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## How much is enough in brief acceptance and commitment therapy?

Emily Brenny Kroska  
*University of Iowa*

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HOW MUCH IS ENOUGH IN BRIEF ACCEPTANCE AND COMMITMENT  
THERAPY?

by  
Emily Brenny Kroska

A thesis submitted in partial fulfillment  
of the requirements for the Doctor of Philosophy  
degree in Psychology (Clinical Psychology) in the  
Graduate College of  
The University of Iowa

August 2018

Thesis Supervisor: Professor Michael W. O'Hara

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Graduate College  
The University of Iowa  
Iowa City, Iowa

CERTIFICATE OF APPROVAL

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PH.D. THESIS

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This is to certify that the Ph.D. thesis of

Emily Brenny Kroska

has been approved by the Examining Committee for  
the thesis requirement for the Doctor of Philosophy Degree  
in Psychology (Clinical Psychology) at the August 2018 graduation.

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## ABSTRACT

A large body of research has examined the appropriate time course of psychotherapy across a variety of therapeutic modalities. Research in the area of Acceptance and Commitment Therapy (ACT) has indicated the efficacy of single-session interventions in improving anxiety, depression, and even weight loss. These findings, though promising, are accompanied by the question of how much ACT is enough to make a statistically and clinically significant difference in symptoms. The present study sought to clarify this question among individuals with depression.

Adults ( $N = 271$ ) with elevated depressive symptoms were recruited via mass emails for a study comparing the relative effectiveness of time-variant single-session ACT interventions (90 minutes, 3 hours, 6 hours). Inclusion criteria included PHQ-8 score  $\geq 10$ , no history of TBI, no current psychotherapy, and no medication changes in the past 60 days. Eligible participants completed a screening interview, which included modules from the M.I.N.I. Exclusion criteria included active suicidality, past or current mania, and past or current psychoses. If interested in participating ( $n=351$ ), eligible participants could complete the baseline measure after enrolling in the study. Participants were randomized to a single-session 90-minute, 3-hour, or 6-hour group ACT intervention. About half (51.2%) of enrolled and randomized participants completed their assigned group intervention. Follow-up assessments were completed at 1-month and 3-months post-intervention with limited attrition. Longitudinal mixed-effects modeling was used to examine change over time and between conditions.

Findings indicated that depressive symptoms and avoidance decreased over time, and social satisfaction increased over time. Differences between conditions and

interactions between time and condition were not observed. Equivalency analyses revealed that the 3- and 6-hour groups were not within the margin of equivalence in terms of depressive symptoms. Mindfulness analyses revealed that at 3-month follow-up, the 3- and 6-hour groups reported higher mindfulness than the 90-minute group.

The findings have public health implications in terms of reaching a larger number of patients with increased efficiency. Given the far greater patient demand than number of therapists available, increased access and efficiency are of great importance. The results also suggest that individuals with depression can make rapid, sustainable changes, and this is of critical importance clinically. Limitations included a homogenous sample of primarily white, highly educated females, and the lack of a no-treatment control group. The findings of the current study indicate that brief group ACT interventions can result in change in both processes (avoidance, mindfulness) and functioning (depressive symptoms, social satisfaction) months after the single-session intervention. Future research should examine the effectiveness of brief interventions with other symptomatology as compared to a no-treatment control or a more traditional course of psychotherapy.

## PUBLIC ABSTRACT

An important question asked by both depressed patients and treating providers is: how much treatment is enough to impact depressive symptoms? One therapeutic approach that has shown promise as a brief intervention is Acceptance and Commitment Therapy (ACT). The present study sought to answer the question of how much ACT is enough to make an impact on depression.

The study compared three single-session group ACT interventions that varied in length (90 minutes, 3 hours, or 6 hours). Participants completed measures of depression, social satisfaction, and key processes before and after the intervention at 1- and 3-months.

The results indicated that depression decreased between baseline and follow-up, and there was not a difference in conditions. Expected change in avoidance and social satisfaction was observed over time, but no differences in condition were observed. Finally, mindfulness did not change over time across groups, but differences in mindfulness were observed at 3-month follow-up between the 90-minute group and the 3- and 6-hour groups.

The findings are important to consider in light of public health initiatives to increase access to mental health services. Access is impacted by number of patients in need, available providers, efficiency of services, and reach of services in the communities where patients reside. Several aspects of the current study are promising from a public health perspective, including the single-session time commitment, the group component, and the brevity of the intervention. Future research should examine the acceptability and feasibility of brief interventions compared to more traditional courses of psychotherapy.

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## **How Much is Enough in Brief Acceptance and Commitment Therapy?**

Major depression is a recurrent, debilitating disorder that is associated with poor quality of life, functional impairment, and substantial physical health risks (Spijker et al., 2004; Ustun, Ayuso-Mateos, Chatterji, Mathers, & Murray, 2004). In fact, the World Health Organization predicted that by the year 2020, depression will be the second leading cause of disability around the world (Murray & Lopez, 1996). A recent general population prevalence study indicated that in the United States, the lifetime prevalence of depression is 19.2%, and the average age of onset is 22.7 years (Bromet et al., 2011). Thus, the burden of depression is substantial, rendering the need for effective treatment critical.

The present study compared the effectiveness of three single-session Acceptance and Commitment Therapy (ACT) interventions in a sample of individuals with elevated depressive symptoms. The study sought to determine the amount of therapeutic time necessary to result in clinically significant improvements in depressed individuals. The results should have clinical and research implications and further elucidate the effectiveness of brief therapy in treating depression.

### **Acceptance and Commitment Therapy**

Basic research provides substantial evidence to indicate that pathological behaviors may be conceptualized as inflexible responses in the context of thoughts, emotions, bodily sensations, memories, and urges (Chawla & Ostafin, 2007). Experiential avoidance, or any attempt to alter or control the form, frequency, or intensity of one's internal mental or physiological experiences, is an extensively researched process and is implicated as a mechanism by which psychological symptoms are maintained (Hayes, Strosahl, & Wilson, 2011). Furthermore, psychological inflexibility and experiential avoidance are implicated as key target processes of change in

Acceptance and Commitment Therapy (ACT; Hayes et al., 2011). A meta-analysis examining the association between psychological flexibility and depressive symptoms indicated a moderate effect size, such that individuals who reported higher levels of psychological flexibility reported lower depressive symptoms (Ruiz, 2010). In depression, experiential avoidance may function to minimize, control, or prevent unpleasant internal experiences and increase short-term relief. Avoidance is immediately negatively reinforced by the relief, thus increasing an individual's propensity to avoid. When avoidance becomes a pattern of behavior, psychological rigidity and inflexibility may result. Rigid or inflexible behavior fails to consider the context of experiences, whether internal or external. Furthermore, when dedicating a substantial amount of time to avoiding unpleasant experiences, this time cannot be devoted to creating a life based upon one's values, causing a loss of contact with vitality and meaning in life.

