Early Development of Mechanisms of Change as a Predictor of Subsequent Change and Treatment Outcome: The Case of Working Alliance

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Objective: Advanced statistical tools have created the opportunity to systematically examine the effect of early trajectories in predictors of therapeutic change, such as early alliance development patterns, on outcome. To date, however, these methods have been used almost exclusively to examine the effect of the development of early symptoms on later ones. Development patterns of alliance early in treatment, and their association with treatment outcome, have received much theoretical attention, but few systematic examinations have been conducted so far. *Method:* We integrated exploratory cluster analysis with the accumulated theoretical and empirical knowledge on patterns of alliance development to identify distinct patterns of early alliance development across the 1st 4 sessions of treatment in a sample of 166 patients receiving psychotherapy. *Results:* Three patterns of early alliance development were identified: early gradual strengthening, early repaired rupture, and early unrepaired rupture. The gradual strengthening and the repaired rupture patterns early in treatment predicted alliance strengthening later in treatment, whereas the unrepaired rupture pattern early in treatment predicted alliance stability later in treatment. The effect of early alliance development patterns on treatment outcome was moderated by pretreatment interpersonal problems: For patients with better interpersonal functioning at intake, the gradual strengthening and the repaired rupture patterns showed better outcomes, whereas for those with poorer interpersonal functioning at intake, the early unrepaired rupture pattern showed better outcomes. *Conclusions:* Findings suggest that early alliance development patterns affect treatment process and outcome.

What is the public health significance of this article?
Three patterns of patient perception of the working alliance with the therapist during the first four psychotherapy sessions were detected: early gradual strengthening, early repaired rupture, and early unrepaired rupture. The study determined that the three early patterns provide important information about how the alliance will evolve during the rest of the treatment and about the outcome of treatment. It is therefore important that clinicians pay attention not only to the alliance levels at each session but also to the trajectory of the alliance development in the first sessions.

Keywords: patterns of early change, alliance, patterns of alliance development, rupture resolution patterns

Supplemental materials: http://dx.doi.org/10.1037/ccp0000192.supp

Identifying early in treatment who may benefit from it is of great importance for reducing individuals' suffering and saving society the expense of ineffective treatment that is destined to fail. Studies focusing on early improvement in symptoms have shown that early

change in symptoms is a powerful predictor of outcome (e.g., Lutz, Stulz, & Köck, 2009). Broadening the investigation not only to quick versus slow changes but also to patterns of development, other studies have identified distinct *trajectories* in symptomatic change and examined their ability to predict outcome. These studies found that distinct trajectories of change in symptoms over the entire treatment period (e.g., Stulz, Gallop, Lutz, Wrenn, & Crits-Christoph, 2010) and even early in the treatment (e.g., Lutz et al., 2014; Stulz, Lutz, Leach, Lucock, & Barkham, 2007) predict different outcomes. The patterns of change that were identified, such as sudden reductions in symptoms between consecutive sessions (Tang & DeRubeis, 1999), early rapid response (Ilardi & Craighead, 1994), and depression spike (A. M. Hayes et al., 2007), were found to account for a large portion of the total improvement in treatment, beyond what can be found by focusing on only snapshots of symptoms. To date, the methods used to identify patterns of early change have been restricted to early symptom

change and were rarely used to study the ability of potential mechanisms of change to predict outcome. Therefore, it is an open question whether early trajectories of change in potential mechanisms predict the process and outcome of treatment. To examine this question, which has both theoretical and practical implications, the present study focuses on one predictor of therapeutic change, the working alliance, and examines the effect of early patterns in its development on the subsequent process and outcome of treatment.

The working alliance is commonly defined as the quality of the emotional bond established in the therapeutic dyad and as the level of agreement between patient and therapist concerning the goals of therapy and the tasks necessary to achieve them (Bordin, 1979; Hatcher & Barends, 1996). There is a theoretical debate whether alliance may serve as a mechanism of therapeutic change. Many contemporary theories of alliance conceptualize it as such (e.g., Safran & Muran, 2000), and there is a call to empirically examine such theoretical conceptualizations using recent methodological advances (Zilcha-Mano, 2016). For decades, however, most of the empirical attention was directed at the association between single snapshots of the working alliance, measured at one early session, and outcome. Dozens of studies have shown that the quality of alliance at a given point in treatment (e.g., the 3rd week) is a consistent predictor of outcome in psychotherapy, with stronger alliances being associated with better outcomes (Horvath, Del Re, Flückiger, & Symonds, 2011). These studies, however, cannot go beyond the discovery of this consistent association, which they were instrumental in establishing.

Patterns of Alliance Development

Contemporary conceptualizations of the working alliance highlight the importance of focusing on patterns of alliance development and their effect on outcome (Gelso & Carter, 1994; Safran & Muran, 2000; Stiles & Goldsmith, 2010). Alliance levels and trajectories may represent distinct types of information. Information about a single alliance snapshot is important for understating the current state of the working alliance with the therapist and to determine the degree to which treatment can be carried out adequately. A single alliance snapshot may answer the question: Is the alliance level at a given session adequate for productive work (i.e., a productive use of techniques)? But such a snapshot does not reveal the dynamic nature of the alliance. For example, having a mean level of alliance of five at a given session (which is defined as *often* on the Working Alliance Inventory; Tracey & Kokotovic, 1989) may enable the therapeutic work at that session. However, knowing the level of the alliance at a given session does not reveal the dynamic of the alliance: Was the level at the prior session 7 (defined as *always*), so that a rupture is under way, or was it 3 (defined as *occasionally*), so that the alliance is on the rise, perhaps as a result of resolution? Each possibility has different implications for the dynamic of the alliance and its effect on outcome (Gelso & Carter, 1994; Safran & Muran, 2000; Stiles & Goldsmith, 2010). Although patterns of alliance development have received much theoretical attention in recent years, few systematic examinations of the effect of early patterns of alliance development on treatment process and outcome exist.

The literature on alliance development across treatment can be broadly divided into two main courses of study: (a) showing that alliance develops along a linear course, exhibiting consistent strengthening, and (b) describing alliance as developing through other patterns of change, such as rupture-resolution processes. The former describes alliance as consistently strengthening over the course of treatment (e.g., Fitzpatrick, Iwakabe, & Stalikas, 2005; Sauer, Lopez, & Gormley, 2003; Zilcha-Mano et al., 2016), although some studies have failed to find evidence of such a linear trend of development across patients (e.g., Hilsenroth, Peters, & Ackerman, 2004; Sexton, Hembre, & Kvarme, 1996). The latter portrays nonlinear patterns of development, such as rupture-resolution (episodes of tension or breakdown in the collaborative relationship between patient and therapist) and U-shaped (strong alliance, followed by weaker alliance, then strong alliance again) patterns (Gelso & Carter, 1994; Horvath & Luborsky, 1993; Kivlighan & Shaughnessy, 1995, 2000; Mann, 1973; Patton, Kivlighan, & Multon, 1997; Safran & Muran, 2000). Some studies have supported these patterns (Eubanks-Carter, Gorman, & Muran, 2012; Golden & Robbins, 1990; Patton et al., 1997) but mostly regarding small samples of patients.

Both linear strengthening and rupture-resolution patterns have received much support in the literature for the "average" patient, beyond individual differences between patients. But there are few systematic evaluations of whether specific subtypes of patients show one type of development pattern early in treatment and others another type and which of these early patterns predicts more successful treatment. It has been argued that focusing on between-patients differences in patterns of changes in alliance is of importance because a group mean of alliance development may be misleading (Henry, Strupp, Schacht, & Gaston, 1993) and could obscure between-patients variability (Castonguay, Constantino, & Holtforth, 2006; Kivlighan & Shaughnessy, 2000; Stiles et al., 2004). A few studies have suggested that this is a promising research path, pointing to subgroups of patients within the same cohort who demonstrate different patterns of alliance development (Weiss, Kivity, & Huppert, 2014; Zilcha-Mano, McCarthy, et al., 2015). For example, Kramer, de Roten, Beretta, Michel, and Despland (2008) identified three main patterns of alliance development across the first eight sessions of treatment: improving, deteriorating, and stable. Kramer, de Roten, Beretta, Michel, and Despland (2009) replicated the stable and linear growth but found quadratic growth to be a third pattern. In two samples of volunteer university students who were invited to discuss their problems with a counselor for four sessions, Kivlighan and Shaughnessy (2000) distinguished three subgroups of patients whose alliance followed different temporal patterns: stable, linear improvement, and U-shaped. Stiles et al. (2004) roughly replicated two of the patterns, the linear growth and the stable cluster, together with two additional ones, but failed to replicate the U-shaped pattern. This line of research is especially important given the recent move toward personalized treatment (DeRubeis et al., 2014), especially if specific trajectories are found to have better outcome for some groups of patients but not for others.

The Association Between Patterns of Alliance Development and Outcome

To date, studies that examined the ability of patterns of alliance development to predict outcome assessed mostly whether for the average patients it was a linear or some other

development pattern that better predicted treatment success. These studies produced mixed results, some finding that linear strengthening had an advantage (Kivlighan & Shaughnessy, 1995; Kramer et al., 2009; Piper, Ogrodniczuk, Lamarche, Hilscher, & Joyce, 2005) and others that rupture-resolution processes did (Strauss et al., 2006; Tracey & Ray, 1984). Referring to the average patient, however, may be simplistic because one pattern may not fit all. It may also contain little relevant information for clinical practice. It may be much more important to discover whether specific subgroups of patients who form distinct patterns of early alliance development show different abilities to benefit from treatment.

