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ORIGINAL ARTICLE

When is it Effective to Focus on the Alliance? Analysis of a Within-Client Moderator

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Abstract Contemporary studies on the working alliance seek to move forward from demonstrating an association between alliance and outcome to investigating how alliance can be used to maximize treatment outcome by identifying the clients *for whom* state-like changes in alliance predict symptomatic change (between-clients moderators). Yet, very little is known empirically on *when* state-like changes in alliance predict outcome for individual clients (within-client moderators). The present study, based on a sample of 327 clients, demonstrates that state-like changes in alliance at a given session have a significant effect on subsequent session outcome only in the case of higher life satisfaction in that session. This finding suggests that strengthening in the state-like component of the alliance has a greater effect on outcome when the client suffers less from poor life satisfaction.

Keywords Alliance · Alliance-outcome association · Process psychotherapy research · Within-client moderators

Introduction

The quality of the client-therapist relationship appears to be important for achieving favorable outcomes in evidence-based treatments (Kazantzis et al. 2013). One of the most promising directions of investigation of this relationship concerns the working alliance, commonly defined as the emotional bond established in the therapeutic dyad, and the agreement between client and therapist concerning the goals of therapy and the tasks required to achieve them (Bordin 1979; Hatcher and Barends 2006). The strength of the working alliance is a consistent predictor of outcome in psychotherapy, with stronger alliance predicting better therapeutic outcomes (Horvath et al. 2011).

Until recently, most of the studies on the alliance-outcome association focused on the alliance in a given early session in treatment (e.g., week 3) as a predictor of outcome from pre- to post-treatment. Although these studies have been instrumental in establishing the consistent association between alliance and outcome, their methods cannot take us beyond this discovery and thus cannot demonstrate how alliance may be used to maximize treatment efficacy. Recently, a new line of alliance research has been developing, which advanced from a general understanding that alliance is associated with outcome to a more detailed investigation, seeking to understand the different roles alliance may play in treatment and how it can be used to improve treatment efficacy (for a review, see Zilcha-Mano 2016). As part of the general progress in psychotherapy study design, toward session-to-session assessment of both outcome and process measures, three new possibilities for investigation have arisen: (a) the establishment of a correct temporal relationship between alliance and outcome, (b) the disaggregation of within- and between-clients alliance effects, and (c) the identification of moderators of the alliance-outcome association, as described below.

The first path of recent alliance research focuses on the temporal relationship between alliance and outcome. The importance of the alliance in influencing treatment outcome has been challenged by the question whether alliance is the cause or rather the result of symptomatic change

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(Barber 2009; Crits-Christoph et al. 2013; DeRubeis et al. 2005). Progress toward weekly assessment of alliance and outcome made the examination of the temporal relationship possible between the two. Several recent studies have shown that the alliance-outcome association is significant even after establishing a correct temporal relationship, according to which alliance precedes symptomatic change (Falkenström et al. 2013; Zilcha-Mano 2016; Zilcha-Mano et al. 2014; Zilcha-Mano and Errázuriz 2015).[1]

The second path of recent alliance research is the disaggregation of the trait-like and state-like components of alliance. The alliance effect on outcome can be separated into three types of variance (Curran and Bauer 2011): (a) the effect of between-therapists alliance (which reflects how differences between the average alliances of the therapists across their clients were related to their clients' average outcomes; Baldwin et al. 2007), (b) the effect of within-therapist between-clients alliance (which reflects whether clients who generally reported stronger alliance also reported better outcomes than clients who were treated by the same therapist and reported weaker alliance), and (c) the effect of within-client alliance on outcome (which reflects how a specific change in client alliance during treatment is associated with change in client outcomes). Although abundant number of studies disaggregate between-therapists from within-therapist's variance (for review, see Baldwin and Imel 2013), the disaggregation of between-clients and within-client variance is becoming prevalent only now. Only recently, it has become clear that it is important to separate the client's general tendency to report a strong alliance from changes in alliance throughout treatment, and the effect of each on treatment outcome (Falkenström et al. 2013). Disentangling these two components reveals that some elements of the alliance-outcome association are the result of the clients' trait-like component of the alliance, their general predisposition or capability of forming a satisfying relationship with another person, this time the therapist (DeRubeis et al. 2005). This trait-like ability may affect the client's capacity to form a satisfactory relationship with the therapist, manifested in a strong alliance, and simultaneously also influence the client's capacity to benefit from treatment. In this regard, the alliance-outcome association is at least partly due to existing client traits, rather than the pure result of therapeutic interaction with the therapists. By contrast, the state-like component of alliance refers to changes in alliance during treatment (e.g., time-specific strengthening), which can predict changes in outcome. This component brings into focus the therapeutic nature of alliance, an active ingredient sufficient in itself to bring about therapeutic change (Zilcha-Mano 2017). The relatively few studies that disentangled the trait-like and state-like components of the effect of alliance on outcome revealed that each plays a distinct role in affecting treatment outcome (for review, see Zilcha-Mano 2017). These studies are still relatively few in number, however, and are awaiting replication.