ACT is a transdiagnostic, functional contextualist model of human suffering (Hayes, Strosahl, & Wilson, 1999). In short, ACT does not target one particular disease, disorder, or set of symptoms; instead, ACT considers the context (internal and external) and function of behavior, with the goal of predicting and influencing human behavior. ACT posits that pain is simply a part of life, and the way in which an individual relates to the pain is the problem, not the pain itself (Hayes et al., 1999). Outcome data from clinical trials indicate that ACT has moderate empirical support in treating depression and strong empirical support in treating chronic pain. The efficacy of ACT in treating a variety of other psychological disorders has been examined (for review, see Hayes, Luoma, Bond, Masuda, & Lillis, 2006 or A-Tjak et al., 2015).

The primary goal of ACT is to increase psychological flexibility through mindful, chosen behavior that is informed by an individual's ever-changing context. Psychological flexibility is approached using six interconnected core processes, including values clarification, committed

action, present moment awareness, acceptance, defusion, and self-as-context (Hayes et al., 2011), each of which are described in detail. The identification and clarification of values (e.g., family, education, freedom) is intended to help clients develop an internal compass to direct behavior. *Values* give life meaning and purpose. Values can never be achieved or completed; instead, values can serve as a guide when making decisions. *Committed action* involves the behavioral pursuit of values through repeated engagement with what makes life meaningful. Values-based behaviors are the specific goals identified in order to move toward a value. Although continued pursuit of values through repeated values-based behaviors may be required to live in alignment with a particular value, behavioral flexibility, or the ability to adapt a goal given a change, is imperative. *Present moment awareness* is the ability to exercise conscious mindfulness of ongoing experiences, regardless of the mental evaluations that may arise throughout such experiences. Cultivating present moment awareness allows an individual to be more fully engaged in life. *Acceptance* is defined as willingly allowing oneself to have painful experiences in service of one's values. Acceptance is the opposite of experiential avoidance, so it involves embracing the lack of control that all humans have over thoughts, emotions, urges, and other experiences. *Defusion* involves detaching from thoughts or allowing thoughts to come and go instead of letting them determine behavior. The goal of defusion is to see thoughts *as* thoughts, not rules or literal representations of the world. Finally, *self-as-context* is the "observer" perspective from which clients can observe thoughts, feelings, and experiences without being absorbed by them. This perspective allows clients the opportunity to notice the temporary nature of experiences and conclude that while individuals contain all of their experiences, there is a constant perspective through which the experiences are accessed without engagement. In

combining all six of the ACT processes, the ideal outcome is values-based, contextually-sensitive behavior.

### **Effectiveness of ACT in Treating Depression**

ACT has garnered moderate empirical support in treating depression. The first study of ACT with depressed individuals compared a 12-session ACT protocol to Cognitive Therapy (CT; Zettle & Hayes, 1986). Results indicated that subjects in the ACT condition had significantly lower depressive symptom scores at post-treatment and two-month follow-up relative to CT. A similar study compared ACT to two CT conditions, in which all interventions were delivered in groups (Zettle & Rains, 1989). Although all conditions resulted in significant reductions in depression, there were no significant between-group differences at post-treatment or follow-up. In summary, ACT was successful in reducing depression, but no more successful than CT. Similar outcomes were found in another study comparing ACT to CT. Although significant reductions in depression occurred in both groups, no significant differences were observed (Tamannaefar, Gharraee, Birashk, & Habibi, 2014). Finally, in a sample of caregivers (of a relative with dementia) with elevated depressive symptoms, ACT was compared to Cognitive Behavior Therapy (CBT) (four modules: cognitive restructuring, assertiveness skills, relaxation, increasing pleasant activities) and a minimal support control group (psychoeducation about dementia) (Losada et al., 2015). Results indicated that depression decreased in the ACT and CBT conditions at post-treatment relative to the control group, but the reductions were only maintained at follow-up in the CBT condition. The proportion of participants who were recovered at follow-up was greater in the ACT and CBT conditions than in the control group at post-treatment and follow-up. In summary, several studies have compared ACT to cognitive-

behavioral approaches to treating depression, finding that there are few identifiable differences at post-treatment and follow-up.

ACT has been compared to a variety of other control conditions. In a web-based intervention, in which ACT was compared to a waiting-list control and expressive writing condition, the ACT condition led to significantly lower levels of depressive symptoms than the other conditions at post-intervention, six-month follow-up, and one-year follow-up (Pots et al., 2015). Another web-based version of ACT also demonstrated success in treating depression at post-treatment and 12-month follow-up (Lappalainen, Langrial, Oinas-Kukkonen, Tolvanen, & Lappalainen, 2015). Furthermore, in a sample of individuals with comorbid depression and substance dependence, ACT was compared to a traditional 12-step program. Reductions in depression were equivalent between groups (Petersen & Zettle, 2009). However, individuals in the ACT condition required less time (3.1 hours) in therapy compared to those in the comparison condition (4.3 hours). Finally, ACT was compared to a wait-list control condition in a sample of depressed individuals. Reductions in depression at follow-up were mediated by reductions in experiential avoidance (Bohlmeijer, Fledderus, Rokx, & Pieterse, 2011).

In summary, ACT has been used in a variety of settings and delivered through several modalities, and in each case, ACT has demonstrated success in reducing levels of depressive symptoms.

