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Psychotherapy Credibility Ratings: Patient Predictors of Credibility and the Relation of Credibility to Therapy Outcome

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Abstract

Very little is known about what factors may influence credibility ratings. The current investigation examined the relation between credibility ratings for adult psychotherapies and a variety of patient factors as well as the relation between credibility ratings and subsequent symptom change. A pooled study database that included studies evaluating the efficacy of cognitive and psychodynamic therapies for a variety of disorders was used. For all studies, a 3-item credibility scale was administered at session 2. Early symptom change, expectation of improvement, demographic characteristics, clinical measures, and functioning and interpersonal measures were used to predict credibility at session 2. We found that early symptom improvement was significantly associated with higher credibility ratings at session 2; higher ages, higher levels of education, and lower expectations of improvement were associated with lower credibility ratings at session 2; and credibility ratings predicted subsequent symptom improvement.

Treatment credibility ratings are used within studies of psychotherapy to measure an individual's belief about how convincing and logical a treatment seems (Kazdin & Wilcoxon, 1976). Rationales for various treatment models have been shown to vary in their credibility as rated from the patient's perspective (Borkovec & Nau, 1972; Lent, 1983). Therefore, in order to rule out the possibility of differential credibility as an explanation for differences in therapy outcomes, credibility assessments are included in psychotherapy trials with the purpose of demonstrating that the treatments being compared do not differ in credibility (Kazdin & Wilcoxon, 1976; Borkovec & Nau, 1972). It is particularly important to ensure that different treatments do not differ in credibility since patients who do not find a treatment credible are more prone to premature treatment termination, non-compliance with treatment, and poor outcome (Wong, Kim, Zane, Kim, & Huang, 2003; Kirsch & Henry, 1977; Carter, Luty, McKenzie, Mulder, Frampton, & Joyce, 2011; Borkovec, Newman, Pincus, & Lytle, 2002).

Given the widespread use of credibility measures and the importance of credibility in the therapeutic process, it is imperative that we identify any factors that might influence an individual's perspective on treatment. Research has indicated that credibility is associated with features of psychotherapy such as duration, amount of information provided, and use of specific language (Horvath, 1990). Moreover, credibility perceptions can change over time. Hardy and colleagues (1995), for example, found that credibility scores improved following an initial presentation of a cognitive behavioral therapy rationale to consumers. However,

beyond the basic features of psychotherapy and the presentation of a rationale, we know very little about other variables that might influence credibility.

There has been minimal exploration of the potential influence of patient characteristics on credibility. To date, only one study has examined the relation between individual characteristics and credibility ratings in a clinical sample. Constantino, Penek, Bernecker, and Overtree (2013) used data from a university outpatient mental health training clinic. Credibility was assessed after session 1 using Devilly and Borkovec's (2000) Credibility/Expectancy Questionnaire (CEQ). In an exploratory analysis of demographics, general and mental health behavior and history, global and specific symptom severity, and diagnostic type and comorbidity, the investigators found that higher patient global functioning significantly predicted higher credibility ratings while Axis II comorbidity significantly predicted negative credibility ratings. The investigators theorized that individuals with more problems might find it more challenging to see the logic of a treatment and therefore believe that a treatment will alleviate their problems. The investigators also postulated that poorer global functioning might reflect unsuccessful past treatment experiences and encouraged that future studies explore this possibility. It is important to note that 29% of the sample was comprised of students and the mean age of participants was 27.7 years. Additionally, the therapists were mostly graduate trainees. Therefore, these associations should be examined in an older, more clinically representative sample to determine if the results generalize to other populations.

The only other investigations on credibility and patient variables include non-clinical, student samples. One investigation examined the relation between individual characteristics and treatment credibility ratings among a sample of college students who rated the credibility of three out of nine treatment rationales based on written descriptions of the rationales (Rokke, Carter, Rehm, and Voltum, 1990). These investigators found that females rated interpersonal therapy more positively than males; and younger, single participants rated activity change therapy more positively than older and married participants. The investigators also found that higher neuroticism scores predicted higher credibility ratings for self-control, cognitive, relaxation, and psychodynamic therapies whereas higher extroversion scores predicted lower credibility ratings of cognitive therapy and higher credibility ratings of activity-change therapy.

Another investigation found that cultural identity and self-construals moderated credibility ratings across cognitive and dynamic therapies. Wong, Kim, Zane, Kim, and Huang (2003) examined credibility ratings among a sample of Asian American students from a west coast university who read either a cognitive therapy or a time-limited dynamic psychotherapy treatment rationale. Results showed that students with low levels of "White identity" rated cognitive therapy as more credible than time-limited dynamic therapy and students with high levels of "White identity" did not rate the two treatments differently. Additionally, students with high independent self-construals found cognitive therapy to be significantly more credible than time-limited dynamic therapy while less independent students did not rate the interventions differently. The findings of Constantino and colleagues (2013), Rokke and colleagues (1990), and Wong and colleagues (2003) support the need to explore the relation between patient characteristics and patient ratings of credibility in clinical samples

as it seems that at least among these samples, credibility might be influenced by pre-treatment variables distinctive to the individual. In order to determine that credibility is not simply a proxy for another patient variable, we must examine the relation between patient variables and credibility ratings.

