MOTIVATIONAL INTERVIEWING AS AN ADJUNCT TO COGNITIVE BEHAVIORAL THERAPY FOR ANXIETY

A Dissertation

Presented to

The Faculty of the Department

of Psychology

University of Houston

In Partial Fulfillment

Of the Requirements for the Degree of

Doctor of Philosophy

By

Terri L. Barrera

April 24, 2013

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ABSTRACT

Numerous studies support the efficacy of CBT for the treatment of anxiety, yet 15-50% of patients fail to respond to this treatment. These non-response rates indicate there is room to improve our current treatments. One proposed method to enhance response is to include Motivational Interviewing (MI) as an adjunct to CBT. Preliminary studies of MI as a pretreatment to CBT indicate that this combination intervention leads to increased treatment expectancies, greater homework compliance, and improved outcomes (Westra, Arkowitz, & Dozois, 2009). However, these promising results have not been replicated across treatment settings or multiple providers, and have not been tested against a control condition. Furthermore, the dose of MI in these studies (3-4 50 minute sessions) may be burdensome in many clinical settings because of the additional cost and resources required for delivery. The development of an abbreviated pretreatment MI intervention would reduce treatment costs and facilitate dissemination to community practice. The current study examined the effects of a single Motivational Interviewing pretreatment session to a standard CBT protocol for anxiety as compared to CBT only. Participants in the MI condition were more likely to initiate CBT and had greater expectances for symptom improvement following treatment. The overall pattern of results suggest that a single MI pretreatment session may have positive effects on treatment engagement; however future studies are needed to further test this intervention.

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Motivational Interviewing as an Adjunct to Cognitive Behavioral Therapy for Anxiety

Anxiety disorders are among the most common types of psychopathology, affecting more than 18.1% of adults in a given year (Kessler, Chiu, et al., 2005). Lifetime prevalence rates of anxiety disorders are 28.8% (Kessler, Berglund et al., 2005). The negative impact of these disorders is well-established: anxiety disorders are associated with increased physical disability (Brenes et al., 2005; Stein, et al., 2005) occupational dysfunction (Henning et al., 2007), decreased quality of life (Barrera & Norton, 2009; Bourland et al., 2000) and increased service utilization (Stanley et al., 2001). The clinical course of anxiety tends to be chronic with low rates of remission, and it may be a life-long condition if not treated (Bruce et al., 2005; Yonkers et al., 2003). The public health costs of anxiety are extremely high, with direct and indirect costs related to anxiety disorders estimated to be $46.6 billion in 1990 (DuPont et al., 1996). This was an astonishing 31.5% of total expenditures for mental illness that year.

Efficacy of CBT for Anxiety

Cognitive behavioral therapies are the most well-established psychosocial treatments for anxiety disorders (Deacon & Abramowitz, 2004; Otto, Smits, & Reese, 2004) and are generally recommended as the first-line psychosocial treatment for the majority of individuals with anxiety (Tolin, 2010). Numerous studies support the efficacy of CBT for the treatment of individual anxiety disorders (e.g., Antony & McCabe, 2002; Davidson et al., 2004; Stanley et al., 2009), and more recently, evidence of CBT efficacy across anxiety disorders has begun to emerge (Norton & Price, 2007). Due to indications that there may be a common underlying pathology among anxiety disorders (Barlow, Allen, & Choate, 2004), as well as practical concerns about dissemination of empirically supported treatments, several independent research groups have developed transdiagnostic CBT protocols for mixed-diagnosis anxiety groups. Transdiagnostic

treatments are designed to target the shared pathology across the anxiety disorders, emphasizing the links between thoughts, behaviors, and physiological symptoms for each individual rather than focusing on a specific anxiety diagnosis.

Preliminary results support the efficacy of these treatments over waitlist controls (e.g., Allen, Ehrenreich, & Barlow, 2005; Erickson et al., 2007; Norton & Hope, 2005; Smith & Schmidt, 2005), in open trials (Ellard et al., 2010; Norton, 2008), and in benchmark comparisons to diagnosis specific clinical trials (McEvoy & Nathan, 2007). No differences in outcomes have been observed across diagnoses following transdiagnostic CBT for anxiety (Norton, 2012a), and results from a recent preliminary randomized controlled trial of transdiagnostic CBT compared to diagnosis-specific group CBT treatments for GAD, Panic, and Social Phobia suggest the equivalence/non-inferiority of transdiagnostic CBT (Norton & Barrera, 2012). Additionally, remission rates of comorbid affective disorder diagnoses were higher in transdiagnostic CBT as compared to benchmarked diagnosis-specific CBT trials (Norton et al., 2013).

