

Running head: WORKING ALLIANCE DISCREPANCY IN ALCOHOL TREATMENT

PATIENT-THERAPIST WORKING ALLIANCE RATING DISCREPANCIES PREDICTING
ALCOHOL TREATMENT PARTICIPATION AND CLINICAL OUTCOMES

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ABSTRACT

Client and therapist perceptions regarding their therapeutic working alliance have been shown to be independently predictive of treatment outcomes. The extent to which patients and therapists agree or disagree about the quality of the therapeutic relationship may be a distinct variable from either individual's perspective of the quality of the relationship. Recent studies of alliance have explored patient and therapist congruence and discrepancy regarding measurements of the alliance and the degree to which they are predictive of treatment outcomes. This study centers on an investigation of patient-therapist discrepancy in evaluations of the therapeutic relationship as a predictor of treatment participation and outcomes (i.e., alcohol use, alcohol-related problems). To achieve study aims, secondary data analyses were conducted using 741 participants from the outpatient sample of Project MATCH. To examine the extent to which patient-therapist Working Alliance Inventory (WAI) rating discrepancies predicted posttreatment outcomes and treatment participation, a difference score was computed and multiple regression analyses conducted. To further examine patient-therapist WAI discrepancy as a predictor of posttreatment outcomes and treatment participation, both patient and therapist WAI scores were categorized as high or low alliance based on a median split, yielding a 2 by 2 study design (therapist score vs. patient score; low vs. high). Study hypotheses based on this 2 by 2 study design were tested using four analyses of covariance (ANCOVAs). Working alliance discrepancy was not found to be a significant predictor of posttreatment alcohol use behavior, alcohol-related negative consequences, or treatment participation when controlling for baseline measures. No significant interaction effect was found for the combination of patient and therapist alliance levels on posttreatment outcomes when controlling for baseline measures, although significant main

effects ($p < .05$) were detected. The results of the current study do not support the hypothesis that alliance discrepancy accounts for differences in treatment outcomes and treatment participation. Limitations of the study and future directions for research examining alliance discrepancy are discussed.

Keywords: Alcohol treatment, working alliance, congruence, discrepancy, Project

MATCH

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Introduction

The influence of the patient-therapist relationship on the outcomes of psychotherapy has been a component of the psychology zeitgeist for many years. For example, as early as 1913, Freud explored differences between neurotic transference and the constructive or positive feelings that the patient had toward the therapist (Freud, 1913). The importance of a positive therapeutic relationship has been noted in the work of Carl Rogers and his associates (Rogers, 1957). In this regard, Rogers posited that the major component of therapy that allowed for patient improvement was the therapist's ability to be empathic. Further support for the importance of a positive patient-therapist relationship was provided by Greenson (1965) who posited that success in therapy hinged upon a positive collaboration between patient and therapist and coined the term '*working alliance*' to reflect this relationship. Interest in the working alliance in the following decades increased, along with the view that "both the therapist and the patient make important contributions to the formation of an effective therapeutic partnership" (Horvath & Symonds, 1991, p.1). According to Horvath and Symonds (1991), an accurate representation of the therapeutic relationship cannot be assessed solely through examination of either the patient's or the therapist's perceptions, but rather must take into account the collaborative aspects of the relationship.

Research during the 1970s and 80s began to suggest that psychotherapy, regardless of theoretical basis, was generally effective (e.g., Bergin & Lambert, 1978; Smith, Glass, & Miller, 1980; Stiles, Shapiro, & Elliot, 1986). Debate about the relative effectiveness of specific psychotherapies, however, continues unabated and has resulted in a search for common factors across therapies that can explain therapeutic outcomes distinct from theoretical orientation. For

example, Lambert and Bergin (1994) identified many elements common across psychotherapies, such as warmth, trust, empathy, decreased sense of isolation, insight, affective experiencing, cognitive learning, feedback, reconceptualization of problems, mastery experiences, and reality testing. Therapeutic working alliance is one such common factor that may help to explain similar therapeutic benefits derived from treatments with disparate theoretical underpinnings, and is the focus of this dissertation research.

Current Understanding of Working Alliance

During the 1970's and 1980's, several research groups focusing on working alliance emerged, each with their own tools to measure the construct. Measures to assess the patient-therapist relationship were developed at the University of Pennsylvania (Luborsky, 1976), Vanderbilt University (Gomes-Schwartz, 1978), the Langley Porter Institute (Marmar, Horowitz, Weiss, & Marziali, 1986; Marziali, Marmar, & Krupnick, 1981), and the University of British Columbia (Horvath & Greenberg, 1989). Each of these measures arose from a somewhat different definition of working alliance, its role in therapy, and the selected source (i.e., patient, therapist, or observer). Despite differences in measurement tools, the correlations between these various instruments are generally good and suggest they assess similar underlying processes (Cecero et al., 2001; Fenton et al., 2001; Hatcher & Barends, 1996; Stiles et al., 2002; Tichenor & Hill, 1989). For example, Cecero et al. (2001) compared the California Psychotherapy Alliance Scale (CALPAS; Marmar & Gaston, 1988), the Penn Helping Alliance Rating Scale (Penn; Luborsky et al., 1983), The Vanderbilt Therapeutic Alliance Scale (VTAS; Hartley & Strupp, 1983), and the Working Alliance Inventory therapist and client scales (WAI-T, WAI-C; Horvath & Greenberg, 1986) and observer scale (WAI-O; Tichenor and Hill, 1989). Using

Pearson product-moment correlation coefficients, they demonstrated that all of the observer-rated measures (CALPAS, Penn, VTAS, and WAI-O) were significantly correlated with each other (ranging from .45 to .90), with the highest correlation between the Vanderbilt and WAI-O. Regarding the relationship between the client-and therapist-rated instruments (WAI-C and WAI-T) and the four observer-rated instruments, the WAI-C was not significantly related to any of the observer-rated measures. Similarly, the WAI-T had significant but lower correlations with the Penn, the VTAS, and the CALPAS, but was not significantly correlated with the WAI-O (Cecero et al., 2001).

Although there are a number of different definitions and constructions of working alliance, most definitions emphasize similar key points. A good working alliance is defined by a collaborative relationship between the patient and therapist consisting of an emotional bond between them, and shared expectations of the tasks and goals of treatment (Horvath & Symonds, 1991).

Working Alliance and Treatment Outcomes

A number of meta-analyses have been conducted over the years in an attempt to empirically review the association between therapeutic alliance and treatment outcomes, and have broadly found a statistically significant but moderate association. In a meta-analysis by Horvath, Del Re, Flückiger, and Symonds (2011), the aggregate effect size for 190 independent alliance/outcome associations was $r = .275$ (significant at the $p < .0001$ level), adjusted for sample size and intercorrelation among outcome measures. Other meta-analyses have found similar consistent but moderate associations for patient and therapist perceptions of the alliance, ranging from .21 to .26 (Horvath & Bedi, 2002; Horvath & Symonds, 1991; Martin, Garske, &

Davis et al., 2000). Across the research, this association does not appear to be a function of the type of therapy treatment, the length of treatment, whether the research is published, the number of participants in the study, who rated the outcome, or who rated the alliance.

Although both therapist and patient perceptions of the alliance have each been shown to be associated with treatment outcome, it has been found that these perceptions are only moderately related to one another (e.g., Marmarosh & Kivlighan, 2012; Tryon, Blackwell, & Hammel, 2007). Evidence regarding the unique contribution of the patients' and therapists' reports to the association between alliance and outcome is less clear, as previous studies seldom included therapist and patient alliance ratings in the same analysis (Kivlighan, 2007). The findings of studies that examined the unique contribution of each perspective to treatment outcomes were mixed, some showing that both patient and therapist alliance have a clearly marked effect on outcome (e.g. Bachelor, 2013), others that neither can predict outcome (e.g. Knuuttila, Kuusisto, Saarnio, & Nummi, 2012) or that only one of them can (e.g., Gaston, Marmar, Gallagher, & Thompson, 1991; Huppert et al., 2014; Marcus, Kashy, & Baldwin, 2009).

Across years of theoretical refinement and research, the qualities of the therapeutic relationship that define the working alliance have gradually shifted from patient driven, to therapist driven, to patient-therapist collaboration. This aspect of collaboration and mutual agreement in the goals of therapy is reflected in the scales constructed to measure working alliance. Nevertheless, the majority of early published research studies that assessed the association between working alliance and treatment outcomes used patient scores and therapist scores as two distinct variables (i.e., patients and therapists each making independent judgments about the perceived quality of the relationship). In their meta-analysis, Horvath and colleagues

found that 112 out of 175 independent effect sizes between alliance and outcome were based on the point of view of the patient (Horvath et al., 2011).