Pretreatment expectation for improvement is one such variable that may be influencing credibility ratings. Treatment credibility and expectations of improvement are often considered similar and sometimes even spoken about interchangeably or assessed in the same measure. Since both have been demonstrated to influence therapy outcome (Dew & Bickman, 2005), it is important to distinguish if credibility is predictive of outcome on its own or simply a proxy for pretreatment expectations of improvement. Constantino and colleagues (2013) conducted a bivariate correlation to examine the collinearity between expectancy of improvement and credibility and found that the two were moderately correlated; however, they measured the two constructs in the same questionnaire and measured expectancy of improvement both at baseline and after session 1 whereas some studies only examine expectancy of improvement before treatment. To simplify the issue of disparate definitions of expectancy and credibility that Schulte (2008) raises, the current study will distinguish that expectancy of improvement is a pretreatment measure of how much improvement a patient expects to achieve before entering treatment while credibility is an early treatment assessment of how believable a patient finds a treatment to be after brief exposure to a treatment rationale.

It is possible that patient variables that influence expectancy also influence credibility. In their review of the literature on clinical interventions and patient and therapist variables that predict positive expectations for psychotherapy and psychotherapy change, Constantino, Ametrano, and Greenberg (2012) report that manic symptoms (Constantino, Penek, Bernecker, & Overtree, 2013), adaptive perfectionism (Oliver, Hart, Ross, & Katz, 2001) and previous therapy experience (MacNair-Semands, 2002) were associated with more positive expectations of improvement. Hopelessness and symptoms related to substance abuse and personality disorders (Constantino, Penek, Bernecker, & Overtree, 2013) were predictive of more negative outcome expectations. It is possible that these same patient variables that predict expectations of improvement also contribute to early treatment credibility ratings about treatment.

This investigation had three goals. The first goal was to examine the relation between early symptom change and credibility ratings. Although investigations have demonstrated a relation between early treatment credibility ratings and positive treatment outcome (e.g., Carter, Luty, McKenzie, Mulder, Frampton, & Joyce, 2011), no investigation to date has evaluated the relation between credibility and outcome controlling for the early symptomatic improvement that is also predictive of outcome (Lutz, Stulz, & Köck, 2009). It may be that early symptomatic improvement is driving both credibility ratings and subsequent treatment outcome. This investigation will look at the relationship between credibility ratings and the change in patient-rated anxiety and depression levels from intake to the point at which credibility is assessed at session 2.

The second goal of this study was to examine the relation between patient characteristics and credibility rating scores, controlling for any potential influence that early symptom change might have on credibility ratings. Since expectation of improvement and credibility are related, and expectation has more frequently been shown to be predictive of outcome (Deville & Borkovec, 2000), it is vital that we understand if credibility is a valid measure of how a patient perceives a treatment once he or she has received a minimal dose or if credibility is largely influenced by expectations of improvement, early symptom change, and other patient variables. This goal of our study extends the work of Constantino and colleagues (2013) to an older, more clinically representative sample.

Finally, the third goal of this investigation was to evaluate the relation between patient credibility ratings early in treatment and subsequent treatment outcome controlling for baseline patient variables that may influence credibility. This goal of our study also extends the work of Constantino, Penek, Bernecker, and Overtree (2013), who found that patient variables predict credibility but did not examine treatment outcome, by taking the next step of evaluating whether credibility ratings remain predictive of outcome controlling for baseline patient characteristics.

We hypothesized that early treatment credibility ratings would be influenced by a number of patient variables. Specifically, it was expected that early symptom improvement, positive pre-treatment expectations of improvement, and a higher number of previous therapy experiences would predict higher credibility ratings. Our measure of credibility was administered after a brief exposure to treatment; thus, it is plausible that those who were faring better in a treatment at the point that credibility was assessed would have rated the treatment as more credible. Similarly, we predicted that those who expected to fare better in treatment would be more invested in the treatment early on and therefore rate the treatment as more credible. Our prediction that patients who had more previous therapy experiences would rate treatments as more credible was based on the finding from MacNair-Semands (2002) that more previous therapy experiences predicted higher treatment expectations.

The remaining patient variables included in this investigation were exploratory. We included demographic variables, expecting that individuals who were female, younger, single, employed, educated, and reporting less symptomatology and higher quality of life would have had higher credibility ratings. These hypotheses were based on the few analogue studies reviewed that have examined predictors of students' credibility ratings. Additionally, since Constantino and colleagues (2013) reported that feelings of hope led to higher expectations for improvement in therapy and we know that expectations of improvement and credibility are related, we expected that factors such as more education, employment, less severe symptomatology, higher quality of life, and fewer interpersonal problems would lead an individual to feel more hope and therefore be more positive about treatment.

We further hypothesized that higher ratings of treatment credibility would be predictive of symptom reduction even when we controlled for any patient characteristics, expectations of improvement, previous treatment history, and early symptom change that influenced credibility. Newman and Fisher (2010) hypothesize that positive views toward treatment might motivate continued investment in attending therapy and employing the techniques

from sessions. Thus, we expected that even though there would be variables that informed the way a patient perceived a treatment rationale, ultimately it would be the perception formed after presentation of the treatment rationale and model that drove treatment outcome.