Suggestions for Improvement to Enhance CBT Outcomes

Despite the demonstrated positive effects of CBT for anxiety, 15-50% of patients fail to respond to this treatment (Otto, Behar, Smits, & Hofmann, 2008). Furthermore, substantial proportions of treatment seeking individuals withdraw from CBT prematurely (Arch & Craske, 2009), and thus may not receive the full range of CBT skills and treatment techniques. These problems have led some to call for increased focus on engaging patients in treatment in order to help maximize the benefits of CBT (Collins, Westra, Dozois, & Burns, 2004).

Treatment engagement has traditionally been defined as session attendance and treatment completion status, but may also include measures of compliance with treatment procedures such as homework completion. Both session attendance and homework compliance have been

identified as predictors of treatment outcomes in CBT, underscoring the importance of increasing treatment engagement among patients (Neimeyer et al., 2008; Schmidt & Woolaway-Bickel, 2000). A growing body of literature suggests that enhancing patient motivation for behavior change is a key factor in improving treatment engagement and outcomes, and conversely has identified poor motivation and resistance to treatment as important contributors to treatment failure (Dugas et al., 2003; Lambert, 2011). An additional target for improving treatment engagement in CBT is enhancing patients' expectation for change, as treatment expectancy has been related to improved outcomes across a number of studies (Federici, Rowa, & Antony, 2010; Westra, Dozois, & Marcus, 2007).

Motivational Interviewing + CBT

One potential method for increasing treatment engagement in CBT is the addition of Motivational Interviewing (MI) to standard CBT. MI is a client-centered therapeutic style in which patients are encouraged to explore and resolve ambivalence in order to elicit behavior change (Miller & Rollnick, 2002). Therapists are guided by the following principles: (1) express empathy, (2) develop discrepancy between the patients' values and current behavior, (3) roll with resistance and avoid confrontation, and (4) support self-efficacy. Motivational interviewing is often used as a prelude intervention, with the supposition that increasing motivation for change may help clients become more engaged in action-oriented CBT treatments (Westra, 2004). To date, MI has primarily been used in combination with substance abuse interventions, with positive results (Burke, Arkowitz, & Melanchola, 2003). However, research examining the potential benefits of MI as an adjunct to treatments for anxiety disorders is in its infancy.

Three preliminary studies have examined the use of MI in combination with CBT for obsessive compulsive disorder (OCD). Merlo and colleagues (2010) randomized 16 adolescent

OCD patients to receive three 20-30 minute sessions of either MI or psychoeducation in addition to CBT. Although post-treatment OCD symptom levels did not differ between groups, patients in the MI group completed treatment an average of three sessions earlier than patients in the psychoeducation group. Simpson and colleagues (2008) integrated MI into three introductory psychoeducation sessions of exposure and response prevention (ERP) for 6 patients with OCD. The authors also created an additional MI module to be used as needed during ERP when patients were resistant to engaging in exposures. Following the integrated MI and CBT intervention in this open pilot trial, 5 of the 6 patients were classified as responders.

Simpson and colleagues (2010) recently conducted a randomized controlled pilot study in which 30 participants received either ERP only or the integrated MI and ERP used in the previous open pilot trial. Participants receiving MI+ERP did not show greater treatment adherence than the participants in the ERP only condition; however, the authors note that the method of incorporating MI may have contributed to these non-significant findings. The integrated MI and ERP protocol used in this study required therapists to switch between MI and ERP within treatment sessions, and MI fidelity ratings indicated that therapists were somewhat unsuccessful in incorporating MI into exposure sessions. Another problem with this study design is that it was not clear when the additional MI module should be used, and thus patients in the MI+ERP condition did not receive equal doses of MI.

These preliminary studies resulted in mixed findings for the addition of MI to CBT, and the integrative nature of the MI interventions raises challenges to directly testing the effects of MI. Two studies to date have sought to test more directly the effects of MI by using MI as a pretreatment to CBT for anxiety. Westra and Dozois (2003) developed a treatment manual for the adaptation of MI to anxiety treatment and found that 3 sessions of an MI pretreatment yielded

a significantly higher number of responders to a transdiagnostic group CBT intervention when compared with no pretreatment (Westra & Dozois, 2006). Additionally, the MI pretreatment was associated with increased treatment expectancies and greater homework compliance compared to no pretreatment. Similarly, 4 sessions of MI as a pretreatment to CBT for generalized anxiety disorder led to reduced worry symptoms and greater homework compliance relative to no pretreatment (Westra, Arkowitz, & Dozois, 2009).