Recent studies have supported the claim that when focusing on specific *levels* of alliance, one size does not fit all. The strength of the alliance–outcome association can be manipulated (Zilcha-Mano et al., 2016; Zilcha-Mano, Roose, Barber, & Rutherford, 2015) and depends on patient characteristics. Patients suffering from less chronic depression but presenting more severe symptoms and greater personality problems may benefit more from stronger alliance for better treatment outcome (Falkenström, Granström, & Holmqvist, 2013; Lorenzo-Luaces, DeRubeis, & Webb, 2014; Zilcha-Mano & Errázuriz, 2015). Similar moderators may be found regarding the ability of *patterns* of alliance development to predict outcome.

Most of the studies showing that rupture-resolution patterns are effective, as well as those demonstrating the negative effect of unresolved ruptures, have been conducted with groups showing severe personality disorders or potential trust issues as a result of traumatic experiences (e.g., Mclaughlin, Keller, Feeny, Youngstrom, & Zoellner, 2014; Strauss et al., 2006). In contrast, most of the studies demonstrating the beneficial effect of linear strengthening have included lower percentages of patients with personality disorders (e.g., de Roten et al., 2004; Kramer et al., 2009). It may be that those who arrive for treatment with more adaptive representations of self and others, as well as better capability for forming satisfactory relationships with others, are better able to create a strong alliance early in the treatment and maintain its level throughout, with minimal fluctuations (Errázuriz, Constantino, & Calvo, 2015). Such patients may benefit most from a relatively stable and strong alliance early in treatment. By contrast, patients who find it difficult to form and maintain strong and satisfactory relationships with others may also have difficulty forming a strong alliance with the therapist (Bernecker, Levy, & Ellison, 2014; Bowlby, 1988). For these patients, alliance rupture-resolution processes early in treatment may be essential for treatment success. As part of these processes, the patient can participate in an effective process of negotiating interpersonal needs led by the therapist (Safran & Muran, 2000), who may model effective ways of doing so (Tsai, Kohlenberg, & Kanter, 2010). Such a process can result in the formation of a strong (repaired) alliance, which in turn may enable other therapeutic processes to take place (e.g., the effective use of therapeutic techniques; Castonguay, Constantino, McAleavey, & Goldfried, 2010) or may even be therapeutic in its own right (Castonguay & Hill, 2012). An important limitation of previous studies is that they did not systematically examine potential moderators to explain heterogeneity in the literature concerning the ability of patterns of alliance development to predict outcome. The relatively small sample size of most studies and the low variability in some of the measures may have contributed to the lack of systematic examination of potential moderators.

The Present Study

The present study focuses on the ability of patterns of early alliance development to be predicted by pretreatment functioning and, in turn, to predict the subsequent process and outcome of psychotherapy. The study had three aims. First, we examined whether a small number of distinct patterns could serve to classify the course of most alliance development patterns in the cohort. Because we focused on the early phase of treatment, we expected to find linear strengthening, alliance ruptures, and rupture-resolution patterns, whereas a U-shape pattern was less expected. Second, we examined baseline predictors of the patterns of early alliance development. We hypothesized that although some of the factors that determine the patterns of early alliance development depend on interaction with the therapist, others, including the patients' psychological and interpersonal functioning, exist even before patient and therapist meet. It has been suggested that both the interpersonal characteristics of the patients and the developing interactions with the therapist affect the alliance (Zilcha-Mano, in press) and that trait like interpersonal characteristics of patients, as measured pretreatment, can affect alliance development across treatment (Levin, Henderson, & Ehrenreich-May, 2012; Siefert & Hilsenroth, 2015; Wong & Pos, 2014; Zilcha-Mano, McCarthy, Dinger, & Barber, 2014; Zilcha-Mano, McCarthy, et al., 2015). Based on the literature, we further hypothesized that patients' demographic variables cannot predict patterns of early alliance development (Mclaughlin et al., 2014). Third, we hypothesized that early alliance development patterns have a lasting effect on subsequent alliance development across treatment. Additionally, based on the argument that one pattern may not fit all, we hypothesized that patients' interpersonal abilities moderate the effect of early alliance development patterns on outcome. For patients with severe interpersonal difficulties, a rupture-resolution pattern can most effectively enable the working through of their interpersonal difficulties and produce the best outcome. But for patients with adaptive interpersonal abilities, no such work is needed, and the best outcome can be obtained with steady, linear strengthening of alliance. In all analyses, we expected that the early pattern of alliance development would make a unique contribution, beyond that manifested in specific alliance levels at early treatment sessions and beyond the sum of alliance levels across early sessions.

To complement the theory-driven hypotheses with the advantages of data-driven strategies (Kraemer, Wilson, Fairburn, & Agras, 2002), we applied cluster analysis to the first four sessions (see also Kivlighan & Shaughnessy, 2000). Focusing on the early phase of treatment is important for both clinical reasons (the therapist still has the opportunity to intervene before treatment ends) and for statistical reasons (establishing a correct temporal relationship between the predictor and outcome, especially because later alliance levels were found to be more affected by earlier symptom change; Crits-Christoph, Gibbons, Hamilton, Ring-Kurtz, & Gallop, 2011; DeRubeis, Brotman, & Gibbons, 2005). The first four sessions were chosen to be consistent with the literature on detecting early patterns of change, in which generally the number of sessions used for detecting early

change in treatments ranged between three (e.g., Haas, Hill, Lambert, & Morrell, 2002) and five (Lutz et al., 2014), and to achieve a balance between (a) giving the alliance enough time to develop through interactions with the therapist and (b) focusing on early treatment that would produce clinically meaningful information early enough to affect subsequent treatment.

Method

Design

This is a secondary analysis of a randomized trial that took place in an outpatient mental health clinic in Santiago, Chile (Errázuriz, Zilcha-Mano, & Calvo, 2016). All adult patients who started therapy at this mental health clinic during the study were asked to participate. Of 953 patients invited to participate, 547 (57.39%) agreed. Participants were randomly assigned to one of five feedback conditions: (a) a control group in which therapists did not receive any feedback; (b) a group in which therapists received raw weekly feedback on patients' psychological dysfunction by being given access to the raw scores of the Outcome Questionnaire (OQ; Lambert, Vermeersch, & Brown, 2004) as answered by patients; (c) a group in which therapists received weekly raw feedback about patients' alliance perception by being given access to the raw scores of the Working Alliance Inventory (WAI) as answered by patients; (d) a group in which therapists received raw weekly feedback about patients' OQ and WAI; and (e) a group in which therapists received weekly feedback by receiving Lambert's (2015) OQ progress feedback report, which included progress graphs and warnings about patients who were not showing expected treatment responses according to the OQ. Patients completed alliance and outcome measures after each session. All patients knew that their therapists could review their alliance and/or outcome ratings, depending on their feedback condition. In the original trial, no significant differences were found between feedback conditions (Errázuriz, Zilcha-Mano et al., 2016).

Participants

In the original trial, 547 patients participated in the study. Consistent with previous studies, only patients who attended the first four sessions of treatment and had alliance ratings for all four sessions were included in the analysis, resulting in a sample of 166 patients. No significant differences were found between included and excluded cases on any variable except for OQ change (see the Results section). In the subgroup of patients included in this study, mean age was 41.34 years ($SD = 12.37$), and 75.9% were female. Mean level of education was 14.5 years ($SD = 2.6$), and median monthly family income was $1,423 (range = $452–$3,612). In the present sample, 66.3% were employed, 12.7% were students, 15.7% were homemakers, 1.8% were retired, and 3.5% were other; 29.5% were single, 51.8% married, 16.3% divorced, and 2.4% widowed. The mean level of psychological functioning (as measured by the OQ-30.2; Lambert et al., 2004) at Session 1 was 60.1 ($SD = 17.4$). This is considered dysfunctional compared to the healthy population in Chile, which was found to have a mean OQ-30.2 score of 29.8 ($SD = 14$; Errázuriz, Opazo, Silva, & Gloger, 2016).

The majority of patients with an Axis I diagnosis were diagnosed with depressive disorders (73.5%), bipolar disorder (6.0%), adjustment disorder (1.2%), or dysthymic disorder (1.2%); 27.7% received a diagnosis of at least one comorbid Axis I disorder. The most prevalent diagnoses were substance-related disorders (4.8%), panic disorder without agoraphobia (4.8%), and dysthymic disorders (3.0%). Most patients with an Axis II diagnosis were diagnosed with dependent (2.4%), borderline (1.8%), and histrionic personality disorder (.6%). All patients signed informed-consent forms, and the study was approved by the ethical review boards.

Therapists and Treatments

Twenty-six therapists took part in the study. All had a professional degree in psychology. All but two of the therapists had completed formal studies in psychotherapy after receiving their professional degrees as psychologists. Mean clinical experience was 7.4 years ($SD = 4.9$), mean age was 37.44 ($SD = 7.90$), and 74.7% were women. The mean number of patients treated by each therapist in the current study was 6.38 ($SD = 4.63$; range = 1–16).