Working Alliance Congruence

One area that has come to the forefront of working alliance research in recent years is that of patient-therapist *congruence* (also referred to as *convergence* or *agreement* in the literature) regarding the assessment of therapeutic working alliance and its association with treatment participation and treatment outcomes. Congruence, in this context, is a measure of the degree to which each member of the therapeutic dyad agrees (or disagrees) about the quality of the relationship. The available instruments for assessing therapeutic working alliance measure either the patient's or the therapist's individual perspective regarding the quality of the relationship, and it is these independent measurements that are more frequently studied for their association with therapeutic outcomes. As an interpersonal construct, examining the shared aspects of the alliance (i.e., alliance agreement) may elucidate the potential role of the alliance with regards to outcomes (Elvins & Green, 2008). For example, one might expect that if the therapist and patient both believe that a good alliance exists, the outcome of therapy would be favorable. On the other hand, if there is substantial disagreement about whether or not there is a working alliance, or if both agree that the working alliance is low or negligible, one might expect premature termination of treatment and/or less than favorable outcomes. These expectations are part of several theoretical conceptualizations of the role of the alliance in psychotherapy that consider alliance agreement to be an important aspect of the working alliance and critical for the

success of treatment (Bordin, 1979; Gaston et al., 1995; Pepinsky & Karst, 1964; Safran & Muran, 2000).

Studies investigating alliance congruence have been typically operationalized in one of two ways: either as a correlation between patients' and therapists' alliance ratings over two or more sessions, or in the case of discrepancy, as the average difference between these ratings. A meta-analysis conducted by Tryon, Blackwell, & Hammel (2007) found 32 studies applying a correlational definition of congruence and 44 studies in which the difference score between patients' and therapists' alliance ratings was used as a measure of discrepancy. With regard to the correlation model, they found a moderate aggregated effect of $r = .36$. With regard to the difference score model, they found a mean difference between patient and therapist ratings of $d = .63$. In examining this mean difference, they also detected the presence of moderators, and concluded that clients with substance abuse problems and those with mild disturbances tended to have larger patient-therapist rating discrepancies than did clients with moderate disturbances without substance abuse concerns and more severely disturbed clients (Tryon et al., 2007).

So far, results on the association between patient-therapist agreement of alliance ratings and treatment outcomes are mixed. Some studies have reported finding evidence of a significant association between alliance agreement and outcome (e.g., Bachelor, 2013; Fjermestad et al., 2016; Rozmarin et al., 2008). Rozmarin et al. (2008) investigated the profile similarity between patients' and therapists' weekly assessments of the short form of the Working Alliance Inventory (WAI-S; Tracey & Kokotovic, 1989) as an indicator of congruence. They found this correlation to be significantly associated with greater pre- to post-therapy change on measures of interpersonal problems and target complaints. This association was twice as strong as the

respective associations of patients' and therapists' alliance ratings with outcome. On the other hand, other studies did not find such an association (e.g. Compare et al., 2016; Fitzpatrick, Iwakabe, & Stalikas, 2005; Langhoff, Baer, Zubraegel, & Linden, 2008; Marmarosh & Kivlighan, 2012; Zandberg, Skriner, & Chu, 2015). Fitzpatrick et al. (2005) found no relationship between either absolute or relative discrepancy of WAI scores on session impact. Meier and Donmall (2006) also used an absolute difference score to examine client and counselor working alliance agreement. They found no relationship between this measure of agreement and whether clients were retained in treatment.

A small number of more recent studies have used sophisticated statistical analyses to closely examine the potential effects of agreement between patients' and therapists' working alliance scores on treatment outcomes. For example, Marmarosh and Kivlighan (2012) used polynomial regression and response surface analysis in addition to relative and absolute difference scores to examine the relationship between alliance agreement on patient rated session smoothness and session depth, and symptom reduction. They found greater reported session smoothness and greater symptom reduction when patients' and therapists' perceptions of the alliance were in agreement and high than when they were in agreement and low. With regards to alliance disagreement, however, they found that session smoothness was highest when clients' ratings of working alliance were higher than therapists' ratings and lowest when therapists' ratings of working alliance were higher than patients' ratings (Marmarosh and Kivlighan, 2012). Most surprisingly, Marmarosh and Kivlighan found that the greater the disagreement on the alliance, the greater the symptom improvement. This finding is in contrast with the available literature. They speculated that there may have been a selection bias favoring those patients that

completed treatment, and that even though there may be a disagreement in the perception of the alliance at the early phase of the treatment, the therapist may have taken actions to remedy misunderstandings over time (Marmarosh & Kivlighan, 2012).

Zilcha-Mano, Snyder, & Silberschatz, (2017) investigated the associations between alliance agreement and symptom reduction with response surface analysis. Alliance agreement in one session was used as a predictor of symptoms 1 month later during the course of cognitive-relational psychodynamic treatment. Similar to Marmarosh and Kivlighan (2012), they found that symptom levels were lower when patients' and therapists' perceptions of the alliance were in agreement and that the alliance was good compared to when they were in agreement and the alliance was moderate or poor. However, they also found lower subsequent symptomatic levels when both the therapist and the patient agreed that the alliance was poor, compared to when the two were in agreement and the alliance was moderate (Zilcha-Mano, Snyder, & Silberschatz, 2017). They interpreted this finding as indicating that agreement on a moderate level of alliance may be the least conducive to therapeutic action, as it neither provides the collaborative atmosphere of strong agreement of a strong alliance, nor the opportunity to address ruptures in a strong agreement on poor alliance. With regard to disagreement, the authors neither found that the amount of disagreement had any association with symptom impairment, nor that either one of the two perspectives contributed more or less to subsequent symptom distress (Zilcha-Mano, Snyder, & Silberschatz, 2017).

This dissertation study examined patient-therapist discrepancy regarding the quality of the therapeutic relationship as a predictor of treatment outcomes (e.g., alcohol use, alcohol related problems) and treatment participation via secondary data analyses using data from Project

MATCH, a large multi-site study that examined hypotheses specific to the matching of patients to alcohol use disorder (AUD) treatments based on patient characteristics (Project MATCH Research Group, 1997). Specifically, this dissertation study was intended to extend the work of previous research looking at the effect of discrepancy between patients' and therapists' working alliance on treatment participation and clinical outcomes. In the context of evaluating the association between working alliance discrepancy and treatment outcomes, the Project MATCH data set has a number of strengths. These strengths include three different standardized treatments (i.e., cognitive-behavioral, motivation enhancement, and twelve step facilitation); a large group of therapists ($N = 80$) who were trained and certified to administer the respective treatments; a large clinical outpatient sample ($N = 952$); and an extensive assessment battery administered before, during, and after treatment. In addition, few studies have examined the impact of working alliance congruence or discrepancy on outcomes in a sample of patients seeking treatment for alcohol use, and therefore the aim of this study was to expand the available literature to include this population.

Although Project MATCH consisted of two parallel study arms (i.e., an 'outpatient arm' that recruited from the community and an 'aftercare arm' that recruited directly from rehabilitation programs), only outpatient study arm data was used for this dissertation because outpatient treatment has become the more common modality for AUD treatment. In addition, prior research using Project MATCH data has shown that ratings of therapeutic alliance by Project MATCH aftercare patients or their therapists broadly did not predict treatment participation or drinking outcomes, with a single exception out of multiple variables tested (Connors, Carroll, DiClemente, Longabaugh, & Donovan, 1997). Additional studies of the

therapeutic alliance which used the Project MATCH data included a study of patient and therapist characteristics that predict alliance ratings, and two studies that examined moderators of the relationship between alliance and outcomes (Connors et al., 2000; Ilgen, McKellar, Moos, & Finney, 2006; Ilgen, Tiet, Finney, Moos, 2006).

Project MATCH Alliance Studies

Project MATCH study investigators identified 10 primary and 11 secondary patient attributes that served as the basis for analyzing matching effects (for a description of the study design, see Longabaugh & Wirtz, 2001). On the whole, Project MATCH failed to confirm the proposed treatment matching hypotheses, with only a few exceptions (Longabaugh & Wirtz, 2001). One explanation posited for the failure to find consistent evidence of patient-treatment matching effects was the possibility of interference due to factors common across the three treatment conditions (Cooney, Babor, DiClemente, & Del Boca, 2003). Working therapeutic alliance is one such factor, and has been shown to contribute to treatment outcomes.