Based on these two advances in the studies of the alliance effect on outcome (accounting for the temporal relationship between alliance and outcome and separating the state-like and trait-like components), it is starting to become clear that the consistent findings regarding the effect of alliance on outcome might have been too simplistic to suggest that alliance predicts outcome across populations, time, circumstances, and treatment orientations. Recent findings seem to depict a more complex picture. Whereas some studies showed that in cognitive behavioral therapy (CBT) within-client changes in alliance significantly predicted treatment outcome, even when accounting for the temporal relationship between alliance and outcome (Connors et al. 2016; Falkenström et al. 2016; Zilcha-Mano 2016), other findings suggest that early alliance may no longer predict outcome when accounting for the temporal relationships between alliance and symptomatic levels (Sasso et al. 2016; Strunk et al. 2010) or for other process variables (such as therapist's use of Socratic questioning—Braun et al. 2015, or improvement in coping skills—Rubel et al. 2017). The mixed results reported in the literature may attest to the importance in finding significant moderators that can identify those for whom within-client alliance generally predicts outcome in CBT (between-clients moderators) as well as under which circumstances alliance most strongly predicts outcome during a single treatment (within-client moderators).

The third path of recent alliance research asks to answer exactly the questions above by searching for moderators of the alliance-outcome association (Lorenzo-Luaces et al. 2014). Advance in alliance research is essential for making progress toward personalized treatment. This strand of research seeks to determine for whom and under which circumstances does alliance affect treatment outcome. Indeed, meta-analyses suggest that although the associations between alliance and symptoms have been found to be consistent across studies, they also show high variability (Horvath et al. 2011). This variability attests to the importance of identifying significant moderators of the alliance-outcome association, which then may perhaps be utilized

[1] Various studies have used different models to examine this association, some showing that stronger alliance at a given time point predicted less severe symptoms at a subsequent time point, while controlling for previous symptomatic levels (e.g., Zilcha-Mano et al. 2014). Other studies used slightly different models, showing that patients who reported improvement in alliance over their expected level, are more likely to report greater reduction of symptoms, while controlling for previous symptomatic levels (e.g., Falkenström et al. 2013; Zilcha-Mano and Errázuriz 2015).

to improve treatment. It is generally accepted that different clients benefit from different aspects of therapy, so that significant moderators exist for the association between process variables (such as alliance) and outcome (Sasso et al. 2015). Identifying such moderators can help improve treatment by tailoring psychotherapy interventions to individuals (DeRubeis et al. 2014). Overlooking the sources of variability in the alliance-outcome association may contribute to a misconception that all clients benefit from alliance for treatment outcome at all times.

Recent meta-analyses suggest that outcome measures, time of assessment (Horvath et al. 2011), client's ethnicity, and substance use (Flückiger et al. 2013) were significant moderators of the alliance-outcome association. Studies that used individual client data to examine the moderators of the alliance-outcome association demonstrate that in CBT for depression, prior depressive episodes exert a significant effect on the magnitude of the alliance-outcome association (Lorenzo-Luaces et al. 2014, 2017).

Several recent studies sought to integrate the recent literature on moderators of the alliance-outcome association with that attempting to disentangle the trait-like and state-like components of alliance. These studies sought to identify the clients for whom the state-like component of alliance is a significant predictor of treatment outcome. They identified between-clients moderators that affect the within-client alliance effect on outcome, drawing attention to the important contribution of the client's pre-treatment symptom severity and interpersonal characteristics (Falkenström et al. 2013; Zilcha-Mano and Errázuriz 2017). These findings are consistent with a study demonstrating that the contribution of therapeutic work focusing on alliance rupture resolution and of interpersonal schemas to treatment success (fostering state-like changes in alliance) depends on the clients' pre-treatment interpersonal characteristics (Newman et al. 2015).

Previous studies focused on between-clients moderators of the within-client alliance effect on outcome, which indicate *for whom* within-client strengthening of alliance predicts better outcome. Although this is of great importance, it is no less important to identify *when* strengthening of alliance predicts better outcome for an individual client. In other words, to gain clinically meaningful knowledge, it is important to identify not only for whom strengthening in the working alliance is a predictor of outcome (between-clients moderators of the state-like alliance effect on outcome) but also when strengthening in the working alliance is a predictor of outcome (within-client moderators of the state-like alliance effect on outcome) for an individual client. It is of great clinical interest to determine the circumstances in which focusing the work of treatment on the alliance may be effective for the individual client because it may direct the therapist's work with that client. To the best of our knowledge, however, to date no study has focused on this question.

Focusing on within-client moderators is important especially because inferences based on a single observation of a moderating variable may not align with those made using a longitudinal assessment of such a variable (Cole and Maxwell 2003; Maxwell and Cole 2007; Maxwell et al. 2011). Whereas the within-client moderators explain the within-client variance of the dependent variable, between-clients moderators explain between-clients variance. Between-clients moderators tell us who generally benefits from strengthening in the alliance in improving outcome (for example, those clients who in general are in a more or less severe condition) separating clients who generally benefit from a strong alliance by achieving successful outcomes, from those who generally do not. By contrast, within-client moderators answer the question about the treatment circumstances in which the alliance has a greater effect on outcome for an individual client (for example answering the question of how changes in the client's level of functioning affect the ability of alliance to predict outcome for that client). Because studies rarely decompose within- and between-persons effects, results that may have been interpreted as within-person moderators have generally reflected a mix of within- and between-persons effects. The focus on within-client moderators has the advantage of looking at within-client treatment processes in a way that cannot be accounted for by stable client characteristics (Sasso et al. 2015). Given the importance of determining the circumstances in which strengthening of alliance predicts better outcome, the present study seeks to be the first to approach this question.