Statement of the Problem

Although preliminary studies integrating MI and ERP for OCD yielded mixed results, Westra and colleagues' studies of MI as a pretreatment to CBT for GAD and mixed anxiety suggest that the addition of MI may have important benefits. Their preliminary studies indicate that including an MI prelude to CBT leads to increased treatment expectancies, greater homework compliance, and improved outcomes. However, these promising results have not been replicated in other treatment settings or across multiple providers. This is an important point, since allegiance effects are most pronounced when treatment studies are conducted in the laboratory of an expert and innovator in the treatment approach (Jacobson, 1999), as is the case with the Westra studies. Furthermore, the dose of MI in Westra's studies (3-4 50 minute sessions) may be burdensome in many clinical settings because of the additional cost and resources required for delivery. An abbreviated MI pretreatment intervention would reduce treatment costs and facilitate dissemination to community practice.

The current project examined the effects of a single Motivational Interviewing pretreatment session, based on the lengthier MI pretreatment protocol of Westra and Dozois (2003), as a pretreatment to transdiagnostic group CBT for anxiety. The study tested whether the brief MI+CBT protocol will result in increased treatment engagement in transdiagnostic group

CBT for anxiety, as well as preliminarily examining the effect of the MI pretreatment on anxiety symptom reduction over the course of CBT. The findings from this study have the potential to lay the groundwork for future research examining the mechanisms of action of MI, as well as investigations into which clients may benefit most from this type of pretreatment intervention.

Specific Aims

Specific Aims of the proposed dissertation are to:

1. Investigate the impact of MI+CBT on treatment attendance in group CBT

   Hypothesis: The addition of MI to CBT will result in greater rates of treatment initiation, session attendance, and treatment completion in comparison to CBT alone

2. Investigate the impact of the MI pretreatment on motivation for change, treatment expectancies and homework compliance

   Hypothesis: The addition of MI to CBT will result in significantly increased ratings of motivation for change and treatment expectancy as well as greater homework compliance in comparison to CBT alone

An exploratory aim of the proposed dissertation is to:

3. Investigate the impact of MI+CBT on anxiety symptoms during treatment

Research Design and Methods

Participants

Inclusion/exclusion criteria. The sample consisted of 39 individuals presenting for treatment at the University of Houston Anxiety Disorder Clinic (ADC). Included participants were required to be 18 years or older, speak English, and meet DSM-IV criteria for an anxiety disorder as assessed by the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV). Exclusion criteria included (a) the presence of a cognitive impairment as indicated by a score of

26 or lower on the Mini-Mental State Examination (b) acute suicidality as indicated by a score of 20 or greater on the Modified Scale for Suicide Ideation and (c) psychosis or serious substance abuse as assessed by the ADIS-IV.

Design and Procedure

This study was conducted in the context of an ongoing study of transdiagnostic group CBT for anxiety. Prior to the initial diagnostic assessment, participants were mailed a packet of research documents including the informed consent document. Participants were asked to return this document at the assessment appointment, where they were given further explanation of the research program and had the opportunity to ask questions about their participation in research.

Study design. Upon providing informed consent, participants were assigned to receive either no pretreatment, or a single session of MI for anxiety prior to participating in group CBT for anxiety using block randomization (in blocks of 4) by principal diagnosis. For example, if the first eligible participant was given a primary diagnosis of panic disorder, he or she would be randomly assigned to either the MI pretreatment or no pretreatment condition. The next eligible participant with a primary diagnosis of panic disorder would be automatically assigned to the other condition. Diagnosticians and CBT therapists were blind to the randomization schedule.

Assessment procedures. All participants received a diagnostic assessment (ADIS-IV) and completed a set of self-report measures prior to beginning treatment. Additional self-report and therapist rated measures were completed throughout the CBT treatment. Patient reports of homework compliance were placed in a lock box, so as not to influence therapist ratings of homework compliance. Post treatment and follow-up data were collected as part of the larger clinical trial, but were not included in this study. Table 1 details the assessment measures employed at each time point.

