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Patient–Therapist Expectancy Convergence and Outcome in Naturalistic Psychotherapy

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PATIENT–THERAPIST EXPECTANCY CONVERGENCE AND OUTCOME IN
NATURALISTIC PSYCHOTHERAPY

A Thesis Presented

by

AVERI N. GAINES

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

MASTER OF SCIENCE

FEBRUARY 2022

Clinical Psychology

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NATURALISTIC PSYCHOTHERAPY

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ABSTRACT

PATIENT–THERAPIST EXPECTANCY CONVERGENCE AND OUTCOME IN NATURALISTIC PSYCHOTHERAPY

FEBRUARY 2022

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Aim: Research on close relationships demonstrates that dyadic convergence, or two people becoming more concordant in their experiences and/or beliefs over time, is commonplace and adaptive. As psychotherapy involves a close relationship, patient–therapist convergence processes may influence treatment-specific outcomes. Although prior research supports that patients and therapists tend to converge on their alliance perspectives over time, which associates with subsequent patient improvement, no research has similarly examined *belief* convergence during therapy. Accordingly, this study focused on patient–therapist convergence in their outcome expectation (OE), a belief variable associated with patient improvement when measured from individual participant perspectives. I predicted both that significant OE convergence would occur and relate to better posttreatment outcome. **Method:** Data derived from a trial of naturalistic psychotherapy. Patients and therapists repeatedly rated their respective OE through treatment, and patients rated their symptom/functional outcomes at posttreatment. For dyads ($N = 154$) with the requisite OE data, I tested my questions using multilevel structural equation modeling. **Results:** There was no discernable OE convergence pattern over treatment ($\gamma_{100} = 0.02$, $SE = 0.04$, $p = .275$) and OE convergence was unrelated to outcome at the between-dyad ($\beta_{02k} = 1.86$, $SD = 10.08$, $p = .406$) and between-therapist ($\gamma_{002} = -0.06$, $SD = 3.54$, $p = .473$) levels. However, higher early patient OE was significantly associated with better outcome at the between-dyad level (β_{05k}

= -0.04, $SD = 0.01$, $p < .001$). **Discussion:** Results suggest that OE may be more of a facilitative patient versus relational process factor.

Keywords: outcome expectation, patient-therapist convergence, naturalistic psychotherapy, patient outcome, dyadic analysis

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CHAPTER 1

INTRODUCTION

Research demonstrates that as a relationship develops over time, its participants become increasingly more similar in their emotions, attitudes, perceptions, and beliefs (Acitelli et al., 2001; Anderson et al., 2003; Gonzaga et al., 2007). Such *convergence* on these variables is common across multiple types of close relationships, including romantic partners (Anderson et al., 2003; Anderson & Keltner, 2004; Duck, 1994; Kenny, 1994), friendship dyads (Bruder et al., 2012; Kenny & Kashy, 1994), and college roommates (Anderson et al., 2003). Moreover, across these relationship types, convergence has been shown to associate positively with favorable relationship outcomes, including satisfaction, stability, trust, cohesion, and closeness (e.g., Anderson et al., 2003; Gonzaga et al., 2007). Thus, dyadic convergence has been considered a facilitative factor for relational health.

Considering that psychotherapy almost always involves a type of close relationship (Derlega et al., 1992), it is plausible that its developmental course may also involve patterns of patient–therapist convergences that bear on *treatment-specific* outcomes (Coyne et al., 2018; Laws et al., 2017). Conceptually, this idea is not new; in fact, it was over five decades ago that Pepinsky and Karst (1964) postulated that patient–therapist convergences may promote improvement across different types of therapy and should therefore become an empirical focus. Although this early call spurred *some* initial research on convergence in psychotherapy (e.g., Arizmendi et al., 1985; Beutler, 1981; Beutler et al., 1983), these early studies were primarily interested in the therapist’s unidirectional influence on patient values and personality variables (i.e., persuasion) rather than fully dyadic and bidirectional processes that evolve over treatment. Fortunately, although still limited in number, more recent studies have examined process variable convergence in psychotherapy in this more two-person, bidirectional manner. Perhaps

unsurprisingly, the primary focus of this small literature has been on the most frequently studied relational construct in psychotherapy: the therapeutic alliance.

To date, several studies have consistently demonstrated that, on average, patients and therapists' individual ratings of the quality of their shared alliance (i.e., the degree to which patients and therapists agree that they agree on the tasks and goals of therapy and are experiencing a positive emotional bond) significantly converge over time (e.g., Atzil-Slonim et al., 2015; Chen et al., 2018; Coyne et al., 2018; Hersoug et al., 2001; Laws et al., 2017). However, only a handful of studies have examined convergence in relation to treatment outcomes. In one, greater alliance convergence across two psychotherapies for chronic depression was associated with lower depressive symptoms at posttreatment and 3-month follow up (Laws et al., 2017). In the second study, early alliance convergence (i.e., over sessions 2 through 8) predicted greater subsequent worry and distress reduction in two variants of cognitive behavioral therapy for generalized anxiety disorder (Coyne et al., 2018). Finally, in a naturalistic study of heterogeneous treatments, roughly half of the sample showed a pattern of alliance convergence over time (Tschuschke et al., 2020). The dyads characterized by such convergence had greater clinically significant improvement relative to those characterized by alliance divergence. These results provide preliminary support for alliance convergence as an evidence-based, pantheoretical, and pandiagnostic dyadic process factor.

Beyond the alliance, I am aware of only one other study that has examined dyadic process convergence during mental health treatment. Namely, in the course of an interpersonal model of counseling for varied concerns, patients and therapists demonstrated a pattern of increased convergence over time on their individual recollections of important session events (Kivlighan & Arthur, 2000). Moreover, and mirroring the alliance studies, such greater convergence was associated with fewer interpersonal problems at posttreatment. This study further supports patient–therapist convergence on perceptions of treatment experiences/emotions (alliance) and perceptions (important events) as a burgeoning, evidence-based correlate of change

across a range of clinical contexts. Yet, with only a few studies conducted to date on just two therapy variables, more expansive research is needed on dyadic convergence.

Notably, the aforementioned social psychology literature on close relationships suggests that convergence on other dyadic factors might occur during therapy and influence treatment outcomes. For example, in addition to emotions and perceptions, people in close relationships also tend to convergence on *beliefs* (Acitelli et al., 2001). Moreover, in their early discussion of patient–therapist convergences, Pepinsky and Karst (1964) included belief convergence as one important type, and they were specifically interested in patient expectancy for change. Such *outcome expectation* (OE) has been defined and measured contemporarily as a patient’s prognostic belief regarding how much they will improve through treatment (Constantino et al., 2018).

Conceptually, patient OE has long been of interest to psychotherapists as a theory-common treatment factor (for reviews, see Constantino et al., 2012; Greenberg et al., 2006). More specifically, OE may reflect Frank’s (1961) notion of *remoralization*, or heightened optimism in one or more pathways to change (perhaps including the treatment and/or the therapist). With more of such hope in the personal applicability and feasibility of these pathways, theory suggests that people would derive more benefit from the therapy in which they will, or have begun to, engage (Snyder, 2002). Indeed, research supports these theoretical tenets. Most notably, a meta-analysis of over 12,000 patients across 81 independent samples (with varying treatments for a range of conditions) demonstrated a significant positive association between patients’ baseline or early treatment OE and their posttreatment outcome ($d = .36$; Constantino et al., 2018).