Connors and colleagues (1997) initiated research on the working alliance in Project MATCH and were the first to study the independent contribution of working alliance to treatment participation and alcohol use outcomes. In the outpatient sample, ratings of the working alliance as measured by the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989), whether provided by the patient or therapist, predicted both greater treatment engagement and positive drinking-related outcomes during the treatment and 12-month posttreatment periods (Connors, et al., 1997). In contrast, ratings of therapeutic alliance reported by aftercare patients did not predict treatment participation or drinking outcomes. Therapists' ratings of therapeutic alliance in the aftercare sample, however, were predictive of patient abstinence (i.e., percentage of days

abstinent) during treatment and follow-up, but not other treatment outcomes (Connors, et al., 1997). Although the reasons for aftercare patients' therapeutic alliance ratings not predicting treatment outcomes to the same extent found among the outpatient sample are unclear, it was noted that the aftercare patients had a greater degree of previous alcoholism involvement, which may have eclipsed any effect of the working alliance. In addition, the aftercare patients had already completed a course of intensive alcoholism treatment, which may have resulted in a pre-selection bias specific to compliance or motivation. This earlier work regarding the prediction of treatment outcomes based on therapeutic working alliance provides the groundwork for this dissertation, and suggests that although both patient and therapist ratings predict treatment outcomes, in some specific scenarios therapist ratings may be more predictive than patient ratings.

Connors et al. (2000) also looked into whether patient and therapist characteristics were predictive of patient and/or therapist assessments of working alliance. Predictions of the working alliance in alcoholism treatment (as rated by the patient and the therapist) were examined in light of a range of potentially relevant factors, including patient demographics, drinking history, current drinking, current psychosocial functioning and therapist demographics. Using regression analyses, it was found that outpatients' ratings of therapeutic alliance were positively predicted by patient age, motivational readiness to change, socialization, level of perceived social support and therapist age, and were negatively predicted by patient educational level, level of depression, and meaning seeking. Therapist alliance ratings among the outpatient sample were positively predicted by the patient being female and by level of overall alcohol involvement, severity of alcohol dependence, negative consequences of alcohol use, and readiness to change. Among

aftercare patients, ratings of alliance were positively predicted by readiness to change, socialization and social support, and were negatively predicted by level of depression. Therapist ratings of the alliance with the aftercare sample were positively predicted by the patient being female and therapist educational level, and were negatively predicted by pretreatment drinks per drinking day.

Ilgen, Tiet, and colleagues (2006) hypothesized that patient self-efficacy regarding abstinence from alcohol would moderate the effects of therapeutic alliance. It was reasoned that patients who have lower evaluations of their self-efficacy would more likely be influenced by external factors like their therapist. Specifically, they hypothesized that a stronger working alliance would be especially beneficial for patients with low self-efficacy. Their results with the Project MATCH dataset demonstrated a significant interaction between the therapists' ratings of therapeutic alliance with patient self-efficacy in predicting percentage of days abstinence and drinks per drinking day at 1-year post treatment follow-up (Ilgen, Tiet, et al., 2006).

Ilgen, McKellar, and colleagues (2006) also looked into possible links between motivation, working therapeutic alliance, and treatment outcomes. After controlling for baseline alcohol use and treatment type, they found that a high-quality therapeutic relationship (as measured by the therapist) was more strongly associated with reductions in alcohol use among patients with low motivation than among those with high motivation, and concluded that a strong positive therapeutic relationship could mitigate the negative effect of low motivation on posttreatment alcohol use.

Taken together, these studies illustrate the overall importance of working therapeutic alliance in AUD treatment, as well as how patient or therapist evaluations of working alliance

interact with motivation or self-efficacy to produce positive outcomes. The regressions by Connors and colleagues (2000) and the interaction effects reported by Ilgen, Tiet, and colleagues (2006) indicate that motivational readiness to change, self-efficacy, patient age, patient gender, and patient education level are all potentially relevant variables that might influence the relationship between therapeutic alliance and treatment outcomes. What has not been demonstrated is how differences between patients and their therapists in their evaluation of the alliance might predict outcomes.

Study Aims and Hypotheses

This dissertation was aimed at obtaining a better understanding of therapist and patient perceptions of their therapeutic working alliance (i.e., the relationship formed between the patient and the therapist) as they are associated with treatment participation and related clinical outcomes among an AUD treatment sample. Specifically, this study was conducted to examine the extent to which discrepancy between patients and therapists regarding the therapeutic working alliance predicts AUD treatment participation, alcohol use, and alcohol-related negative consequences. Additionally, this research attempted to compare the clinical outcomes and treatment participation of participant groups based on different arrangements of the direction of the discrepancy.

Discrepancy as a predictor. One might expect that if the therapist and patient both believe that a good alliance exists, the outcome of therapy would be favorable. When the patient and therapist agree that the working alliance is strong, both are stating that they know the goals of therapy, that they know what they must do to reach those goals, and that they are emotionally bonded. In essence, the patient would have a therapist who is behaving in ways that match the

client's perception of the relationship, so the therapist would more likely be effective in delivering therapeutic strategies and there should be increased coordination and collaboration (Maramosh & Klivighan, 2012). In contrast, if there was agreement between patient and therapist that the alliance is weak, this could lead to less favorable outcomes and/or premature termination of treatment. In such a scenario, however, the therapist would be aware of the weak alliance and could take actions to address it by increasing support, focusing on rapport-building, or clarifying the goals and tasks of therapy (Safran, Muran, & Eubanks-Carter, 2011). Despite a broadly weak alliance, the therapist behavior of addressing the alliance rupture would continue to fit the patient's perceptions, allowing the therapist to be effective in delivering therapeutic strategies in order to increase their coordination.

Contrast this scenario with one of disagreement about the strength of the working alliance. If there was substantial discrepancy between patients and therapists about whether or not there is a working alliance, one might expect premature termination of treatment and/or less than favorable outcomes. The patient and therapist would have different understandings of the relationship and will be operating under different assumptions. Events in the therapy would be likely to be interpreted differently by the therapist and the patient, making them less able to coordinate their efforts (Bashshur et al., 2011). Regardless of the direction of the disagreement (either the patient or therapist perceiving the relationship more favorably than the other), the treatment would be likely to suffer to some degree. Either the therapist would use time better spent with the tasks of therapy in an attempt to address perceived relationship problems when the client is satisfied with the therapy, or the therapist would fail to perceive the discrepancy and/or rupture, and believing the relationship to be secure, do nothing (Marmarosh & Kivlighan, 2012).

Regardless of the overall quality of the relationship, agreement between the patient and therapist would be likely to be associated with better outcomes. The current study therefore hypothesized that a greater patient-therapist working alliance discrepancy score would be associated with poorer treatment participation, greater alcohol use, and greater alcohol related negative consequences (hypothesis 1).

Discrepancy direction. Whether patient-therapist working alliance discrepancy can predict treatment participation or clinical outcomes was not the only factor of interest for this study. It is also possible that particular combinations of discrepancy may have a differential association with outcomes. When patients and therapists disagree about the quality of the relationship, are the perceptions of the working alliance by either patients or therapists more accurate as a predictor of eventual patient outcome? In other words, how does the direction of the disagreement (i.e., patients rating the alliance more favorably than their therapists, or therapists rating the alliance more favorably than their patients) relate to patient outcomes?

Safran and Muran's (1996) process model for addressing working alliance ruptures was used as the theoretical basis to determine the hypothesis regarding the effects of the direction of working alliance discrepancy in the current study. Broadly, the model states that the therapist must first recognize that a rupture has occurred and then take steps to address it (Safran & Muran, 1996). It is plausible that disagreement about the working alliance indicates or represents a rupture in the relationship (Marmarosh & Kivlighan, 2012). Although the rationale for the first hypothesis above suggested that any disagreement about the alliance would be likely to cause some negative impact on the therapy process and thereby outcomes, when directly comparing the two possible disagreement scenarios, it is feasible that one could be more likely to have negative

consequences than the other. If the patient perceived the working alliance as weak in comparison to their therapist, the therapy would be more likely to suffer substantive setbacks than the reverse. In the case that the patient perceived a weaker working alliance than the therapist, the patient would not see the therapist as a collaborator, and would be less likely to engage fully in the treatment. The therapist would be unlikely to take the necessary actions to address the rupture because they do not perceive the rupture in the first place. By contrast, if the therapist perceived the working alliance as weak but the patient perceived it as relatively strong, the likely consequence would be that the therapist chooses to spend time away from therapy tasks to focus on unnecessary alliance rupture interventions (Marmarosh & Kivlighan, 2012; Zilcha-Mano, et al., 2017). For the current study, it was therefore hypothesized that in the case of discrepant alliance ratings by patients and their therapists, positive patient evaluation of the alliance will supersede lower therapist evaluation, resulting in more treatment participation and more positive treatment outcomes in comparison. Specifically, the patient group characterized by patients who rated the alliance as high when their therapists rated it low would have greater treatment participation, less alcohol use, and fewer alcohol-related negative consequences when compared to the patient group characterized by patients who rated the alliance as low when their therapists rate it high (hypothesis 2).