One variable that may be suggested as a potential within-client moderator is the clients' level of life satisfaction. The focus on life satisfaction as a potential moderator is of great importance, theoretically and empirically. First, quality of life is a broad concept that comprises a range of life domains of the individual, such as social relationships, physical abilities, mental health functioning, role functioning, and engagement in daily activities (DuPont et al. 1996). Given the heterogeneous reasons for clients to enter treatment, life satisfaction may serve as a good indication of treatment progress across clients. Multiple, large-scale trials for depression and anxiety disorders showed that participants had major life satisfaction impairments (Rapaport et al. 2005). Second, considerations of quality of life and life satisfaction have become increasingly important when evaluating treatment success and health outcomes, and when assessing the benefit-to-burden ratio of therapies. It has been argued that a crucial part of treatment progress is tracking the positive side of the individuals' experiences and building up their successes (Pavot and Diener 1993). Studies suggest that measurements of diagnosis-related

symptoms account only partially for the variability in life satisfaction (Kolovos et al. 2016; Rapaport et al. 2005). Research also suggests that changes in life satisfaction are important for subsequent reduction of symptoms (Zilcha-Mano et al. 2014). (Zilcha-Mano et al. 2014). Thus, client quality of life is generally perceived as an essential aspect of outcome assessment (Kuyken et al. 1995). It has also been argued that in order to maintain long-term improvement following treatment, it is important to focus on life satisfaction during treatment. Previous studies have demonstrated that deficiencies in quality of life persist even after remission from MDD (IsHak et al. 2011; Zimmerman et al. 2006), so that distortion in daily life may endure even when deficits related to symptoms have been remedied (Üstün et al. 2004). Third, the assessment of life satisfaction as a session outcome is especially relevant in CBT, which has been documented to increase satisfaction with life (Dobson 2010; Diefenbach et al. 2007). It has been argued that life satisfaction is an important indicator of response to CBT because it can detect changes in cognitively-mediated perceptions of life satisfaction despite an absence of change in the external environment (Eng et al. 2005). Traditionally, CBT has focused on reducing symptoms, but it is now becoming generally acknowledged that CBT also affects life satisfaction in important ways, as has been repeatedly demonstrated for both anxiety disorders (Hofmann et al. 2014) and depression (Kolovos et al. 2016).

Based on theory and on empirical studies, we expected that life satisfaction would play a unique role in CBT in moderating the effect of within-client alliance on outcome. CBT differs from treatments in which the work on strengthening the alliance is at the heart of the treatment, such as in alliance-focused treatment (Safran and Muran 2000) where it is hypothesized to serve as a primary mechanism of therapeutic gains (Castonguay et al. 2010). Thus, strengthening the alliance is not always by definition the main goal of the therapist, and the therapist's decision to be aware of the alliance and invest effort in strengthening it may depend more on the circumstances of the treatment than on the general guideline directing the therapist to focus on the alliance. It is therefore an important clinical question when strengthening the alliance results in better treatment outcome and when it does not.

Monitoring the positive side of individuals' experiences may be crucial for determining the magnitude of the effect of alliance on outcome. Although it is possible to speculate that clients benefit most from strengthening of the alliance when they are already showing a positive change in their life, it may also be suggested that when clients do not see a positive change in their life in the course of treatment, such strengthening in the alliance plays a more crucial role (for a related argument on reducing deficits vs building upon strengths in treatment, see Cheavens et al. 2012). Thus, two competing hypotheses can be formulated regarding the potential within-client moderating effect of life satisfaction on the effect of within-client alliance on outcome. One possibility is that the state-like changes in alliance are therapeutic when the client shows low satisfaction with life, the treatment has not progressed to the point where life satisfaction is high, and the client and therapist need to work on forming sufficient alliance between them to enable the effective delivery of treatment. An alternative possibility is that alliance is therapeutic when clients show high satisfaction with life, because then they have the capabilities, emotional resources, and power to work on the alliance. When more stressful problems are less distressing the client, the alliance may serve as a laboratory for working on interpersonal schemas and emotional processing in interpersonal relationships. Additionally, after clients' life satisfaction in treatment became higher, they are more likely to experience the therapeutic effect of being helped in their relationship with the therapist, reinforcing their schemas of being helped by another person.

The first aim of the present study was to examine whether both trait-like and state-like components of alliance can predict outcome in a sample of 327 clients, whose therapists consider themselves as CBT-oriented. Based on previous studies, we expected the trait-like alliance to be significantly associated with outcome across treatment. We also expected that state-like strengthening in alliance would result in subsequent better treatment outcome. The second aim of the study was to examine whether life satisfaction, as developed throughout treatment, served as a within-client moderator of the state-like alliance effect on outcome. We compared two contrasting possibilities, one arguing that higher life satisfaction in a given session is associated with a stronger effect of state-like changes in alliance on outcome, the other arguing that it is poor life satisfaction that carries such an association.