### **Brief Therapy**

Substantial research has focused on the question of “how much is enough?” in psychotherapy. A review addressing this question found that the majority (64%) of included studies found a positive relationship between length of treatment and outcome of treatment, whereas 32% of studies found no significant association, and 4% found a negative association

(Orlinsky, Grawe, & Parks, 1994). Dose-response methodology has typically been used to assess the association between treatment length and outcome. A seminal meta-analysis of dose-response associations in psychotherapy indicated that 10-18% of patients improved before the first session of therapy, and 50% of patients had achieved maximal progress after 8 sessions (Howard, Kopta, Krause, & Orlinsky, 1986). Another study examined how many sessions of therapy were required to achieve clinically significant improvement in depressive symptoms, finding that 50% of patients reached this threshold after 8 sessions of psychodynamic-interpersonal or cognitive-behavioral therapy (Barkham et al., 1996). In contrast, other reviews have indicated that between 13 and 18 sessions of therapy are necessary to achieve clinically significant improvement in symptoms (Hansen, Lambert, & Forman, 2002). A meta-analysis and systematic review of brief therapy for depression found that as few as six 30-minute sessions of psychotherapy can have a positive impact on depressive symptoms (Nieuwsma et al., 2012).

The good-enough level (GEL) model describes a different way of conceptualizing dose-response associations. The critical assumption behind this model is that patients change at different rates throughout an intervention (Barkham et al., 2006; Stiles, Barkham, Connell, & Mellor-Clark, 2008). According to this model, termination of therapy occurs when patients have determined that they have made satisfactory improvements that are subjectively judged to be “good enough.” In summary, the dose of treatment is dependent upon the patient’s perception of response to treatment, rather than a prescribed or predetermined number of sessions. Therefore, according to this model, if a patient finishes treatment quickly, rapid change occurred, and if a patient remains in treatment for an extended period of time, a slower rate of change occurred. Support for the GEL model was evidenced in a study of the dose-response relation between treatment length and outcome, which found that patients who were provided with a brief

intervention showed accelerated rates of change, compared to patients whose treatment was longer (Baldwin, Berkeljon, Atkins, Olsen, & Nielsen, 2009). What's more, the number of sessions was not a significant predictor of treatment outcome. The results from this study indicate that patients have different rates of change throughout treatment, but the most rapid rates of change were observed in patients who had the fewest sessions. Interestingly, patients who attended more sessions were no more likely to experience clinically significant levels of change than those who attended fewer sessions. Similarly, another more recent study also found that rates of change were inversely related to the duration of treatment (Stulz, Lutz, Kopta, Minami, & Saunders, 2013).

In a study of therapy in community settings (i.e., community mental health clinic, employee assistance program, university counseling center, and local/national health maintenance organization) the average number of treatment sessions ranged between 3-6 sessions, and the median ranged between 2-4 sessions across all sites, except in a community mental health training clinic ( $M = 9.5$ , Median = 8) (Hansen, Lambert, & Forman, 2002). Thus, on average, patients in a variety of treatment settings were receiving a relatively small number of treatment sessions. In summary, even though there is evidence that 8 or more sessions are necessary for producing clinically significant change (Howard et al., 1986), patients attend relatively fewer sessions on average (Hansen et al., 2002). Therefore, optimizing treatment time to provide time-effective interventions is essential in providing adequate patient-centered care.

Additional support for brief interventions stems from Garfield (1994), who indicated that 25-50% of patients do not return to psychotherapy after the first session. A later study examined treatment outcomes in a sample of over 9,500 adult patients completing therapy in the community, where observational data were collected, and there was no required number of

sessions (Brown & Jones, 2005). Importantly, the results indicated that the modal number of sessions was 1, and many patients terminated treatment while reporting high levels of symptoms. These studies emphasize the need to consider that the dose of treatment may be a function of the patient's appraisal of treatment outcome, rather than the treatment outcome being determined by the dose. In short, patients who feel that treatment has been sufficiently successful may terminate therapy quickly. Alternatively, it is also possible that patients who find little benefit in psychotherapy drop out quickly. Beyond basic research of the models of brief therapy, research has also examined brief approaches to therapy within specific therapeutic modalities.

Several different therapeutic modalities utilize a brief approach to treatment. A meta-analysis of Motivational Interviewing (MI) across a variety of populations (Dunn, Deroo, & Rivara, 2001) indicated the success of this treatment approach in targeting health behavior change. Across several different types of comparison groups, the duration of total time spent delivering MI ranged from 5-360 minutes. Many of the targeted outcomes were health behaviors (e.g., substance use, diet/exercise). In 69% of the included studies, at least one of the measured outcomes showed significant change in the MI condition compared to the control group. A substantial proportion of the studies that have utilized MI are focused on substance use, and the evidence provides support for the use of MI with this population. An early meta-analysis found a small-to-moderate effect size for MI relative to controls at one-year post-treatment (Hettema, Steele, & Miller, 2005). Other meta-analyses have shown that MI improves medication adherence (Palacio et al., 2016), lifestyle behaviors and psychosocial stress among cancer survivors (Spencer & Wheeler, 2016), adherence to chronic pain treatments (Alperstein & Sharpe, 2016), and diet and weight loss among individuals with Type 2 diabetes (Ekong & Kavookjian, 2016). In sum, Motivational Interviewing is an established treatment that has

demonstrated success in changing a variety of health behaviors using a time-limited treatment approach.

Solution-Focused Brief Therapy (SFBT; de Shazer, 1985, 1988) is another form of brief intervention that has shown success in a variety of samples. The central feature of SFBT is that clients can use strengths to find solutions to problems in collaboration with the therapist. The conversation changes from being about the presenting problem to possible solutions. This strengths-based approach has garnered some support in reducing internalizing behavior; a meta-analysis examined the weighted mean effect size of SFBT relative to control conditions, finding that on average that SFBT subjects had lower internalizing symptoms (Kim, 2007). Initial studies of SFBT followed up with clients at 6-18 months post-treatment and asked clients to indicate if significant progress was made in therapy. The first study found that 82% of clients made progress (de Shazer, 1985), and a second study found that 72% of clients felt progress was made (de Shazer et al., 1986). In a study that compared 90 minutes of SFBT to 90 minutes of Interpersonal Psychotherapy (IPT) in a sample of college students with depression, no significant between-group differences were found at post-intervention (Sundstrom, 1993). Both conditions reduced depressive symptoms at post-treatment (Sundstrom, 1993). A variety of other samples have been treated with SFBT, including prisoners (Lindforss & Magnusson, 1997), antisocial adolescents (Seagram, 1997), and orthopedic patients (Cockburn, Thomas, & Cockburn, 1997); despite the studies having vastly different outcome measures, in each of these well-controlled studies, the outcomes in SFBT were superior to the control condition. A recent meta-analysis of SFBT in medical settings indicated the effectiveness of SFBT in improving psychosocial and behavioral outcomes (Zhang, Franklin, Currin-McCulloch, Park, & Kim, 2017). Overall, SFBT

has shown success in improving outcomes through brief interventions, and more research with specific samples is needed to indicate empirical support for this treatment.