Methods

The Parent Study: Project MATCH

In 1989, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) initiated Project MATCH, a multisite clinical trial conducted across nine United States cities that was designed to investigate patient-treatment matching hypotheses for study participants with an

alcohol use disorder (Project MATCH Research Group, 1997). Through extensive collaboration by committee, three AUD treatments (i.e., cognitive behavioral, motivational enhancement, and twelve step facilitation) were chosen for investigation. These three AUD treatments had been demonstrated to be clinically effective, had potential for revealing matching effects, had applicability to existing treatment programs and patient populations, and were deemed sufficiently distinctive from each other (Longabaugh & Wirtz, 2001). Participants were randomly assigned to one of the three treatment conditions: *Twelve-Step Facilitation* (TSF; Nowinski, Baker & Carroll, 1995); *Cognitive-Behavioral Coping Skills Therapy* (CBT; Kadden et al., 1995); or *Motivational Enhancement Therapy* (MET; Miller et al., 1995), which were delivered across a twelve-week period. Both CBT and TSF involved weekly individual treatment sessions, whereas MET consisted of four individual treatment sessions, occurring during the 1st, 2nd, 6th, and 12th weeks.

The overall goal of the TSF treatment was to help the participant achieve abstinence from alcohol by promoting the patient's active participation in Alcoholics Anonymous (AA). The major goals of the TSF intervention emphasize the first steps of AA: admitting that they have developed the chronic and progressive illness of alcoholism, that the ability to control drinking has been lost, and that the only viable solution is complete abstinence. The primary goal of MET was to help the patient modify his/her alcohol consumption, which was accomplished by interventions designed to increase patient motivation and helping to mobilize the patient's own resources to effect change. The first session (week 1) provided structured feedback from the intake assessment regarding drinking frequency and quantity, as well as problems associated with drinking. The second session (week 2) worked toward consolidating commitment to change

and the creation of a change plan. The sessions during the sixth and twelfth week were designed as booster sessions aimed at reinforcing and/or reconfirming the patients' commitment to change. CBT, as implemented in Project MATCH, represented an integration of several social learning-theory based interventions. The CBT approach emphasized teaching techniques to enable patients to achieve and maintain sobriety, such as skills-training, problem-solving, and contingency management. Detailed information specific to each treatment approach is available in the form of treatment manuals specific to each treatment (Kadden et al., 1995; Miller et al., 1995; Nowinski et al., 1995) and a summary of each treatment approach is provided in the initial Project MATCH paper detailing the study's rationale and methods (The Project MATCH Research Group, 1993).

Participants

The current study included a sample of participants from the outpatient arm of the Project MATCH study. The demographics of the full outpatient sample ($n = 952$) were 27.7% female, 80% non-Hispanic White, 35.5% married, mean age was 38.9 years ($SD = 10.7$), and the mean level of education was 13.4 years ($SD = 2.2$). More information on participant characteristics are described in detail by the Project MATCH Research Group (1993), as well as in the study of the primary matching hypotheses (Project MATCH Research Group, 1997). All participants met criteria of the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., rev.; DSM-III-R; American Psychiatric Association, 1987) for a current diagnosis of alcohol abuse or dependence as assessed using the alcohol section of the *Structured Clinical Interview for the DSM-III-R* (SCID; Spitzer & Williams, 1985). The majority ($> 95\%$) met criteria for alcohol dependence.

To be eligible for Project MATCH, participants had to be at least 18 years of age and satisfy the following conditions: (1) meet DSM- III-R criteria for alcohol dependence or abuse; (2) report alcohol as their principle substance of abuse; (3) report alcohol use within 3 months prior to treatment entry; (4) not meet the DSM-III-R criteria for dependence on sedative/hypnotic drugs, stimulants, cocaine, or opiates; (5) report no intravenous drug use for the past 6 months; (6) report no current acute suicidality; (7) report no current residential instability; (8) indicate no current acute psychosis or severe organic impairment; and (9) report that they anticipated no more than 6 hours of involvement in other non-self-help treatment during participation in Project MATCH.

In the present study, 741 patients provided requisite data from the Project MATCH outpatient arm sample, representing 78% of the original population. Baseline demographics and participant characteristics are provided in Table 1. The main reasons for deletion of cases from the original outpatient sample were missing Working Alliance Inventory (WAI; Horvath & Greenberg, 1986) ratings by either patients or therapists ($n = 228$), and incomplete or missing post-treatment primary drinking data ($n = 13$). Chi-square tests comparing participants in the present sample with those from the original outpatient sample revealed no significant differences between samples.

Procedure

Although a brief overview of the procedures used in Project MATCH is included here, a detailed description is provided in the Project MATCH Research Group (1993). Outpatient participants were recruited from the community through advertisements or from outpatient

treatment centers, and the outpatient arm of the study took place at five clinical research units in, Albuquerque, NM, Buffalo, NY, Farmington, CT, Milwaukee, WI, and West Haven, CT.

Background information (e.g., demographics, education, current marital and employment status) was gathered from participants as part of the initial screening and formal diagnostic evaluation interview session at baseline. After baseline assessment, patients were randomly assigned to one of the three 12-week treatments. Therapy sessions were videotaped to assure treatment protocol adherence and to provide the data needed for investigations of treatment process (Carroll, Kadden, Donovan, Zweben, & Rounsaville, 1994; DiClemente, Carroll, Connors, & Kadden, 1994). Assessments in a variety of process domains were also conducted during the course of treatment, including measurements of the therapeutic alliance.

Study participants were assessed at baseline and with additional follow-up assessments quarterly at 3-months, 6-months, 9-months, 12-months and 15-months. The treatment period was 12 weeks long, thus the 3-month assessment occurred immediately after the treatment period and the 15-month assessment occurred one year after treatment. Intake and follow-up data were primarily obtained with interviews and questionnaires. Collateral informants were interviewed at recruitment and at the 3-, 9-, and 15-month follow-up periods regarding their observations of the participant's drinking behavior and psychosocial functioning. The 3-month, 9-month, and 15-month follow-ups also included collection of blood and urine specimens, which were used to monitor unreported drug use and changes in alcohol consumption, and to corroborate self-report measures. At the 1-year posttreatment follow-up, 92% of the living outpatients and 93% of the living aftercare clients were interviewed.

Measures

Working alliance inventory. Project MATCH used the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989) to measure both therapist and patient assessments of therapeutic working alliance. The WAI is a 36-item measure that consists of three subscales that address the goals of therapy (Goal), agreement about the tasks of therapy (Task), and the bond between the patient and therapist (Bond). In addition to the three WAI subscale scores, the WAI yields an overall total score. Responses are based on Likert-type ratings (1 = ‘Never’ to 7 = ‘Always’) for 36 items that assess the extent to which the respondent agrees with statements regarding the therapeutic relationship (e.g., “We respect each other”). The psychometric properties of the WAI are well established, with estimates of internal consistency exceeding .85 and above on all subscales (Horvath & Greenberg, 1986; Safran & Wallner, 1991; Tracey & Kokotovic, 1989). The reliability estimate (Cronbach’s α) for the total scale is .92 (Tracey & Kokotovic, 1989).

As in previous studies of working alliance in Project MATCH (Connors et al, 1997), this dissertation study was based on analyses of WAI total scores. Connors and colleagues (1997) justified the use of total score over sub-scale measures in their analysis due to the structural analysis of the WAI reported by Tracey and Kokotovic (1989), who found support for the use of the WAI to assess one general alliance dimension. Additionally, Connors and colleagues (1997) also reported high levels of intercorrelation between sub-scales in the Project MATCH sample (ranging from .69 to .91), and high levels of intercorrelation between the subscales and the total score (ranging from .87 to .96).

