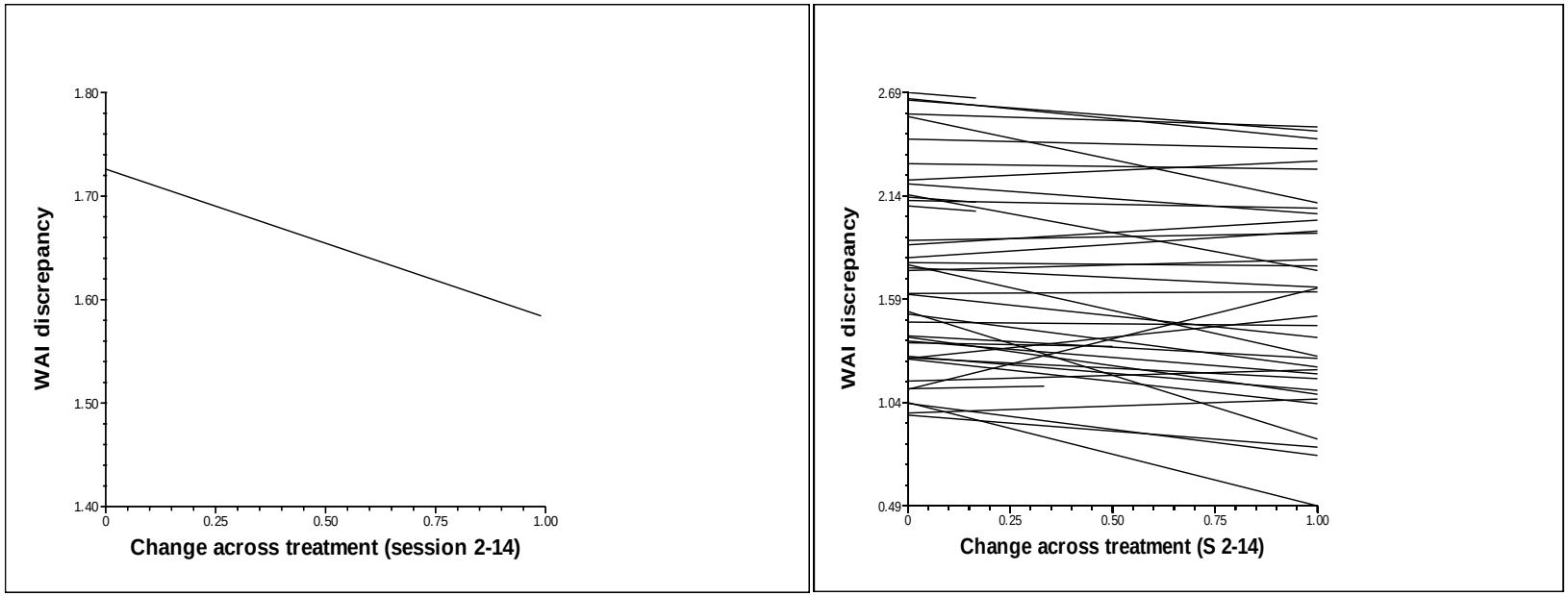
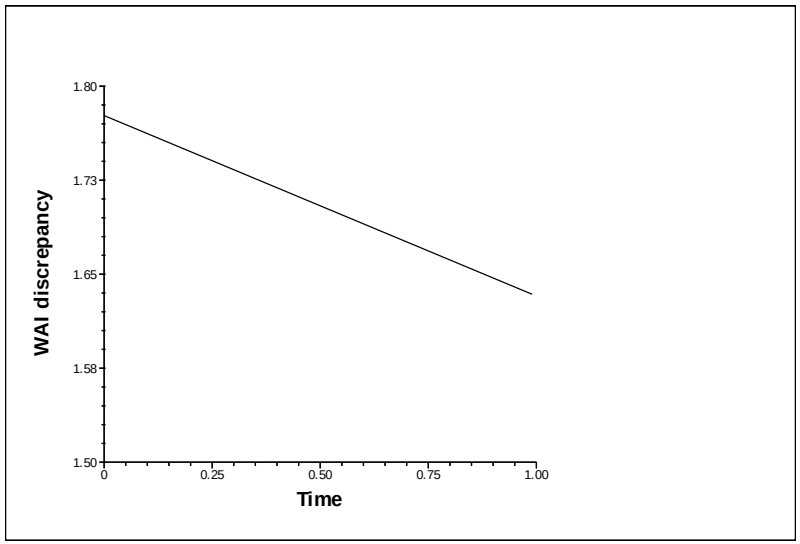


Figure 2. Panel A shows the average change in alliance discrepancy across treatment and Panel B depicts the variability around the average rate of change in discrepancy across treatment for a random sample (n = 41).