Method

Design

This is a secondary analysis of a randomized trial that took place at an outpatient mental health clinic in Santiago, Chile (Errázuriz et al. 2017a). All adult clients who started therapy at the mental health clinic during the study were asked to participate. Of 953 clients invited to participate, 547 (57.39%) agreed. Participants were randomly assigned to one of five feedback conditions: (a) control group in which therapists did not receive any feedback; (b) therapists received raw weekly feedback on clients' psychological dysfunction by being given access to the raw scores of the outcome questionnaire (OQ) answered by clients; (c)

therapists received weekly raw feedback about clients' alliance perception by being given access to the raw scores of the Working Alliance Inventory (WAI) completed by clients; (d) therapists received raw weekly feedback about clients' OQ and WAI; and (e) therapists received weekly feedback by receiving Lambert's OQ progress feedback report, which included progress graphs and warnings about clients who were not showing expected treatment responses, according to the OQ. Clients completed alliance, outcome, and life satisfaction measures after each session. Clients' mental health diagnoses were made by their treating therapists using DSM-IV-TR (American Psychiatric Association 2000) diagnostic categories. All clients knew that their therapists could review their alliance and/or outcome ratings, depending on their feedback condition. In the original trial, no significant differences in outcomes were found between feedback conditions (Errázuriz et al. 2017a).

Participants

In the original trial, 547 clients participated in the study. Only therapists who scored at least 4 (on a 0–5 Likert scale) on a question concerning the extent to which they regarded themselves as cognitive and/or behavioral therapists were included in the study, which reduced the number of participating clients to 327. A previous report based on the entire sample ($N = 547$) verified the significant association between alliance and outcome in the entire sample (Zilcha-Mano and Errázuriz 2015). In the subgroup of clients included in the present study, mean age was 41.13 ($SD = 12.76$); 73.7% were female. Mean level of education was 14.28 years ($SD = 2.9$), and median monthly family income was $1130, ranging from $452 to $3,615. In the present sample, 61.2% were employed, 10.1% were students, 17.7% were homemakers, and 4% were retired; 26.3% were single, 53.2% married, 18.7% divorced, and 1.8% widowed. The mean level of psychological functioning, as measured by the OQ-30.2 (Lambert et al. 2004) at session 1 was 58.076 ($SD = 17.02$). This is considered dysfunctional compared to the healthy population in Chile, which was found to have a mean OQ-30.2 score of 29.8, SD = 14 (Errázuriz et al. 2017b).

The clients with an Axis I diagnosis were diagnosed with depressive disorders (63.6%), bipolar disorder (4.9%), adjustment disorder (0.9%), or dysthymic disorder (2.8%); 23.2% received a diagnosis of at least one comorbid Axis I disorder. The most prevalent diagnoses were substance-related disorders (4.6%), panic disorder without agoraphobia (2.4%), and depressive disorders (2.4%). Most clients with an Axis II diagnosis were diagnosed with borderline (2.1%), dependent (1.8%), and schizoid (0.6%) personality disorder. All clients signed informed consent forms, and the study was approved by the ethical review boards.

Therapists and Treatments

Thirteen therapists took part in the study. All had a professional degree in psychology. All but two of the therapists completed formal studies in psychotherapy after receiving their professional degrees as psychologists. Mean clinical experience was 6.52 years ($SD = 3.79$), mean age was 36.88 ($SD = 7.97$), and 78% were women. The mean number of clients treated by each therapist in the current study was 17.67 ($SD = 7.84$; range 1–30). Except for the feedback received, treatments were conducted as usual. All clients were treated in individual therapy. Treatment length was determined jointly by clients and therapists, as well as by practical concerns (clients' financial considerations, health insurance, etc.). For the subsample included in the present analyses, the mean length of treatment was 8.3 sessions ($SD = 7.32$, Median = 6), with a range of 1–55.

Measures

Therapeutic Alliance

The clients' perception of the quality of the working alliance was assessed using the 12-item client-rated version of the Working Alliance Inventory (WAI; Tracey and Kokotovic 1989). Items were rated by clients on a 7-point Likert scale, ranging from 1 = never to 7 = always. The mean internal reliability level across time points was 0.86.

Outcome Measure

Psychological dysfunction was assessed with the 30-item client-rated version of the OQ (Lambert et al. 2004), designed to measure client progress over the course of therapy. Client progress was monitored along three primary dimensions: (a) subjective discomfort, (b) interpersonal relationships, and (c) social role performance. Possible scores ranged from 0 to 120, higher scores reflecting higher severity of distress. Cut-offs and norms in Chile were similar to those obtained in the original English version (Errázuriz et al. 2017b). In the present study, the mean internal reliability of the global score of client functioning across time points was 0.93.

Life Satisfaction

Life satisfaction was assessed with a one-item client-rated measure taken from the World Values Survey (WVS 2009), to measure client life satisfaction over the course of therapy. The item was rated by clients on a 10-point Likert scale, with higher scores reflecting greater life satisfaction. The instructions were as following: "All things considered, how satisfied are you with your life as a whole these days?