### **Brief ACT**

ACT has been applied in brief form with a variety of samples, including individuals with elevated depressive symptoms. Four 60-minute ACT sessions were implemented with individuals reporting depressive symptoms, and the intervention was compared to a wait-list control group (Kohtala, Lappalainen, Savonen, Timo, & Tolvanen, 2013). Results indicated that compared to the wait-list control, subjects in the ACT condition had significant reductions in depression at post-treatment relative to the wait-list control condition. The treatment gains were maintained at 6-month follow-up in the ACT group. Furthermore, single session interventions have been applied to those with comorbid health conditions and elevated depression or anxiety symptoms, finding that after 5 hours of ACT, reductions in depression were significant at follow-up relative to the control conditions (12- and 24-weeks, 12-weeks, respectively; Dindo, Marchman, Gindes, & Fiedorowicz, 2015; Dindo, Recober, Marchman, Turvey, & O'Hara, 2012). A single session of ACT was also effective in improving quality of life, psychological distress, obesity-related stigma, and body mass index at 3-month follow-up in a sample of patients participating in a weight loss program (Lillis, Hayes, Bunting, & Masuda, 2009). Finally, in a sample of inpatient psychiatric patients experiencing positive psychotic symptoms, comparisons were conducted between four 1-hour sessions of ACT and treatment-as-usual (Bach & Hayes, 2002). Results indicated that relative to treatment-as-usual, hospitalizations in the 4-month follow-up period were 50% lower in the ACT condition. This finding was clinically significant given that the average number of psychotic symptoms reported was higher in the ACT condition at follow-up than in treatment-as-usual.

Though several brief interventions have been conducted using ACT, there is little information about the appropriate amount of time required to implement an intervention that results in significant differences in functioning and behavior. Several studies support the use of six or fewer hours of ACT as an effective dose to promote change in outcomes and targeted ACT processes (Bach & Hayes, 2002; Dindo et al., 2012; Dindo et al., 2015; Kohtala et al., 2013; Lillis et al., 2009). Given substantial evidence from both original data and meta-analyses indicating that patients attend far fewer than what is considered the standard number of therapy sessions, it is critical that brief therapeutic approaches are explored. Furthermore, research that directly assesses the necessary amount of intervention time to detect statistically and clinically significant differences in symptoms, functioning, or processes is essential to fully capture the benefits of brief therapy.

### **Objectives of Current Study**

The current study explored the incremental differences in treatment outcome that are experienced with time-variant brief interventions. Given the substantial patient burdens endured by individuals with depression and the moderate empirical support for ACT, brief versions of ACT were explored in order to maximize both therapist and patient efficiency in obtaining treatment. Furthermore, with evidence indicating that those engaging in brief therapeutic approaches experience more rapid gains than those in lengthier treatments, it was important to understand what constitutes a time-effective treatment for depression when employing ACT as a treatment modality. Single-session interventions are particularly advantageous for reducing attrition and participant burden during the intervention itself, as participants only have to allocate time in a single day for the intervention, rather than several sessions over a period of weeks.

## Summary, Specific Aims, and Hypotheses

The present study addressed two key objectives. First, the study examined longitudinal change in ACT processes across conditions from pre-intervention to 1- and 3-month follow-up. Second, the study examined the comparative effects of three brief ACT interventions on depressive symptoms at 1-month and 3-month follow-up. Given that several single-session ACT studies utilized between 5-6 hours as the length of treatment (Dindo et al., 2015; Lillis et al., 2009), the 6-hour condition was used as the current standard for a one-day intervention. The 3-hour condition was utilized to see if similar or equivalent results could be achieved in exactly half of the time. Finally, the 90-minute condition was included as a minimal-treatment control group and was half the length of the 3-hour condition.

**Specific Aim #1.** *To examine the longitudinal change in targeted processes (mindfulness, psychological inflexibility, and satisfaction with participation in social roles and activities) of participants in all intervention conditions. At 1-month and 3-month follow-up, I expected that mindfulness and satisfaction with social roles and activities would increase significantly more in the 3- and 6-hour conditions than the 90-minute condition, though all would be significantly different from pre-intervention scores. In sum, I expected to observe a main effect of time and an interaction between time and condition. In addition, I expected that scores at 3-month follow-up in the 3- and 6-hour conditions would be significantly greater than the pre-intervention scores. Next, I hypothesized that psychological inflexibility would decrease significantly in all conditions at 1-month follow-up (main effect of time). I expected to observe significant differences in the magnitude of reductions between the 90-minute and 3- and 6-hour conditions, such that the 3- and 6-hour conditions would report lower psychological inflexibility than the 90-minute condition (time by condition interaction). At 3-month follow-up, I hypothesized that the*

reductions in psychological inflexibility would remain significant among the 3- and 6-hour conditions, but in the 90-minute condition, there would be no significant differences from pre-intervention.

**Specific Aim #2.** *To examine the between-group differences in depressive symptoms at 1- and 3-month follow-up.* First, I expected the 3-hour and 6-hour conditions to demonstrate significant superiority over the 90-minute intervention condition, such that those in the 3- and 6-hour conditions would report lower depressive symptoms than those in the 90-minute intervention condition. Second, I expected that the 3- and 6-hour intervention conditions would demonstrate equivalent effects, such that the level of depressive symptoms at 1- and 3-month follow-up would not represent a clinically meaningful difference in depressive symptoms between conditions.

## Method

### Participants

Adults ( $N = 271$ ) were recruited for the current study. Recruitment methods included the University of Iowa mass e-mail system, as well as flyers in the community and on campus. If interested in the study, potential participants accessed the screening survey to determine eligibility. Adults with scores of  $\geq 10$  on the first eight items of the Patient Health Questionnaire-9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001) were eligible for inclusion. Exclusion criteria were: 1) medication changes within the last 60 days, 2) brain injury, 3) current psychotherapy, or 4) active suicidality, past/current mania, or past/current psychosis. See the consort diagram (Figure 1) for exact numbers of individuals who completed the screening survey, completed the screening interview, consented, completed group, and completed follow-up surveys.