Panel A



Panel B

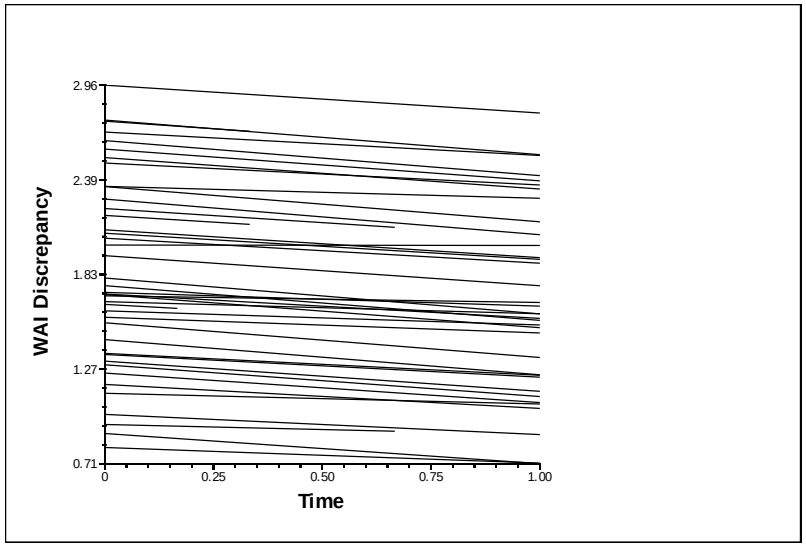


Figure 3. Panel A shows the average change in alliance discrepancy across the first half of treatment and Panel B depicts the variability around the average early rate of change in discrepancy for a random sample (n = 41).

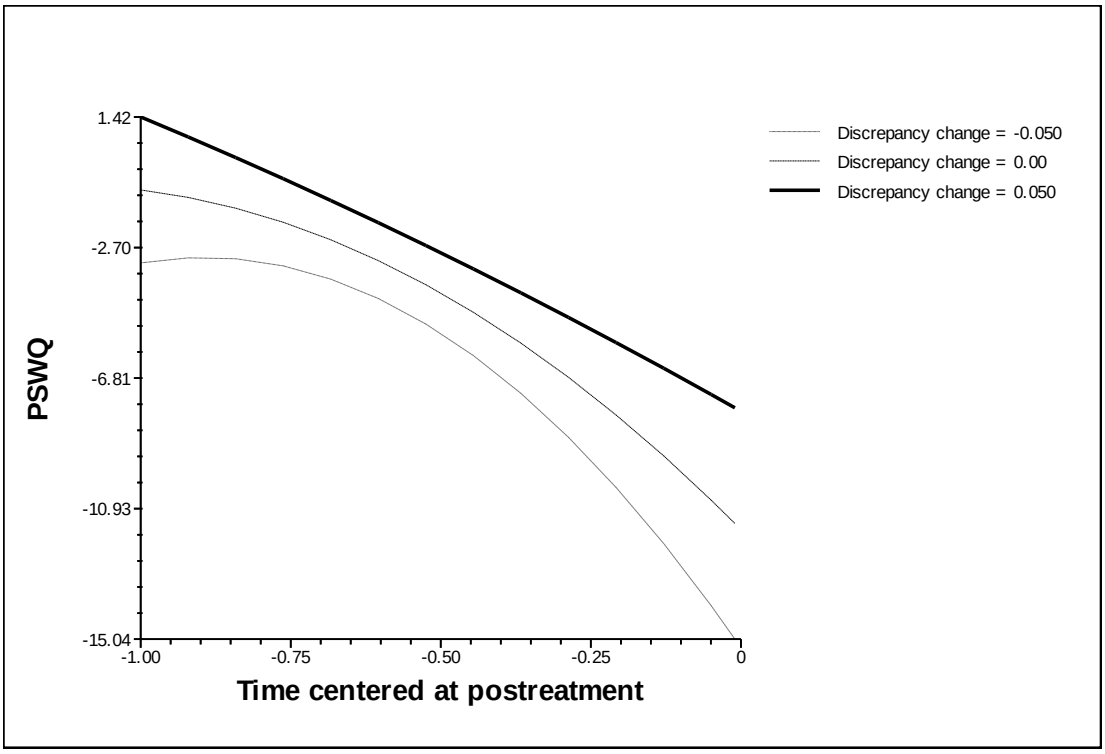


Figure 4. Change in early alliance discrepancy as a predictor of subsequent worry change across the second half of treatment.