In Project MATCH, study protocol dictated that participants complete the WAI after the second treatment session, and therapists complete the measure after the second, sixth, and 10th

treatment sessions for CBT and TSF conditions, and after the second and third sessions in the MET condition). For the current study, only WAI scores collected during the second treatment session were used, unless this data was missing. In the case of missing data, several decision rules were applied to determine if data could be used from another session as a replacement. These rules were adapted from the procedure used by Connors and colleagues (1997) in their study of working alliance. As participants in different conditions met with their therapists on different schedules (weekly for CBT and TSF; 1st, 2nd, 6th, and 12th weeks for MET), different rules were applied for inclusion/exclusion of WAI data beyond the second session. When patients or therapists in the CBT or TSF conditions were missing second session data points, WAI data that were collected at session three were included. Participants in the MET treatment condition did not meet for session three until the sixth week of treatment, therefore all MET cases for which WAI data was collected after the second session were excluded. After these decision rules were applied, all cases in which WAI data was available for only one member of the patient-therapist dyad were also excluded.

Thus, for the present study, cases were only included if both participants had useable WAI data, and all ratings of the therapeutic alliance occurred after at least two treatment sessions, but no later than the third treatment session for TSF and CBT and no later than the second treatment session for MET.

Drinking history and drinking outcomes. At baseline, several questionnaire and interview measures were used to gather information on participants' pretreatment drinking histories. These same measures were used to collect posttreatment drinking outcome data. Estimates of alcohol consumption were obtained for the 90-day pretreatment period, the 12-week

treatment period, and throughout the posttreatment follow-up period using the Form 90 (Miller, 1996). The Form 90 was administered by an in-person interview to obtain retrospective self-reports of daily alcohol consumption. This interview procedure combines calendar memory cues from a time-line follow-back methodology (Sobell & Sobell, 1992) and drinking pattern estimation procedures (Miller & Marlatt, 1984). The Form 90 was used to derive measures of alcohol consumption (i.e., the percentage of days during the assessment interval for which the participant was abstinent [PDA], and average number of drinks consumed per drinking day[DDD]). In two separate test-retest reliability samples, the Form 90 interview yielded relatively consistent outcome measures of drinking, illicit drug use and psychosocial functioning ($r > .90$ in 57 of 81 comparisons). For drinking outcome indices in particular (i.e., the variables that the Form 90 interview was originally constructed to measure), reliability was consistent (all r values $> .88$) (Tonigan, Miller & Brown, 1997).

Alcohol-related negative consequences. Alcohol related negative consequences were assessed using the Drinker's Inventory of Negative Consequences Instrument (DrInC; Miller et al., 1995). This scale measures the problems related to drinking distinct from abuse, dependence, consumption, or help-seeking. Study participants reported the frequency of 45 alcohol-related consequences (e.g., "My marriage or love relationship has been harmed by my drinking") using a 4-point Likert type scale that ranged from 0 (never) to 3 (daily or almost daily). The items measure severity of alcohol problems in five domains — physical, intrapersonal, social responsibility, interpersonal, and impulse control. Additionally, five non-problem items that heavy drinkers would be expected to endorse are included as a control scale, to detect a negative or inattentive response set. Participants were assessed at baseline for both lifetime and recent (90

days) consequences, and for recent consequences at posttreatment and follow-up assessments. Excellent stability in measurement was found for both the total scale and DrInC subscales, with five of six test-retest Pearson correlations exceeding .90 (DrInC; Miller et al., 1995). Lifetime outpatient and inpatient Cronbach α 's fell within the range of .70 to .80 (Miller et al., 1995).

Treatment participation. Treatment providers reported dates of attendance and the number of treatment sessions attended by each participant. As per Connors et al. (1997), treatment participation was operationalized as the number of weeks patients were involved in treatment during the 12-week treatment period. In other words, participation was calculated as the number of weeks spanning the first and last treatment session patients attended. This measure, rather than number of sessions or percentage of sessions attended, provided a more comparable assessment of participation across these three treatments, which differed in the number of sessions offered (i.e., 12 sessions for CBT and TSF and four sessions for MET).

Data Analysis

Operationalizing working alliance discrepancy. Working alliance rating discrepancy between participants and therapists was operationalized in two ways in the present study. The first measure of working alliance discrepancy was a baseline gauge of the level of disagreement between the patient and therapist in their working alliance ratings at the second session. This measure was calculated as the absolute value of a difference score derived by subtracting the participant WAI total score from their respective therapist's WAI total score. A score of zero represents perfect congruence (no difference between the participant and therapist WAI total scores), whereas higher values represent greater discrepancy between patients and their therapist. This method of determining working alliance discrepancy produces a continuous variable that

does not take into account the directionality of the disagreement, and was therefore used to address whether the degree of discrepancy predicts outcomes.

The second working alliance discrepancy measure used in this study was derived through the use of a median-split method. WAI scores for both patient's and therapists were dichotomized into high vs. low working alliance ratings. This was accomplished by determining the median values for both participant and therapist WAI scores. Patients with WAI scores above the median were defined as having "high alliance" while those below the median were defined as having "low alliance." Those with a median score were assigned to the "high alliance" condition. The same procedure was used for therapist scores. This resulted in a 2 by 2 design with two "alliance levels" for both patients and therapists (see Figure 1). This design produces four groups: two congruent groups (patient high/therapist high; patient low/therapist low) and two discrepant groups (patient high/therapists low; patient low/therapist high). These groups can then be compared to address the relative outcomes of the two discrepant alliance groups.

Preliminary analyses. Following selection criteria described above, preliminary analyses were conducted to obtain information regarding frequencies, distributions, and characteristics of the study subsample. Chi-square tests were performed to determine if the study subsample differed significantly from the full outpatient sample. The outcome variables of percentage of days abstinent (PDA) and drinks per drinking day (DDD) were also examined for their distributions, as they have been noted to depart from normality because of skewness and floor-ceiling effects (Connors et al., 1997). As per Connors, et al., (1997) the percentage of days abstinent variable was subjected to an arcsin transformation and the drinks per drinking day

variable was subjected to a square root transformation in order to improve their distributions prior to conducting primary analyses.

Primary analyses. Hypotheses regarding the contribution of working alliance discrepancy were evaluated in two separate analyses using the two different operationalizations of working alliance discrepancy described above. Hypothesis 1 was examined using a series of four multiple regression analyses, one for each of the outcome variables. The outcome variables were those assessed at the 3-month follow-up (immediately posttreatment), measuring percentage of days abstinent (PDA), mean drinks per drinking day (DDD), and alcohol related negative consequences (DrInC) during the treatment period, as well as treatment participation (the number of weeks attended). The predictor variable of interest included in this analysis was the working alliance discrepancy score. Baseline measures of PDA and DDD for the 90-day pretreatment period and baseline DrInC scores were included as covariates.

Hypothesis 2 was examined via a 2x2 factorial design using four separate univariate analyses of covariance (ANCOVAs), examining the groups formed by the median-split dichotomization of the patient and therapist WAI scores. The dichotomy of high vs. low alliance scores for the patients represent two levels of factor A, whereas the dichotomy of high vs. low scores for the therapists represent two levels of factor B. In this design, the main effects of factor A demonstrates the relative difference between levels of patient alliance on outcomes regardless of therapist scores, while main effects of factor B demonstrates relative difference between levels of therapist alliance on outcomes regardless of patient scores. The hypothesis that the discrepant group characterized by higher patient scores will outperform the discrepant group characterized by higher therapist scores can be tested via the presence of a significant interaction effect. This

significant interaction would indicate that the contribution to the variance in outcomes by the alliance level of the participant (high or low) varies depending on the level of alliance of the therapist (high or low). This would illustrate any significant differences between those groups that had mismatched patients' and therapists' evaluations of the level of the alliance. The outcome variables were those assessed at the 3-month follow-up (immediately posttreatment), measuring percentage of days abstinent (PDA), mean drinks per drinking day (DDD), and alcohol related negative consequences (DrInC) during the treatment period, as well as treatment participation. Baseline measures of PDA and DDD for the 90-day pretreatment period and baseline DrInC scores were included as covariates.