Using a scale on which 1 means that you are 'completely dissatisfied' and 10 means you are 'completely satisfied,' where would you put your satisfaction with life as a whole?" The validity of this measure has been repeatedly demonstrated in previous studies (Bjørnskov 2010; Bjørnskov et al. 2010; Diener et al. 2010; Fleche et al. 2012).

Data Analysis

The data were hierarchically nested on three levels: assessments nested within clients nested within therapists. To account for the resulting non-independence of assessments, and to prevent inflation of the effects, we added the client and therapist as random effects using the SAS PROC MIXED procedure for multilevel modeling (Littell et al. 2006). To measure the amount of unexplained variance in outcome due to the random effects of the therapist and client, we used intra-class correlations (ICCs), using the SAS PROC Mixed output. Therapist's random effects were calculated as follows: $\mathrm{ICC} = \sigma^2_{therapist} \Big/ \left(\sigma^2_{therapist} + \sigma^2_{patient} + \sigma^2_{error}\right)$, with $\sigma^2_{therapist}$ as the variance of the therapists' random effect, $\sigma^2_{patient}$ as the variance of the clients' random effect, and σ^2_{error} as the variance of the error. The therapist's and client's random variance components were estimated based on a model with only random intercept of the therapist and client, with no other covariates.

To examine outcome behavior over time, we evaluated the following trend models for each: linear, quadratic, linear in log of time, and stability over time either as fixed or random effects. We started with a model with only a fixed intercept and no random effects, and added sequentially a random intercept, fixed effect of week, random effect of week, and a quadratic effect of week in therapy. Next, we examined the models with fixed and random linear effect of log of week. We used the log likelihood test and the AIC criterion to determine whether the inclusion of each term improved the model fit.

To disentangle the between-clients and within-client effects of alliance on outcome, we followed the recommendations of Wang and Maxwell (2015), and centered the client-reported alliance within the individual client's mean and used the individual client's mean for client-reported alliance for the between-clients effects. This procedure yielded independent coefficients for within-client and between-clients effects (Bolger and Laurenceau 2013). Using this approach to disaggregate the within- and between-clients components of alliance, we examined the two alliance components simultaneously as predictors, in a combined model. To establish a correct temporal relationship between alliance and outcome, we introduced the within-client alliance at time T as a predictor of symptom severity at time T + 1. To investigate whether life satisfaction can serve as a within-client moderator of the relationship between within-client alliance and outcome, we examined the interaction between life satisfaction at time T and within-client alliance at time T as a predictor of symptom severity at time T + 1. Life satisfaction was centered around the variable mean.

The model equation for the moderation effect was as follows:

$$\begin{aligned} \mathrm{OQ}_{i(t)} = {} & b_0 + (b_1 + u_{1\_i}) \times \log_{(t)} + b_2 \times \mathrm{WAI}_{(t-1)} \\ & + b_3 \times \mathrm{life-satisfaction}_{(t-1)} + b_4 \times \mathrm{WAI}_{(t-1)} \\ & \times \mathrm{life-satisfaction}_{(t-1)} + u_{2\_i} + u_{3\_j} + e_{\_i} \end{aligned}$$

where b_{1_i} and b_{2_i} are random effects of slope and intercept of subject i, b_{3_j} is the random effect of therapist j (who treated subject i), and $e_{\_i}$ is the random error. All random effects are normally distributed and independent. WAI is the within-subject alliance.

Results

The model that was found to have the best fit based on the Akaike Information Criterion (AIC) for both alliance and symptoms was the one with a fixed effect of log of time, random intercept, and random slope in log of time. Graphical depiction demonstrated that the outcome variable develops in a log of time. This model was used in all analyses.

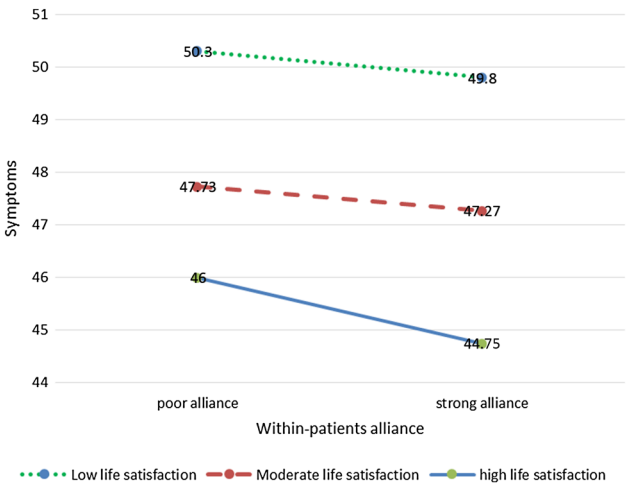

Fig. 1 The effect of within-client alliance on outcome for low, moderate, and high levels of life satisfaction

Table 1 Alliance effect between- and within-clients as predictors of outcome and the within-patient moderating effect of life satisfaction

Label	Estimate	S.E.	DF	Confidence interval	t value	p
Between-patient alliance	−0.32	0.15	1617	−0.61–(−0.03)	−2.12	0.03
Within-patient alliance	−0.07	0.03	1617	−0.13–(−0.01)	−2.07	0.03
Moderating effect of life satisfaction	−0.08	0.04	1616	−0.16–(0.002)	−1.97	0.04
Low satisfaction	0.04	0.06	1616	−0.02–(0.08)	0.77	0.44
High satisfaction	−0.18	0.07	1616	−0.32–(−0.06)	−2.43	0.01

βs are not standardized

Therapist's Random Effect

The estimated variance of the therapist's random effect in the three-level model predicting outcome was null ($S^2 = 0.00$, $p = .99$, ICC = 0.00). This finding indicates that the therapist's random effect was null and did not contribute significantly to variance in outcome.