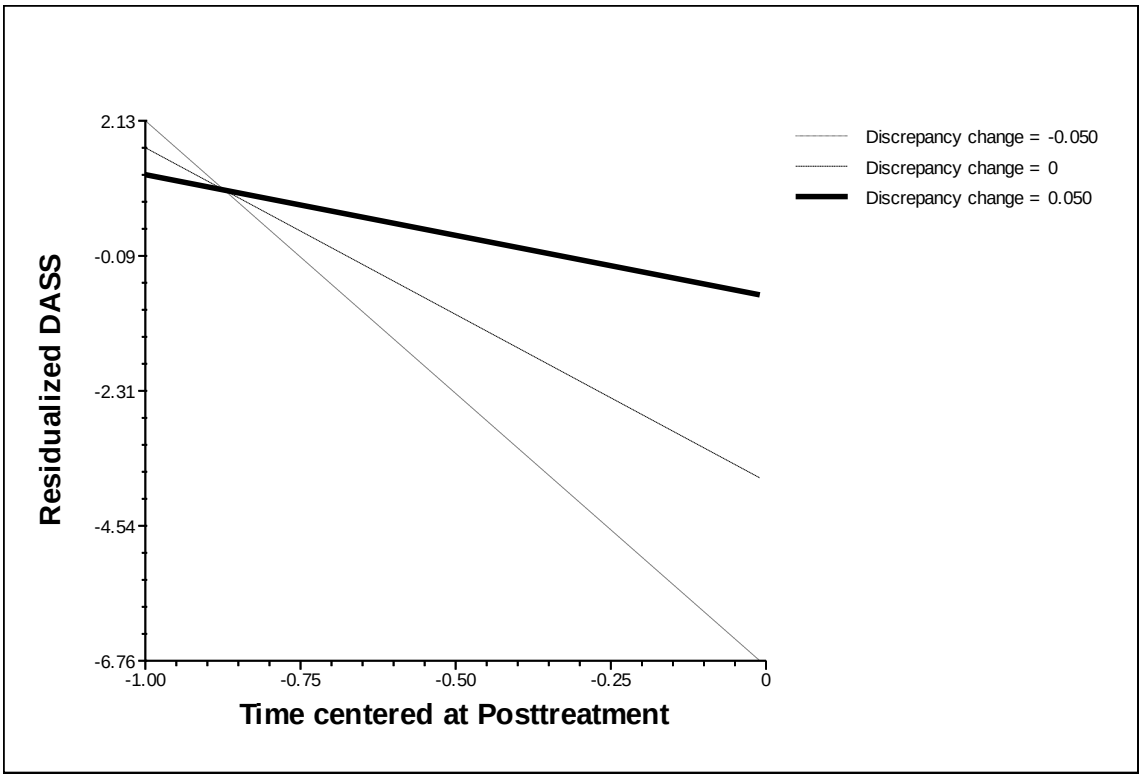


Figure 5. Change in early alliance discrepancy as a predictor of general distress change across the second half of treatment.