Treatment Overview

MI for anxiety. The single session of MI for anxiety was adapted from the longer MI pretreatment protocol developed by Westra and Dozois, 2003, and the recent book titled *Motivational Interviewing in the Treatment of Anxiety* (Westra, 2012). The intervention was conducted in an individual format and followed the principles of MI outlined by Miller and Rollnick (2002; express empathy, develop discrepancy, roll with resistance, and support self-efficacy), with a focus on ambivalence and motivation to change anxiety related problems. Several optional exercises in the longer MI pretreatment protocol were omitted in the single session protocol. The following key components of the longer protocol were retained: The idea that change is a process was first introduced, including the normalization of ambivalence about change. Next, the participant's ambivalence about change was explored through a discussion of the pros and cons of both changing and staying the same. The therapist then worked with the participant to develop discrepancy between the participant's values and current behaviors. Finally, if (and only if) the participant articulated their intention to change, the therapist helped to develop and support the participant's self-efficacy for change using MI-consistent language.

Transdiagnostic CBT. The transdiagnostic treatment protocol utilized in this study consisted of a 12-week schedule of group CBT that meets for two hours per session on consecutive weeks. Groups are capped at 6 to 8 members and enrollment is closed, in that new participants are not added to an existing group after the group is initiated. The treatment protocol is highly structured and follows a standardized set of therapeutic procedures (Norton, 2012b). The first session orients participants to the group format, group rules, and the structure of the treatment. In addition, the therapists provide a brief summary of the nature of anxiety, and each participant develops a fear hierarchy. The next two sessions focus on educating members

regarding the importance of thoughts, how anxious thinking typically involves negative automatic thoughts, and cognitive restructuring techniques. In the following six sessions, participants incrementally work up their individualized fear hierarchy by performing the cognitive restructuring techniques prior to an in–session exposure. Exposures are typically in vivo but sometimes include imaginal exposure depending upon the nature of the fear and feasibility of reproducing the feared situation. Participants are then asked to perform the exposure over the following week for homework. Sessions ten and eleven address more broad use of the cognitive restructuring techniques to extend to global patterns of negative automatic thinking related to their particular anxious style (e.g. recurrent perfectionistic patterns, chronically negative views of self, the world, or the future). The final session wraps up by reflecting on gains made in treatment, and discusses how to deal with stressors, lapses, and relapses.

Therapists. Two advanced doctoral graduate students served as MI therapists in this study. Both MI therapists read the standard MI text (Miller & Rollnick, 2002), watched standard MI training tapes (Miller, Rollnick, & Moyers, 1998) and attended at least one MI training workshop offered through the Motivational Interviewing Network of Trainers. Additionally, therapists read the book *Motivational Interviewing in the Treatment of Anxiety* (Westra, 2012) in order to better understand the application of MI to an anxiety population. MI therapists pilot tested the MI intervention with six participants prior to the start of the current trial. MI proficiency was assessed using the Motivational Interviewing Treatment Integrity (MITI) Code (Moyers, Martin, Manuel, & Miller, 2003), and MI therapists began conducting the MI intervention for the current study once their global MI ratings for pilot cases were above the proficiency level (3.5, on a scale of 1 to 5) established by Moyers et al (2010). MI treatment

fidelity was assessed through the review of 30% of session videotapes by a graduate research assistant trained in the MITI, which has demonstrated good reliability and validity when used with graduate and undergraduate student raters (Moyers et al., 2005; Pierson et al., 2007). The MI therapists did not serve as therapists for group CBT so as to keep the CBT therapists blind to the pretreatment conditions of patients. CBT therapists in this study were advanced graduate students supervised by Dr. Norton. CBT therapists received supervision on a weekly basis either in groups or individually.

Measures

Treatment attendance. Treatment attendance was measured by examining treatment initiation, number of CBT sessions attended, and treatment completion. For the purposes of this study, treatment completion was defined as attending a majority of the CBT sessions (i.e., at least 7 of 12 sessions).

Treatment credibility/expectancy.

Reaction to Treatment Questionnaire. The Reaction to Treatment Questionnaire (RTQ; Holt & Heimberg, 1990) is a 6-item measure of treatment expectancy and rationale credibility. The credibility subscale of the RTQ contains the four treatment credibility items from Borkovec and Nau's (1972) original measure of credibility of therapy rationales. The RTQ expectancy items ask participants to rate the projected severity of their anxiety symptoms immediately following treatment and one year post-treatment on a scale from 1 (not severe) to 10 (very severe).