Except for the feedback received, treatments were conducted as usual. All patients were treated in individual therapy. Usual treatment at this clinic, and perhaps generally in Chile, relies on an integrative approach. Mean levels of therapist-reported use of each core theoretical orientation were as follows (scored on a 0–5 Likert scale, with 5 as the *highest score*): systems 3.75 ($SD = 1.15$), cognitive 3.63 ($SD = 1.37$), psychodynamic 2.77 ($SD = 1.40$), behavioral 3.21 ($SD = 1.49$), and humanistic or existential 2.22 ($SD = 1.82$). Treatment length was determined jointly by patients and therapists, as well as by practical concerns (e.g., patients' financial considerations, health insurance). For the subsample included in the present analyses, the mean length of treatment was nine sessions ($SD = 5.35$, median = 8; range = 4–31).

Measures

Therapeutic alliance. The patients' perception of the quality of the working alliance was assessed using the 12-item patient-rated version of the Working Alliance Inventory (WAI; Tracey & Kokotovic, 1989). Items were rated by patients on a 7-point Likert scale, ranging from 1 (*never*) to 7 (*always*). We used a total score, which was the sum of all 12 items, after reverse-scoring all the relevant items. The mean internal reliability level across time points was .85.

Outcome measure. Psychological dysfunction was assessed with the 30-item patient-rated version of the OQ (Lambert et al., 2004), designed to measure patient progress over the course of therapy. Patient progress was monitored along three primary dimensions: (a) subjective discomfort (SD; e.g., anxiety and depression), (b) interpersonal relationships (IR; interpersonal problems and satisfaction with the quality of intimate relationships), and (c) social role performance (SR). Possible scores ranged from 0 to 120, with higher scores reflecting higher severity of distress. Cutoffs and norms in Chile were similar to those obtained in the original English version (Errázuriz, Opazo et al., 2016). In the present study, the mean internal reliability of the global score of patient functioning across time points was .94. Mean internal reliability scores for subjective discomfort, interpersonal relationships, and social role performance across time points were .92, .69, and .70, respectively.

Data Analysis Strategy

Early alliance development patterns. We used the curveRep procedure in R, package Hmisc (Harrell, 2014), to identify subpopulations of patients with similar change trajectories of alliance within the first four sessions. Instead of assuming that there is only one underlying population with a single change pattern (intercept and slope), the curveRep procedure allowed us to test for an a priori unknown number of subpopulations that can differ in their mean intercepts and slopes (in the case of a linear model) and in more complex change trajectories over time. The curveRep procedure searches for representative curves from a relatively large collection. The curves represent time–response profiles in longitudinal data. In this study, the curves were stratified based on the distribution of four time points per curve. The curveRep procedure used in this study requires the same amount of data points for each patient (Zheng, Simpson, van der Windt, & Elliott, 2005), and missingness of a single time point for a specific patient may have a great effect on the individual patient's trajectory.

As proposed by Wang (2010), we estimated the number of patterns by calculating clustering stability using the Jaccard coefficient (Hennig, 2007), a similarity measure of two clustering assignments, defined as the proportion of points (participants) included in the same cluster in the two clustering assignments. The Jaccard index takes a value between 0 and 1. An index of 1 means that the clustering solutions of two clustering assignments are identical; an index of 0 indicates that the data sets have no common clustering solutions. Thus, the index reflects cluster stability, meaning that a meaningful valid cluster should not disappear easily if the data set is changed in a nonessential way. Therefore, a data set derived from the same underlying distribution should give rise to more or less the same clustering. If within-cluster variability is high compared to between-clusters variability, one can expect poor stability, because in any set of simulated data many points will be clustered into a different cluster. We examined stability by performing a nonparametric bootstrap resampling, where each resample was clustered into two to five clusters. For a single cluster, stability was assessed by the bootstrap distribution of the Jaccard coefficient, compared to the distribution of the most similar cluster in the bootstrapped data set. A mean Jaccard similarity value smaller than .6 or equal to it is considered an indication of an "untrusted cluster." A value between .6 and .75 is considered an indicator of patterns in the data. A stable cluster should reach a mean Jaccard value of .75 or higher.[1]

Prediction of early alliance development based on patient intake characteristics. We conducted a multinomial logistic regression analysis to identify intake variables (age, gender, first session WAI levels, baseline OQ total score and subscale levels, and personality disorders) that could predict cluster membership.

Early alliance development pattern as a predictor of treatment length, dropout, subsequent alliance development, and treatment outcome. To examine the ability of early alliance development patterns to predict subsequent alliance development and treatment outcome, we used a three-level hierarchically nested model, with patient and therapist as random effects. We used the SAS PROC MIXED procedure for multilevel modeling to examine whether pattern membership predicts alliance and symptom development across subsequent treatment (from Session 4 to the end of treatment), by inserting an interaction between early alliance pat-

tern membership and time effect together with the main effects. Among the various time effects examined (linear, quadratic, linear in log of time, and stability over time with several definitions of random effect), the model found to have the best fit based on the Akaike information criterion 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. We used this model in all analyses to predict both alliance and symptoms.

Next, we examined the ability of pretreatment difficulties in interpersonal relationships (IR; a subscale of the OQ) to moderate the effect of early alliance development patterns on subsequent outcome, by inserting a three-way interaction between early alliance pattern membership, patients' pretreatment difficulties in interpersonal relationships, and time in predicting subsequent outcome, together with the lower level effects. The region of significance for the three-way interaction was calculated using the following model:

$$Y = b_0 + b_1 \cdot IR + b_2 \cdot \log Time + b_3 \cdot IR \cdot \log Time + b_4 \cdot IR \cdot G$$
$$+ b_5 \cdot \log Time \cdot G + b_6 \cdot IR \cdot \log Time \cdot G,$$

where G is an indicator function. The difference in the trend (in log of time) between the groups is $b_5 + b_6 \cdot IR$. We used the method suggested by A. F. Hayes and Matthes (2009) to calculate for which values of IR is the difference between groups significantly greater than 0. We repeated all analyses controlling for feedback condition membership and treatment length, as well as the interaction between time and each early alliance level (Weeks 1–4) or the mean early alliance.

Results

Sample Characteristics

Dropout information was available for 144 patients out of the 166. Based on this documentation, 29 (20.13% of the sample) dropped out. This dropout rate is consistent with that in the literature (Swift & Greenberg, 2012). Similar to the findings in the original trial, no significant differences were found between feedback conditions in the subset of patients who were the focus of the present study, $F(4, 2,833) = 1.62$, $p = .17$. We compared baseline variables (age, gender, nationality, marital status, employment status, income level, education level, number of times in previous psychotherapy, baseline OQ levels, baseline IR levels or first session WAI) between the subset that was included in the analyses ($N = 166$) and the subset that was not included ($N = 381$). There were no significant differences in any of the variables between the included and excluded subgroups, be-

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[1] The number of observations needed for clustering depends on the number of variables used (the dimension), the number of true clusters, and the quality (degree of separation) of these clusters. In the present study, we clustered the first four alliance assessments into three clusters, resulting in a small number of variables and making a relatively small sample size adequate. Because of the lack of clear rules regarding the minimal sample size needed, the literature has offered several rules of thumb. One of the strictest ones is based on the literature on latent class analyses: Formann (1984) suggested that the minimal sample size should include no less than 2^k cases (k = number of variables), preferably 5×2^k (Dolnicar, 2003). The present study meets this criterion. The stability found in the bootstrap analysis further suggests that we had an adequate sample size.

sides significant differences in changes in OQ across treatment, $t(545) = -4.22$, $p < .001$, with those who attended all first four sessions and completed the WAI assessments showing significantly more change in OQ ($M = 12.69$, $SD = 17.61$) than did those who did not ($M = 6.93$, $SD = 13.15$).