Method

This study used a pooled dataset consisting of multiple studies conducted between 1995 and 2002 at one location that used a central intake and common assessment battery. The studies were pilot evaluations of cognitive or psychodynamic therapies for various disorders including general anxiety disorder (GAD), adolescent generalized or separation anxiety disorder, panic disorder, and major depressive disorder (MDD). This pooled database has previously been used to examine mechanisms of change across diverse psychotherapies (Gibbons et al., 2009), changes in quality of life across psychotherapy (Crits-Christoph et al., 2008), and the role of baseline skills in the process of psychotherapy (Connolly Gibbons et al., 2012).

Participants

Patients—In total, 411 participants completed the common baseline assessment. Of these, 184 patients were enrolled into one of five psychotherapy studies and 138 patients received treatment and completed outcome assessments. Of these 138 patients, 117 completed the credibility measure and our outcome measures.

Therapists—Therapists were typically recruited from the community. Therapists had PhD's (22 out of 29 participants), PsyD's (2 out of 29 participants), MD's (2 out of 29 participants), or Master's Degrees (3 out of 29 participants). In terms of experience, there was a range of 1 to 27 years of post-degree clinical experience among the participating therapists with 38% of therapists having at least 10 years of experience. Seventy-two percent of the therapists who participated were female and all of them were Caucasian. Supervision occurred at a rate of 1 hour of supervision for every 2 hours of therapy provided for the study, and all therapists were supervised by doctoral-level clinical psychologists.

Psychotherapy Studies

Alliance-fostering therapy for MDD—Fifty participants who were diagnosed with MDD were treated in three phases in this study. In the first phase, therapists delivered treatment-as-usual therapy across 16 sessions. In the second phase, therapists were trained in alliance-fostering psychotherapy while delivering 16 sessions of psychotherapy. In the third phase, therapists delivered 16 sessions of alliance-fostering psychotherapy. The primary outcome results of this trial are reported in Crits-Christoph et al. (2006).

Relationship focused therapy versus cognitive therapy for panic disorder—In the first phase of this trial, therapists were trained in relationship-focused psychotherapy tailored for panic disorder. In the second phase of this trial, 33 participants received either 16 sessions of relationship-focused psychotherapy, 16 sessions of cognitive therapy, or remained on a waitlist. The waitlist group was excluded from analysis in this investigation since a waitlist condition is not considered to have a comparable therapy rationale. Results

of this trial were presented by Connolly Gibbons, Crits-Christoph, Hearon, & Worley (2006).

Cognitive behavior therapy plus attachment-based family therapy for adolescent anxiety—This study enrolled adolescents who were diagnosed with Generalized Anxiety Disorder (GAD) or separation anxiety disorder in two phases. In the first phase, therapists treated two training cases with 16 to 18 sessions of combined cognitive behavior therapy and family therapy. In the second phase, patients were randomized to either 16 sessions of cognitive behavior therapy or 16 to 18 sessions of combined cognitive behavior therapy plus family therapy. Results are presented in Siqueland, Rynn, and Diamond (2005).

Supportive-expressive therapy versus supportive therapy for GAD—This study enrolled participants who were diagnosed with GAD, some of whom also had comorbid MDD and Anxiety NOS. These participants were randomized to receive either 16 sessions of supportive-expressive dynamic psychotherapy or 16 sessions of supportive therapy. Outcome results of this study are reported in Crits-Christoph, Connolly Gibbons, Narducci, Schamberger, and Gallop (2005).

Treatment

The treatments described above were categorized into three groups for the purpose of data analysis: interpersonal/dynamic therapies, cognitive behavioral therapies, and “other” therapies. Interpersonal/dynamic therapies included supportive-expressive dynamic psychotherapy for GAD, the relationship-focused psychotherapy for panic disorder, and the alliance-fostering psychotherapy for MDD. Cognitive behavioral therapies included the cognitive therapy for panic disorder and cognitive behavioral therapy plus family therapy treatments in the adolescent GAD/separation anxiety disorder study. A third category of treatment was “other” psychotherapies and included the training phase of the alliance-fostering study of MDD and the supportive therapy provided to participants with GAD.

In the interpersonal/dynamic therapies category, the treatment manuals used were specific to the disorder being studied. The supportive-expressive therapy for panic disorder employed a modified version of supportive-expressive dynamic psychotherapy (Luborsky, 1984). In the alliance-fostering therapy of MDD, the manual was developed by Crits-Christoph and Crits-Christoph (1998); this approach combines supportive-expressive dynamic psychotherapy techniques (Luborsky, 1984) with other techniques designed to enhance the therapeutic alliance. In the adult GAD study, supportive-expressive psychotherapy was based on the manual of supportive-expressive psychotherapy (Luborsky, 1984) but was augmented with a manual tailored to GAD (Crits-Christoph, Crits-Christoph, Wolf-Palacio, Fichter, & Rudick, 1995).

In the cognitive therapy category, Beck's guidelines for focused cognitive therapy for panic disorder (1992) were applied to the panic disorder study, and Siqueland and Diamond's manual for cognitive-behavioral treatment (2000) was used in the adolescent anxiety pilot.