Homework compliance

Homework Compliance Scale. The Homework Compliance Scale (HCS; Primakoff, Epstein, & Covi, 1986) is a therapist rated assessment of homework completion. Therapists

evaluate the degree of homework compliance for each patient on a 7 point scale where 0= homework was not assigned, 1 = the patient did not attempt homework, 2 = the patient attempted the assigned homework but was unable to execute it due to extenuating circumstances, 3 = the patient did homework that was different from that assigned, but could be considered "relevant" to the patient's particular target problems, 4 = the patient did some portion of the assigned homework, 5 = the patient completed the assigned homework, and 6 = the patient did more of the assigned homework than was requested. This rating scale was modified for use in this study as a self-report homework compliance rating for patients to evaluate their own success at completing the assigned homework. The self-report HCS was collected in addition to the therapist rated HCS. Therapists were blind to patient ratings of homework compliance.

Motivation for change

Change Questionnaire. *The Change Questionnaire* (CQ, Miller & Johnson, 2008) is a 3-item screener of patients' motivation for change. Patients are asked to rate the importance, commitment, and ability to change a specific behavior (reducing anxiety) on a scale from 0 to 10. Although the items are highly face valid, potentially increasing the risk of a ceiling effect in a treatment-seeking sample, the CQ has shown promise in predicting both proximal and distal therapy outcomes in anxiety disorder populations (Westra, 2011).

Treatment Ambivalence Questionnaire. *The Treatment Ambivalence Questionnaire* (TAQ; Rowa, Gifford, McCabe, Antony, & Purdon, unpublished) is a 26-item measure that assesses treatment concerns of people awaiting exposure-based treatments for anxiety disorders. The TAQ consists of three subscales: Personal Consequences of Treatment (containing items related to fears of personality change, relationship disruption, and being subject to greater expectations from others); Adverse Reactions to Treatment (including items related to fears of

increased anxiety after treatment, the emergence of new symptoms, and fears of relapse); and Inconvenience of Treatment (containing items related to treatment being time consuming, embarrassing, and inconvenient). Items are rated on a scale from 1 (strongly disagree) to 7 (strongly agree), where higher scores are indicative of greater ambivalence about treatment.

Anxiety symptoms.

Anxiety Disorders Interview Schedule for DSM-IV. The Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV; Brown, Di Nardo, & Barlow, 1994) is a semi-structured diagnostic interview designed to assess the presence, nature, and severity of DSM-IV anxiety, mood, and somatoform disorders, as well as previous mental health history. A recent large scale analysis of the ADIS-IV offers strong support for the reliability of diagnoses using the ADIS-IV (Brown, Di Nardo, Lehman, & Campbell, 2001). Interrater reliability for ADIS-IV diagnoses is high among diagnosticians in prior trials of transdiagnostic CBT (86% agreement, $\kappa = 0.759$, $p < .001$; Norton et al., 2013).

State-Trait Anxiety Inventory – State Version. The state form of the State-Trait Anxiety Inventory (STAI-S; Spielberger, Gorsuch, Luschene, Vagg, & Jacobs, 1993) is a 20-item measure assessing state anxiety. STAI-S items are scored on 1 (Not at all) to 4 (Very much so) scales, with a total score ranging from 20 to 80. The psychometric properties of the STAI-S are strong across multiple populations (Spielberger et al., 1993), and the measure has demonstrated sensitivity to anxiety treatment effects (e.g., Fischer & Durham, 1999).

Data Analysis

- *Specific Aim 1: Investigate the impact of MI+CBT on treatment attendance in group CBT.* Rates of treatment initiation and completion were compared between the MI

pretreatment and no pretreatment conditions using Pearson's chi square test. Session attendance was examined using ANOVA.

- *Specific Aim 2: Investigate the impact of MI+CBT on motivation for change, treatment expectancies, and homework compliance.* Treatment motivation was analyzed using ANCOVA, where pretreatment measures of motivation were included as a covariate. Differences in treatment expectancy were tested using ANOVA. Because homework compliance may be related to the type of homework assigned, average ratings for homework compliance were assessed separately for cognitive restructuring (CBT sessions 2-4), exposures (CBT sessions 5-10), and advanced schema work (CBT sessions 11-12). A series of ANOVAs was conducted to test client rated and therapist rated homework compliance for these three types of homework.
- *Exploratory Aim: Investigate the impact of MI+CBT on change in anxiety symptoms.* To fully utilize the entire sample of treatment initiators, change in STAI scores was examined using Mixed-effect Regression Modeling (MRM).

Sample size and power analysis. This study included a sample of 39 patients with anxiety disorders who were randomized to either the MI pretreatment or no pretreatment prior to participation in group CBT. Power analyses indicate that based on an effect size of f =.48 (consistent with the effect size for the impact of MI on homework compliance in Westra & Dozois, 2006), a sample size of 39 is sufficient to detect effects when alpha = .05.