Because OE is a variable that the patient “owns,” most research, as exemplified in the aforementioned meta-analysis, has examined patients’ own rating of this belief. However, therapists too can possess prognostic beliefs about whether their patients will improve as a result of treatment (Bartholomew et al., 2019; Constantino, Aviram, et al., 2020; Goldstein, 1962). In this case, this would represent a therapist belief variable that is *about the patient*, which could

also influence patient outcomes in various ways. Most straightforwardly, it is plausible that when possessing more hope and confidence that a given patient will improve, therapists may behave in more hope-inspiring and adaptive ways that will facilitate better outcomes for that patient.

Although therapist OE (again, a foretelling belief *about*, or *on behalf of* their patients) has received far less empirical attention than patients' own OE assessments, the few existing studies indeed show a unique positive association between therapist OE (again, *on behalf of* their patients) and adaptive patient outcomes (Connor & Callahan, 2015; Constantino, Aviram, et al., 2020; Joyce et al., 2003; Martin et al., 1976; Meyer et al., 2002; Swift et al., 2018).

Another way in which therapist OE may influence treatment process and outcome is through its contribution to a dyadic belief process, such as convergence. Given that patients and therapists independently construct their own OE (about self and other, respectively), these beliefs may be more or less aligned at a given time and become more alike over time, as the previously reviewed theory and research on the therapy process would suggest. Moreover, like alliance experiences and perceptions of important session events, it is plausible that greater convergence, whether of higher or lower OE levels, may facilitate better patient outcomes. Conceptually, such convergence on the predictive belief that the patient will experience improvement from treatment, whether the valence of such change is low, moderate, or high, might reflect a type of adaptive relational attunement (Coyne et al., 2021).

Speaking more to this valence issue, it seems intuitive that when there is greater convergence between patients and therapists on more *optimistic* levels of OE, both dyad members can capitalize on this well-attuned optimism while collaboratively engaging in the treatment tasks in the service of agreed upon goals. On the other hand, although it may seem counterintuitive that converging on more *pessimistic* OE could be facilitative, it may still represent a type of clear attunement whereby both dyad members see an obvious need for responsiveness. For example, if both members are converging on perceiving low utility of a current treatment approach, they may both be open to a discussion about changing course and engaging in a reformulated

conceptualization of the patient's problem and the treatment plan (Constantino, Coyne, et al. 2020). Additionally, converging on moderate OE could represent adaptive dyadic process in that *realistic* versus Pollyannaish expectations may allow patients to adapt to the inherent challenges that therapy poses for substantive change (Goldstein, 1962). Moreover, such realism may protect patients from extreme disappointment from failing to achieve expectations that were unrealistically high for the amount or speed of improvement.

Although such conceptualizations may make sense clinically, to my knowledge there has been no empirical examination of patient–therapist OE convergence and its impact on outcome. Thus, consistent with previous investigations of variable convergence in psychotherapy, I explored these questions in naturalistically delivered outpatient psychotherapy for adults with a range of mental health concerns. I hypothesized that (1) a significant average pattern of OE convergence would emerge across therapy, and (2) greater OE convergence would be associated with better posttreatment symptoms/functioning, above and beyond the patients and therapist's individual ratings of OE.

CHAPTER 2

METHOD

2.1 Dataset Overview

Data for this study originated from an individual-level, double-masked, randomized controlled trial that tested the efficacy of an empirical match algorithm for which patients were assigned to providers with previously established strengths in treating that patient's primary mental health problem(s) (e.g., depression, anxiety; Constantino et al., 2021). Specifically, for context, 218 adults were randomly assigned to the match condition ($N = 99$) or to the case assignment-as-usual (CAU) control condition (typically based on pragmatic considerations, such as provider availability, convenience, or self-reported specialty; $N = 119$). Following case assignment, treatment itself was unmanipulated and administered by 48 therapists, with posttreatment designated as either the actual point at which the patient terminated or at 16 weeks, whichever came sooner. This parent trial was funded by the Patient-Centered Outcomes Research Institute (PCORI; IHS-1503-28673) and was conducted across six outpatient clinics within a large community mental health care system in Cleveland, OH. Briefly, as predicted, patients who were matched to empirically good-fitting clinicians (again, based on their previous performance data) achieved greater global symptom reduction and functional improvement than those in the CAU condition ($d = .75$; Constantino et al., 2021). Given this between-group effect, I included assignment condition as a covariate for all analyses in the current study.

2.2 Participants

2.2.1 Patients

As noted, 218 adults enrolled in the trial. These patients were eligible to participate if they were seeking psychotherapy at the time of intake and held primary authority over their health care decisions. With no other inclusion or exclusion criteria, the sample included a range of clinical presentations. Given my interest in convergence, a process that relies on both the

patient and therapist completing a parallel process measure at the same occasion(s), the present study included a subsample of the 154 patients for whom both they and their therapist completed their respective OE measure (discussed below) on one or more measurement occasions. To characterize this patient subsample, Table 1 presents descriptive information on baseline demographic and clinical characteristics. Importantly, chi-square analyses for categorical variables and *t*-test analyses for continuous variables demonstrated that patients in the subsample did not significantly differ on any demographic or clinical characteristics when compared to those in the full sample who were excluded due to missing dyadic OE data (all *ps* > .05).

Although the parent trial did not assess formal categorical diagnoses, the primary multidimensional outcome tool that informed the match algorithm—the *Treatment Outcome Package* (TOP; Kraus et al., 2005)—was administered at baseline. Table 2 presents the patient subsample’s descriptive data across the TOP’s 12 symptom/functioning subscales at baseline (discussed in further detail below). As noted, owing to the trial’s naturalistic and ecologically valid design, the clinical presentations were heterogeneous.

2.2.2 Therapists

As noted, 48 therapists for whom their objective outcome “track record” was established with pre–post TOP data on at least 15 historical, pretrial cases enrolled in the trial. As a means of controlling for general between-therapist effects, clinicians were eligible to treat patients in *both* the scientific match and CAU conditions. Based on the OE measurement requirement previously discussed, the present study included a subsample of the 41 therapists who treated the 154 subsample patients. Therapists saw an average of 4.05 study patients, with a range of 1 to 11. To characterize this therapist subsample, Table 3 presents descriptive information on therapist demographic and professional characteristics. Chi-square and *t*-test analyses demonstrated that therapists in the subsample did not significantly differ on any demographic or professional characteristics when compared to those in the full sample who were excluded due to missing dyadic OE data (all *ps* > .05). When asked how much their current therapy practice was guided by

different theoretical frameworks (on a scale from 0 to 6, with 6 indicating “very much”), subsample therapists identified their theoretical orientation as most strongly influenced by a “cognitive behavioral” framework ($n = 41$, $M = 5.20$, $SD = 1.08$), followed by “other” ($n = 14$, $M = 3.93$, $SD = 2.30$), “interpersonal” ($n = 36$, $M = 3.83$, $SD = 1.63$), “humanistic/experiential” ($n = 39$, $M = 3.31$, $SD = 1.75$), “systems” ($n = 37$, $M = 2.97$, $SD = 1.38$), and “psychoanalytic/psychodynamic” ($n = 36$, $M = 2.17$, $SD = 1.80$). On the same scale, therapists also rated the extent to which they currently regarded themselves as having one primary orientation ($n = 41$, $M = 2.95$, $SD = 1.55$) and regarded their orientation as “integrative” ($n = 41$, $M = 4.27$, $SD = 1.63$).