Client's Random Effect

The estimated variance of the client's random effect in the three-level model predicting outcome was significant, indicating that client's random effects contributed significantly to the variance in outcome ($p < .0001$). The ICC for the client random effect was 65.23%.

Alliance Effect on Outcome

The effect of between-clients alliance was significant, $\beta = -0.32$, SE = 0.15, $p = .03$, indicating that clients who generally report better alliance also report greater improvement in outcome. The within-client alliance effect was also significant, $\beta = -0.07$, SE = 0.03, $p = .03$, indicating that clients who report improvement relative to their underlying level of alliance were more likely to report less severe symptoms at the subsequent session. Findings were similar when we controlled for feedback condition.

Life Satisfaction as a Within-Client Moderator of Within-Client Alliance Effect on Outcome

The interaction between life satisfaction and the within-client component of the alliance was a significant predictor of subsequent outcome, $\beta = -0.08$, SE = 0.04, $p = .04$ (see Fig. 1). The standardized coefficient of the interaction was −0.038.[2] Simple slope analysis revealed that at the lower levels of life satisfaction, within-client alliance was not a significant predictor of subsequent outcome, $\beta = 0.04$, SE = 0.06, $p = .44$. At higher levels of life satisfaction, however, within-client alliance was a significant predictor of subsequent outcome, $\beta = -0.18$, SE = 0.07, $p = .01$ (see Table 1). Findings were similar when we controlled for feedback condition.[3,4]

Missing Data

The mixed model assumes that the dropout process is independent of unobserved data—the missing at random (MAR) assumption. Similarly to other missing-not-at-random process, this assumption cannot be tested directly. To indirectly assess the effect of a violation of this assumption, we applied a joint mixed model (Asar et al. 2015; Little 1995). In joint modeling, we join the alliance-outcome process modeled by a mixed-effect linear model and the time-to-dropout process as a survival model. To cope with informative missing data, this model assumes that both processes are dependent on the random intercept and slope of the clients, but given these random effects, they are independent. The resulting model estimates in the present study were found to be highly similar to the original model, which assumes MAR process.

[2] It is important to stress that this value, although standardized, is by definition not comparable to other values taken from models that are not identical to the reported one (e.g., without log of time as both a fixed and a random effect, etc.).

[3] We repeated the analysis using a model that controlled for concurrent (time T) symptoms and prior change in symptoms (i.e., symptom change occurring before time T) as well as for log of time. This model revealed a significant interaction between within-client alliance and life satisfaction at the previous session in predicting outcome ($\beta = -0.09$, SE = 0.04, $p = .02$).

[4] To explore the question whether this moderating effect is specific to CBT, we performed a three-way interaction between within-client alliance and life-satisfaction at the last session with treatment condition (CBT and non-CBT therapists) to predict outcome for the entire sample ($N = 547$, CBT and non-CBT therapists). This interaction was not significant ($F_{(1,2592)} = 0.55$, $p = .46$).

Discussion

Recent empirical work has been devoted to translating the alliance-outcome association into evidence-supported work focusing on the question whether and how the alliance effect on outcome can be maximized. To date, studies focused on identifying the clients who may benefit most from state-like changes in alliance for better treatment outcome. For clinically meaningful knowledge to support the therapists' work with individual clients, it is important to identify not only those for whom strengthening in the working alliance is a predictor of outcome but also when and in which circumstances throughout the course of treatment of an individual client strengthening in the working alliance is a predictor of outcome. The present study sought to replicate previous findings according to which both trait-like and state-like components of alliance are significantly associated with outcome. The present study also sought to examine whether life satisfaction, as assessed across treatment, can significantly moderate the state-like alliance effect on outcome.

The findings suggest that at the sample level, across time points, both the state-like and the trait-like components of alliance were significantly associated with outcome. Regarding the between-clients alliance effect on outcome, clients who generally report better alliance also report greater improvement in outcome. This finding suggests that a strong alliance may have been the context in which effective treatments took place. Regarding the within-client alliance effect on treatment, clients who reported improvement relative to their underlying level of alliance were more likely to report less severe symptoms at the subsequent session.

These findings are consistent with previous studies (for review, see Zilcha-Mano 2016), as well as with the perception that alliance may serve several different roles in CBT treatment (Castonguay et al. 2010). The findings are also consistent with the importance of the trait-like alliance as the context for applying therapeutic techniques. This trait-like alliance is what Beck et al. (1979) referred to as "necessary but not sufficient to produce an optimum therapeutic effect" (p. 45). It might be suggested that in collaboration with clients, the therapist may apply techniques such as evidence testing to help clients manage their psychological difficulties, in the context of sufficiently good alliance (Pierson and Hayes 2007). It might be speculated that under these circumstances, clients may feel free to disclose personal information and actively engage with their therapist in successful implementation of CBT techniques. The findings are also consistent with the importance of state-like changes in alliance for treatment, as when therapists potentially react responsively to the clients' needs (e.g., adapting the level of structure in sessions to the needs of the client in that session, Dobson and Dobson 2013). In this way, state-like changes in alliance may prove to be therapeutic in themselves.