Early Alliance Development Patterns

We computed Jaccard similarity values for several possible numbers of patterns (two to five), using 1,000 resampling runs. We received the most stable results for the three-pattern solution (.78, .88, .82), which we used for further analyses. Figure 1A shows the estimated means of each pattern within the first four sessions: The first pattern, *early repaired rupture,* showed a strong alliance with a minimal downward trend, followed by a minimal upward trend (which can be interpreted as a minimal rupture-resolution pattern; $N = 45$; 27.1% of the sample); the second pattern, *early gradual strengthening,* showed a strong alliance, with a minimal upward trend ($N = 81$; 48.8% of the sample); the third pattern, *early unrepaired rupture,* showed a dramatic reduction in alliance, with a mean reduc-
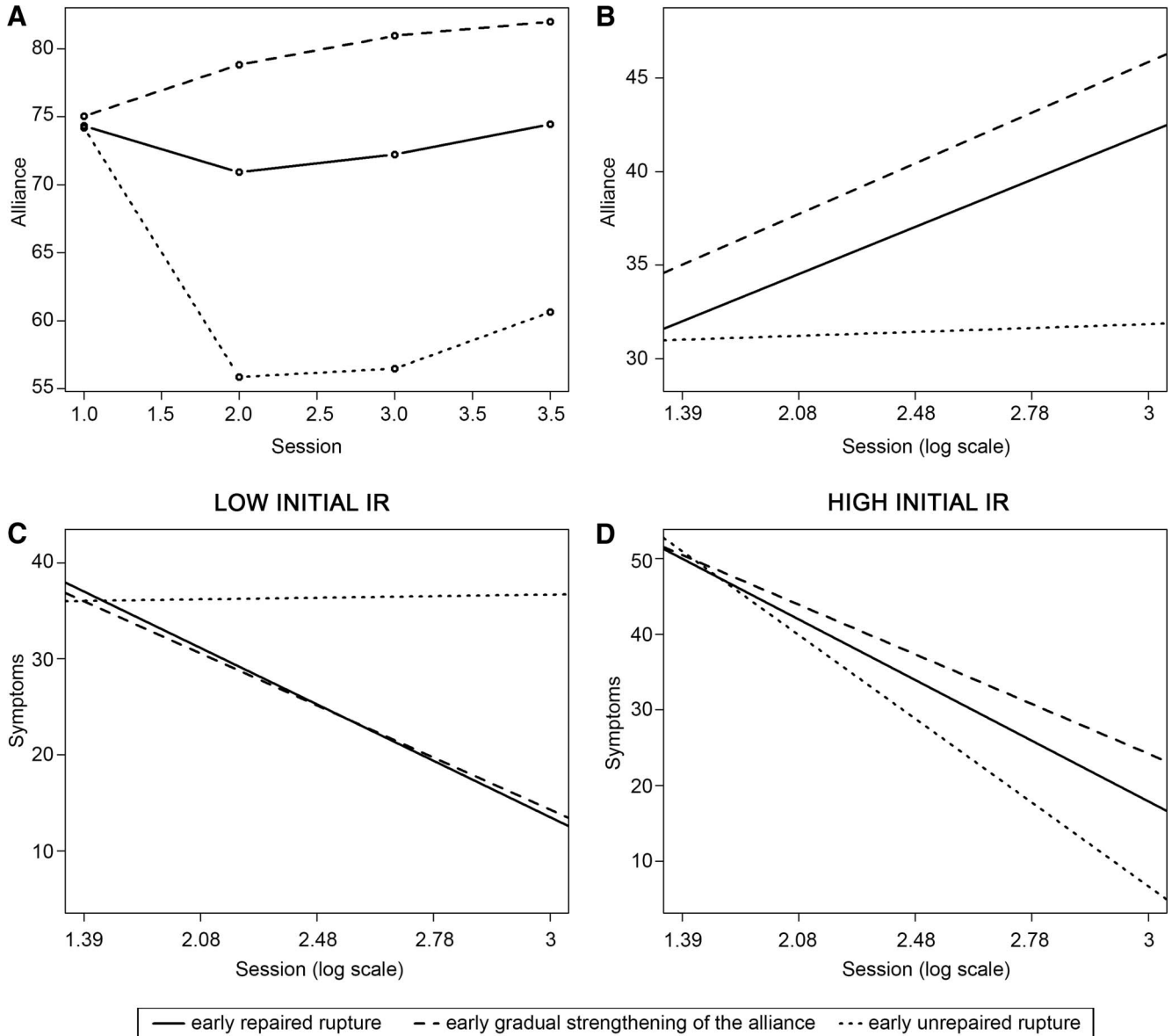

Figure 1. Panel A: Early alliance development patterns identified across the first four sessions. Panel B: Estimated subsequent alliance development of the three early alliance development patterns. The *x*-axis describes log of time. Panels C and D: The moderating effect of pretreatment difficulties in interpersonal relationships (initial IR; low initial IR in Panel C; high initial IR in Panel D) on the ability of early alliance development patterns to predict subsequent OQ development across treatment. The *x*-axis describes log of time. IR = Interpersonal relationships; OQ = Outcome Questionnaire.

tion of 18.35 WAI points, followed by a minimal trend of increased alliance levels, which can be interpreted as a profound rupture followed by minimal resolution ($N = 40$; 24.1% of the sample). As shown in Figure 1A, early alliance development patterns differed regarding their change in trajectory over the first four sessions (see the online supplementary material for a distribution of the 75th, 50th, and 25th percentile alliance development within clusters, demonstrating the within-cluster homogeneity of the clusters).

Prediction of Early Alliance Development Based on Patient Intake Characteristics

We investigated the ability of intake variables (age, gender, first session WAI levels, baseline OQ total score and subscales levels, and personality disorders) to predict membership in one of the three patterns using multinomial logistic regressions. The analysis demonstrated significant predictive power for baseline OQ total score, as suggested by significant chi-square values in likelihood-quotient tests, $\chi^2(2) = 7.14$, $p = .02$. Baseline OQ levels accounted for $R^2_{Nagelkerke} = 4\%$ of explained variance in the differences in class membership. Baseline OQ scores significantly distinguished the early unrepaired rupture pattern from the other two patterns: Higher baseline OQ scores were associated with higher probabilities for membership in the early unrepaired rupture pattern than in the early repaired rupture and early gradual strengthening patterns ($p = .04$ and $p = .008$, respectively; see table 1 in the online supplemental materials). With every unit increase in baseline OQ level, the odds of belonging to an early unrepaired rather than to an early repaired rupture pattern increased by a factor of 3%, and the odds of belonging to an early unrepaired rupture rather than to an early gradual strengthening pattern increased by a factor of 4%. Similar results were found when focusing on the pretreatment IR and the SR OQ subscales. All the other variables could not significantly predict cluster membership ($p \geq .25$).

Early Alliance Development Pattern as a Predictor of Treatment Length, Dropout, Subsequent Alliance Development, and Treatment Outcome

We found no differences between early alliance patterns in treatment length, $F(2, 165) = .91$, $p = .40$. Similarly, a chi-square test revealed no significant association between dropout and cluster membership, $\chi^2(2) = 2.83$, $p = .24$. The estimated variance of the therapist's random effect in the three-level model predicting alliance was not significant ($p = .05$, interclass correlation = 4.05%), and the estimated variance in the model predicting outcome was null. The analysis examining the interaction between early alliance development patterns and time (in log scale) in predicting subsequent alliance development across treatment (from Week 4 to the end of treatment) resulted in a significant interaction, $F(2, 1,272) = 10.60$, $p < .001$ (see Figure 1B). The early unrepaired rupture pattern showed no significant improvement ($\beta = .20$, $SE = .44$, $p = .63$), whereas the early repaired rupture pattern had a slope of 2.52 ($SE = .33$, $p < .001$), and the early gradual strengthening pattern a slope of 2.71 ($SE = .44$, $p < .001$). Comparison of the slopes showed no significant differences between the early repaired rupture and early gradual strengthening patterns ($p = .73$), but the differences between the early unrepaired rupture and between the early repaired rupture and early gradual strengthening patterns were significant ($ps < .001$). The significant interaction suggests that early alliance patterns predict the subsequent

slope of alliance development: Patients in the early unrepaired pattern did not demonstrate any subsequent significant alliance improvement over the course of the treatment, whereas the two other patterns of early alliance development demonstrated significant subsequent improvement in alliance, so that an increase in 1 unit in time (log scale) was associated with a 2.71-point increase in WAI in the early gradual strengthening and a 2.52-point increase in the early repaired rupture.

Examination of the interaction between early alliance development patterns and time (in log scale) in predicting subsequent OQ development across treatment for the whole sample resulted in a nonsignificant interaction, $F(2, 1,139) = 1.57$, $p = .20$. But pretreatment difficulties in interpersonal relationships significantly moderated the association between early alliance development patterns and time in predicting subsequent OQ from Session 4 to the end of treatment, $F(2, 1,160) = 12.22$, $p < .001$ (see Figures 1C and 1D). Specifically, at low levels of pretreatment difficulties in interpersonal relationships (see Figure 1C), both the early repaired rupture and early gradual strengthening patterns showed a significant subsequent reduction in symptoms across treatment ($\beta = -5.87$, $SE = .73$), $t(1,169) = -7.98$, $p < .001$, and ($\beta = -5.42$, $SE = .89$), $t(1,166) = -6.09$, $p < .001$, respectively, whereas the early unrepaired rupture pattern showed no significant reduction ($\beta = .16$, $SE = 1.05$), $t(1,164) = .16$, $p = .87$. At high levels of pretreatment difficulties in interpersonal relationships (see Figure 1D), all patterns showed a significant subsequent reduction in symptoms across treatment ($\beta = -8.96$, $SE = 1.04$), $t(1,165) = -8.58$, $p < .001$; ($\beta = -7.07$, $SE = 1.60$), $t(1,152) = -4.41$, $p < .001$; and ($\beta = -13.12$, $SE = 1.25$), $t(1,145) = -10.50$, $p < .001$, for the early repaired rupture, early gradual strengthening, and early unrepaired rupture patterns, respectively. For low levels of pretreatment difficulties in interpersonal relationships, the early repaired rupture and early gradual strengthening patterns had better outcomes than did the early unrepaired rupture ($\beta = -6.04$, $SE = 1.28$), $t(1,166) = -4.70$, $p < .001$, and ($\beta = -5.58$, $SE = 1.37$), $t(1,165) = -4.05$, $p < .001$, respectively, but for high levels of pretreatment difficulties, the early repaired rupture and early gradual strengthening patterns had poorer outcomes than did the early unrepaired rupture ($\beta = 4.15$, $SE = 1.62$), $t(1,153) = 2.55$, $p = .01$, and ($\beta = 6.04$, $SE = 2.03$), $t(1,149) = 2.97$, $p = .003$, respectively. This finding suggests that pretreatment difficulties in interpersonal relationships moderate the association between early alliance development patterns and outcome, so that for patients with lower levels of pretreatment difficulties in interpersonal relationships both early repaired rupture and early gradual strengthening patterns showed the best outcomes. By contrast, for patients with higher levels of pretreatment difficulties in interpersonal relationships, early unrepaired rupture showed the best outcome.