2.3 Treatment

As noted, therapy was naturalistically administered, and posttreatment measurement occurred at the time at which a patient actually terminated treatment, up to a maximum of 16 weeks (even though some patients continued seeing their therapist beyond the parent trial’s end point). Within this design constraint, the average length of time in treatment for the present subsample was 12.31 weeks ($SD = 5.87$ weeks) and the average number of sessions was 6.17 ($SD = 3.10$).

2.4 Measures

2.4.1 OE

To assess OE from individual perspectives, patients and therapists completed their respective versions of the *Credibility/Expectancy Questionnaire* (CEQ; Devilly & Borkovec, 2000). For the present study, I focused on the widely used OE subscale, which is composed of three items: (1) “By the end of the therapy period, how much improvement in your [your patient’s] presenting concerns/problems do you think will occur?” (rated from 0 to 100% in 10-point intervals), (2) “At this point, how much do you really *feel* that therapy will help you [your patient] to reduce your [their] presenting concerns/problems?” (rated from 1 [*not at all*] to 9 [*very*]

much)), and (3) “By the end of the therapy period, how much improvement in your [your patient’s] presenting concerns/problems do you *feel* will occur?” (rated from 0 to 100% in 10-point intervals). Because of the different scales, the items rated 0 to 100% can be rescaled¹ to the 1 to 9 metric prior to summing them to obtain a total score (theoretical range = 3 to 27, with higher scores indicating greater OE). This total score has demonstrated high internal consistency (with alphas ranging from .79 to .90), as well as good test-retest reliability, predictive validity, and stability across a variety of populations (Deville & Borkovec, 2000; Price et al., 2008). The sample-specific alphas for the patient- and therapist-rated OE subscales of the CEQ at each study time point ranged from .84 to .98.

2.4.2 Mental health

To assess domains of mental health, patients completed the TOP, a 58-item routine outcome measure (see Appendix A) that also prompts patients to provide demographic information and clinical history at the first administration. Items are rated from 0 to 5, with higher scores indicating better functioning. These items load onto 12 symptom/functioning subscales: panic/somatic anxiety, depression, suicidal ideation, violence, work functioning, sexual functioning, social conflict, substance use, sleep, mania, psychosis, and quality of life. Scores on these subscales can also be summed to create an overall index of global psychological distress/impairment. For the primary outcome measure of the current study, I used a z-scored TOP total score that was rescaled so that higher scores indicated *worse* symptoms/functioning. Previous studies support the TOP’s strong psychometric properties. Not only does it have excellent factor structure (Kraus et al., 2005), but with the exception of mania, the TOP subscales have also demonstrated good internal consistency (with alphas ranging from .69 to .93) and test-

¹ The rescaling formula is as follows: rescaled variable = [(participant score – original scale minimum)/original scale range] * the upper limit of the rescaled variable.

retest reliability (with intraclass correlations ranging from .87 to .94; Kraus et al., 2005)².

Additionally, the TOP total score has demonstrated excellent reliability ($\alpha = .94$), convergent validity with other measures of global symptom severity (r s ranged from .89 to .91), and sensitivity to change (Kraus et al., 2005; Zack et al., 2015). The sample-specific average alpha for the TOP total score across all time points (baseline through posttreatment) was .85.

2.5 Procedure

Therapists within the aforementioned large community mental health care system were recruited between December 2016 and September 2017. Specifically, clinicians with the requisite historical effectiveness track record data were contacted about the trial through emails and/or telephone calls from the project coordinator and/or system administrators. Interested therapists then spoke with the project coordinator to learn more about the study. Namely, they were told that the study was examining the effectiveness of various referral processes (about which they would be unaware) and would in no way impact their typical treatment practices with enrolled patients (who would also be unaware of their referral condition). At this time, therapists were also informed of the following compensation for participating in the trial: a \$20 gift card for completing a baseline assessment of demographic and professional characteristics and a \$50 gift card for completing process measures (including the CEQ) for each of their study patients. All therapists who were interested in participating were instructed to complete an online informed consent form and the baseline survey.

Patient recruitment was conducted through the existing referral system and took place between November 2017 and April 2019. At the time of initial contact, intake staff screened patients for trial eligibility. If eligible, intake workers provided basic study information and asked permission to send further details via email. As with the therapists, patients were informed

² Despite the relatively poorer psychometric properties of the mania subscale (alphas ranging from .55 to .70; test-retest ICC = .76), its influence on the psychometrics of the TOP total score (discussed next) is unproblematic.

that the study was examining the effectiveness of various referral processes (about which they would be unaware) and would in no way influence the care they would receive. They were also told that for the minimum burden of completing study-specific measures, they would be compensated with a \$50 gift card (prorated to the number of administrations completed). All patients who were interested in participating were instructed to complete an online informed consent form and a set of baseline measures, which included the TOP. Consenting patients were then randomized to the scientific match or CAU condition. After their condition was established, intake staff assigned patients to a participating therapist. For additional information on the parent trial, see Constantino et al. (2021).

Patients completed the TOP at baseline, at every odd-numbered week of active treatment, and at the patient's unique posttreatment. Patients and therapists completed their respective version of the CEQ at every even-numbered week of active treatment. The Institutional Review Board at the University of Massachusetts Amherst (IRB Protocol number: 2016-3401) approved all secondary analyses of deidentified data from this trial.

2.6 Power Analysis

To estimate power for my two primary research questions, I fit a 2-level (repeated measures nested within patients)³ Monte Carlo simulation using the Bayesian estimator in the Mplus 8.4 program (Bolger & Laurenceau, 2013; Lane & Hennes, 2018; Muthén & Muthén, 2002). For this simulation, I used the parameter estimates from the convergence study conducted by Coyne et al. (2018) as the population model, from which 10,000 random samples were drawn to create sampling variability. Assuming similar effect sizes to the Coyne et al. (2018) study, with my sample of 154 dyads with an average of 5 repeated measures, I had a power of > .80 to detect

³ Note that although a 3-level model (repeated measures nested within dyads nested within therapists) would be more consistent with my planned analyses, the Coyne et al. (2018) study only provided the required parameter estimates for a 2-level analysis. Thus, 2-level model estimates represented the closest "pilot data" I could access to inform a power analysis.

both OE convergence and to detect an association between OE convergence and posttreatment outcome.