Most important, within-client development of life satisfaction across treatment served to moderate the effect of state-like changes in alliance on outcome. When life satisfaction was poorer at a given session, the alliance at that session did not have a significant effect on outcome at the next session. But when life satisfaction was better at a given session, the alliance at that session had a significant effect on outcome at the next session.

Several post hoc explanations can be offered to explain the mechanism at the basis of the within-client moderating effect of life satisfaction on the ability of state-like alliance to predict outcome. For example, clients who have already acquired empiricism as well as other cognitive and behavioural skills, as evinced by greater life satisfaction, can focus on using these skills in the interpersonal sphere, in their interaction with the therapist and significant others. When clients report greater life satisfaction, they can be skillfully guided by their therapists to discover their automatic thoughts, assumptions, behaviors, triggers, and maintenance factors that apply in interpersonal interactions (Wong 2013). The alliance thus serves as an opportunity to solve interpersonal problems and to use a situationally focused case conceptualization to understand the thoughts, emotions, and physiology that triggered rupture in the alliance (Cronin et al. 2015).

Greater life satisfaction also provides clients with alternative, corrective experiences in interpersonal relationships based on the therapeutic interaction with the therapists, affording them additional or competing data to facilitate reevaluation of their core schemas (i.e., their original "theory of interpersonal relationship"), similarly to the work of treatment in other spheres of life (Castonguay and Hill 2012; Wong 2013). The process of building collaboration following the attainment of greater life satisfaction, in which both partners assume shared responsibility in caring for the client's wellbeing and improvement in mental health (DeRubeis et al. 2005; Padesky 2004), can be therapeutic in itself (Cohen et al. 2013).

When stressful problems preoccupy and disturb the client, strengthening of the alliance may affect outcome to a lesser degree. In these situations, the client may be more concerned with other issues, and working on the relationship with the therapist may look more like yet another burden than a source of relief. Poor life satisfaction in treatment may be another indication of the fact that the collaborative relationship was not successful in bringing about therapeutic change, and therefore could not serve as a corrective experience of being helped by the relationship with another person. Note that these *post hoc* explanations must

be tested empirically directly before they can guide clinical work.

It is possible to suggest that the present findings regarding the ability of life satisfaction to serve as a within-client moderator of the state-like alliance effect on outcome may be consistent with the argument that the working alliance can and should be tailored and modified during treatment to adapt it to the needs of individual clients at different points during treatment (Dobson and Dobson 2013; Freeman and McCloskey 2003). In this way, in successful treatments the collaborative working relationship is developed dynamically rather than simply assumed as being present (Wong 2013).

Our post hoc interpretation whereby alliance becomes an important factor in treatment after gains have already been observed, seems to receive support also from recent advanced studies on alliance in CBT. Specifically, recent findings suggest that alliance in the first four sessions of treatment was the product rather than the predictor of symptomatic change (Sasso et al. 2016; Strunk et al. 2010), and was not a significant predictor of outcome when controlling for the therapist's use of Socratic questioning (Braun et al. 2015). Future studies should systematically examine whether later in treatment, after gains in client functioning have been reported, within-client alliance is a significant predictor of outcome, especially after controlling for other key predictors of outcome, such as the therapist's use of Socratic questioning (Braun et al. 2015), cognitive methods, negotiating of content, structuring of sessions (Strunk et al. 2010), and coping skills (Rubel et al. 2017). As suggested by Strunk et al. (2010), differences between studies in the effect of alliance on outcome may also result from less heterogeneity in therapists competence to form strong alliances across treatment in some studies (such as those conducted as part of well-designed and implemented RCTs) than in others.

The study has several merits that make important contributions to the literature. To date, only between-clients moderators were tested empirically as a way of custom tailoring the alliance to individual clients; thus, investigating who are the clients for whom alliance predicts outcome. The present study is the first to examine in which circumstances in the treatment, strengthening in the alliance is a predictor of outcome for an individual client. Another merit of the present study is its focus on the effect of strengthening in the alliance, while partialling out general individual differences between clients (e.g., Sasso et al. 2015), such as social desirability and other client characteristics that may affect the client's general tendencies to form and/or report strong or poor alliances. It has been argued that within-client effects provide a better test of clinically relevant hypotheses, for they are more likely to reflect causal predictions of outcome (Falkenström et al. 2016) and can be directly translated into clinical recommendations (Hoffart 2016; Rubel et al. 2017).