## Procedure

**Recruitment.** Individuals were invited to participate in the intervention after completing the screening survey if scores on the PHQ-8 were  $\geq 10$ . They were considered ineligible for inclusion in the trial if any of the exclusion criteria were endorsed in the screening survey. Eligible individuals were contacted by the research team to schedule a screening interview, and during this call, they could decline or schedule a screening interview (10-15 minutes in duration). During the screening interview, the suicidality, mania, and psychosis modules of the Mini International Neuropsychiatric Interview (M.I.N.I.) were administered by a member of the research team. Individuals were considered ineligible if they scored in the *high* category on suicidality, screened positive for *past or current mania*, or screened positive for *past or current psychosis*. If an individual was eligible after completing the M.I.N.I. modules, the consent form was reviewed, and for individuals who expressed interest, a consent form and baseline survey were sent to them via email. Individuals who did not complete the online consent form within 7 days were contacted once by phone to ensure that the survey was received and answer any questions about the study.

**Procedure for Participants.** Individuals who consented to participate in the trial were randomly assigned to condition, informed of their condition via email, and asked to provide availability for their 90-minute, 3-hour, or 6-hour group session. Groups were scheduled based on availability of multiple participants at a given time, as well as availability of two facilitators. Participants were informed of the scheduled group time via email and asked to confirm attendance in reply. A reminder phone call was made about five days in advance of the group date, and a reminder email was sent about 24 hours prior to the scheduled time. Groups were

cancelled if only one participant presented at the scheduled time. Six groups were cancelled, and of the six, two groups were from each condition.

Participants completed the BDI-II upon arrival to the group. Groups consisted of 2-6 participants and two facilitators. Group members were encouraged to converse with, listen to, and observe each other. Participants were encouraged to share to the degree that they were comfortable sharing. The core processes of ACT were the focus of the group, beginning with identification of current struggles and what benefit participants would like from the group intervention. Previously tried coping strategies were discussed, as well as the effectiveness of these strategies. Next, values were identified and clarified, including people, domains, and qualities that participants want to embody. Values-based behavioral goals were established for the immediate future, short-term, and long-term. The effectiveness of avoidance strategies and struggling with difficult thoughts or emotions was explored. Present moment awareness was emphasized when engaging in behavior, whether values-based or avoidance. Finally, specific behavioral changes that participants wanted to make after the group were elicited. Behavioral changes, in conjunction with acceptance of difficult internal experiences, were the focus of the session. Regardless of session length, the interventions were composed of these similar core parts. Facilitators were free to utilize clinical discretion as to how these questions were addressed (e.g., discussions, metaphors, exercises). Questions were many times addressed multiple times during the same group intervention in an effort to reinforce important concepts.

After completion of the group, participants were contacted via email to complete follow-up surveys at 1-month and 3-months post-intervention. If surveys were not completed within several days of sending, reminder calls were made by a member of the research team. If one month passed after the date of scheduled follow-up, reminder calls ceased. Participants were

compensated \$5 to complete the baseline and 1-month and 3-month post-intervention online assessments. There was no compensation for attending the group sessions.

**Randomization.** Randomization was conducted using Power Analysis Software, version 10 (PASS10). The randomization scheme was 1:2:2 (90 minute: 3 hour: 6 hour), with a total sample size of  $n= 210$  (35:70:70). After 210 participants were recruited and after substantial difficulties with participants not attending scheduled groups, a second randomization was conducted with the same randomization scheme ( $n= 65$ ; 13:26:26). Of the 65 randomizations, 61 participants were ultimately randomized.

**Intervention Conditions.** Each of the intervention conditions was delivered in one session, though the number of intervention hours differed. Participants were assigned to one of the following conditions of group ACT: 90 minutes, 3 hours, and 6 hours. The interventions consisted of the same core content, but consistent with the ACT model, there was flexibility on the part of the therapists in the use of metaphors and exercises.

All interventions were delivered using ACT, based on Kirk Strosahl's Focused Acceptance and Commitment Therapy (FACT) model (Strosahl, Robinson, & Gustavsson, 2012). The six core processes of ACT were emphasized in each condition (i.e., acceptance, defusion, self-as-context, committed action, values clarification, present moment awareness). Each of the interventions focused on six essential questions posed by Strosahl et al. (2012): "what are you struggling with?", "what have you tried?", "what do you want for your life?", "what gets in the way of pursuing what you want?", "are you at war with the barriers?", "if group were helpful to you in making a change, what would we see you doing differently in life?". These questions could be explored using several metaphors or exercises, including Tug of War (S. Hayes & Smith, 2005, pg. 32), Passengers on a Bus (S. Hayes & Smith, 2005, pg. 153), or

Life Path Turnaround (Strosahl, Robinson, & Gustavsson, 2012, pg. 90-94). Exercises utilized in every session were documented by facilitators (see Appendix A). Facilitators could also decline to use exercises or metaphors and instead address the processes through discussion. All sessions were audiotaped for fidelity and competency assessments.

**Training of Interventionists.** All groups were facilitated by two graduate students in a clinical psychology doctoral program. Students had prior exposure to ACT and behavior therapies through courses and clinical seminars (courses through doctoral program, conference workshops, and trainings in community). Additional training in ACT was provided, which included didactic teaching, reading, discussion, and practicing delivery of the group. Substantial focus was devoted to conceptualization using the six ACT processes and targeted intervention based on conceptualizations. Facilitators completed 40 hours of training. In addition, practice groups were completed. Before delivering the intervention, adequate fidelity and competency in these measures was demonstrated by all facilitators. Fidelity and competency ratings during practice groups were coded by the principal investigator and an independent coder, who also coded fidelity and competency for the study groups. Groups were facilitated by two of the trained five graduate students based on availability. Every attempt was made to ensure that facilitators led an equal number of groups across conditions. In addition, variety in the facilitator pair was prioritized in scheduling. Data regarding group facilitators, condition, date, and number of participants who attended the group is conveyed in Table 2.

**Treatment Fidelity and Competency.** Fidelity and competency were rated by a post-doctoral level psychologist with substantial experience in ACT and behavioral therapies. Given the time-variant nature of the groups, all audiotapes were divided into 30-minute segments. The 30-minute segments were then compiled in SPSS for random selection of 15% of the 30-minute

segments for coding. Due to breaks taken during the groups, some segments were less than 30 minutes in length. Segments were utilized if greater than or equal to 20 minutes in duration.