In the “other” psychotherapies category, the supportive psychotherapy condition provided to participants with GAD followed a specific treatment manual (Borkovec & Costello, 1993; Borkovec & Matthews, 1998), which aims to focus the patient's attention on his or her emotions and emphasizes an environment in therapy that promoted empathy, a nonjudgmental stance, and acceptance.

Measures

Hamilton Anxiety Rating Scale (HAMA; Hamilton, 1959)—The HAMA is a 14-item measure assessing the presence and severity of typical anxiety symptoms. In the four studies described above, the HAMA was administered using a structured interview guide (Bruss, Gruenberg, Goldstein, & Barber, 1994), for which Bruss et al. found good internal consistency for the total score (Cronbach's $\alpha = .79$ to $.83$) and good interjudge reliability on test-retest ($\rho_I = .96$ for the total score). For the current analyses ($N = 116$), an internal consistency reliability (Cronbach's α) of $.76$ was obtained at baseline.

Hamilton Depression Rating Scale (HAMD; Hamilton, 1960)—The HAMD is a measure designed to assess the presence and severity of depression symptomatology. The structured interview guide (Williams, 1988) was used with the 24-item version of the measure to enhance reliability. Williams (1988) reported good interjudge reliability for test-retest assessment of the 17-item score ($\rho_I = .81$) when using the structured interview guide. For the current analyses at baseline ($N = 117$), an internal consistency reliability (Cronbach's α) of $.75$ was obtained.

Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988)—The BAI is a 21-item self-report scale that assesses typical features of anxiety. Beck, Epstein, et al. (1988) demonstrated good internal consistency (Cronbach's $\alpha = .92$), good test-retest reliability ($.75$), and good discrimination of anxiety disorders from non-anxiety disorders. In the current study at baseline ($N = 105$), an internal consistency reliability (Cronbach's α) of $.91$ was obtained.

Beck Depression Inventory (BDI; Beck, Steer, & Garbin, 1988)—The BDI is a 21-item questionnaire that examines typical features of depression on a 4-point scale focusing on cognitions. Beck, Steer, and Garbin (1988) demonstrated good internal consistency (mean Cronbach's $\alpha = .86$ across seven studies of psychiatric patients) in addition to adequate construct validity with clinical ratings of depression (mean correlation between psychiatric patients = $.72$). In the current study at baseline ($N=105$), an internal consistency reliability (Cronbach's α) of $.92$ was obtained.

Quality of Life Inventory (QOLI; Frisch, Cornell, Villanueva & Retzlaff, 1992)—The QOLI is a 16-item self-report measure that assesses overall life satisfaction. Items include satisfaction with work, love, friendships, money, health, neighborhood, creativity, learning, goals and values, helping, play, children, self-esteem, relatives, home, recreation, and community. Participants rate the importance of each item on a 3-point scale and then rate how satisfied they are with the item on a scale that ranges from -3 to 3 . The product of the importance and satisfaction ratings is computed for each item rated as important or

extremely important, and then a composite score across items for each participant is obtained. In the current study at baseline ($N=103$), an internal consistency reliability (Cronbach's α) of .78 for the product of the importance and satisfaction ratings was obtained.

The Inventory of Interpersonal Problems (IIP; Barkham, Hardy, & Startup, 1996; Kim & Pilkonis, 1999)—The IIP is a 64-item self-report measure designed to assess interpersonal problems in eight domains across two dimensions representing affiliation and control. This study used the overall average score from the 64-item version of the IIP (Alden et al. 1990) as well as the eight subscale scores. The IIP average score and subscales have demonstrated good internal consistency and 10-week test-retest reliability (Horowitz et al., 1988). In the current study at baseline ($N=110$), an internal consistency reliability (Cronbach's α) of .94 for the IIP average score was obtained.

Expectations of Improvement—Expectancy of improvement was measured at baseline in all studies with the Attitudes and Expectations questionnaire. This is an adaptation of a scaled developed by Moras and Jones (1992) and used in the NIMH Treatment of Depression Collaborative Research Program (Elkin et al., 1989; Sotsky et al., 1991). This investigation used one question from the questionnaire, “Overall, how much improvement do you expect to experience as a result of treatment?” The scale ranged from -3 to $+3$ with -3 indicating “I expect to feel much worse,” 0 representing “No change,” and $+3$ indicating “I expect to feel much better.”

Number of times in therapy—Self-report of the number of times previously in psychotherapy was also measured at baseline in all studies. The item used asked “How many times have you tried psychotherapy/counseling (at least two sessions) to help with your problems?”

Credibility—Treatment credibility was measured at session 2 in all studies with the Opinion About Treatment (OAT) form, a self-report measure adapted from Borkovec and Nau's credibility and expectancy questionnaire (1972). The three questions included in analysis in this study were the following: “(1) At this point, how logical does this portion of therapy seem to you? (2) At this point, how successfully do you think this treatment will reduce the symptoms that brought you to treatment? (3) How confident would you be in recommending this treatment to a friend who has similar problems?” The patient scores each response on a scale from 1 (not at all logical/useful/confident) to 9 (very logical/useful/confident). Thus, a higher score indicates greater perceived credibility of treatment. These three items were averaged to give an overall credibility score. In the current study ($N=117$), an internal consistency reliability (Cronbach's α) of .90 for the average was obtained.