Anticipating when strengthening the alliance can affect outcome has important implications. Replicating the present findings in future studies that include the coding of in-session interventions, would support the recommendation that therapists invest time and effort in strengthening the alliance especially at sessions in which life satisfaction appears to be high. Treatments occasionally include severe ruptures in the alliance, which do not leave therapists much choice but to invest time and effort in repairing the ruptures (Castonguay et al. 2004; Safran and Muran 2000). However, there are also many minor ruptures in alliance across treatment, where it is less clear whether therapists should continue adhering to the protocol of the treatment, or work on repairing the ruptures. Consider, for example, a case of a client who generally tends to avoid interpersonal conflicts, and at a specific session she acts in an avoidant way when the therapist reviews her homework with her, though she came with all the homework prepared for the session. The therapist may choose to continue adhering to the protocol or to redirect attention to the interpersonal patterns emerging in the therapeutic relationship, and inquire about automatic thoughts and feelings the client may have about the therapist (Leahy 2003; Dobson and Dobson 2013). The question when to repair minor alliance ruptures and when to continue to adhere to the treatment manual is of great clinical interest. To the best of our knowledge, the present study is the first to empirically examine this question. Replicating our findings in future studies that include the coding of in-session interventions would suggest that at a given session the therapists should consider repairing minor alliance ruptures especially if the client's life satisfaction is high. The therapist can use such techniques as realigning treatment goals, Socratic questioning, didactic approaches like psychoeducation, and in-depth collaborative investigation of the expectations, cognitions, affect, and body experiences, as well as the underlying relational schemas contributing to the rupture (Safran and Muran 2000). In this way, the relational attributes and processes serve as change agents, because they help clients develop new cognitive processes and content (DeRubeis et al. 1990; Garratt et al. 2007; Whisman 1993).

The present study has several important limitations. First, as in the case of many naturalistic studies, therapists' treatment orientation was determined by their self-report. In this case, the treatment center included therapists from integrative backgrounds. Sessions were not videotaped, and thus, external behavioral coding of the therapists' adherence to CBT techniques has not been possible. This shortcoming is common in both naturalistic and non-naturalistic CBT studies (e.g., Rubel et al. 2017). Because no coding of within-session process interventions was possible, we must

be cautious when considering the potential implications of the findings, until they can be replicated in more controlled settings where coding of within-session process interventions can be made. Similarly, because this was a naturalistic study, with clients being diagnosed by a single rater (their therapists), it was not possible to verify diagnostic reliability. Second, life satisfaction was assessed using a one-item self-report measure. Third, although we suspect that within-client changes in alliance exert their effect on outcome partly through the therapist's work, which results in a strengthening of the alliance, we did not directly test this in the present study. Our assumption is based on studies that questioned the traditional separation between alliance and techniques in psychotherapy research, and showed that it is possible to develop techniques that are focused on strengthening the alliance (Castonguay et al. 2004; Crits-Christoph et al. 2006; Safran and Muran 2000), and that such techniques may increase the effect of changes in alliance on outcome (Zilcha-Mano et al. 2016). The direct examination of such an assumption is a task for future research. Future studies should also explore which specific work in the treatment resulted in alliance strengthening (e.g., repairing alliance ruptures, implementing other CBT techniques in a collaborative way, etc.) through behavioral coding of the interaction between therapist and client during the sessions. Although in the present study a correct temporal relationship was established between alliance and outcome, the alliance was not manipulated. Therefore, causality should not be assumed, and unmeasured variables associated with the level of alliance and/or with the level of life satisfaction at a specific session (e.g., the effective use of problem-solving techniques) may play a role in explaining the present findings (Rubel et al. 2017).

Fourth, although state-like strengthening may imply within-session alliance fluctuations, which are more dynamic, we focus on session-to-session ratings. Future studies may focus on within-session alliance fluctuations, which are more dynamic in nature (Weiss et al. 2014; Zilcha-Mano and Errázuriz 2017). Fifth, the relatively low number of therapists prevented us from adequately estimating the therapist effect. Thirteen therapists took part in the study, with a mean number of 17.67 clients treated by each therapist. Future studies should be designed to enable a systematic examination of the therapist effect based on a larger sample of therapists and a higher therapist-client ratio (Crits-Christoph et al. 2011). Sixth, in the present study, we were able to focus on a single within-client moderator, similar to other studies that focused on a single within-client mediator. Future studies with videotaped sessions should test the unique contribution of each of several types of within-client moderators together, such as Socratic questioning (Braun et al. 2015). Finally, although it was not the focus of the present work, it has been recognized that working alliance and collaboration are not synonymous (Kazantzis et al. 2013). Future studies should focus on examining whether each may be moderated by different variables, both within- and between-clients. Future studies should also inquire whether the distinction between working alliance and collaboration in CBT overlaps in some way with the distinction between state-like and trait-like components of alliance.

The alliance-outcome association is one of the most consistent findings in psychotherapy, and yet not much is known about evidence-based techniques to help guide therapists with the use of alliance in ways that are most effective for individual clients. Providing guidance to therapists in determining when work focusing on the alliance is most preferable and is likely to affect treatment outcome is highly relevant for clinical work. The present study reveals that both trait-like and state-like alliance components are generally significantly associated with treatment outcome, but specific strengthening in alliance benefits treatment outcome only when clients experience high life satisfaction in that session in treatment.

Compliance with Ethical Standards

Conflict of Interest Sigal Zilcha-Mano, Ilana Lipsitz, and Paula Errázuriz, declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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