2.7 Data Management

Although patients and therapists were instructed to follow the measurement schedule outlined above up to a maximum of 16 weeks, the naturalistic nature of data collection resulted in completion of measures at varied time points. To facilitate pairing of patient and therapist measurement occasions to conduct dyadic analyses, time of completion of the CEQ was rounded to the nearest week. Patient and therapist measurement occasions that occurred within one week of one another were considered a dyadic match and paired accordingly. Data for a given participant (patient or therapist) were considered missing when only *one* member of the dyad completed the CEQ at a particular time point and the other did not; for these instances, missing data were handled using the Bayesian corollary of full information maximum likelihood estimation in the Mplus program (see below for further details; Muthén & Muthén, 1997–2017). This type of occasional, single-dyad member missingness occurred for 82.47% of the dyads. However, given the naturalistic nature of treatment, it was sometimes the case that one dyad member (patient or therapist) completed measures for several weeks after the other dyad member stopped providing data (e.g., a therapist continued completing the CEQ because they were unaware the patient had unilaterally discontinued treatment). Thus, data were no longer considered dyadic—and therefore not included—if one member of the dyad ceased completion of the CEQ for at least 3 weeks in a row (e.g., the therapist continued completing the CEQ through week 16, but the patient stopped completing the CEQ at week 4).

2.8 Data Analytic Plan

I began by examining descriptive statistics and assessing for normality for the patient and therapist OE ratings and the patients' posttreatment TOP total z-score. To test my primary research questions, I drew upon similar analytic steps as Coyne et al. (2018) and Laws et al. (2017). First, I used a dyadic difference score model (Lyons & Sayer, 2005) to derive estimates of

the discrepancy between patient and therapist OE at each rated session. Second, I used a multilevel structural equation modeling (MSEM; Preacher, Zyphur, and Zhang, 2010) framework to fit a 3-level (repeated measures over time nested within dyads nested within therapists) linear growth model to test patient–therapist OE convergence across treatment. More specifically, this model tested the degree to which dyads’ OE ratings became more or less discrepant over time (i.e., a pattern of convergence or divergence), while adjusting for dependencies in the data due to nesting. Finally, within this same 3-level MSEM model (which allows for multiple outcome variables), I tested whether each dyad’s degree of convergence/divergence predicted posttreatment outcome. To generate estimates of effect size, I used standardized coefficients. Missing data in both my predictor and outcome variables were handled using the Bayesian corollary of full information maximum likelihood estimation in the Mplus program (Muthén & Muthén, 1997–2017). Thus, I was able to retain all dyads who completed at least one simultaneous OE measurement occasion.

CHAPTER 3

RESULTS

3.1 Preliminary Analyses

Table 4 presents the descriptive statistics and intercorrelations of all study variables included in subsequent models (including the latent OE convergence variable described below). Of note, at week 2, therapist OE ($M_T = 19.32$, $SD = 4.20$) was higher than patient OE ($M_P = 17.72$, $SD = 5.37$), while at week 16, therapist OE was slightly lower ($M_T = 19.88$, $SD = 4.67$) than patient OE ($M_P = 20.08$, $SD = 4.87$). All variables were within acceptable ranges of skewness and kurtosis based on published guidelines (Kline, 2016).

3.2 Primary Analyses

To assess for patterns of convergence or divergence in OE across therapy, I first used a multilevel difference score model (Lyons & Sayer, 2005) to output post-estimation coefficients (viz. empirical Bayes [EB] estimates) of the discrepancy between patient and therapist OE ratings for each dyad at each week OE was rated. I chose to use EB estimates over raw discrepancy scores because they account for missing data and measurement error (Laws et al., 2017; Raudenbush & Bryk, 2002).

At level 1 of this model, I included a discrepancy indicator variable (viz. $dyad\ member_{ijk}$) that was coded to differentiate therapists (0.5) from patients (-0.5). The equations for this model are included below:

Level 1

$$OE_{ijk} = \pi_{0jk} + \pi_{1jk} \times (dyad\ member_{ijk}) + e_{ijk}$$

Level 2

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

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

Level 3

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

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

Therefore, the outcome (OE_{ijk}) represented the OE score i for dyad j of therapist k at a given week, which was predicted by the model's level 1 intercept (π_{0jk}) that represented the dyad's average OE level (i.e., the model's estimated OE rating when the difference between patient and therapist is 0), and slope (π_{1jk}) that represented the discrepancy between patient and therapist OE ratings at a given week. At level 2, these coefficients (π_{0jk} , π_{1jk}) dropped down to become the outcomes, which were predicted by the average OE level (β_{00k}) and OE discrepancy score (β_{10k}) for each therapist (k) in the sample, and the random effects allowed each dyad's average OE level (r_{0jk}) and discrepancy score (r_{1jk}) to vary around each therapist's own average. At level 3, the fixed effects represented the average OE level (γ_{000}) and OE discrepancy score (γ_{100}) across all *therapists* in the sample (i.e., the sample-level average associations), and the random effects allowed each therapist's average OE level (u_{00k}) and discrepancy scores (u_{10k}) to vary around the estimated therapist average across the entire therapist sample.

I ran this model for each week in which OE was rated (i.e., even-numbered weeks 2 through 16) to output EB discrepancy score estimates for eight total time points (see Table 5). To account for within-dyad changes in the sign of the discrepancy over time (e.g., a patient beginning treatment with a lower OE score than their therapist but ending therapy with a higher OE score than their therapist, or vice versa), I took the absolute value of the EB discrepancy scores, which is consistent with previous alliance convergence studies (Coyne et al., 2018; Laws et al., 2017). Accordingly, decreases in absolute OE discrepancy scores over time signified greater OE convergence, while increases in absolute OE discrepancy scores over time signified greater OE divergence. Of note, these absolute EB discrepancy estimates were highly correlated with raw discrepancy scores (i.e., absolute value of patient ratings subtracted from therapist ratings) at each time point (i.e., all $r_s > .98$ and $p_s < .001$), suggesting that the EB discrepancies

indeed captured the desired construct after accounting for measurement error. I then used the absolute EB discrepancy score estimates as an outcome in a subsequent model examining patterns of convergence/divergence over time, as detailed next.

To answer my primary research questions, I again fit a 3-level model using MSEM. Relevant to this analytic step, MSEM allows for the inclusion of multiple outcome variables, which allowed me to *simultaneously* examine the degree to which dyadic OE ratings became more or less discrepant over time (i.e., a pattern of convergence or divergence) *and* examine the latent convergence/divergence variable as a predictor of posttreatment outcome (i.e., symptoms/functioning as measured via the TOP total *z*-score). To maximize clarity for the reader, the equations for these models are presented separately in hierarchical format below. Convergence/divergence was modeled as the *biweekly* rate of change in OE discrepancy scores over the course of eight possible therapy time points (*viz.* every *other* week of treatment through week 16), with time centered at the first time point.