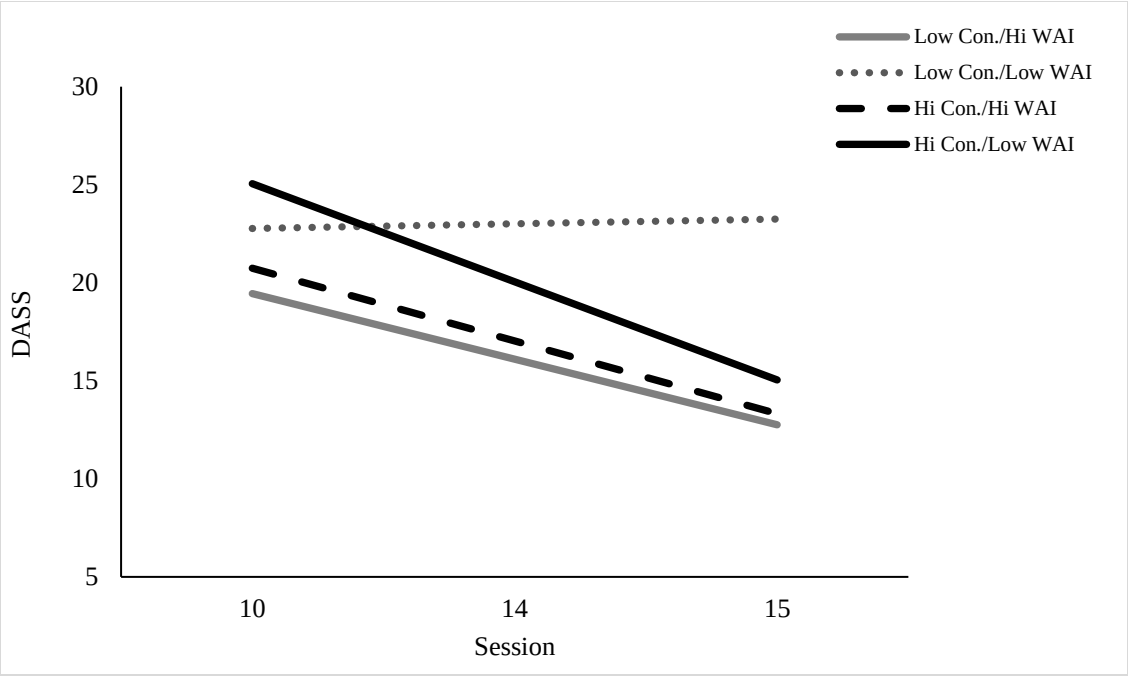


Figure 6. Interactive effect of early alliance convergence and patient session 1 alliance on subsequent general distress change.

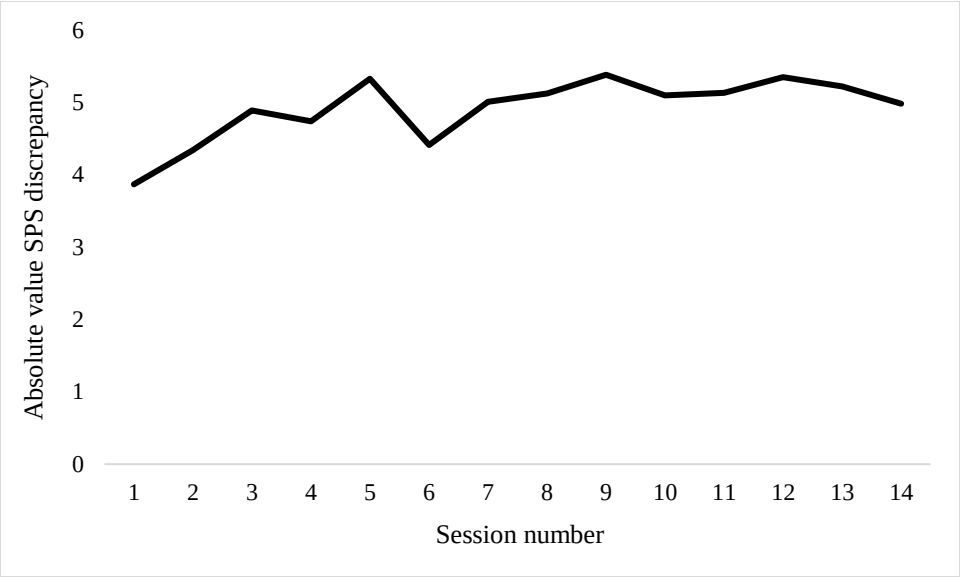
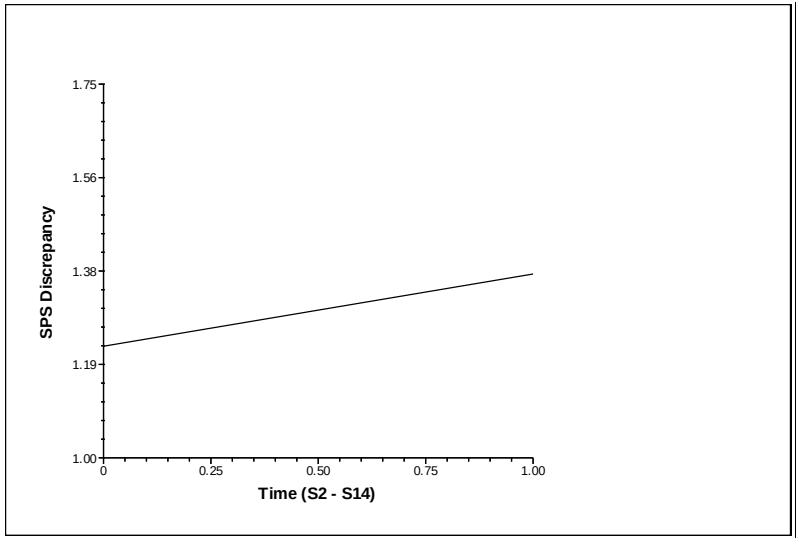