A calculation of the region of significance (at 95% confidence level) for the three-way interaction suggests that when IR < 11.34, early repaired rupture and early gradual strengthening patterns showed better outcome than did early unrepaired rupture, and when IR > 15.36, early unrepaired rupture pattern showed better outcome than did early repaired rupture and early gradual strengthening.[2] Finally, findings were similar in all analyses when con-

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[2] Comparing high and low IR across clusters may be affected by phenomena such as regression to the mean. But our analyses focused on the differences between clusters within the levels of IR in the slopes of symptoms across time, which cannot be explained by regression to the mean.

trolling for feedback condition membership and treatment length and for the interaction between time and each of the early alliance measures or the mean alliance level across the first 4 weeks.

Given the unexpected finding that for patients with high pretreatment IR the unrepaired pattern resulted in a better outcome than did the other patterns, we performed a post hoc analysis to find out whether the ruptures in the early unrepaired cluster were resolved later in treatment (manifested in an increase in alliance levels), as a function of the patients' pretreatment interpersonal abilities. We used a two-way interaction of time (log of time) and IR to predict alliance development from the 4th week onward among patients in the early unrepaired rupture pattern. IR was introduced to the model as a binary variable (lower or higher than the mean). We found a significant two-way interaction, $F(1, 169) = 7.80$, $p = .005$, suggesting that the slope of alliance was significantly stronger in the case of high IR than for low IR (differences between the slopes: $B = 5.16$, $SE = 1.84$, $t(169) = 2.79$, $p = .005$).

Discussion

The present study examined the effect of early development trajectories in a process variable on the subsequent process and outcome of psychotherapy, focusing on the case of the working alliance. Our first goal was to examine whether a small number of distinct patterns can serve to classify the course of most alliance development patterns in the cohort. We found that three distinct trajectories of early alliance development best described early development courses in alliance: (a) the early repaired rupture pattern, characterized by rapid alliance strengthening, with a minimal downward trend followed by a minimal upward trend; (b) the early gradual strengthening pattern, characterized by strong alliance with a minimal upward trend; and (c) the early unrepaired rupture pattern, characterized by a dramatic reduction (a mean of 18.35 WAI points) followed by a minimal increase in alliance levels, which is consistent with the pattern identified in the literature as a profound unresolved rupture (Safran & Muran, 2000). Note that it was not possible to explain these patterns of early alliance development, or their ability to predict subsequent alliance and outcome, based on the alliance levels of each of the first four sessions or on the mean early alliance levels. This is especially important given the fact that the early alliance snapshot has been used extensively so far to predict outcome.

The three early alliance development patterns resemble those described in other settings and samples. In the present study, gradual strengthening of the alliance was found to be the most dominant pattern, and it occurred in 48.8% of the sample. This is consistent with the prevalent tendency in the literature to treat alliance as developing linearly across treatment (Owen, Miller, Seidel, & Chow, 2016; Stiles & Goldsmith, 2010) and with previous studies demonstrating the high incidence of this pattern of development (e.g., 32% of the sample in Kramer et al., 2008 and 35% of the sample in Stiles et al., 2004). In the present study, repaired ruptures occurred in 27% of the sample. Other studies that examined the broader time frame of the treatment as a whole reported higher frequencies: 46% (Mclaughlin et al., 2014), 50% (Stevens, Muran, Safran, Gorman, & Winston, 2007), and even 56% (Strauss et al., 2006). The present study, however, observed a higher frequency of unrepaired ruptures than reported in previous

studies: 24% versus 18% in Mclaughlin et al. (2014) and 12% in Strauss et al. (2006). This is perhaps a result of our focus on early treatment, when some of the ruptures were not yet resolved. The post hoc analyses we conducted support this assumption. Additionally, although the unrepaired rupture group showed a dramatic reduction in alliance levels from the first to the second sessions (a mean of 18.35 WAI points), individually some patients may not have met the threshold used in some of the previous studies for defining ruptures. The disadvantages of using a rigorous standard for defining ruptures, as opposed to a more sensitive and clinically relevant definition (e.g., subtle signs that require clinical attention) have been discussed in the literature (Mclaughlin et al., 2014), and the cost of a false positive (spending time to address irrelevant ruptures) appears to be lower than that of a false negative, which may affect the alliance across the entire treatment.

The present findings suggest that alliance is not a static entity during early treatment but a dynamic one that changes both within-patient and between-patients, with different subsets of patients demonstrating distinct early alliance development patterns. When patients have time to develop the alliance beyond the fourth session, other patterns may be found as well, such as gradually decreasing (Kramer et al., 2008) or U-shaped (Gelso & Carter, 1994) alliance development patterns.

Our second goal was to examine whether pretreatment psychological and interpersonal functioning can partially predict the patients' belonging to early alliance development patterns. The present findings suggest that patients' psychological functioning (pretreatment OQ levels) as well as social role and interpersonal relations (two of the three subscales of the OQ) were significant predictors of membership in alliance pattern groups and that they could explain about 4% of the variability in patients' membership patterns. Patients with higher levels of pretreatment psychological functional impairment and interpersonal problems were more likely to demonstrate an unrepaired rupture pattern.

The findings regarding the ability of pretreatment psychological functioning and interpersonal patterns to predict a portion of early alliance development are consistent with theoretical conceptualizations stating that some people are generally more capable than others of forming strong and satisfying relationships, and such patients are likely to have a better chance of forming a strong and satisfying alliance with their therapist as well. For example, according to attachment theory, individuals have different capabilities of forming satisfying relationships with others (Bowlby, 1988). People learn to trust others in times of need through interactions with significant others, which begin to accumulate in infancy. They are encoded in internal representations of the self and of others and later serve as the basis for future interactions, including the relationship with the therapist (Bowlby, 1988). The present findings are also consistent with those of previous studies showing that patients' pretreatment interpersonal characteristics can predict specific session alliance snapshots (Errázuriz et al., 2015; Levin et al., 2012; Zilcha-Mano et al., 2014) as well as patterns of alliance development (Siefert & Hilsenroth, 2015; Zilcha-Mano, McCarthy, et al., 2015). Note, however, that although pretreatment measures were able to significantly predict a portion of the alliance development patterns, most pattern variance could not be predicted pretreatment and may be the result of the interactions with the therapists.

Our third goal was to examine whether the identified patterns of early alliance development can affect subsequent treatment pro-

cess and outcome. Findings suggest that differences in early alliance development patterns seem to reflect different treatment processes. Patients with early gradual strengthening of alliance or minor repaired rupture patterns were likely to show steady strengthening of alliance later in treatment, whereas early major unrepaired rupture predicted no subsequent alliance strengthening. Early alliance development patterns seemed to uncover an aspect of alliance that could not be explained by initial levels of alliance in any of the first four sessions or by the sum of alliance levels across early sessions.

Consistent with our hypothesis, patients' pretreatment level of interpersonal problems was found to moderate the association between early alliance development patterns and subsequent treatment outcome. These findings were significant beyond the effect of specific alliance levels in early treatment sessions and beyond the sum of alliance levels across early sessions on outcome. The moderating role of interpersonal functioning may serve to explain previously mixed findings about the ability of alliance patterns to predict outcome. These findings are important especially in view of the present shift toward personalized treatment, the underlying assumption of which is that specific treatment processes may characterize certain subsets of patients. Although no one ideal pattern of alliance development was most effective for all patients, certain patterns were more effective for given subsets of patients, based on their ability to form satisfactory relationships with others when starting treatment. Clearly, one pattern does not fit all. For patients with low levels of pretreatment difficulties in interpersonal relationships, linear strengthening and minimal repaired rupture both showed better outcomes than unrepaired rupture did. In fact, the unrepaired rupture pattern showed no significant symptom improvement as a result of treatment. But for patients with high levels of pretreatment difficulties, early major unrepaired rupture predicted a better outcome than did linear strengthening and repaired rupture patterns.