The equations for the convergence/divergence model are included below:

Level 1

$$OE\ discrepancy_{ijk} = \pi_{0jk} + \pi_{1jk} \times (Week_{ijk}) + e_{ijk}$$

Level 2

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

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

Level 3

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

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

At level 1, the outcome of OE discrepancy score at time *i* for dyad *j* of therapist *k* (OE discrepancy_{ijk}) was predicted by the intercept (π_{0jk}) that represented a particular dyad's average initial OE discrepancy, and the slope (π_{1jk}) that represented a particular dyad's biweekly rate of

change in OE discrepancy. At level 2, these coefficients (π_{0jk} , π_{1jk}) dropped down to become the outcomes and were predicted by the average initial OE discrepancy (β_{00k}) and average biweekly rate of change in OE discrepancy (β_{10k}) for each therapist (k) in the sample. Random effects allowed each dyad's average initial OE discrepancy (r_{0jk}) and rate of change in OE discrepancy (r_{1jk}) to vary around the therapist averages. At level 3, the fixed effects represented the average initial OE discrepancy (γ_{000}) and average biweekly rate of change in OE discrepancy (γ_{100}) across *all therapists* in the sample. Random effects allowed the initial OE discrepancy (u_{00k}) and rate of convergence/divergence (u_{10k}) to vary across therapists (level 3).

Results of this model are presented in Table 6. The sample average initial OE discrepancy was estimated to be 3.14 ($\gamma_{000} = 3.14$, $SD = 0.32$, $p < .001$). Contrary to my hypotheses, there was no discernable pattern of convergence or divergence across treatment ($\gamma_{100} = 0.02$, $SD = 0.04$, $p = .275$). However, at both levels 2 and 3, there was significant between-dyad and between-therapist variability, respectively, in the average initial OE discrepancy ($ps < .001$) and average biweekly rate of change in OE discrepancy ($ps < .001$), suggesting that individual dyads significantly varied around a given therapist's average initial OE discrepancy and average degree of OE convergence across their entire caseloads (level 2), and therapists significantly varied from *one another* in their average initial OE discrepancy and their average degree of OE convergence/divergence over time (level 3). Thus, despite the absence of an average convergence/divergence pattern, the significant variability indicated that dyad- and therapist-level differences in convergence/divergence could predict outcome.

Within the same model, I also examined whether between-dyad differences in convergence/divergence were associated with between-dyad differences in posttreatment outcome (level 2). Though not a primary research question of the current study, I also included these predictors at level 3 to examine whether between-therapist differences in convergence/divergence were associated with between-therapist differences in posttreatment outcome. At both levels 2

and 3 of the model, I included the following covariates⁴: baseline symptom severity, individual (i.e., non-dyadic) initial patient and therapist OE ratings, treatment length (which varied by dyad given the naturalistic nature of the dataset), and match condition from the parent trial (at level 2 only, given that it was a between-dyad predictor). I allowed individual therapist estimates to vary around the therapist averages for the entire sample by including random effects for the outcome. The outcome (TOP_{ijk}) denoted the posttreatment TOP score of patient j treated by therapist k . The equations for this model are included below:

Level 2

$$TOP_{jk} = \beta_{00k} + \beta_{01k} \times (\text{initial between-dyad discrepancy}_{jk}) + \beta_{02k} \times (\text{between-dyad convergence}_{jk}) + \beta_{03k} \times (\text{baseline } TOP_{jk}) + \beta_{04k} \times (\text{treatment length}_{jk}) + \beta_{05k} \times (\text{initial patient } OE_{jk}) + \beta_{06k} \times (\text{initial therapist } OE_{jk}) + \beta_{07k} \times (\text{match condition}_{jk}) + r_{0jk}$$

Level 3

$$\beta_{00k} = \gamma_{000} + \gamma_{001} \times (\text{initial between-therapist discrepancy}_{jk}) + \gamma_{002} \times (\text{between-therapist convergence}_{k}) + \gamma_{003} \times (\text{baseline } TOP_k) + \gamma_{004} \times (\text{treatment length}_k) + \gamma_{005} \times (\text{initial patient } OE_k) + \gamma_{006} \times (\text{initial therapist } OE_k) + u_{00k}$$

$$\beta_{01k} = \gamma_{100}$$

$$\beta_{02k} = \gamma_{200}$$

$$\beta_{03k} = \gamma_{300}$$

$$\beta_{04k} = \gamma_{400}$$

$$\beta_{05k} = \gamma_{500}$$

$$\beta_{06k} = \gamma_{600}$$

⁴ In one iteration of this model, I also controlled for demographic characteristics that were significantly correlated with posttreatment TOP score (viz. number of previous hospitalizations, number of previous therapists, family income above \$200,000 a year); however, once entered into the model, none of these variables significantly predicted outcome, so I selected the more parsimonious model as my final analysis.

Results of this model are presented in Table 7. Contrary to my hypothesis, OE convergence was unrelated to posttreatment symptoms/functioning at the between-dyad level ($\beta_{02k} = 1.86, SD = 10.08, p = .406$) and the between-therapist level ($\gamma_{002} = -0.06, SD = 3.54, p = .473$). Notably, at the between-dyad level, initial patient OE ratings were significantly associated with posttreatment symptoms/functioning ($\beta_{05k} = -0.04, SD = 0.01, p < .001$). Put differently, controlling for all other covariates, every 1 *SD* increase in initial patient OE (at the *between-patient* level) was associated with an estimated 0.54 *SD* decrease in posttreatment TOP total *z*-score.

To ensure that the null convergence findings were not unduly influenced by my data management approach, I computed a “missingness” variable that represented the proportion of missing observations imputed for each dyad. Across all dyads in the sample, the average proportion of missing OE data points relative to *all* OE data points (including those that were missing) was 0.23 ($SD = 0.15$), or ~23%. Each dyad’s degree of missingness was unrelated to their initial OE discrepancy and OE convergence at levels 2 and 3 of the model (all *ps* > .05).

CHAPTER 4

DISCUSSION

This study aimed to extend prior research on patient–therapist convergence processes by examining the dyadic nature of a key psychotherapy belief variable—OE. Counter to my hypotheses, there was no evidence for an average pattern of patient–therapist OE convergence across therapy dyads, and when OE convergence did occur, it was not associated with more adaptive patient symptoms/functioning at posttreatment. However, consistent with prior research, more optimistic initial patient OE on its own was significantly associated with better posttreatment outcome at the between-dyad level. Despite neither of my hypotheses being supported, the nonsignificant results may actually fit well with previous research on relational and belief attunement in psychotherapy.

To contextualize my findings, it is worth reiterating that the current study asked each therapy dyad member to rate how much they expected either themselves (patient report about self) or a given patient with whom they were working (therapist report about patient) to improve. Although these ratings are both about the patient, they are nonetheless distinct and “owned” by each individual. Accordingly, patient and therapist OE may not be as linked in a relational sense as parallel ratings of other more inherently interpersonal psychotherapy constructs. For instance, with respect to the therapeutic alliance, patients and therapists provide ratings on parallel measures that are anchored to their experience of a *shared* relationship. In contrast, individual OE beliefs may be more inherently intrapsychic than relational in nature, suggesting different inputs for each dyad member. For example, patient OE may be impacted by previous therapy experiences, the specific treatment in which the patient is engaging, the therapist, the unfolding psychotherapy process thus far, and/or other case mix factors (e.g., baseline demographic and clinical characteristics). In contrast, therapist OE may be influenced by other factors, such as the therapist’s own sense of competence (i.e., case-level confidence) or their perceptions of the

malleability versus intractability of a particular patient’s mental health concerns. Given the varied and possibly (or even likely) differing inputs into these individual expectancies, it makes sense that patient and therapist OE ratings might not converge over time in the same way as other psychotherapy processes that are more closely tethered to the experience of a shared relationship.