Figure 7. Differences between patient-therapist session progress scores across treatment.

Panel A



Panel B

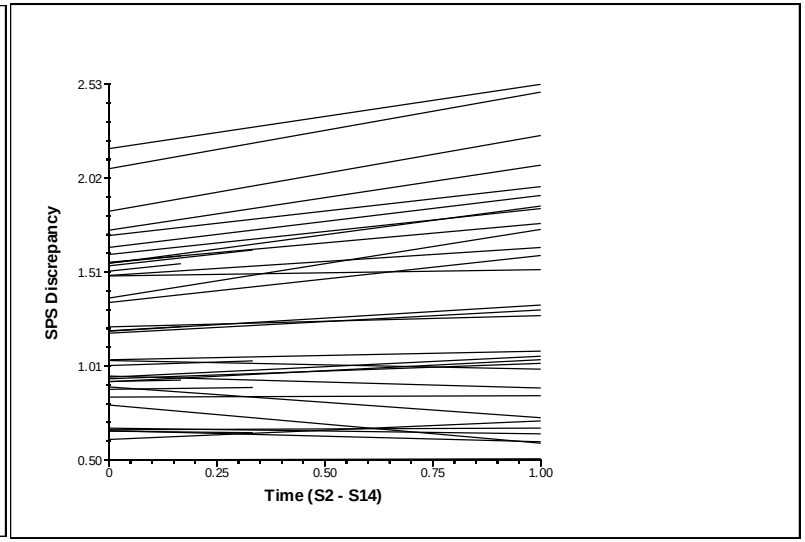
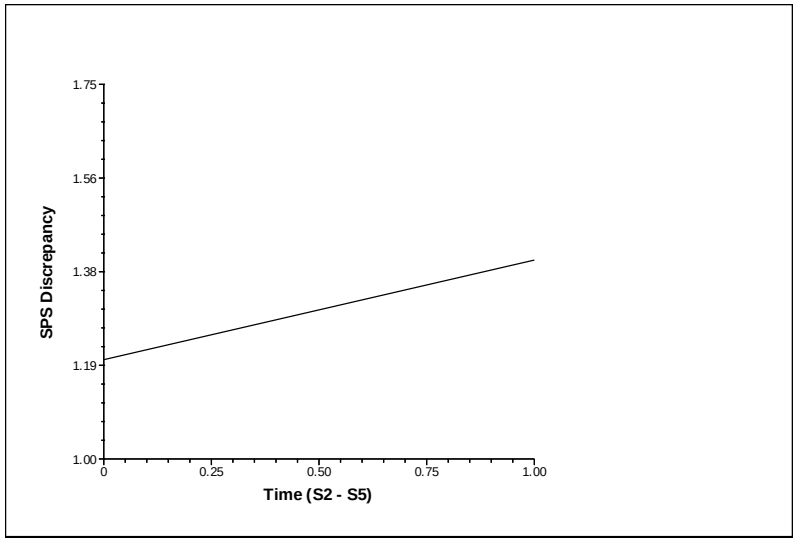


Figure 8. Panel A shows the average change in session progress discrepancy from session 2 through 14 and Panel B depicts the variability around the average rate of change in discrepancy for a random sample (n = 41).