Procedure

Patients were recruited for participation either by referrals from mental health clinicians in a local setting, by referrals from mental health clinicians in private practice in the community, by referrals from a friend or other unknown source, or by newspaper advertisements for the treatment of the one of the disorders being studied.

When patients made initial contact with the clinic, a member of the research staff conducted a structured telephone interview that ruled out any potential patients who met obvious exclusion criteria. Patients who were not ruled out based on the phone screen were then scheduled for a baseline evaluation at which they were administered the Structured Clinical Interview for Axis I DSM-IV disorders (SCID-I; First, Spitzer, Gibbon, & Williams, 1997) and Axis II disorders (SCID-II; First, Spitzer, Gibbon, Williams, & Benjamin, 1994) as well as the measures described above. Patients completed the BAI and BDI at every treatment session as well as intake and termination. The HAMD and HAMA were administered at intake and termination by trained interviewers who were blind to treatment assignment. These same interviewers conducted the diagnostic assessments at baseline.

Statistical Analysis

All analyses were conducted on a modified intent-to-treat sample (i.e., the sample included all patients who had an assessment at the respective time point evaluated, regardless of the number of treatment sessions attended). Sample sizes varied per analysis on the basis of variations in the missing data across the different assessment measures.

The first analysis evaluated the relation between early symptom change and treatment credibility as measured by the OAT score at session 2. Early symptom change was measured with the BDI and BAI and calculated as the residual change (from intake to session 2). We evaluated the relation between residual change in each the BDI score and BAI score and OAT score with a simple regression, controlling for study (four categories) and treatment group (3 categories: dynamic, cognitive, other).

Pearson correlations were computed to assess the relation of each of 13 baseline characteristics to treatment credibility. Baseline characteristics that were significantly associated with credibility based on the Pearson correlations were then included in a multiple regression analysis predicting treatment credibility, controlling for early symptom change, treatment, and study.

Each demographic variable was included as a dichotomous variable: Education was coded as a college degree or post-baccalaureate education versus less than college; marital status as married or cohabitating versus not; race as White versus non-White; employment as full-time versus not employed full-time; gender as male versus female. Age was based on a median split, including participants greater than 35 years of age versus those less than or equal to 35 years of age.

Finally, we conducted a multiple regression evaluating whether credibility ratings at session 2 were predictive of subsequent symptom course, controlling for early symptom change, significant baseline patient characteristics, treatment, and study. The dependent variable, subsequent symptom course, was operationalized as the residual change (intake to termination) on the expert rater administered HAMA and HAMD interviews. Since these expert rated interviews were only administered at intake and termination and not at sessions, early symptom change was operationalized as residual change on the BDI from intake to session 2 when evaluating change on the HAMD and as the residual change on the BAI from intake to session 2 when evaluating change on the HAMD.

Results

Sample Demographics

A complete description of baseline demographic characteristics is provided in Table 1. Of the 117 patients who began treatment in one of the four pilot studies and completed the OAT, 59.5% were female and 84.5% were Caucasian. The sample ranged in age from 14 to 61 years of age, with a mean of 40.2 years of age. Of the sample, 69% had completed college or some other level of higher education; 41% were married or cohabitating, and 53% were employed full-time.

Relation between Early Symptom Change and Treatment Credibility Ratings

The means and standard deviations for all continuous measures at each time point are provided in Table 2. Analyses examining the relation between early symptom change on the BDI from baseline to session 2 and OAT score at session 2 revealed that early symptom improvement on the BDI was predictive of treatment credibility ratings at session 2, $F(1,115) = 4.409$, $\eta(1) = -.20$, $p = .038$, controlling for treatment and study. Similarly, early symptom improvement on the BAI was predictive of treatment credibility ratings at session 2, $F(1,113) = 8.223$, $\eta(1) = -.27$, $p = .005$. Patients who demonstrated greater improvement in symptoms of depression and anxiety across the early sessions of treatment rated their treatments as more credible. The residual change in BDI score from baseline to session 2, did not interact with treatment, $F(2,106) = .814$, $\eta(1) = .12$, $p = .446$, or with study, $F(3,105) = .602$, $\eta(1) = .13$, $p = .615$ in the prediction of credibility ratings. The residual change in BAI score from baseline to session 2, did not interact with either treatment, $F(2,113) = 3.249$, $\eta(1) = -.14$, $p = .342$, or study, $F(2,113) = 2.115$, $\eta(1) = -.24$, $p = .103$.

Relation between Baseline Characteristics and Treatment Credibility Ratings

The simple correlations for each baseline characteristic with credibility, assessed by the OAT at session 2, are presented in Table 3. Of the simple correlations computed between the 13 baseline characteristics and credibility, four correlations were statistically significant. Two of the significantly predictive patient characteristics were demographic variables: age and education. At baseline, age, $r(116) = -.211$, $p = .023$, was predictive of credibility at session 2, with higher age correlating with lower credibility scores. Additionally, education, $r(116) = -.287$, $p = .002$, was predictive of credibility at session 2, with higher levels of education correlating with lower credibility scores. Marital status, employment, and race were not significantly predictive of credibility at session 2.