Results

The means, standard deviations, *N*, and correlations of non-transformed baseline and treatment outcome measures with working alliance discrepancy can be found in Table 2. Correlations indicated that discrepancy between patients and therapists in working alliance scores were not associated with baseline or 3-month (posttreatment) percent days abstinent (PDA), drinks per drinking day (DDD), alcohol-related negative consequences (DrInC), or treatment participation. Following transformation of baseline and posttreatment PDA and DDD (as described in the Methods section), additional correlations were obtained. Baseline PDA was weakly correlated with posttreatment PDA ($r = 0.19, p < .01$) and DDD ($r = 0.07, p < .05$). Baseline DDD was weakly correlated with posttreatment DDD ($r = 0.22, p < .01$) and DrInC ($r = 0.17, p < .01$), and weakly negatively correlated with treatment participation ($r = -0.12, p < .01$). Baseline negative consequences was weakly correlated with posttreatment DDD ($r = 0.11, p < .01$), moderately correlated with post treatment DrInC ($r = 0.36, p < .01$), and weakly negatively

correlated with treatment participation ($r = -0.14, p < .01$). Among the predictor variables, baseline PDA was weakly negatively correlated with baseline DrInC ($r = -0.17, p < .01$), and baseline DDD was moderately correlated with baseline DrInC ($r = 0.43, p < .01$). All of the outcome measures were correlated with one another, with Pearson r values ranging from $-.27$ to $-.57$ and $.36$ to $.64$ (all significant at the $p < .01$ level).

A series of four multiple linear regressions were calculated to predict the selected outcome measures based on working alliance discrepancy score and the appropriate corresponding baseline measure. These four models were tested independently of one another, and predictor variables were entered simultaneously. Some models had a slightly reduced N due to missing outcome data. The model predicting PDA during the treatment period was tested using the working alliance discrepancy score and PDA at baseline. Similarly, the models predicting DDD and DrInC scores were tested using only the working alliance discrepancy score and their corresponding baseline measure. As treatment participation had no specific corresponding baseline measure to control for, all three baseline measures (i.e. PDA, DDD, & DrInC) were entered into this model.

All four models were found to significantly predict their various outcome measures, with uniformly small effect sizes. The beta weights, presented in Table 3, suggest that in all models the contribution of working alliance discrepancy was non-significant. For the model examining percent days abstinent during the treatment period, the regression analysis indicated that the two predictors (baseline percent days abstinent and working alliance discrepancy) explained 3.5% of the variance (adjusted $R^2 = .035$, $F(2,738) = 14.52, p < .001$). For the model examining drinks per drinking day during the treatment period, the regression indicated that the two predictors

(baseline drinks per drinking day and working alliance discrepancy) explained 4.8% of the variance (adjusted $R^2 = .048$, $F(2,733) = 19.357$, $p < .001$). For the model examining alcohol-related negative consequences during the treatment period, the regression indicated that the two predictors (baseline negative consequences and working alliance discrepancy) explained 12.7% of the variance (adjusted $R^2 = .127$, $F(2,703) = 52.28$, $p < .001$). For the model examining treatment participation, the regression indicated that the combination of all four predictors (baseline drinks per drinking day, baseline percent days abstinent, baseline negative consequences and working alliance discrepancy) explained 1.7% of the variance (adjusted $R^2 = .017$, $F(4,726) = 4.14$, $p < .001$). Of the four predictors, only baseline alcohol related negative consequences contributed a statistical significant proportion of the variance ($\beta = -0.11$, $t(726) = -2.64$, $p < .01$).

Four two-way analysis of covariance tests (ANCOVAs) were conducted to compare the influence of two factors (client alliance level and therapist alliance level) on the four outcome variables while controlling for the appropriate corresponding baseline measure. The four outcomes measured were two drinking behavior variables (percent days abstinent, drinks per drinking day), alcohol related negative consequences, and treatment participation. Patient alliance included two levels (high and low) and therapist alliance included two levels (high and low). These four ANCOVAs are summarized in Table 4. In all four analyses, no statistically significant interaction effects were found. This indicates a lack of support for the hypothesis that the contribution to the variance in outcomes by the alliance level of one participant of the therapist-patient dyad depends on the level of alliance of the other. Table 5 shows the number of subjects, means, and standard deviations of the dependent variables for each cell.

The analysis of percent days abstinent during treatment yielded a main effect for both therapist alliance level ($F(1,736) = 9.69, p < .05$) and client alliance level ($F(1,736) = 5.19, p < .01$) after controlling for baseline percent days abstinent. This indicates a significant difference between participants with therapists with high alliance ($M = 1.17, SD = .41$) versus those with therapists with low alliance ($M = 1.07, SD = .44$) in the percentage of days patients maintained abstinence during the course of treatment. Similarly, there was a significant difference in maintenance of abstinence between participants who had high alliance ($M = 1.16, SD = .42$) versus those who had low alliance ($M = 1.08, SD = .44$). It should be noted that both percent days abstinent and drinks per drinking day were transformed prior to these analyses, and therefore the means and standard deviations presented here do not represent the actual percentage of days abstinent or number of drinks consumed. For the purpose of clinical interpretation, Table 6 shows the non-transformed means and deviations representing these values.

The analysis of drinks per drinking day during treatment yielded a main effect for both therapist alliance level ($F(1,736) = 4.70, p < .05$) and client alliance level ($F(1,736) = 7.24, p < .01$) after controlling for baseline drinks per drinking day. This indicates a significant difference between participants with therapists with high alliance ($M = 1.94, SD = 1.53$) versus those with therapists with low alliance ($M = 2.23, SD = 1.47$) in the number of drinks consumed on drinking days during the course of treatment. Similarly, there was a significant difference in drinks consumed between participants who had high alliance ($M = 1.93, SD = 1.51$) versus those who had low alliance ($M = 2.24, SD = 1.49$). See Table 6 for non-transformed means and standard deviations.

The analysis of alcohol-related negative consequences during treatment yielded a main effect only for client alliance level ($F(1,701) = 9.58, p < .01$) after controlling for baseline alcohol-related negative consequences. This indicates a significant difference in the mean number of alcohol-related negative consequences experienced during the course of treatment between participants with high alliance ($M = 21.27, SD = 24.4$) versus those with low alliance ($M = 26.71, SD = 26.46$).

The analysis of treatment participation yielded a main effect only for therapist alliance level ($F(1,724) = 6.41, p < .05$) after controlling for baseline percent days abstinent, baseline drinks per drinking day, and baseline alcohol-related negative consequences. This indicates a significant difference in the mean number of treatment sessions attended during the course of treatment between participants with therapists with high alliance ($M = 10.83, SD = 2.99$) versus those with therapists with low alliance ($M = 10.20, SD = 3.49$).

Discussion

This study examined two primary hypotheses regarding the impact of disagreement between patients and therapists about the quality of their therapeutic relationship on eventual therapeutic outcomes and treatment participation. First, this study examined whether the level of disagreement between patients and therapists on the quality of their therapeutic relationship was predictive of reduced treatment participation and treatment outcomes. Second, this study compared the treatment outcomes and treatment participation of patient groups that were characterized by the arrangement of levels of patient and therapist alliance ratings, in order to determine whether the amount of variance in outcomes accounted for by levels of patient alliance varied as a function of therapist alliance.

The findings of this study did not provide support for the first hypothesis regarding the use of working alliance discrepancy as a predictor of drinking behavior, alcohol-related negative consequences, or treatment participation. Working alliance discrepancy was not found to be correlated with outcomes, and all four multiple regression analyses failed to provide support for the hypothesis that the discrepancy significantly contributed to the variance beyond that which could be explained by baseline measurements. Although all of the regression models were significant, only the baseline measures were significant contributors. This corroborates the findings by Connors et al. (1997), which consistently showed that greater degrees of pretreatment alcohol involvement predicted fewer treatment sessions attended, lower percentage of days abstinent, and more drinks consumed per drinking day when assessed posttreatment. Unlike the findings reported by Connors et al. (1997), of the three baseline measures included in the regression analysis examining treatment participation, only alcohol-related negative consequences provided a significant (though modest) impact to the model. Clinically this suggests that negative consequences that stem from heavy drinking just prior to treatment are potentially a better predictor of worse session attendance when compared to alcohol consumption prior to treatment. Theoretically, it is possible that pretreatment alcohol-related negative consequences mediate the relationship between the amount of alcohol consumed prior to treatment and treatment participation. Higher levels of alcohol consumption could lead to increased negative consequences, and it may be the social, physical, and interpersonal difficulties associated with heavy drinking that lead to increased difficulty in participating fully in treatment. As Connors and colleagues (1997) did not include a baseline measure of the negative consequences of alcohol consumption in their analysis, this interpretation is speculative. The

potential mediating effects of alcohol-related negative consequences on the relationship between pretreatment alcohol consumption and treatment participation warrants further study.