Treatment fidelity was assessed using a measure created for this study (see Appendix B for measure). The measure assessed whether facilitators addressed the six core ACT processes (self-as-context, present moment awareness, defusion, acceptance, values, committed action) (0= *Not covered*, 1= *Covered*). Further, the measure also assessed processes that should *not* occur in an ACT treatment (e.g., challenging content of thoughts).

Key items from an established measure of ACT competency (S.C. Hayes & Strosahl, 2004) were used to evaluate whether facilitators were delivering ACT in a manner consistent with the model and stance (see Appendix B for measure). The 14-item scale used a 7-item Likert scale (1= *Never true*, 7= *Always true*) to assess competency. Example items include: “The facilitators avoid use of “canned” ACT interventions. Interventions are responses to the group” and “The facilitators create a separation between an individual and his or her thoughts, feelings, and experiences.” In some cases, the coder reported that there was not an opportunity to address a competency item in the segment, and this item was coded as not applicable.

**Assessments.** Participants completed assessments at baseline and post-intervention at 1-month and 3-months. Participants also completed a measure of depression directly before the start of the intervention (the pre-intervention measurement). Baseline and follow-up assessments were administered using Qualtrics survey software. The pre-intervention assessment was completed on paper.

## Measures

**Depressive Symptoms.** The Beck Depression Inventory—II (BDI-II; Beck, Steer, & Brown, 1996) is a commonly used 21-item measure that quantifies severity of depressive

symptoms. Items are rated in severity on a 4-point Likert scale, ranging from 0 to 3. Total scores range from 0 to 63. Established thresholds have been developed to classify patients according to severity of depressive symptoms. The BDI-II has demonstrated high internal consistency in a variety of samples ( $\alpha = .93-.96$ ; Beck et al., 1996). Furthermore, validity of the measure is well-established (Dozois, Dobson, & Ahnberg, 1998) and is based on the original version, which has also been validated extensively (Beck, Steer, & Garbin, 1988). Internal consistency of the BDI-II in the present sample was good across time points: baseline ( $\alpha = .87$ ), pre-treatment ( $\alpha = .89$ ), 1-month follow-up ( $\alpha = .93$ ), and 3-month follow-up ( $\alpha = .93$ ).

**Psychological Inflexibility.** The Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011) was used to measure psychological inflexibility, defined as an unwillingness to experience unwanted emotions and thoughts, an inability to make contact with the present moment, and an unwillingness to make flexible values-guided actions when experiencing unpleasant internal events (Hayes et al., 1999). The measure is factor analytically derived and internally consistent ( $\alpha = .78-.87$ ; Bond et al., 2011). The AAQ-II has demonstrated convergent, concurrent, predictive, and discriminant validity. Participants are asked to rate items on a 7-point Likert scale (1 = *Never true*, 7 = *Always true*). Example items include “My painful memories prevent me from having a fulfilling life” and “I’m afraid of my feelings.” Higher scores on the measure indicate higher levels of psychological inflexibility. Internal consistency of the measure in this sample was good across time points: baseline ( $\alpha = .82$ ), 1-month follow-up ( $\alpha = .89$ ), and 3-month follow-up ( $\alpha = .89$ ).

**Mindfulness.** The Five Facet Mindfulness Questionnaire (FFMQ) was used to assess different facets of mindfulness, including observation, description, action with awareness, nonjudgment, and nonreactivity (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). In both

meditating and nonmeditating samples, factor analyses indicated five distinct facets of mindfulness. Internal consistency was adequate among four of the five facets ( $\alpha = .83-.91$ ), with the reliability of the nonreactivity scale being slightly lower ( $\alpha = .75$ ). Convergent, discriminant, predictive and incremental validity were demonstrated (Baer et al., 2006; Baer, Smith, Lykins, Button, Krietemeyer, Sauer, et al., 2008). Participants are asked to rate items on a 5-point Likert scale (1 = *Never or very rarely true*, 5 = *Very often or always true*). Example items include “I pay attention to sensations, such as the wind in my hair or sun on my face” (observation), “I’m good at finding words to describe my feelings” (description), “It seems I am ‘running on automatic’ without much awareness of what I’m doing” (action with awareness), “I tell myself that I shouldn’t be thinking the way I’m thinking” (nonjudgment), and “I watch my feelings without getting lost in them” (nonreactivity). The total score, including all five facets, was used in analyses. Internal consistency of this sample was good across time points: baseline ( $\alpha = .89$ ), 1-month follow-up ( $\alpha = .94$ ), and 3-month follow-up ( $\alpha = .94$ ).

**Social Satisfaction.** The Patient Reported Outcome Measurement Information Systems (PROMIS) Satisfaction with Participation in Social Roles and Activities scale was used to measure social satisfaction (Cella et al., 2010). Participants are asked to rate items on a 5-point Likert scale (1 = *Not at all*, 5 = *Very much*). Total scores are converted to T scores. Extensive research indicates the reliability and validity of the scale (Hahn et al., 2010). Sample items include: “I am satisfied with my ability to do things for my family” and “I feel good about my ability to do things for my friends.” Internal consistency across time points was good: baseline ( $\alpha = .92$ ), 1-month follow-up ( $\alpha = .93$ ), and 3-month follow-up ( $\alpha = .94$ ).

**Demographics.** Participants were asked several questions regarding demographic information, including age, gender, education, race and ethnicity, and relationship status.

**Psychological Treatment History.** Participants were asked if they were currently taking psychiatric medication. For participants who were on medication at the beginning of the trial, information was collected regarding the dosage and duration of pharmacotherapy. At the conclusion of the study, participants were asked if they sought additional treatment throughout the course of the study. If participants were involved in therapy at any point throughout the study, information was collected regarding the nature of treatment (duration, intensity, therapeutic modality).