Although the differences between individuals with high versus low levels of pretreatment difficulties in interpersonal relationships conformed to our expectations, we expected to find this pattern among the resolved rather than the unresolved ruptures. One post hoc explanation suggests that for patients with very severe deficiencies in interpersonal functioning, any continued interpersonal interaction with a therapist who may be perceived as able to provide a supportive holding environment and be there for them consistently at the next session, however difficult the last one was, can be beneficial (Winnicott, 1969). By contrast, patients with more nuanced interpersonal difficulties, who can form adequate interpersonal relationships and may expect to develop a similar one with the therapist, need to form an adaptive alliance with the therapist early in the treatment to benefit from it for the success of the treatment. Another potential post hoc explanation for these unexpected findings is that patients with severe interpersonal difficulties may benefit most from treatment when they bring their interpersonal difficulties to the therapy room, where they manifest in a major rupture with the therapist at the beginning of treatment, creating an opportunity for patient and therapist to collaboratively work through the patient's interpersonal problems, which are presumably a source of difficulties for the patient outside of the therapy room as well and now are enacted with the therapist (Book, 1998; Safran & Muran, 2000; Silberschatz, 2017). This explanation is based on the assumption that the rupture is resolved later in the treatment. Our post hoc findings support this assumption, but caution should be exercised when interpreting post hoc findings. Future studies should systematically examine a model according to which patients with high interpersonal problems, who experience a major early rupture that is resolved later in treatment, may show better outcomes. Processes of compensation and corrective experiences within the working alliance (Castonguay & Hill, 2012; Safran & Muran, 2000; Tsai et al., 2010) may serve as a theoretical basis for the examination of such a model.

Therapists in the present study were not in the same feedback condition for all their patients, which may have affected the findings. Although in our study the therapist effect in predicting alliance was not significant, it is in the range reported in previous studies (Baldwin & Imel, 2013). Many of the therapists were trained in the same institutes, and all of them worked at the same clinic. It is possible that variability in the levels of homogeneity of therapists working in different clinics may have contributed to the extreme variance found in the between-therapists effect across studies (Baldwin & Imel, 2013). Another potential explanation for the lack of significant random effect for therapists may have to do with the possibility that some therapists (e.g., those seen as more competent) have treated the more challenging patients. Finally, although the number of therapists who participated in the study (28) is not small relative to many similar works in the literature, studies have shown that about 50 therapists are needed to accurately estimate the size of the between-therapists alliance–outcome association (it has been shown in Crits-Christoph et al., 2011).

If the present findings are replicated in future studies, they can serve as a source of clinical recommendations for carefully monitoring therapeutic alliance and addressing difficulties when they arise (Lambert, 2015), especially early in treatment, because early manifestations may affect alliance development across the treatment. Given that patients in all three early alliance development patterns showed the same starting point in alliance levels, close monitoring is needed even if early alliance levels are strong. In this context, it is interesting to speculate on potential reasons for the insignificant differences in outcome between patients whose therapists received feedback on their alliance levels after each session and those whose therapists did not receive such feedback. It may be beneficial to provide therapists with feedback on patterns of alliance development rather than only on specific session alliance ratings, because patterns of alliance development may contain important data not apparent in each individual session.

Our findings also demonstrate that relying on the alliance development patterns of the average patient may be too simplistic and contain little relevant information for clinical practice. Specifically, the findings do not support a clinical rationale whereby it is generally a good sign when alliance levels become increasingly stronger from session to session early in treatment. Neither do the findings support the opposite clinical rationale, stating that unrepaired ruptures early in treatment are natural for all patients and represent only the process of formation of the therapeutic relationship, without affecting the rest of the treatment. Rather, our findings identify the patients for whom each early alliance development pattern is most beneficial and those for whom it should raise warning signs.

The implications of the present study should be considered together with its limitations. First, to provide a robust examination of the ability of alliance development patterns to predict outcome

in which the predictor (alliance development) temporally precedes the outcome and does not overlap with it, we restricted alliance development patterns to the first four sessions of treatment. This prevented us from observing the entire course of alliance development over the treatment, especially certain processes of alliance change that may occur only later in treatment. This is a shortcoming common to most studies that focus on early patterns of change (both outcome and mechanisms of change; e.g., Lutz et al., 2014); it is also shared by studies that use other advanced methods of analysis (e.g., Curran & Bauer, 2011), which require at least three or four observations to be included. Clinicians who rely on information on early patterns in clinical work must bear in mind the optimistic possibility that the currently unresolved ruptures can still be resolved and produce good outcomes. Detecting early patterns may therefore have important advantages in clinical practice, because before the treatment terminates, much can still be done. Second, as in other studies that focused on early trajectories, only patients who attended all first four sessions were included in our analyses, because the procedure used in this study requires the same amount of data points for each patient (Zheng et al., 2005). Although in the present study the excluded subgroup did not differ in any intake variables from those who were included, they had poorer outcomes, perhaps because they did not have a sufficient dose of treatment to benefit adequately from it (Falkenström, Josefsson, Berggren, & Holmqvist, 2016). Thus, the findings may not be generalized to treatments with fewer than four sessions. Third, additional measures of interpersonal problems (such as the Inventory of Interpersonal Problems Circumplex; Horowitz, Alden, Wiggins, & Pincus, 2000) and information about tendencies to form satisfactory relationships with other people (such as attachment orientations) may have complemented the findings derived from the IR subscale of the OQ, which demonstrated relatively low reliability and allowed us to focus only on specific aspects of interpersonal problems and functioning. Fourth, the study relied on patients' self-report measures for both alliance and symptoms, incurring the risk of shared variance and restricting us to what the patient was able to report and interested in reporting. It would be of particular interest to evaluate the extent to which therapists are aware of the dramatic reduction in alliance in the early unrepaired rupture patterns and to examine the extent to which this awareness may moderate the effect of early alliance ruptures on treatment outcome. Fifth, the lower percentage of personality disorders may be the result of the fact that the study was conducted in a naturalistic setting, where the collection of data on personality disorders may have been less meticulous than in a laboratory setting and where therapists may have paid less attention to personality disorders than to affect and anxiety disorders. Sixth, the alliance development patterns identified should not be interpreted as literally distinct entities but rather as groups of individuals following similar trajectories of change. Valid patterns of early alliance development can emerge only through the accumulation of findings over several studies. Therefore, future studies are needed.

In-depth within- and between-sessions analyses of the types of ruptures occurring and of the ways in which they have been repaired are required, using rating scales such as the Rupture Resolution Rating System (Eubanks, Muran, & Safran, 2015). It is equally important to examine whether, in addition to pretreatment interpersonal problems, other theoretically driven patient characteristics (e.g., attachment orientation), therapist characteristics, and type of treatment can moderate the effect of early patterns of alliance development on outcome and maybe even differentiate between the early gradual strengthening of the alliance and early repaired rupture patterns. Replicating the findings with heterogeneous as well as homogeneous populations of patients and therapists, in diverse treatment orientations, could help elucidate potential moderators of the effect of clusters on outcome, showing which patterns of alliance development are the most beneficial for each population. Replicating the findings in treatments with fixed session limits may reveal the extent to which the present findings are the result of different treatment durations.

This is the first study that systematically examined the effect of early development trajectories of a predictor of therapeutic change on the subsequent development of this predictor and on treatment outcome. The present findings demonstrate the promising potential of investigations of early alliance development patterns. This information can be used to advance toward personalized treatment adapted to patient pretreatment characteristics and to early changes in potential therapeutic mechanisms, suggesting for whom each alliance development pattern is most beneficial and for whom it should raise warning signs. The focus on early patterns may contain useful information for the therapist while there is still meaningful time left in the treatment.

References

Baldwin, S. A., & Imel, Z. E. (2013). Therapist effects: Findings and methods. In M. J. Lambert (Ed.), *Bergin and Garfield's handbook of psychotherapy and behavior change* (6th ed., pp. 258–297). New York, NY: John Wiley & Sons, Inc.

Bernecker, S. L., Levy, K. N., & Ellison, W. D. (2014). A meta-analysis of the relation between patient adult attachment style and the working alliance. *Psychotherapy Research, 24,* 12–24. http://dx.doi.org/10.1080/10503307.2013.809561

Book, H. E. (1998). *How to practice brief dynamic psychotherapy: The CCRT method.* Washington, DC: American Psychological Association.

Bordin, E. S. (1979). The generalizability of the psychoanalytic concept of the working alliance. *Psychotherapy: Theory, Research & Practice, 16,* 252–260. http://dx.doi.org/10.1037/h0085885

Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development* (Tavistock Professional Book). London, UK: Routledge.

Castonguay, L. G., Constantino, M. J., & Holtforth, M. G. (2006). The working alliance: Where are we and where should we go? *Psychotherapy: Theory, Research & Practice, 43,* 271–279. http://dx.doi.org/10.1037/0033-3204.43.3.271

Castonguay, L. G., Constantino, M. J., McAleavey, A. A., & Goldfried, M. R. (2010). The alliance in cognitive-behavioral therapy. In J. C. Muran & J. P. Barber (Eds.), *The therapeutic alliance: An evidence based guide to practice* (pp. 150–171). New York, NY: Guilford Press.

Castonguay, L. G., & Hill, C. E. (2012). *Transformation in psychotherapy: Corrective experiences across cognitive behavioral, humanistic, and psychodynamic approaches.* Washington, DC: American Psychological Association.