In the functioning and interpersonal category of patient variables, a patient's quality of life as reported on the QOLI at baseline was not significantly predictive of credibility at session 2, $r(116) = .19$, $p = .054$.

In the attitudes and expectations category, higher expectations of improvement prior to treatment significantly predicted higher credibility ratings at session 2, $r(117) = .268$, $p = .003$. Previous therapy treatments did not significantly predict credibility at session 2.

In terms of symptoms, none of the four measures of symptom severity at treatment baseline were significantly predictive of credibility at session two.

Controlling for Early Symptom Change and other Baseline Variables

Given the overlap in symptom improvement on BDI and BAI scores, the three significantly predictive baseline variables were modeled in two different combined multiple regressions. Both models controlled for study and treatment, but in the first model, early symptom improvement on the BDI was included and in the second model, early symptom improvement on the BAI was included. When the three variables that were significantly predictive of credibility at session 2 (age, education, and expectation of improvement) were modeled in a combined multiple regression controlling for study, treatment, early symptom improvement on the BDI, and the other baseline predictors, age, $F(1,114) = 5.61$, $\eta(1) = .23$, $p = .020$, education, $F(1,114) = 12.03$, $\eta(1) = -.32$, $p = .001$, and expectation of improvement, $F(1,113) = 5.52$, $\eta(1) = .22$, $p = .021$, all remained statistically significant. We found that age and expectation of improvement showed a small to moderate effect on credibility ratings, while education showed a moderate effect on credibility. Our results indicated that 31.3% of the variance in credibility ratings is predicted by variations in these patient variables.

When the three variables that were significantly predictive of credibility at session 2 (age, education, and expectation of improvement) were modeled in a combined multiple regression controlling for study, treatment, early symptom improvement on the BAI, and the other baseline predictors, age, $F(1,112) = 4.14$, $\eta(1) = .20$, $p = .045$, education, $F(1,112) = 11.17$, $\eta(1) = -.31$, $p = .001$, and expectation of improvement, $F(1,112) = 4.81$, $\eta(1) = .21$, $p = .031$, all remained statistically significant. Very similar to the findings above when these variables were combined in a model with the residual change in BDI scores, our results indicated that 31.4% of the variance in credibility ratings is predicted by variations in these patient variables.

We did not find any interactions between our significant baseline predictors and treatment in the prediction of credibility ratings. Neither age, $F(2, 115) = 1.98$, $p = .143$, nor education, $F(2, 115) = 0.24$, $p = .787$, nor expectation of improvement, $F(2,115) = 1.20$, $p = .304$, predicted credibility at session 2 differentially across treatments.

Relation between Credibility Ratings and Outcome

Finally, we examined the association between credibility and subsequent symptom change controlling for early improvement (prior to credibility rating), treatment, and study. Credibility at session 2 significantly predicted improvement on the Hamilton Depression Scale at termination when controlling for treatment, study, and early improvement on the BDI, $F(1,103) = 6.44$, $\eta(1) = -.25$, $p = .013$. However, credibility at session 2 did not significantly predict improvement on our expert-rated anxiety measure, the Hamilton Anxiety Scale at termination, $F(1,101) = 3.881$, $\eta(1) = -.20$, $p = .052$.

We then performed a second analysis of the relation between credibility and subsequent symptom change, this time controlling for age, education, and expectation of improvement,

in addition to controlling for early symptom change, treatment, and study. With regards to our depression measure, we found that credibility at session 2 significantly predicted subsequent symptom change on the HAM-D, $F(1,103) = 5.42$, $\eta(1) = -.24$, $p = .022$, controlling for early improvement on the BDI (prior to credibility rating), treatment, study, and our significant baseline predictors. Higher credibility ratings at session 2 were predictive of lower HAMD scores at termination. On our anxiety measure, credibility at session 2 did not significantly predict subsequent change when controlling for our baseline predictors of credibility, $F(1,101) = 3.056$, $\eta(1) = -.18$, $p = .084$.

Credibility significantly predicted subsequent symptom change even when controlling for age, education, expectation, treatment, study, and early symptom change, with very little reduction in the size of the relation to outcome, $F(1,89) = 4.51$, $\eta(1) = -.23$, $p = .037$.

Discussion

We assume that the measures we use to obtain credibility ratings provide us with accurate representations of a patient's experience of treatment. However, as is the case in most personal judgments, the judgment a patient makes about a treatment may not be solely a function of the treatment itself but instead may be influenced by pre-existing attitudes and beliefs that the patient brings to his or her evaluation of the treatment or other personal characteristics of the individual.

In this study, we aimed to identify which personal characteristics might predict credibility ratings in a clinically diverse sample of adults receiving psychotherapy services. We expanded on the work of Constantino and colleagues (2013) by exploring which patient variables influenced credibility ratings in a larger, older, and more clinically representative sample. We also extended our investigation to include an examination of credibility's relation to symptom change – symptom improvement both before the assessment of credibility and subsequent symptom improvement from the point credibility was measured until termination.