### **Power Analysis**

Power analyses were conducted in accordance with Piaggio, Elbourne, Altman, Pocock, and Evans (2006) statement on sample size calculations in equivalence studies. The hypothesis in equivalence trials maintains that the two approaches are therapeutically equivalent, and clinically important differences can be ruled out (rejecting the null hypothesis). Thus, sample size calculations take a confidence interval (CI) approach, wherein a 95% confidence interval is used. An a priori equivalence margin was established. The equivalence margin for this study was established using the maximum acceptable difference in depressive symptom scores, the primary outcome. Clinically meaningful effects are represented by 0.5 standard deviation change (Cohen, 1988). Among data from clinically symptomatic individuals ( $N = 3,339$ ), average depression scores were aggregated,  $M = 25.45$ ,  $SD = 9.99$ , and reliable change in symptoms was 8.46 points (Seggar, Lambert, & Hansen, 2002). Thus, the conservative margin of equivalence used in the current study (-4, +4) was used to denote clinically significant differences across groups in depressive symptoms. To estimate 80% power, using the established equivalence margin, power analyses were conducted using PASS software (version 14). This approach to power analyses for equivalency designs has been well-established (Blackwelder, 1998; Phillips, 1990). Results of

the power analysis indicated that 70 participants would be needed in each condition in order to adequately power tests of equivalence.

In order to test the superiority hypothesis, power analyses were conducted for a between-groups repeated measures *F*-test using GPower 3.0.10. Included in the calculation were three groups and four measurements (baseline, pre-intervention, 1-month follow-up, 3-month follow-up). In addition, power estimations were calculated with an alpha value of .05 and estimated power of 80%. The estimated effect size *f* was 0.25. The power analysis indicated that a total sample of 102 participants (approximately 35 participants per condition) would be required.

Because two power analyses were completed with different sample size estimations, the total required sample size was computed based on both analyses. The 3- and 6-hour groups required 70 participants, and the 90-minute group required 35 participants. Given that attrition was anticipated at follow-up, additional participants were recruited to account for missing data. With an estimated 20% attrition, 35 participants were expected to be lost to follow-up. A total sample of 210 participants were recruited to test all hypotheses and account for attrition. After difficulties with attrition between randomization and group completion, an additional 61 participants were recruited by the same procedure.

### **Statistical Analyses**

Data were examined for outliers. The entire sample of completers was included in the analyses. In equivalency trials, intent-to-treat analyses are considered anticonservative, as the likelihood for confirming equivalency is greater in these analyses (Wiens & Zhao, 2007). As such, completers were used in the current analyses.

**Analysis of Specific Aim #1:** Mixed-effects modeling were used to analyze the longitudinal change from pre- to post-intervention across all conditions. A longitudinal mixed-

effects model was fit using the lmer function in the lme4 package (Bates, Maechler, Bolker, Walker, & Christensen, 2014) in R (R Development Core Team, 2008). To estimate degrees of freedom and  $p$  values, the lmerTest package in R was used (Kuznetsova, Brockhoff, & Christensen, 2013). Effect sizes were calculated using established procedures that are appropriate for mixed-effects models (Oishi, Lun, & Sherman, 2007; Rizk & Treat, 2015).

Scores on the process measures were modeled as a function of time of assessment. The intercept ( $\beta_0$ ) indicates the average mindfulness level across time.  $\beta_1$ , the average linear slope, indicates the extent to which change in mindfulness levels vary linearly as a function of time, such that change in model-predicted mindfulness is associated with a one-unit increase in time. The full fixed effects model, including the main effects ( $\beta_0$ ,  $\beta_1$ ) and interaction, was examined to determine the effect of time and condition. A random effect of subject was included to account for individual variability.

Analyses also examined the individual parameters (e.g., baseline to 1-month follow-up, baseline to 3-month follow-up, 90-minute vs. 3-hour, 90-minute vs. 6-hour) for the main effect and interaction terms. These post-hoc analyses are reported in Tables 5 and 6.

**Analysis of Specific Aim #2:** In order to test the superiority hypotheses, standard hypothesis testing was used. Furthermore, the parameter of the 90-minute group was compared to the 3- and 6-hour groups. Superiority can be concluded if significant differences are indicated.

In order to test the equivalency hypotheses, a prespecified margin of equivalence was identified (-4, +4). This represents the largest difference that can be found between the 3- and 6-hour intervention conditions in order to conclude equivalence. The equivalence margin (-4 to +4) is the range by which depressive symptom scores can vary between groups and be of no clinical significance (Jones, Jarvis, Lewis, & Ebbutt, 1996). In equivalence analyses, both ends of the

confidence intervals are important, and the treatments are considered equivalent in the case that the mean difference in treatment outcome and the 95% confidence interval fall within this margin. The analyses were conducted in NCSS11, the complementary program to PASS14, where the power analyses for equivalency were conducted. Analyses examined the mean difference between conditions at each follow-up time point and used the Two One-Sided Test to compare conditions for equivalence.

## Results

Descriptive characteristics of the sample are reported in Table 1. After consenting to participate, about half (51.29%) of participants attended a group in the assigned condition. The participants who did not attend a group were unresponsive to the email requesting participant availability, did not present at the time of group, or elected to drop out of the study prior to attending the assigned group. Comparisons between group attenders and non-attenders were conducted across measures taken during the baseline assessment. Results of the analyses indicated that there were no significant differences between attenders and non-attenders in depression, psychological inflexibility, mindfulness (all five facets), and satisfaction with participation in social roles and activities ( $ps > .05$ ). Differences were observed between attenders and non-attenders in gender ( $X^2(1) = 6.38, p = .01$ ), with males being more likely to attend the group than females, and age ( $t(268) = -3.40, p = .001$ ), with older participants being more likely to attend than younger participants. Differences were also observed in years of education, with attenders ( $M = 16.64$ ) having higher years of education than non-attenders ( $M = 15.64; X^2(1) = -3.12, p = .002$ ). The averages and comparisons are conveyed in Table 1. In addition, analyses examined if there were differences in attenders vs. non-attenders based on assigned condition. Findings indicated that those assigned to the 90-minute condition were more

likely to attend the group session (67.9%) than those assigned to the 3-hour (46.3%) or 6-hour (48.2%) conditions,  $X^2(2) = 7.37, p = .03$ . Bivariate correlations among study measures are reported for attenders in Table 3.

All participants who presented for the scheduled group completed the full duration of the assigned condition. These individuals were contacted to complete follow-up assessments. Completion of follow-up assessments was excellent at both 1-month (99.23%) and 3-month (96.4%). Means of each measure across time and condition are reported in Table 4.