Crits-Christoph, P., Gibbons, M. B. C., Hamilton, J., Ring-Kurtz, S., & Gallop, R. (2011). The dependability of alliance assessments: The alliance–outcome correlation is larger than you might think. *Journal of Consulting and Clinical Psychology, 79,* 267–278. http://dx.doi.org/10.1037/a0023668

Curran, P. J., & Bauer, D. J. (2011). The disaggregation of within-person and between-person effects in longitudinal models of change. *Annual*

Review of Psychology, 62, 583. http://dx.doi.org/10.1146/annurev.psych
.093008.100356

DeRubeis, R. J., Brotman, M. A., & Gibbons, C. J. (2005). A conceptual and methodological analysis of the nonspecifics argument. *Clinical Psychology: Science and Practice, 12,* 174–183. http://dx.doi.org/10 .1093/clipsy/bpi022

de Roten, Y., Fischer, M., Drapeau, M., Beretta, V., Kramer, U., Favre, N., & Despland, J.-N. (2004). Is one assessment enough? Patterns of helping alliance development and outcome. *Clinical Psychology & Psychotherapy, 11,* 324–331. http://dx.doi.org/10.1002/cpp.420

DeRubeis, R. J., Cohen, Z. D., Forand, N. R., Fournier, J. C., Gelfand, L. A., & Lorenzo-Luaces, L. (2014). The personalized advantage index: Translating research on prediction into individualized treatment recommendations. A demonstration. *PLoS One, 9*(1), e83875. http://dx.doi .org/10.1371/journal.pone.0083875

Dolnicar, S. (2003). Using cluster analysis for market segmentation—Typical misconceptions, established methodological weaknesses and some recommendations for improvement. *Australasian Journal of Market Research, 11,* 5–12.

Errázuriz, P., Constantino, M. J., & Calvo, E. (2015). The relationship between patient object relations and the therapeutic alliance in a naturalistic psychotherapy sample. *Psychology and Psychotherapy: Theory, Research and Practice, 88,* 254–269. http://dx.doi.org/10.1111/papt .12046

Errázuriz, P., Opazo, S., Silva, O., & Gloger, S. (2016). *Spanish adaptation and validation of the Outcome Questionnaire OQ-30.2.* Manuscript submitted for publication.

Errázuriz, P., Zilcha-Mano, S., & Calvo, E. (2016). *To know or not to know: Does therapists access to feedback about patients' psychological dysfunction and alliance perception affect treatment adherence, alliance, and outcome?* Manuscript in preparation.

Eubanks, C. F., Muran, J. C., & Safran, J. D. (2015). *Rupture Resolution Rating System (3RS): Manual.* Unpublished manuscript, Mount Sinai-Beth Israel Medical Center, New York, NY.

Eubanks-Carter, C., Gorman, B. S., & Muran, J. C. (2012). Quantitative naturalistic methods for detecting change points in psychotherapy research: An illustration with alliance ruptures. *Psychotherapy Research, 22,* 621–637. http://dx.doi.org/10.1080/10503307.2012.693772

Falkenström, F., Granström, F., & Holmqvist, R. (2013). Therapeutic alliance predicts symptomatic improvement session by session. *Journal of Counseling Psychology, 60,* 317–328. http://dx.doi.org/10.1037/ a0032258

Falkenström, F., Josefsson, A., Berggren, T., & Holmqvist, R. (2016). How much therapy is enough? Comparing dose-effect and good-enough models in two different settings. *Psychotherapy: Theory, Research & Practice, 53,* 130–139. http://dx.doi.org/10.1037/pst0000039

Fitzpatrick, M., Iwakabe, S., & Stalikas, A. (2005). Perspective divergence in the working alliance. *Psychotherapy Research, 15,* 69–80. http://dx .doi.org/10.1080/10503300512331327056

Formann, A. K. (1984). Latent class analysis. *Encyclopedia of Statistical Sciences.*

Gelso, C. J., & Carter, J. A. (1994). Components of the psychotherapy relationship: Their interaction and unfolding during treatment. *Journal of Counseling Psychology, 41,* 296–306. http://dx.doi.org/10.1037/ 0022-0167.41.3.296

Golden, B., & Robbins, S. (1990). The working alliance within time-limited therapy: A case analysis. *Professional Psychology: Research and Practice, 21,* 476–481. http://dx.doi.org/10.1037/0735-7028.21.6.476

Haas, E., Hill, R. D., Lambert, M. J., & Morrell, B. (2002). Do early responders to psychotherapy maintain treatment gains? *Journal of Clinical Psychology, 58,* 1157–1172. http://dx.doi.org/10.1002/jclp.10044

Harrell, F. E., Jr. (2014). Hmisc: Harrell Miscellaneous (R package version 3.14–0) [Computer software]. Retrieved from https://cran.r-project.org/ web/packages/Hmisc/Hmisc.pdf

Hatcher, R. L., & Barends, A. W. (1996). Patients' view of the alliance of psychotherapy: Exploratory factor analysis of three alliance measures. *Journal of Consulting and Clinical Psychology, 64,* 1326–1336. http:// dx.doi.org/10.1037/0022-006X.64.6.1326

Hayes, A. F., & Matthes, J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods, 41,* 924–936. http://dx.doi.org/10 .3758/BRM.41.3.924

Hayes, A. M., Feldman, G. C., Beevers, C. G., Laurenceau, J. P., Cardaciotto, L., & Lewis-Smith, J. (2007). Discontinuities and cognitive changes in an exposure-based cognitive therapy for depression. *Journal of Consulting and Clinical Psychology, 75,* 409–421. http://dx.doi.org/ 10.1037/0022-006X.75.3.409

Hennig, C. (2007). Cluster-wise assessment of cluster stability. *Computational Statistics & Data Analysis, 52,* 258–271. http://dx.doi.org/10 .1016/j.csda.2006.11.025

Henry, W. P., Strupp, H. H., Schacht, T. E., & Gaston, L. (1993). Psychodynamic approaches. In S. L. Garfield & A. E. Bergin (Eds.), *Handbook of psychotherapy and behavior change* (4th ed., pp. 467–508). New York, NY: Wiley.

Hilsenroth, M. J., Peters, E. J., & Ackerman, S. J. (2004). The development of therapeutic alliance during psychological assessment: Patient and therapist perspectives across treatment. *Journal of Personality Assessment, 83,* 332–344. http://dx.doi.org/10.1207/s15327752jpa8303_14

Horowitz, L. M., Alden, L. E., Wiggins, J. S., & Pincus, A. L. (2000). *Manual for the Inventory of Interpersonal Problems.* Oxford, UK: Harcourt Assessment, The Psychological Corporation.

Horvath, A. O., Del Re, A. C., Flückiger, C., & Symonds, D. (2011). Alliance in individual psychotherapy. *Psychotherapy: Theory, Research & Practice, 48,* 9–16. http://dx.doi.org/10.1037/a0022186

Horvath, A. O., & Luborsky, L. (1993). The role of the therapeutic alliance in psychotherapy. *Journal of Consulting and Clinical Psychology, 61,* 561–573. http://dx.doi.org/10.1037/0022-006X.61.4.561

Ilardi, S. S., & Craighead, W. E. (1994). The role of nonspecific factors in cognitive-behavior therapy for depression. *Clinical Psychology: Science and Practice, 1,* 138–156. http://dx.doi.org/10.1111/j.1468-2850.1994 .tb00016.x

Jacobson, N. S., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology, 59,* 12–19.

Kivlighan, D. M., & Shaughnessy, P. (1995). Analysis of the development of the working alliance using hierarchical linear modeling. *Journal of Counseling Psychology, 42,* 338–349. http://dx.doi.org/10.1037//0022-0167.42.3.338

Kivlighan, D. M., & Shaughnessy, P. (2000). Patterns of working alliance development: A typology of client's working alliance ratings. *Journal of Counseling Psychology, 47,* 362–371. http://dx.doi.org/10.1037/0022-0167.47.3.362

Kramer, U., de Roten, Y., Beretta, V., Michel, L., & Despland, J.-N. (2008). Patient's and therapist's views of early alliance building in dynamic psychotherapy: Patterns and relation to outcome. *Journal of Counseling Psychology, 55,* 89–95. http://dx.doi.org/10.1037/0022-0167.55.1.89

Kramer, U., de Roten, Y., Beretta, V., Michel, L., & Despland, J.-N. (2009). Alliance patterns over the course of short-term dynamic psychotherapy: The shape of productive relationships. *Psychotherapy Research, 19,* 699–706. http://dx.doi.org/10.1080/10503300902956742

Kraemer, H. C., Wilson, G. T., Fairburn, C. G., & Agras, W. S. (2002). Mediators and moderators of treatment effects in randomized clinical trials. *Archives of general psychiatry, 59,* 877–883.

Lambert, M. J. (2015). Progress feedback and the OQ-systemml: The past and the future. *Psychotherapy: Theory, Research & Practice, 52,* 381–390. http://dx.doi.org/10.1037/pst0000027

Lambert, M. J., Vermeersch, D. A., & Brown, G. J. (2004). *Administration and scoring manual for the OQ-30.2.* East Setauket, NY: American Professional Credentialing Services.