As we hypothesized, specific patient variables predicted early treatment credibility with small to moderate effect sizes. Patients who improved early in treatment viewed treatment as more credible. It seems then that we can expect patients who are doing better early on in treatment to tend to have more belief that a treatment will continue to improve their symptoms. Patients who were older and more educated had lower ratings of early treatment credibility while patients who expected to do better before treatment had higher ratings of early treatment credibility. We had hypothesized that younger patients would view treatments as more credible based on the literature, but we expected that more educated individuals would also have more positive opinions about treatment, and we found the opposite. Employment, marital status, clinical severity, quality of life, number of previous therapy experiences, and interpersonal problems, did not predict credibility.

We can speculate that life experiences that come with age and experience lead to “sadder but wiser” patients who are less optimistic that a treatment will substantially reduce their symptoms. One theory is that older patients may have a history of previous therapy failures.

However, in this sample, the number of times a patient was previously in therapy was not significantly correlated with age, $r(102) = -.161, p = .106$, nor significantly related to credibility ratings. So it appears that age is not simply a reflection of previous therapy experiences. Instead, there is something about being older and more educated that leads to patients having less belief in a treatment early on. Our results suggest that age and education, in addition to the amount of early symptom improvement, may influence the patient's perceptions of the credibility of a treatment rationale early in the treatment process.

Perhaps our most important finding is that credibility predicted outcome even when controlling for age, education, expectations at baseline, and early symptom change; more positive impressions of treatment after a minimal dose are related to more positive outcomes. The fact that it was the part of credibility unrelated to patient characteristics, or early symptom change, that predicted subsequent symptom improvement suggests that efforts to improve outcome by attempting to alter the lower views of credibility of the older and more educated patients is not necessarily warranted. Though Constantino and colleagues (2013) suggest that the identification of patient variables could be used to help therapists determine which patients need direct intervention, our work which expands on previous research by evaluating outcome, indicates that this is not necessary. Approximately one-third of an individual's perception about a treatment is influenced by early improvement and what the patient brings to treatment – age, education, and expectations – but the other two-thirds might be coming from an individual's early experience of a treatment. Based on our results, and assuming that other patient variables not measured here are not highly associated with credibility, it appears that it is the positive view of treatment influenced by the early exposure to treatment, not the piece influenced by baseline characteristics and expectations, which drives the ultimate treatment outcome. Since we know credibility is associated with positive symptom change, we must get all patients “on board” with treatment in order to increase the likelihood that they will improve through treatment. These results suggest that efforts to socialize patients to the treatment model and monitor therapeutic expectations early in treatment might be important to diverse models of psychotherapy.

The most significant limitation to our findings is the overlap between the measures for expectation and credibility. Given the similarity in wording between the two measures – expectations asking “How much improvement do you expect...from treatment?” and credibility asking in the second item “How successfully do you think this treatment will reduce your symptoms?” - the main difference between the two constructs is temporal and based on exposure to treatment. Despite the fact that the two constructs ask similar questions, expectation is measured before a person has received any treatment and credibility is measured after a brief exposure to treatment. Opinions about treatment prior to the treatment (defined as expectations in this investigation) and following some exposure to treatment (defined as credibility in this investigation) are expected to be related; however, even when controlling for the piece of credibility that is driven by pre-treatment expectation, credibility predicts symptom improvement. This differentiation in timing points to the central focus of this paper which is to measure the influence of a patient's belief about treatment after a brief exposure on the outcome of treatment. To a certain extent, this might

be expected because a more proximal variable is likely to predict outcome better than a more distal one. However, credibility was measured very early (session 2) within treatments that extended 16-18 sessions. Thus, it seems likely that the exposure to treatment was important in influencing credibility impressions, rather than simply the timing of the assessments (i.e., credibility was measured typically about 14-16 weeks prior to the outcome assessment while expectations were measured 16-18 weeks prior to the outcome assessment).

Another important limitation of the assessment of baseline expectations for improvement was that only a single item was used. This scale, however, has successfully predicted outcome in other treatment studies (e.g., Sotsky et al., 1991). Nevertheless, to further explore the relationship between credibility, pre-treatment expectations, and outcome, future studies should use more comprehensive and validated measures of expectations. Our conclusions from this study are also limited by the use of a pooled database with a heterogeneous sample and relatively small sample sizes in each individual study. The participants included in this pooled sample all agreed to participate in randomized, controlled trials, which may have an influence on the expectation and credibility ratings. Furthermore, this study did not examine the role of the therapist in treatment credibility. We did not explore the therapeutic alliance nor have a measure of therapist credibility. It is possible that our measures of treatment credibility are significantly influenced by interpersonal variables in the therapeutic relationship. In addition, there may be other patient variables, not examined here, that are important determinants of patient ratings of treatment credibility.

Furthermore, it will be important to determine if credibility is driving any other mechanisms of the therapeutic process. We hypothesized that credibility would be associated with outcome based on the work of Newman and Fisher (2010) who postulate that positive views toward treatment motivate investment in attending therapy and using therapeutic techniques outside of sessions. It would be useful to know if attendance patterns or adherence to treatment moderate the relation between credibility and outcome.