Both present and prior data support this post hoc interpretation. Notably, the current results align with a previous study on patient–therapist OE associations over time, which also failed to support a significant average pattern of OE convergence among therapy dyads (Coyne et al., 2021). However, it is worth noting that contrary to the present study, Coyne et al. found that when OE convergence did occur, it was associated with more positive patient treatment outcomes. Although seemingly incompatible at first blush, these distinct findings actually complement one another when one considers a key methodological difference between the two studies. Whereas the current study centered on typical parallel ratings of OE that captured each dyad member’s *own* prognostic beliefs about a given patient’s improvement, Coyne et al. asked therapists to rate, in a novel manner, how they predicted that *their patient* would rate their expected improvement. That is, the therapist variable captured the degree of therapist *attunement to their patient’s* belief, or a type of less-to-more accurate assessment of the patient’s own “truth.”

Thus, it seems reasonable to suggest that therapists attuning to their patient’s unique outcome forecast would be more beneficial than the alignment of distinct patient and therapist OE ratings over time. The former may reflect a type of felt empathy by therapists that is meaningful and helpful for psychotherapy process and outcome (Atzil-Slonim et al., 2019), whereas the latter may only occur if dyads examine and discuss their respective OE ratings together, which did not occur in the naturalistic setting of the present study. Moreover, therapist empathic OE attunement could also facilitate therapists’ responsive tailoring of psychotherapy to their patients’ momentary levels of OE (Coyne et al., 2021); that is, a therapist would presumably need to have an accurate awareness of their patient’s OE state (rather than relying on their own OE on behalf of the patient,

which the present study revealed tended to be discrepant from their patients' OE ratings) in order to effectively respond to this treatment belief (Constantino et al., 2018).

Further, given the conceivably different determinants of patient and therapist OE noted previously, we might expect patient OE to be a stronger predictor of outcome than therapist OE when the construct is rated in traditional ways. This notion was supported in the present study, as higher initial patient OE was significantly associated with better posttreatment outcome, a finding that parallels a wealth of previous individual studies and a comprehensive meta-analysis (e.g., Constantino et al., 2018). This post hoc interpretation is further supported by the fact that, in the current study, therapist OE was *unrelated* to patient posttreatment outcome when controlling for other known predictors of outcome (e.g., patient OE, patient baseline symptoms/functioning, treatment length). Conceptually, this may suggest that OE is more of a *patient* factor than a psychotherapy therapy process factor; or perhaps, when factoring in some prior research that has supported a unique significant association between therapist OE and outcome (e.g., Swift et al., 2018), OE can reflect two distinct *participant* factors rather than a dyadic psychotherapy process factor.

Expanding on clinical implications, the present results reinforce that it may be most clinically useful for therapists to routinely measure their *patients'* OE, which helps to prognosticate those individuals who are more or less likely to experience improvement from therapy (Constantino et al., 2018). Through whatever assessment means, if it is revealed that a patient has more pessimistic OE, the clinician should consider using explicit OE-fostering strategies (see Constantino, Muir et al., 2021). For instance, they can try to deliver personalized, hope-inspiring statements that highlight the patient as a good candidate for psychotherapy in general (e.g., because of the patient's motivation for treatment) and/or for the specific proposed treatment (e.g., because the patient's presenting concerns are an explicit aim of the approach). Therapists can also reference, in lay language, that research supports the efficacy of psychotherapy in general and/or the selected treatment.

Conversely, therapists might consider evidence of high patient OE as a “green light” to stay the current treatment course that has thus far proven to be compelling and hope-inspiring to the patient (see Constantino, Muir et al., 2021). If, as the research literature would suggest, such optimism is accompanied by early patient improvement, therapists may want to explicitly spotlight such progress to their patients. In doing so, therapists can frame this change as tangible evidence that the patient is likely to experience additional future change as well. Also, because patient OE can shift, therapists should continue to assess and stay attentive to the possible waxing and waning of patient OE throughout treatment. As therapists obtain such information, they should be prepared to maintain (when OE remains marked by more optimism) or adapt (when OE becomes more pessimistic) the treatment plan accordingly (see Constantino, Muir et al., 2021).

Importantly, though, therapists should also be aware of the ways in which their OE can influence outcomes in a dyadic sense. Although the research is limited, the addition of the present results suggest that it may be most clinically useful for therapists to be empathically *attuned to* their patient’s own “truth” about expected recovery (whether it is more pessimistic or optimistic in a given state over time; Coyne et al., 2021) than it is for therapists’ own confidence in their ability to help someone to *converge* with that someone’s own treatment-related OE (current nonsignificant convergence findings). Put differently, it seems more important that a therapist has a good sense of the patient’s OE, then it is for the therapist’s OE “on behalf of” the patient (and likely more about their own confidence) to align with the patient’s own OE.

The current study was not without limitations. First, as with previous psychotherapy convergence studies (e.g., Coyne et al., 2018; Laws et al., 2017), the analytic approach included the use of difference score models (Lyons & Sayer, 2005) to obtain absolute EB discrepancy score estimates. Although such models produce an intuitive latent variable (in which higher scores indicate greater discrepancy and lower scores indicate less discrepancy [or similarity]), modeling changes in these scores masks each dyad member’s contribution to increasing or decreasing discrepancy over time. This is to say that there may be noteworthy differences in

convergence/divergence processes based on which dyad member is doing the converging or diverging (relative to one another) over time that cannot be teased apart with the present methodology. Second, whereas these models are well-equipped to adjust for measurement error, handle missing data, and account for multiple levels of nesting, outputted EB estimates have been the subject of some criticism due to their tendency to weight the EB estimates too strongly toward the group mean for dyads with fewer measurement occasions (Coyne et al., 2018; Hedeker, 2004; Laws et al., 2017). Third, although the results of the present study have high ecological validity given the naturalistic nature of the treatment, this design feature also resulted in variable treatment lengths and some differences in exactly when dyad members rated their individual OE perceptions. Thus, it is possible that some of the differences (discrepancies) in patient and therapist OE could owe to greater temporal distance between when each dyad member rated OE (relative to one another) than is usually observed in more tightly controlled trials that can fully standardize measurement (e.g., Coyne et al., 2018; Laws et al., 2017). Therefore, the ability to detect dyadic convergence could have been affected by such uneven measurement. Finally, patients and therapists were predominantly White and predominantly female; such restricted diversity limits the generalizability of the current findings.

Despite such limitations, this study contributes to a small but growing literature on patient–therapist convergence on transtheoretical psychotherapy process variables. Moreover, it adds further nuance among the independent and intersecting outcome beliefs that therapy participants possess. As the field seeks to reconcile mounting evidence for the therapeutic utility of routine outcome and process monitoring (e.g., Muir et al., 2019), the present findings help to inform the best means of allocating limited clinical resources and prioritizing measurement of evidence-backed processes to optimize patient outcomes—in this case, patient OE in general and therapist OE rated in a very specific dyadic manner.