Expected Outcomes

It was expected that the addition of a single MI pretreatment session would improve treatment engagement in CBT for anxiety. Specifically, it was expected that MI+CBT would result in increased treatment initiation, attendance, and completion relative to CBT alone.

Additionally, it was expected that the brief MI intervention would increase treatment expectancy, homework compliance, and motivation for change when compared to no pretreatment. Given previous findings that 3-4 sessions of MI lead to greater symptom reduction following CBT for anxiety compared to no pretreatment, it was expected that the single MI session will result in similar reductions in anxiety symptoms relative to no pretreatment.

Results

Participants

The sample consisted of 24 men and 15 women, and was racially diverse (51.3% Caucasian, 28.2% Hispanic/Latino(a), 10.3% African American, 5.1% Asian American, and 5.1% Other or Mixed). Participants ranged in age from 19 to 66 years, with a mean of 35.82 (*SD* = 12.61). Most participants were single (48.7%) or married (38.5%), and were well educated (28.2% some undergraduate, 46.2% Bachelors degree or equivalent, 10.3% some professional/graduate school, 12.8% graduate/professional degree).

Of the total sample, 18 participants were assigned principal diagnoses of social anxiety disorder, 10 panic disorder, 8 generalized anxiety disorder, 2 obsessive compulsive disorder, and 1 anxiety disorder not otherwise specified. No significant pattern of association was observed between primary diagnosis and treatment condition, $\chi 2$ (2, n = 39) = 3.64, p = .602. The sample showed considerable comorbidity, with 64.1% of participants having additional Axis I diagnoses including major depressive disorder or dysthymia (n = 13), social anxiety disorder (n = 6), specific phobia (n = 6), GAD (n = 5), panic disorder with or without agoraphobia (n = 3), obsessive-compulsive disorder (n = 2), and substance dependence (n = 2). At pre-treatment, no differences emerged between the conditions in terms of demographic variables such as age, sex, race, education, marital status, or medication use ($t(37) = 1.68$ p = .10; χ^2s = 1.05 - 6.87, ps = .14 - .54). Similarly, no differences between conditions emerged at pretreatment on clinician-rated

symptom severity (ts = 1.00 - 1.17, *p*s = .25 - .32) nor were there differences between conditions in the percent of participants with comorbid diagnoses, χ^2 (1, *n*=39) = 0.14, *p* = .91.

MI Fidelity

Six of the MI sessions (30%) were chosen at random and transcribed and rated by an independent evaluator using the MITI coding system. Mean global ratings for the MI sessions ranged from 3.33 to 4.33 with an average of 3.73 (*SD* = 0.34), which is above the 3.5 recommended for proficiency in MI (Moyers et al., 2010). These ratings suggest the MI therapists were generally proficient in maintaining the "MI spirit".

Aims 1 and 2: Treatment Engagement

Session Attendance. Of the 39 randomized participants, 4 from the non-MI condition failed to attend any group CBT sessions, resulting in 35 treatment initiators. The relationship between MI condition and CBT treatment initiation was significant, X^2 (1, *n* = 39) = 4.69, *p* = .030, *V* = .347; participants in the MI group were more likely to initiate group CBT than those who did not receive MI. Participants in the MI condition (*M* = 8.85, *SD* = 2.93) attended a greater number of CBT sessions compared to the non-MI condition (*M* = 6.00, *SD* = 4.93), *F*(1,38) = 4.88, *p* = .034, partial $\eta 2$ = 0.116. However, when restricting this analysis to CBT treatment initiators, differences in number of sessions attended between the MI (*M* = 8.85, *SD* = 2.93) and non-MI conditions (*M* = 7.60, *SD* = 4.27) were no longer significant, *F*(1,34) = 1.06, *p* = .311, partial $\eta 2$ = 0.031. Seventy-five percent of participants in the MI pretreatment condition were categorized as CBT treatment completers compared with 53% of participants in the non-MI condition. Although mean scores suggested greater retention in the MI pre-treatment condition, this difference was not statistically significant, $\chi 2$ (1, n = 39) = 2.12, *p* = .146, *V* = .233. There

were no differences between dropouts and completers on age, gender, marital status, current use of psychotropic medications, or severity of the primary anxiety disorder.