Panel A



Panel B

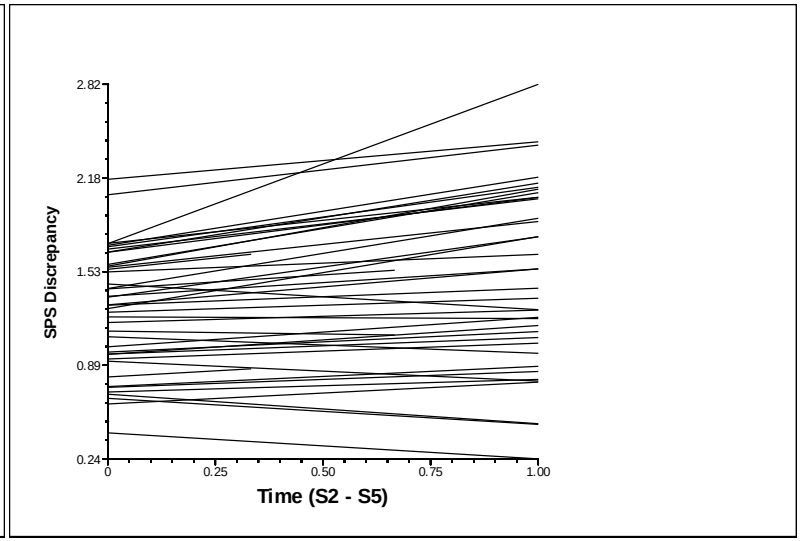


Figure 9. Panel A shows the average change in session progress discrepancy from session 2 through 5 and Panel B depicts the variability around the average rate of change in discrepancy for a random sample (n = 41).

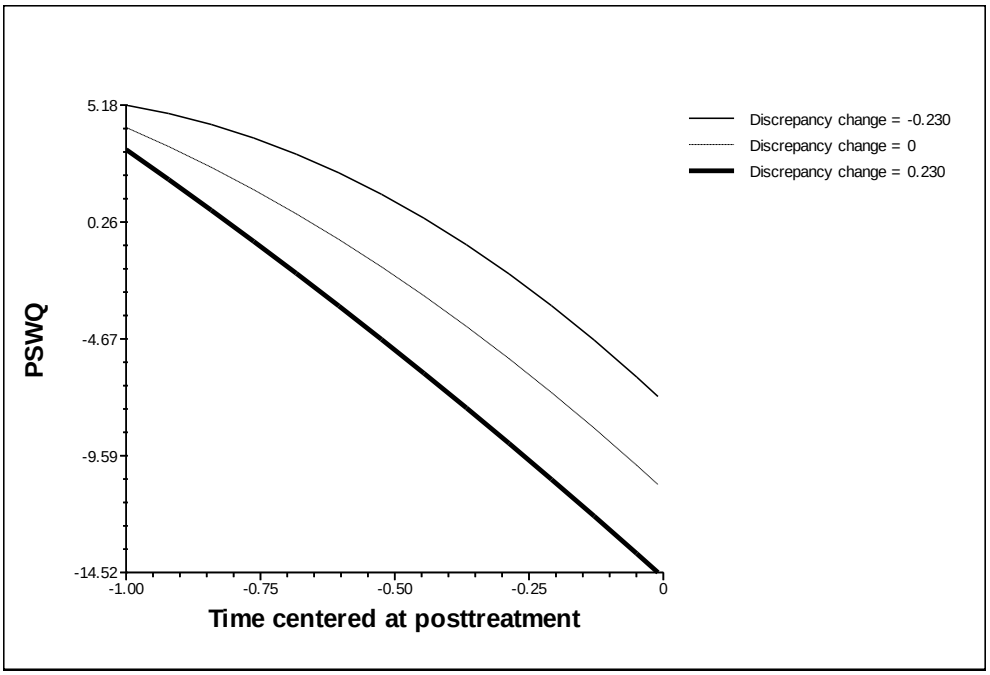


Figure 10. Change in early session progress discrepancy as a predictor of subsequent worry change.