APPENDIX A

MEASURES

Adult TOP Clinical Scales Form

IMPORTANT: Before answering any question, please read the message on the back regarding the purpose and use of this information.

OP4.2 Adult CS

David R. Kraus, Ph.D. © BHL, 2004

ENGLISH

	All	Most	A lot	Some	A little	None	
1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	been satisfied with your relationships with others
2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	been satisfied with your daily responsibilities
3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	been satisfied with your general mood and feelings
4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	been satisfied with your life in general
5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt too much conflict with someone
6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	been emotionally hurt by someone
7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt someone else had too much control over your life
8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had trouble falling asleep
9	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had nightmares
10	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	awakened frequently during the night
11	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had trouble returning to sleep after awakening in the night
12	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had a paying job
13	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had conflicts with others at work or school regardless of fault
14	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	missed work or school for any reason
15	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	not been acknowledged for your accomplishments at work or school
16	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had your performance criticized at work or school
17	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	not been excited about your work or school work
18	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	physically hurt someone else or an animal
19	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had desires to seriously hurt someone
20	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had thoughts of killing someone else
21	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt that you were going to act on violent thoughts
22	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt no desire for, or pleasure in, sex
23	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt sexually incompatible with your partner or frustrated by the lack of a partner
24	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt emotional or physical pain during sex
25	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had trouble functioning sexually (having orgasms, ...)
26	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had a racing heart
27	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt light-headed
28	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had shortness of breath
29	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had a dry mouth or trouble swallowing ("a lump in your throat")
30	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had sweaty hands (clammy) or cold hands or feet
31	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had to do something to avoid anxiety or fear (washing hands, ...)
32	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	avoided certain situations due to fear or panic
33	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt panic in places that would be hard to leave if necessary
34	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt down or depressed
35	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt little or no interest in most things
36	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt guilty
37	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt restless
38	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt worthless
39	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt tired, slowed down, or had little energy
40	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	worried about things
41	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had trouble concentrating or making decisions
42	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	noticed your thoughts racing ahead
43	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	inflicted pain on yourself
44	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt rested after only a few hours of sleep
45	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	thought about killing yourself or wished you were dead
46	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	planned or tried to kill yourself
47	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt you were better than other people
48	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt on top of the world
49	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	worried that someone might hurt you
50	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had unwanted thoughts or images
51	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	seen or heard something that was not really there
52	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt someone or something was controlling your mind
53	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	spent more time drinking or using drugs than you intended
54	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	neglected school, work, or other responsibilities because of using alcohol or drugs
55	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	felt you wanted or needed to cut down on your drinking or drug use
56	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	had your family, a friend, or anyone else tell you they objected to your alcohol or drug use
57	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	found yourself thinking about a drink or getting high
58	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	used alcohol or drugs to relieve uncomfortable feelings, such as sadness, anger, or boredom

Provider Code _____ Primary Dx _____

Client Code _____

Case-Mix form is attached
 Case-Mix not completed

Please request follow payer instructions or leave blank
 Pre-treatment assessment
 Treatment starts today
 First assessment during treatment
 Middle of treatment assessment
 Last assessment during treatment
 Post treatment assessment

Admin
 Completely Self-Administered
 Self-Administered with some assistance
 Semi-structured Interview
 Clinician Judgement

Units of service delivered
 Units listed are in...
 Hours
 Days

APPENDIX B

TABLES

Table 1

Patient Demographic and Clinical Characteristics at Baseline (N = 154)

Variable	<i>M</i>	<i>SD</i>	<i>n</i> ^a	%
Age (years)	33.94	10.93	154	
Gender				
Male			48	31.17
Female			106	68.83
Primary ethnicity				
Caucasian/White			134	87.01
Hispanic or Latino			6	3.90
African American/Black			9	5.84
Asian/East Indian			4	2.60
Other			1	0.65
Marital status				
Single			68	44.16
Married			70	45.45
Divorced			7	4.55
Separated			6	3.90
Employment status				
Employed full-time			102	66.23
Employed part-time			22	14.29
Retired			1	0.65
Full-time student			12	7.79
Unemployed, not looking for work			1	0.65
Unemployed, looking for work			8	5.19
Working, but not for money			2	1.30
Yearly family income				
None to \$10,000			6	3.90
\$10,000 to \$20,000			5	3.25
\$20,000 to \$30,000			4	2.60
\$30,000 to \$40,000			9	5.84
\$40,000 to \$50,000			17	11.04
\$50,000 to \$75,000			29	18.83
\$75,000 to \$100,000			34	22.08
\$100,000 to \$200,000			32	20.78
Over \$200,000			15	9.74

Variable	<i>M</i>	<i>SD</i>	<i>n</i> ^a	%
Living situation				
Living alone			23	14.94
Living with parent(s)			25	16.23
Living with partner			54	35.06
Living with children			38	24.68
Living with other relatives			5	3.25
Other			6	3.90
Sexual orientation				
Heterosexual			133	86.36
Gay or Lesbian			4	2.60
Bisexual			11	7.14
Not sure			3	1.95
Highest degree				
High School			25	16.23
Business or trade school			9	5.84
Two-year college			17	11.04
Four-year college			52	33.77
Master's or doctorate			39	25.32
Religion				
Christian			86	55.84
Jewish			8	5.19
No religion			47	30.52
Other religion			9	5.84
Number of previous hospitalizations	0.17	0.82	151	
Number of previous therapists	1.66	1.76	151	
Number of prescription medications	1.86	1.97	154	

Note. *M* = mean; *SD* = standard deviation.

^aCategory sums to less than 154 participants due to missing or unreported data.

Table 2*Patient Symptom/Functioning at Baseline (N = 154)*

Variable	<i>M</i>	<i>SD</i>
TOP total score	0.92	0.86
TOP clinical scales		
Depression	2.15	1.35
Mania	-0.23	0.70
Panic/somatic anxiety	1.13	1.68
Psychosis	0.81	1.53
Quality of life	2.17	1.06
Sleep	0.89	1.47
Sexual functioning	0.58	1.36
Social conflict	0.95	1.58
Substance use	1.45	3.08
Suicidal ideation	0.97	1.75
Work functioning	0.34	1.09
Violence	0.11	1.61

Note. *M* = mean; *SD* = standard deviation; TOP = Treatment Outcome Package. TOP total score and scores across clinical domains are presented as *z*-scores, with higher scores indicating *worse* symptoms/functioning.