Homework Compliance. Therapist and client ratings of homework compliance were calculated for the cognitive restructuring, exposure, and advanced cognitive restructuring treatment phases. Though not statistically significant, therapist ratings of cognitive restructuring homework compliance were slightly higher for participants in the MI condition (M = 4.04, SD = 1.21) than the non-MI condition (M = 3.17, SD = 1.96), $F(1,31) = 2.42$, $p = .131$, partial $\eta 2$ = 0.075. Similarly, there was a trend toward higher participant-rated cognitive restructuring homework compliance in the MI condition (M = 4.27, SD = 0.90) than the non-MI condition (M = 3.37, SD = 1.86), $F(1,31) = 3.34$, $p = .078$, partial $\eta 2 = 0.100$. No significant differences were observed for therapist- or participant-rated homework compliance for the exposure Fs (1,28) = 0.13–0.41, Ps = .53–.91, partial $\eta 2$s= 0.000–0.015, or advanced cognitive restructuring phases of treatment Fs (1,19) = 0.16–0.54, Ps = .47–.70, partial $\eta 2$s= 0.010–0.029.

Treatment Credibility and Expectancies. Participants in the MI condition (M = 23.83, SD = 3.96) and those in the non-MI condition (M = 24.27, SD = 3.44) did not differ significantly in their perceptions of CBT treatment credibility, $F(1,29) = 0.93$, $p = .763$, partial $\eta 2 = 0.003$. Comparisons of treatment expectancies assessed at CBT session 2 yielded intriguing results. Participants in the MI condition (M = 3.44, SD = 1.69) and non-MI condition (M = 2.63, SD = 2.42) endorsed similar expectations regarding reduction in anxiety symptoms immediately following CBT, $F(1,29) = 1.13$, $p = .298$, partial $\eta 2 = 0.040$; however, MI participants (M = 4.22, SD = 1.80) reported greater expectancies for anxiety symptom reduction in the year following treatment compared to non-MI participants (M = 2.45, SD = 2.58), $F(1,29) = 4.73$, $p = .039$, partial $\eta 2 = 0.149$.

Motivation for Change. Participants in the MI condition (M = 23.38, SD = 3.40) and non-MI conditions (M = 24.63, SD = 2.39) did not differ significantly in their reported motivation for change (CQ) at CBT session 1, $F(1,21) = 1.23$, $p = .281$, partial $\eta 2 = 0.064$. Similarly, differences in TAQ subscale scores across MI and non-MI subgroups were not statistically significant, Fs (1,17) = 0.45–1.46, ps = .236–.836, partial η2s= 0.003–0.088.

Exploratory Aim: Treatment Outcome

To utilize fully the entire sample of treatment initiators, STAI session measures were examined using mixed-effect regression modeling. STAI session measures were first grouped into quartiles (quartile 1: sessions 1-3, quartile 2: sessions 4-6, quartile 3: sessions 7-9, quartile 4: sessions 10-12). Next, using a restricted maximum likelihood estimator (MLE), the data were fitted to a random intercepts and slopes model with STAI quartile scores serving as a time variant regressor and condition as a time invariant factor. Results indicated that similarly decreasing STAI scores were observed between the MI ($MLE = -3.12$, Wald $z = -6.15$, $p<.001$; and non-MI conditions ($MLE = -3.77$, Wald $z = -10.45$, $p < .001$) over treatment. Constraining the intercepts and slopes to be equal across conditions did not result in decreased model fit (Bayesian Information Criteria constrained: 806.10; freely estimated: 810.04) indicating that intercepts (MLE = 47.82) and slopes (MLE = -3.51) were invariant across treatment conditions.

Discussion

The primary goal of this study was to examine whether a single session of Motivational Interviewing would impact treatment engagement in individuals enrolled in transdiagnostic group CBT for anxiety. A secondary aim was to investigate whether pre-treatment MI had a more distal impact on reduction in anxiety severity during group CBT. The overall pattern of results suggest that a single MI pretreatment session may have positive effects on proximal

measures of treatment engagement, but that these effects may not be long-lasting enough to impact anxiety symptom severity over the course of CBT.

All participants in the MI condition initiated group CBT, whereas 20% of individuals in the non-MI condition failed to attend any CBT sessions. Session attendance was also higher in the MI condition, although differences were no longer significant when excluding non-initiators. On average, MI participants attended more than eight sessions, which is within the range of recommended CBT treatment dose for anxiety disorders (8-12 sessions; National Institute for Clinical Excellence, 2008). Similarly, there was a trend toward greater rates of treatment completion in the MI condition compared to the non-MI condition although this difference was not statistically significant. These results are comparable to the non-significant trend for higher rates of treatment retention in the MI condition reported by Westra and Dozois (2006), and suggest that the MI pretreatment session may have a proximal impact on treatment engagement. Replication is needed to determine whether these results hold in a larger sample.