Our findings in conjunction with the findings of Constantino and colleagues (2013) support the importance of credibility ratings in the therapeutic process. Given the disparity in our significant patient variables, it would be worthwhile to replicate our methods on different samples of patients in an effort to elucidate which variables are the most important predictors of credibility for specific subgroups of patients. On the other hand, if our finding that credibility predicts outcome even when controlling for significant predictors is replicated, our efforts should focus more on bolstering credibility for all individuals. If we can determine when and how to improve a patients' beliefs in treatment, we might uncover an essential tool for improving psychotherapy outcome.

Our findings indicate that patient beliefs after a brief exposure to treatment may influence symptom improvement. In the context of popular models of therapeutic change, this may mean that regardless of treatment modality or diagnostic category, credibility ratings play an important role in the therapeutic process. This supports the common factors theory which predicts that different psychotherapy treatments lead to similar outcomes due to similar underlying components that contribute to outcome (Imel & Wampold, 2008). Our findings

may also relate to the generic model of psychotherapy (Orlinsky & Howard, 1986) which emphasizes the importance of the therapeutic contract, therapeutic interventions, therapeutic bond, self-relatedness, and therapeutic realizations for session outcome and termination; the relation between session outcome is associated with termination outcome; and the changing patterns of important processes and outcome variables as therapy proceeds (Kolden, 1991). The next step in credibility research should be determining just how important the timing of credibility might be. We've already shown that early treatment opinions predict outcome even when controlling for pre-treatment opinions; we should further explore how improvements in credibility relate to outcome. We need to know if those beliefs can be bolstered with interventions such as Constantino and colleagues (2013) suggest. If so, we could intervene right after our first assessment of credibility and essentially “flag” patients who are reporting lower credibility ratings. However, if it is not improvement in later credibility ratings that matters but instead that early credibility, we need to learn what kind of interventions we can incorporate into the first treatment sessions to bolster patients’ beliefs in treatment.

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Table 1

Demographic Data

	Sample (n=116)
	n (% within condition)
Gender	
Male	47 (40.5)
Female	69 (59.5)
Age	
14-18	7 (6.0)
19-29	19 (16.4)
30-39	23 (19.8)
40-49	38 (32.8)
50-61	29 (25.0)
Race	
American Indian or Alaskan Native	1 (0.9)
Hispanic	2 (1.7)
Asian or Pacific Islander	3 (2.8)
White, not of Hispanic origin	98 (84.5)
Black, not of Hispanic origin	8 (6.9)
Other or Unknown	4 (3.3)
Marital Status	
Single	44 (38.3)
Separated	4 (3.5)
Divorced	20 (17.4)
Married	45 (39.1)
Cohabiting	2 (1.7)
Highest Level of Education	
Junior High School (Grades 7-9)	2 (1.7)
Partial High School	5 (4.3)
High School Graduate	9 (7.8)
Partial College	20 (17.2)
College Graduate	36 (31.0)
Post-Graduate or Professional School	25 (21.6)
Other post-secondary education	19 (16.4)
Employment Status	
Employed full-time	61 (53.0)
Employed part-time	13 (11.3)
Student full-time	10 (8.7)
Student part-time	1 (0.9)
Homemaker	7 (6.1)

	Sample (<i>n</i>=116)
	<i>n</i> (% within condition)
Retired	4 (3.5)
Disability	2 (1.7)
Unemployed	17 (14.8)

Table 2

Means and Standard Deviations of Measures at Baseline, Session 2, and Termination

Variable	Baseline <i>M</i> (<i>SD</i>)	Session 2 <i>M</i> (<i>SD</i>)	Termination <i>M</i> (<i>SD</i>)
<i>Symptoms</i>			
BDI	26.41 (12.30)	20.0932 (11.60)	12.74 (11.97)
BAI	23.51 (11.83)		8.67 (8.45)
HAMD	14.07 (5.89)		7.349 (5.88)
HAMA	16.68 (6.01)		9.26 (5.91)
<i>Functioning and Interpersonal</i>			
QOLI	-.154 (2.14)		.898 (1.99)
IIP	86.2 (34.17)		72.60 (34.18)
<i>Attitudes and Expectations</i>			
Previous Therapy Times	2.33 (2.83)		
Expects Improvement	2.32 (.690)		

Table 3

Pearson Correlations and Multiple Regression Predicting Treatment Credibility from Patient Baseline Characteristics

Variable	Simple Correlation	Partial Correlation	
	pearson correlation (significance)	partial Eta (significance)	
<i>Demographics</i>			
Age	-.211 (.023)	-.23 (.020)	-.20 (.045)
Race	-.064 (.495)		
Marital Status	-.095 (.312)		
Education	-.287 (.002)	-.32 (.001)	-.31(.001)
Employment Status	.028 (.766)		
Previous Therapy	-.017 (.861)		
<i>Expectancy</i>			
Expects Improvement	.268 (.003)	.21 (.021)	.21 (.031)
<i>Symptoms</i>			
BDI	-.178 (.055)		
BAI	.117 (.212)		
HAMD	-.074 (.427)		
HAMA	-.149 (.107)		
<i>Functioning and Interpersonal</i>			
QOLI	.190 (.040)		
IIP	.007 (.941)		
<i>Early Symptom Change</i>			
Residual Change from intake to Session 2		-.21 (.029)	-.27 (.005)