Levin, L., Henderson, H. A., & Ehrenreich-May, J. (2012). Interpersonal predictors of early therapeutic alliance in a transdiagnostic cognitive-behavioral treatment for adolescents with anxiety and depression. *Psychotherapy: Theory, Research & Practice, 49,* 218–230. http://dx.doi.org/10.1037/a0028265

Lorenzo-Luaces, L., DeRubeis, R. J., & Webb, C. A. (2014). Client characteristics as moderators of the relation between the therapeutic alliance and outcome in cognitive therapy for depression. *Journal of Consulting and Clinical Psychology, 82,* 368–373. http://dx.doi.org/10.1037/a0035994

Lutz, W., Hofmann, S. G., Rubel, J., Boswell, J. F., Shear, M. K., Gorman, J. M., . . . Barlow, D. H. (2014). Patterns of early change and their relationship to outcome and early treatment termination in patients with panic disorder. *Journal of Consulting and Clinical Psychology, 82,* 287–297. http://dx.doi.org/10.1037/a0035535

Lutz, W., Stulz, N., & Köck, K. (2009). Patterns of early change and their relationship to outcome and follow-up among patients with major depressive disorders. *Journal of Affective Disorders, 118,* 60–68. http://dx.doi.org/10.1016/j.jad.2009.01.019

Mann, J. (1973). *Time-limited psychotherapy.* Cambridge, MA: Harvard University Press.

McLaughlin, A. A., Keller, S. M., Feeny, N. C., Youngstrom, E. A., & Zoellner, L. A. (2014). Patterns of therapeutic alliance: Rupture-repair episodes in prolonged exposure for posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology, 82,* 112–121. http://dx.doi.org/10.1037/a0034696

Owen, J., Miller, S. D., Seidel, J., & Chow, D. (2016). The working alliance in treatment of military adolescents. *Journal of Consulting and Clinical Psychology, 84,* 200–210. http://dx.doi.org/10.1037/ccp0000035

Patton, M. J., Kivlighan, D. M., Jr., & Multon, K. D. (1997). The Missouri Psychoanalytic Counseling Research Project: Relation of changes in counseling process to client outcome. *Journal of Counseling Psychology, 44,* 189–208. http://dx.doi.org/10.1037/0022-0167.44.2.189

Piper, W. E., Ogrodniczuk, J. S., Lamarche, C., Hilscher, T., & Joyce, A. S. (2005). Level of alliance, pattern of alliance, and outcome in short-term group therapy. *International Journal of Group Psychotherapy, 55,* 527–550. http://dx.doi.org/10.1521/ijgp.2005.55.4.527

Safran, J. D., & Muran, J. C. (2000). *Negotiating the therapeutic alliance: A relational treatment guide.* New York, NY: Guilford Press.

Sauer, E. M., Lopez, F. G., & Gormley, B. (2003). Respective contributions of therapist and client adult attachment orientations to the development of the early working alliance: A preliminary growth modeling study. *Psychotherapy Research, 13,* 371–382. http://dx.doi.org/10.1093/ptr/kpg027

Sexton, H. C., Hembre, K., & Kvarme, G. (1996). The interaction of the alliance and therapy microprocess: A sequential analysis. *Journal of Consulting and Clinical Psychology, 64,* 471–480. http://dx.doi.org/10.1037/0022-006X.64.3.471

Siefert, C. J., & Hilsenroth, M. J. (2015). Client attachment status and changes in therapeutic alliance early in treatment. *Clinical psychology & psychotherapy, 22,* 677–686.

Silberschatz, G. (2017). Improving the yield of psychotherapy research. *Psychotherapy Research, 27,* 1–13. http://dx.doi.org/10.1080/10503307.2015.1076202

Stevens, C. L., Muran, J. C., Safran, J. D., Gorman, B. S., & Winston, A. (2007). Levels and patterns of the therapeutic alliance in brief psychotherapy. *American Journal of Psychotherapy, 61,* 109–129.

Stiles, W. B., Glick, M. J., Osatuke, K., Hardy, G. E., Shapiro, D. A., Agnew-Davies, R., . . . Barkham, M. (2004). Patterns of alliance development and the rupture-repair hypothesis: Are productive relationships

U-shaped or V-shaped? *Journal of Counseling Psychology, 51,* 81–92. http://dx.doi.org/10.1037/0022-0167.51.1.81

Stiles, W. B., & Goldsmith, J. Z. (2010). The alliance over time. In J. Muran & J. Barber (Eds.), *The therapeutic alliance: An evidence-based guide to practice* (pp. 44–62). New York, NY: Guilford Press.

Strauss, J. L., Hayes, A. M., Johnson, S. L., Newman, C. F., Brown, G. K., Barber, J. P., . . . Beck, A. T. (2006). Early alliance, alliance ruptures, and symptom change in a nonrandomized trial of cognitive therapy for avoidant and obsessive-compulsive personality disorders. *Journal of Consulting and Clinical Psychology, 74,* 337–345. http://dx.doi.org/10.1037/0022-006X.74.2.337

Stulz, N., Gallop, R., Lutz, W., Wrenn, G. L., & Crits-Christoph, P. (2010). Examining differential effects of psychosocial treatments for cocaine dependence: An application of latent trajectory analyses. *Drug and Alcohol Dependence, 106,* 164–172. http://dx.doi.org/10.1016/j.drugalcdep.2009.08.009

Stulz, N., Lutz, W., Leach, C., Lucock, M., & Barkham, M. (2007). Shapes of early change in psychotherapy under routine outpatient conditions. *Journal of Consulting and Clinical Psychology, 75,* 864–874. http://dx.doi.org/10.1037/0022-006X.75.6.864

Swift, J. K., & Greenberg, R. P. (2012). Premature discontinuation in adult psychotherapy: A meta-analysis. *Journal of Consulting and Clinical Psychology, 80,* 547–559.

Tang, T. Z., & DeRubeis, R. J. (1999). Sudden gains and critical sessions in cognitive-behavioral therapy for depression. *Journal of Consulting and Clinical Psychology, 67,* 894–904. http://dx.doi.org/10.1037//0022-006x.67.6.894

Tracey, T. J., & Kokotovic, A. M. (1989). Factor structure of the Working Alliance Inventory. *Psychological Assessment, 1,* 207–210. http://dx.doi.org/10.1037/1040-3590.1.3.207

Tracey, T. J., & Ray, P. B. (1984). Stages of successful time-limited counseling: An interactional examination. *Journal of Counseling Psychology, 31,* 13–27. http://dx.doi.org/10.1037/0022-0167.31.1.13

Tsai, M., Kohlenberg, R. J., & Kanter, J. W. (2010). A functional analytic psychotherapy (FAP) approach to the therapeutic alliance. In M. J. Christopher & J. P. Barber (Eds.), *The therapeutic alliance: An evidence-based guide to practice* (pp. 172–190). New York, NY: Guilford.

Wang, J. (2010). Consistent selection of the number of clusters via cross-validation. *Biometrika, 97,* 893–904. http://dx.doi.org/10.1093/biomet/asq061

Weiss, M., Kivity, Y., & Huppert, J. D. (2014). How does the therapeutic alliance develop throughout cognitive behavioral therapy for panic disorder? Sawtooth patterns, sudden gains, and stabilization. *Psychotherapy Research, 24,* 407–418. http://dx.doi.org/10.1080/10503307.2013.868947

Winnicott, D. W. (1969). The use of an object. *International Journal of Psychoanalysis, 50,* 711–716.

Wong, K., & Pos, A. E. (2014). Interpersonal processes affecting early alliance formation in experiential therapy for depression. *Psychotherapy Research, 24,* 1–11.

Zheng, X., Simpson, J. A., van der Windt, D. A., & Elliott, A. M. (2005). Data from a study of effectiveness suggested potential prognostic factors related to the patterns of shoulder pain. *Journal of Clinical Epidemiology, 58,* 823–830. http://dx.doi.org/10.1016/j.jclinepi.2005.01.011

Zilcha-Mano, S. (2016). New analytic strategies help answer the controversial question of whether alliance is therapeutic in itself. *World Psychiatry, 15,* 84–85. http://dx.doi.org/10.1002/wps.20305

Zilcha-Mano, S. (in press). Is alliance really therapeutic? Revisiting this question in light of recent methodological advances. *American Psychologist.* http://dx.doi.org/10.1037/a0040435

Zilcha-Mano, S., & Errázuriz, P. (2015). One size does not fit all: Examining heterogeneity and identifying moderators of the alliance–outcome

association. *Journal of Counseling Psychology, 62,* 579–591. http://dx .doi.org/10.1037/cou0000103

Zilcha-Mano, S., McCarthy, K. S., Dinger, U., & Barber, J. P. (2014). To what extent is alliance affected by transference? An empirical exploration. *Psychotherapy: Theory, Research & Practice, 51,* 424–433. http:// dx.doi.org/10.1037/a0036566

Zilcha-Mano, S., McCarthy, K. S., Dinger, U., Chambless, D. L., Milrod, B. L., Kunik, L., & Barber, J. P. (2015). Are there subtypes of panic disorder? An interpersonal perspective. *Journal of Consulting and Clinical Psychology, 83,* 938–950. http://dx.doi.org/10.1037/a0039373

Zilcha-Mano, S., Muran, J. C., Hungr, C., Eubanks, C. F., Safran, J. D., & Winston, A. (2016). The relationship between alliance and outcome: Analysis of a two-person perspective on alliance and session outcome. *Journal of Consulting and Clinical Psychology, 84,* 484–496. http://dx .doi.org/10.1037/ccp0000058

Zilcha-Mano, S., Roose, S. P., Barber, J. P., & Rutherford, B. R. (2015). Therapeutic alliance in antidepressant treatment: Cause or effect of symptomatic levels? *Psychotherapy and Psychosomatics, 84,* 177–182. http://dx.doi.org/10.1159/000379756