The second primary hypothesis of this study was that in the case of discrepant alliance ratings by patients and their therapists, positive patient ratings would be more “important” than therapist ratings, with a stronger association to positive treatment outcomes. In other words, it was expected that the patient group characterized by patients who rate the alliance as high while their therapists rate it as low will have greater treatment participation, less alcohol use, and fewer alcohol related negative consequences when compared to the patient group characterized by patients who rate the alliance as low when their therapists rate it as high. This hypothesis was not supported by the results of the 2 by 2 factorial analyses of covariance, as all four tests of the primary outcome variables failed to show significant interaction effects.

The main effects yielded by these analyses suggests that working alliance ratings by patients and therapists are independently associated with positive outcomes, depending on the variable in question. With regards to drinking behavior, both patient and therapist ratings of the alliance in the second session were associated with increased abstinence during the treatment period and decreased number of drinks consumed on days when patients did drink. On the other hand, a statistically significant reduction of the negative consequences associated with drinking was only observed to be associated with patient ratings of the therapeutic alliance, while statistically significant increases in the number of treatment sessions attended was only associated with therapist alliance.

Clinically, the observed differences between groups defined by high and low alliance ratings in patient drinking behavior, negative consequences, and treatment participation were

modest. The difference between low and high alliance as measured by patients was associated with an average 4% increase in abstinence, 1.24 fewer average drinks consumed on drinking days, and an average 5.44 score reduction on the measure of negative consequences (on a scale ranging from 0-135). The difference between low and high alliance as measured by therapists was associated with an average 5% increase in abstinence, 1.14 fewer average drinks consumed on drinking days, and an average of 0.63 more sessions attended. These changes, though statistically significant, offer only limited relevance for clinicians.

One limitation of the current study was the use of the median-split method to dichotomize the patient and therapist working alliance samples into “high” and “low” alliance. The Working Alliance Inventory does not have standard cut-off scores determining high or low values, and there is a lack of theoretical basis or empirical evidence about what constitutes discrepancy or congruence between two scores from different individuals on a single measure. The problem arises in that the groups obtained by median-split could result in groups containing values that have been operationalized as conceptually distinct (high or low alliance), but are in truth relatively close. In a normal distribution of scores with low skewness and kurtosis, many values will be clustered close to the median, leading to a lack of discrimination and two separate alliance groupings that may not actually be distinct. In the current study, this has the potential to reduce the power/precision of the analyses that used this method, increasing the likelihood of a Type II error.

Additional limitations include the use of data collected as part of a clinical trial (i.e., participants were part of a study employing a research protocol and received a structured, manualized, time-limited intervention). This presents a number of limitations regarding the

generalizability of study results to other treatments, longer treatments, or other types of patients. To what degree any findings of the present study would be present in a non-research community treatment setting is unclear. The current study is also limited by the use of secondary data analysis, rather than a true experimental design.

The use of self-report data in Project MATCH also introduces issues related to reliability and validity. However, the risk of unreliable or invalid reporting is substantially mitigated by the special attention paid by the Project MATCH Research Group to alleviating these risks. A comprehensive test-retest reliability study showed that measures derived from interviewer assessments were reliable for interviewers paired across and within sites, and the PDA and DDD variables were found to be consistent across test-retest interviews (e.g. Del Broca & Brown, 1996; Project MATCH Research Group, 1997; Tonigan, Miller, & Brown, 1997). Project MATCH also included the use of urine drug screens, blood tests, and collateral reports to corroborate and validate self-reported drinking and drug use (Project MATCH Research Group, 1997). They reported that urine drug screens were highly consistent with participant self-reports, and when discrepancies were observed, it was more likely that clients reported drug use when screens were negative. Similarly, patients tended to report more drug use and alcohol consumption than collateral informants. Self-reports of drinking were examined in relation to gamma glutamyl transpeptidase (GGTP) values from blood draws at the 15-month assessment, which they found were significantly associated with self-reported drinking (Project MATCH Research Group, 1997).

Another limitation of the current study is the potential for a selection bias, as the sample included only individuals who stayed in treatment at least through the second session. For those

participants who felt particularly disconnected or negatively towards their therapists in the first session, it stands to reason that these participants would not have returned for a second session. Thus, ratings of alliance could have a hypothetical minimum threshold such that participants included in the present study represent only a subsample within the range of possible alliance scores, limiting the possible upper bounds of the alliance discrepancy score and the lower bounds of the ‘low alliance’ group. Within this sample, only six participants attended a single session before dropping out, representing less than 1% of those included in the study. In addition, the study is limited by only have WAI data available from both members of the therapeutic dyad during the second session.

Although this study did not find significant results with regard to the impact of alliance discrepancy on clinical outcomes, several other studies offer promising results and provide indications that levels of agreement (or disagreement) between patients and therapists regarding the alliance may still be a variable of interest for the field. It may be the case that more sophisticated and sensitive statistical tests will be required to uncover the effects of alliance discrepancy or congruence. For example, Marmarosh and Kivlighan (2012) and Zilcha-Mano, Snyder, and Silberschatz (2017) both used response surface analysis statistical techniques, and were able to isolate a statistically significant impact of alliance congruence on clinical outcomes and therapy process variables respectively. Similarly, some researchers have begun to use dyadic analysis techniques, such as the “one-with-many” design, which can decompose those aspects of the alliance that derive from therapist effects rather than unique aspects of the relationship (see Marcus, Kashy, & Baldwin, 2009, & Manne et al., 2012).

Other areas of study within the field of alliance research have also suggested that alliance levels change over the course of therapy with potentially predictable patterns, although the exact nature of those patterns remain in question (e.g. Brossart, Wilson, Patton, Kivlighan, & Multon, 1998; Horvath & Marx, 1990; Kivlighan & Shaughnessy, 1995; Kivlighan & Shaughnessy, 2000; Patton, Kivlighan, & Multon, 1997). As both patient and therapist alliance have the potential to change over the course of therapy, this complicates the issue of the impact discrepancies or similarities in their perceptions of their alliance and raises the possibility of an impact due to convergence or divergence (i.e., degree of *change* in agreement on alliance quality over time). Though studies examining the impact of convergence/divergence of alliance ratings on treatment outcomes are limited, there is some evidence that alliance convergence is associated with clinical improvements (e.g. Laws, et al., 2017).

Although the findings of this study do not directly support the hypothesis that alliance rating discrepancies between patients and therapists impact treatment outcomes, this area of research remains an important area of study. Statistical modeling techniques that can capture the unique dyadic nature of the alliance construct and its development over the course of therapy show promising results (e.g. Marmarosh & Kivlighan, 2012; Zilcha-Mano, Snyder, & Silberschatz, 2017). The body of research indicates that alliance is a consistent predictor of clinical outcomes. This study confirms that if pre-treatment alcohol consumption and negative consequences associated with alcohol consumption can be taken into account, treatment providers may be able to use early measures of the alliance (by themselves or by patients) to good effect monitoring the therapy and predicting outcomes and treatment retention. The use of

such alliance measures throughout the treatment process may help therapists to become aware of the risk of disengagement, and take steps to mitigate it.

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Tables

Table 1

Descriptive Information on Participants

Demographic	Men	Women	Total
Gender (%)	539 (71.5%)	215 (28.5%)	754
Age (mean $\pm$ SD)	39.3 $\pm$ 10.8	39.5 $\pm$ 11.3	39.4 $\pm$ 11.0
Ethnicity (%)			
Caucasian	83.1	76.6	81.8
Non-Caucasian	16.9	21.4	18.2
Years of Education (mean $\pm$ SD)	13.5 $\pm$ 2.18	13.6 $\pm$ 2.0	13.5 $\pm$ 2.1
Relationship status (%)			
Married	40.0	27.4	36.4
Single	60.0	72.6	63.6
Employment (%)			
Employed	57.0	40.3	52.2
Not Employed	43.0	59.7	47.8
Prior alcohol treatment (%)			
Yes	45.5	38.1	43.4
No	54.5	61.9	56.6
Alcohol dependence symptoms (mean $\pm$ SD)	5.78 $\pm$ 2.0	5.6 $\pm$ 1.9	5.7 $\pm$ 2.0
ASI Psychiatric Severity (mean $\pm$ SD)	.18 $\pm$.19	.22 $\pm$.20	.19 $\pm$.19

Couple = married and living with spouse at least 1 year; single = all others.