Table 3*Therapist Demographic and Professional Characteristics (N = 41)*

Variables	<i>M</i>	<i>SD</i>	<i>n</i>	%
Age (years)	47.20	12.65	41	
Gender				
Male			12	29.27
Female			29	70.73
Ethnicity				
White/Caucasian			33	80.49
Hispanic			1	2.44
African American			6	14.63
Black (other)			1	2.44
Highest current degree				
Master's degree (e.g., MA, MSW)			26	63.41
LISW			1	2.44
EdS			1	2.44
Doctorate in psychology (e.g., PhD, PsyD)			13	31.71
Years working as therapist since highest degree	14.83	10.17	41	

Note. *M* = mean; *SD* = standard deviation; MA = Master of Arts; MSW = Master of Social Work; LISW = Licensed Independent Social Worker; EdS = Educational Specialist; PhD = Doctor of Philosophy; PsyD = Doctor of Psychology.

Table 4*Descriptive Statistics and Intercorrelations of Predictors and Covariates (N = 154)*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Initial OE discrepancy	3.38	3.03	—						
2. OE convergence/divergence	< 0.001	0.07	-.79***	—					
3. Baseline symptoms/functioning	0.92	0.86	.10	-.06	—				
4. Treatment length	12.31	5.87	.10	-.08	-.16*	—			
5. Initial patient-rated OE	18.27	5.07	-.60***	.54***	.00	-.05	—		
6. Initial therapist-rated OE	19.44	4.10	.14	-.08	-.01	.05	.16	—	
7. Match condition ^a	—	—	-.03	.01	.09	< .001	.11	.08	—

Note. Sample sizes vary due to missing data. *M* = mean; *SD* = standard deviation; OE = outcome expectation.

^aMatch condition was coded as the following: non-match condition = 0, match condition = 1.

p* < .05, *p* < .01, ****p* < .001.

Table 5*Parameter Estimates for Patient–Therapist OE Discrepancy Scores and Dyad Average OE Level*

Parameter Estimate	Fixed Effects		Random Effects			
	Coefficient (<i>SD</i>)	<i>p</i>	Level 2 variance component	<i>p</i>	Level 3 variance component	<i>p</i>
OE discrepancy, γ_{100}						
Week 2	1.62 (0.83)	.021	25.38	< .001	5.13	< .001
Week 4	1.53 (0.76)	.018	18.20	< .001	6.11	< .001
Week 6	0.85 (0.95)	.183	23.44	< .001	8.09	< .001
Week 8	1.66 (1.07)	.073	14.08	< .001	14.98	< .001
Week 10	2.11 (1.18)	.045	11.69	< .001	21.66	< .001
Week 12	1.21 (1.27)	.160	12.21	< .001	26.08	< .001
Week 14	0.53 (1.34)	.355	12.41	< .001	20.80	< .001
Week 16	-0.29 (1.62)	.465	30.16	< .001	11.25	< .001
Dyad average OE level, γ_{000}						
Week 2	18.63 (0.52)	< .001	5.45	< .001	4.91	< .001
Week 4	19.54 (0.59)	< .001	4.71	< .001	7.87	< .001
Week 6	19.53 (0.55)	< .001	5.73	< .001	4.46	< .001
Week 8	19.28 (0.57)	< .001	10.43	< .001	3.74	< .001
Week 10	19.87 (0.62)	< .001	10.45	< .001	2.28	< .001
Week 12	20.49 (0.61)	< .001	9.47	< .001	2.84	< .001
Week 14	20.10 (0.75)	< .001	11.12	< .001	3.61	< .001
Week 16	19.37 (1.06)	< .001	5.06	< .001	12.48	< .001

Note. *SD* = standard deviation; OE = outcome expectation. One-tailed *p*-values are presented. OE discrepancy scores were computed using a discrepancy indicator variable that was coded to differentiate therapists (0.5) from patients (-0.5).

Table 6*OE Convergence/Divergence Over Treatment*

Fixed Effects	Coefficient (<i>SD</i>)	<i>p</i>
Initial OE discrepancy (intercept), γ_{000}	3.14 (0.32)	< .001
OE discrepancy over time (slope), γ_{100}	0.02 (0.04)	.275
Random Effects	Variance component	<i>p</i>
<i>Level 1</i> , σ^2	21.06 (0.90)	< .001
<i>Level 2</i>		
Between-dyad initial OE discrepancy, $\tau_{\pi 00}$	3.31 (0.81)	< .001
Between-dyad bi-weekly change rate in OE discrepancy, $\tau_{\pi 11}$	0.02 (0.01)	< .001
<i>Level 3</i>		
Between-therapist initial OE discrepancy, $\tau_{\beta 0000}$	1.12 (0.65)	< .001
Between-therapist bi-weekly change rate in OE discrepancy, $\tau_{\beta 1010}$	0.02 (0.02)	< .001

Note. *SD* = standard deviation; OE = outcome expectation. One-tailed *p*-values are presented.

Table 7*OE Convergence/Divergence as a Predictor of Posttreatment Symptoms/Functioning*

Fixed Effects	Unconditional model		Convergence and discrepancy only model		Convergence, discrepancy, and covariates model	
	Coefficient (<i>SD</i>)	<i>p</i>	Coefficient (<i>SD</i>)	<i>p</i>	Coefficient (<i>SD</i>)	<i>p</i>
<i>Level 2</i>						
Initial between-dyad OE discrepancy, β_{01k}	—	—	-0.05 (0.27)	.424	0.04 (0.66)	.459
Between-dyad OE convergence/divergence, β_{02k}	—	—	-1.22 (4.61)	.386	1.86 (10.08)	.406
Baseline symptoms/functioning, β_{03k}	—	—	—	—	0.50 (0.06)	< .001
Treatment length, β_{04k}	—	—	—	—	-0.03 (0.01)	< .001
Initial patient-rated OE, β_{05k}	—	—	—	—	-0.04 (0.01)	< .001
Initial therapist-rated OE, β_{06k}	—	—	—	—	-0.02 (0.02)	.096
Match condition, β_{07k}	—	—	—	—	-0.16 (0.10)	.061
<i>Level 3</i>						
Posttreatment symptoms/functioning (intercept), γ_{000}	0.38 (0.06)	< .001	0.23 (0.59)	.254	1.36 (2.59)	.219
Initial between-therapist OE discrepancy, γ_{001}	—	—	0.06 (0.21)	.366	0.09 (0.52)	.303
Between-therapist OE convergence/divergence, γ_{002}	—	—	0.68 (1.31)	.226	-0.06 (3.54)	.473
Baseline symptoms/functioning, γ_{003}	—	—	—	—	0.40 (0.80)	.206
Treatment length, γ_{004}	—	—	—	—	-0.01 (0.13)	.425
Initial patient-rated OE, γ_{005}	—	—	—	—	-0.07 (0.08)	.169
Initial therapist-rated OE, γ_{006}	—	—	—	—	-0.01 (0.02)	.274

Random Effects	Variance component	<i>p</i>	Variance component	<i>p</i>	Variance component	<i>p</i>
<i>Level 2</i>						
Posttreatment symptoms/functioning (intercept), $\tau_{\pi 00}$	0.56	< .001	0.53	< .001	0.26	< .001
<i>Level 3</i>						
Posttreatment symptoms/functioning (intercept), $\tau_{\beta 0000}$	0.02	.970	0.02	< .001	0.01	< .001

Note. *SD* = standard deviation; OE = outcome expectation; *df* = degrees of freedom. One-tailed *p*-values are presented.

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