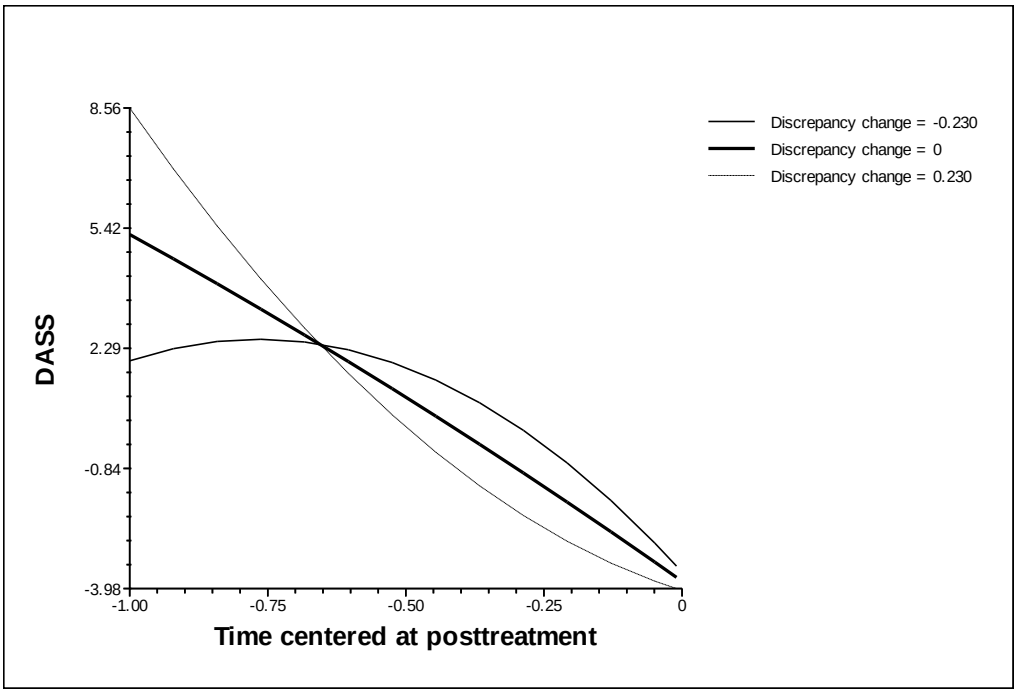


Figure 11. Session progress discrepancy change from session 2 through 5 as a predictor of subsequent distress reduction.

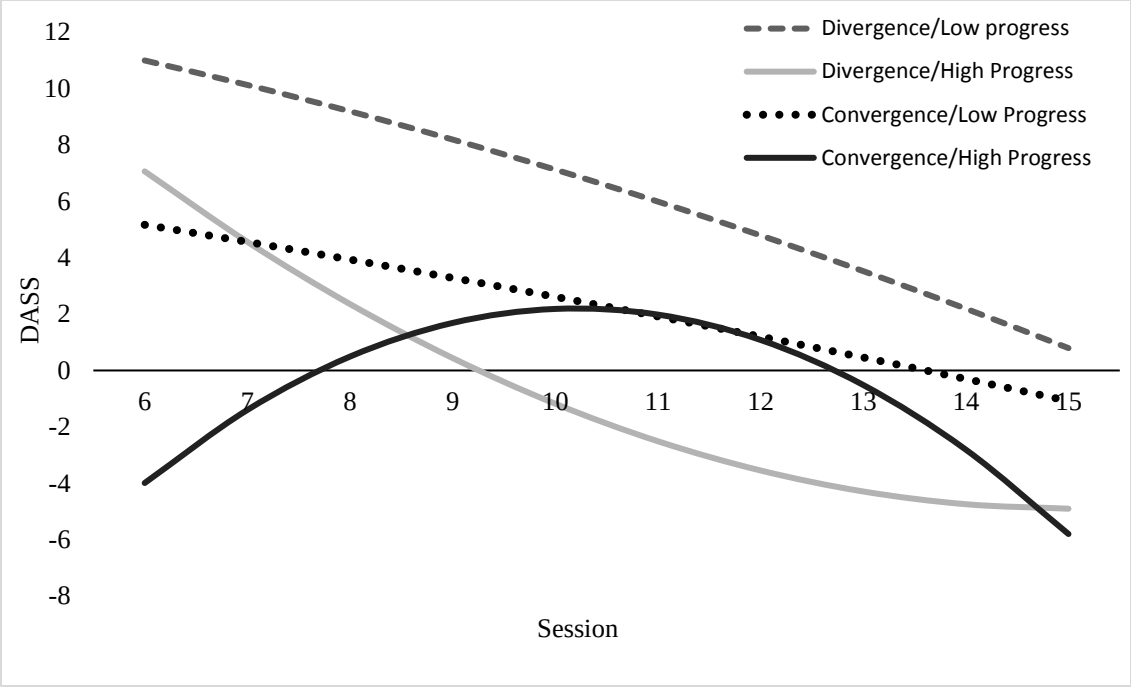


Figure 12. Interactive effect of early session progress convergence/divergence and patient session 1 progress on subsequent general distress change.

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