Employed = full time in same job continuously for past 6 months; not employed = all others. Measured by the SCID for the 90-day baseline period (symptom counts range from 1 to 9).

Composite score derived from the Addiction Severity Index; higher scores indicate higher severity

Table 2

Means, Standard Deviations, and Correlations for Drinking Behavior, Related Problems, Treatment Participation, with Working Alliance Inventory (WAI) Discrepancy at Baseline and 3-Months

Time	Alcohol Use Measure	N	M (SD)	WAI Discrepancy
				27.79 (22.27)
Baseline	PDA	741	0.57 (0.39)	-0.02
	DDD	741	3.49 (0.91)	0.01
	DrInC	735	45.40 (21.77)	-0.01
Months 1-3	PDA	741	1.12 (0.43)	-0.02
	DDD	736	2.08 (1.51)	-0.03
	DrInC	712	24.27 (25.65)	-0.03
	Tx Weeks	737	10.50 (3.27)	-0.02

*p < .05; **p < .01

NOTE: Drinking behavior (PDA = percent days abstinent; DDD = drinks per drinking day) was measured using the Form 90 interview procedure (Miller, 1996). Alcohol-related Problems was assessed using the Drinker's Inventory of Negative Consequences instrument (DrInC; Miller et al., 1995). Treatment participation (Tx Weeks) was measured by calculating the number of weeks spanning the first and last treatment session that patients attended. Working alliance was measured using the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989). WAI Discrepancy was calculated as the absolute value of a difference score derived by subtracting the participant WAI total score from their respective therapist's WAI total score.

Table 3

Multiple Regression Analyses for Working Alliance Inventory (WAI) Discrepancy Predicting Drinking Behavior, Related Problems, and Treatment Participation at 3-Months While Controlling for Baseline Measures

	Predictor	B	SEB	β
PDA [†] (n = 741)	Constant	1.01	0.03	
	Baseline PDA [†]	0.22	0.04	0.19**
	WAI Discrepancy	0.00	0.00	-0.01
	Adjusted R ²	.035		
	F	14.25***		
DDD [†] (n = 736)	Constant	0.84	0.23	
	Baseline DDD [†]	0.37	0.06	0.22**
	WAI Discrepancy	-0.00	0.00	-0.02
	Adjusted R ²	.048		
	F	19.36***		
DrInC (n = 706)	Constant	5.87	2.37	
	Baseline DrInC	0.42	0.04	0.36**
	WAI Discrepancy	-0.04	0.04	-0.03
	Adjusted R ²	.127		
	F	52.28***		
Tx Weeks (n = 731) ⁴	Constant	12.13	0.54	
	Baseline PDA [†]	0.02	0.32	0.00
	Baseline DDD [†]	-0.23	0.15	-0.06
	Baseline DrInC	-0.02	0.01	-0.11*
	WAI Discrepancy	-0.00	0.01	-0.02
	Adjusted R ²	.017		
	F	4.14***		

NOTE: Drinking behavior (PDA = percent days abstinent; DDD = drinks per drinking day) was measured using the Form 90 interview procedure (Miller, 1996). Alcohol-related Problems was assessed using the Drinker's Inventory of Negative Consequences instrument (DrInC; Miller et al., 1995). Treatment participation (Tx Weeks) was measured by calculating the number of weeks spanning the first and last treatment session that patients attended. Working alliance was measured using the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989). WAI Discrepancy was calculated as the absolute value of a difference score derived by subtracting the participant WAI total score from their respective therapist's WAI total score.

† The drinking variables (PDA and DDD) measured at baseline and 3-months were transformed before conducting regressions. PDA was subjected to an arcsin transformation, and DDD was subjected to a square root transformation.

* $p < .01$; ** $p < .01$; *** $p < .001$

Table 4

Means, Standard Deviations, and n for Drinking Behavior, Related Problems, and Treatment Participation, as a Function of Levels of Therapist Alliance and Levels of Patient Alliance, Using Baseline Measures as Covariates

		Patient WAI†						Total	
		Low			High				
		M	SD	<i>n</i>	M	SD	<i>n</i>		
Therapist WAI†									
PDA (n = 741)	Low	0.79	0.27	212	0.81	0.26	159	0.80	0.27
	High	0.82	0.25	159	0.88	0.21	211	0.85	0.23
	Total	0.81	0.26	371	0.85	0.24	370	0.83	0.25
DDD (n = 736)	Low	7.47	7.42	209	6.86	6.79	159	7.21	7.15
	High	6.98	7.33	158	5.39	6.60	210	6.07	6.96
	Total	7.26	7.38	367	6.02	6.71	369	6.64	7.08
DrInC (n = 706)	Low	26.44	26.45	204	24.01	24.99	153	25.40	25.83
	High	27.06	26.55	152	19.14	23.78	197	22.59	25.30
	Total	26.71	26.46	356	21.27	24.40	350	24.01	25.59
Tx Weeks (n = 731)	Low	10.00	3.60	209	10.47	3.32	158	10.20	3.49
	High	10.75	3.09	157	10.89	2.91	207	10.83	2.99
	Total	10.33	3.41	366	10.71	3.10	365	10.52	3.26

NOTE: Drinking behavior (PDA = percent days abstinent; DDD = drinks per drinking day) was measured using the Form 90 interview procedure (Miller, 1996). Alcohol-related Problems was assessed using the Drinker's Inventory of Negative Consequences instrument (DrInC; Miller et al., 1995). Treatment participation (Tx Weeks) was measured by calculating the number of weeks spanning the first and last treatment session that patients attended. Working alliance was measured using the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989). WAI Discrepancy was calculated as the absolute value of a difference score derived by subtracting the participant WAI total score from their respective therapist's WAI total score.

[†] Therapist and patient alliance levels were determined via median-split dichotomization of WAI scores provided by clients and therapists at the second session. Alliance levels were dummy coded as 1 for all scores below the median, and dummy coded as 2 for all scores above the median.

Table 5

Analyses of Covariance (ANCOVA) for Drinking Behavior, Related Problems, and Treatment Participation as a Function of Levels of Therapist Alliance and Levels of Patient Alliance, Using Baseline Measures as Covariates

	Variable and Source	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
PDA‡	Therapist Alliance Level†	1	1.69	9.69	.002**
	Patient Alliance Level†	1	0.90	5.19	.023*
	Therapist x Patient	1	0.19	1.07	.302
	Error	736	0.17		
DDD‡	Therapist Alliance Level†	1	9.99	4.70	.031*
	Patient Alliance Level†	1	15.40	7.24	.007**
	Therapist x Patient	1	2.65	1.24	.265
	Error	731	2.13		
DrInC	Therapist Alliance Level†	1	1263.71	2.25	.134
	Patient Alliance Level†	1	5382.02	9.58	.002**
	Therapist x Patient	1	800.25	1.42	.233
	Error	701	562.08		
Tx Weeks	Therapist Alliance Level†	1	66.31	6.41	.012*
	Patient Alliance Level†	1	19.31	1.87	.172
	Therapist x Patient	1	7.24	0.70	.403
	Error	724	10.35		

NOTE: Drinking behavior (PDA = percent days abstinent; DDD = drinks per drinking day) was measured using the Form 90 interview procedure (Miller, 1996). Alcohol-related Problems was assessed using the Drinker's Inventory of Negative Consequences instrument (DrInC; Miller et al., 1995). Treatment participation (Tx Weeks) was measured by calculating the number of weeks spanning the first and last treatment session that patients attended. Working alliance was measured using the Working Alliance Inventory (WAI; Horvath & Greenberg, 1989). WAI Discrepancy was calculated as the absolute value of a difference score derived by subtracting the participant WAI total score from their respective therapist's WAI total score.

† Therapist and patient alliance levels were determined via median-split dichotomization of WAI scores provided by clients and therapists at the second session. Alliance levels were dummy coded as 1 for all scores below the median, and dummy coded as 2 for all scores above the median.

‡ The drinking variables (PDA and DDD) measured at baseline and 3-months were transformed before conducting regressions. PDA was subjected to an arcsin transformation, and DDD was subjected to a square root transformation.

* $p < .05$; ** $p < .01$

Figures

		Therapist Evaluation of Alliance	
		High	Low
Patient Evaluations of Alliance	High	Congruent (high)	Discrepant (patient high, therapist low)
	Low	Discrepant (patient low, therapist high)	Congruent (low)

Figure 1. Median split working alliance congruence groups