Although not statistically significant, a moderate effect size was observed for differences between the MI and non-MI conditions on both therapist- and participant-rated homework compliance during the cognitive restructuring phase of treatment (sessions 2 – 4). No differences were found between study conditions on homework compliance during the subsequent exposure (sessions 5 – 10) and schema-based cognitive restructuring (sessions 11 – 12). This pattern of results suggests that a single session of MI may have a greater effect on homework compliance in early CBT treatment sessions compared to later sessions. The disparate results for distal homework compliance in this study as compared to Westra and Dozois (2006) may be due to the shorter length of CBT in the later study (8 sessions over 4 weeks), again suggesting that the

strongest impact of the MI pretreatment session may be observed proximally to the time of pretreatment.

Participants in both study conditions endorsed high levels of CBT treatment credibility, and reported similar expectations for anxiety symptom reduction immediately following treatment. Interestingly, participants in the MI condition, but not in the non-MI condition, expected to continue to experience reductions in anxiety symptom severity following treatment. Coupled with the lack of significant difference in CBT treatment credibility between the two study conditions, these results may suggest that the MI pretreatment session increased participants' awareness regarding the role of long-term behavior change in anxiety symptom reduction. This is a promising finding given previous research suggesting that treatment expectancies predict treatment outcome in CBT (Chambless, Tran, & Glass, 1997; Westra & Dozois 2005).

Surprisingly, the MI pretreatment session did not increase motivation for change. Participants in both study conditions reported high levels of motivation for change, thus raising the possibility of a ceiling effect. Previous CBT treatment studies have also reported limited variability in motivation for change (Simpson et al., 2010), suggesting that participants who are self-selecting into CBT treatments for anxiety may be highly motivated. Another possibility is that participants may be responding to perceived demand characteristics and thus over-reporting their true motivation for change, or alternatively that current measures assessing motivation are inadequate to capture variance in motivation.

The exploratory aim of investigating the impact of the MI pretreatment session on anxiety symptom reduction over the course of CBT provided further evidence that a single pretreatment session may not result in long-lasting gains. Participants in both the MI and non-MI

conditions experienced a steady decrease in anxiety over the course of treatment, with no discernible differences in rate of improvement. Taken together, the results of this preliminary study suggest that while a single session MI pretreatment may increase initial CBT treatment engagement, the results are not substantial enough to have a distal impact on engagement or outcomes.

There are several potential explanations for these findings. First,a single session of MI may be inadequate to produce the benefits associated with more time intensive MI pretreatment protocols. Perhaps the brief MI intervention effectively raises participant awareness about ambivalence but additional MI sessions are needed to help resolve and overcome ambivalence. Alternatively, the high rates of self-reported motivation for change may suggest that the MI intervention is not well-suited for participants entering treatment highly motivated. Some evidence supports this hypothesis, as previous studies have shown that MI is most beneficial for individuals with low levels of motivation for change (Rohsenow et al., 2004). A third hypothesis is that the MI protocol utilized in this study was only minimally effective and/or that the study therapists were not sufficiently expert in MI to facilitate long-term treatment engagement.

The findings from this study should be considered in light of several limitations. The study was powered to detect large treatment effects, and thus the small sample size may have precluded detection of small or moderate effects of MI on treatment engagement. Participant attrition and missing data also contributed to some analyses being underpowered. The lack of expert supervision for the MI therapists is an additional limitation. Finally, in the absence of an active therapist-contact control condition, the reported effects cannot be directly attributed to MI. Future studies should compare MI to an active control condition such as anxiety

psychoeducation to allow stronger conclusions to be drawn about the specificity of MI pretreatments in improving CBT treatment engagement.

In sum, the single MI pretreatment session described in this study appears to positively impact early treatment engagement in CBT, but not distal engagement or anxiety symptom reduction over the course of treatment. These results should be considered preliminary however, and future studies with larger samples are needed to further test the effectiveness of this pretreatment intervention.

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Table 1. Timeline of assessment measures

Assessment Measure	Initial Diagnostic Assessment	CBT Session 1	CBT Sessions 1-12
RTQ	X	X	
HCS			X
CQ/TAQ	X	X	
STAI	X		X