Regarding item-level missing data, mean imputation was utilized when less than 20% of the items were missing on a particular measure. In all cases, this resulted in a single item being imputed on a scale. Single-item imputation was required on the measures in the following quantities: baseline (BDI-II: 8, AAQ-II: 0, FFMQ-Observe: 5, FFMQ-Describe: 3, FFMQ-Act with Awareness: 4, FFMQ-Nonjudgment: 4, FFMQ-Nonreactivity: 4, SPSR: 0), pre-intervention (BDI-II: 6), 1-month follow-up (BDI-II: 7, AAQ-II: 1, FFMQ-Observe: 2, FFMQ-Describe: 3, FFMQ-Act with Awareness: 1, FFMQ-Nonjudgment: 3, FFMQ-Nonreactivity: 4, SPSR: 2), and 3-month follow-up (BDI-II: 5, AAQ-II: 1, FFMQ-Observe: 2, FFMQ-Describe: 1, FFMQ-Act with Awareness: 2, FFMQ-Nonjudgment: 2, FFMQ-Nonreactivity: 2, SPSR: 2). The following values represent how many cases of particular scale were excluded due to the majority of items being missing on the scale: baseline (AAQ-II: 3, FFMQ-Observe, Describe, Act with Awareness, and Nonjudgment: 2, FFMQ-Nonreactivity: 6, SPSR: 2), 1-month follow-up (FFMQ-all facets: 2, SPSR: 3), and 3-month follow-up (BDI-II: 1, AAQ-II: 2, FFMQ-all facets: 3, SPSR: 2).

### **Fidelity and Competency**

Ratings were examined across the entire randomly selected sample of segments, as well as compared across conditions. No differences in fidelity were observed across conditions ( $ps >$

.05, see Table 2). Among the entire randomly selected sample, processes were addressed in the majority of segments: self-as-context (84.8%), present moment awareness (100%), defusion (97%), acceptance (93.9%), values (97%), and committed action (60.6%). The total number of processes addressed in a given segment was calculated. Findings indicated that 6 processes were addressed in 48.5% ( $n = 16$ ) of the segments, 5 processes were addressed in 39.4% ( $n = 13$ ), 4 processes in 9.1% ( $n = 3$ ), and 3 processes in 3% ( $n = 1$ ) of the segments.

All exercises or metaphors during a group were recorded by the facilitators. The exercises were divided into the process that they addressed and can be found in Appendix A. Between-group comparisons are also reported. Analyses indicated that the processes were more likely to have been addressed using an exercise or metaphor in the longer sessions (3- and 6-hours). Given the increased amount of time, the findings are intuitive.

Competency ratings were averaged across items. On average among the sample of selected segments, competency was high ( $M = 6.30$ ,  $SD = .29$ , Range = 1-7). Competency did not significantly differ across conditions,  $F(2, 30) = .73$ ,  $p = .49$ .

Finally, analyses were conducted to examine whether groups where the principal investigator was one of the facilitators differed in fidelity and competency when compared to groups where the PI was not a facilitator. Results of fidelity comparisons did not reveal significant differences ( $ps > .05$ ). Results for competency revealed a slightly higher competency in groups that the PI facilitated ( $M = 6.49$ ,  $SD = 0.3$ ) when compared to groups that the PI did not facilitate ( $M = 6.21$ ,  $SD = 0.24$ ),  $t(31) = -2.91$ ,  $p = .007$ .

## **Depression**

Longitudinal mixed-effects modeling analyses were conducted to examine change from pre-intervention to 1-month and 3-month follow-up. Baseline depressive symptoms were

included as a covariate. Analyses were also conducted to examine change from baseline to pre-intervention to follow-up. Initiation of psychotherapy outside of the study at follow-up was included as a covariate. Findings were similar regardless of whether baseline or pre-intervention values were included as the initial measure of depressive symptoms; analyses from pre-intervention to follow-up are reported.

Results indicated a significant main effect of time,  $F(2, 248.9) = 59.1, p < .001$ . There was not a significant main effect of condition,  $F(2, 120.7) = 0.63, p = .53$ . There was not a significant time by condition interaction,  $F(4, 248.86) = 1.01, p = .40$ . Baseline depression was a significant covariate,  $F(1, 375.22) = 16.21, p < .001$ . Graphical depiction of the results can be found in Figure 2.

Post-hoc analyses indicated that depressive symptoms decreased from pre-intervention to 1-month follow-up ( $t(249.5) = -4.80, p < .001, d = -0.61$ ) and 3-month follow-up ( $t(249.5) = -5.02, p < .001, d = -0.65$ ). All parameters are depicted in Table 5.

**Equivalency Analyses.** Equivalency analyses were conducted in NCSS, where the Two One-Sided Test examined whether confidence intervals of the mean difference for the BDI-II between conditions fell within the predetermined margin of equivalence (-4, 4). At 1-month follow-up, the confidence interval of the mean difference did not fall within the margin of equivalence,  $M_{diff} = 4.00$ , CI: [-0.29, 8.29] (see Table 7). At 3 months, confidence intervals of the mean difference also did not fall within the margin of equivalence,  $M_{diff} = 0.35$ , CI: [-4.24, 4.93]. See Table 7 for results.

**Clinical Significance Analyses.** Standards for the BDI-II indicate that a score of 9 or below signifies minimal symptoms (Kendall, Hollon, Beck, Hammen, & Ingram, 1987). Data at pre-intervention indicated that 5.8% of the sample fell beneath this cutoff. At 1-month follow-up,

26.1% of the sample fell beneath the cutoff. No differences were observed across conditions,  $X^2(2) = 2.79, p = .25$ . At 3-month follow-up, 33.6% of the sample fell beneath the cutoff. No differences were observed across conditions,  $X^2(2) = 0.90, p = .64$ .

A 50% decrease in symptoms was also examined as a measure of clinical response. At 1-month follow-up, 28.5% of the sample's depressive symptoms had decreased by half the pre-intervention score. No significant differences were observed across conditions,  $X^2(2) = 2.42, p = .30$ . At 3-month follow-up, 39.4% of the sample had shown a response according to this measure. No significant differences were observed across condition,  $X^2(2) = 1.87, p = .39$ .

Reliable change scores were calculated for each follow-up time point. The formula for reliable change was: (pre-intervention – follow-up)/  $SE_{\text{difference}}$  (Jacobson & Truax, 1991). The standard error of the difference was 4.71. If the RCI was 1.96 or greater, this was considered to be reliable change, and if the RCI was lower than 1.96, this evidenced a lack of reliable change. At 1-month follow-up, 34.3% of the sample met the criteria for reliable change. No significant differences across conditions were observed,  $X^2(2) = 3.17, p = .21$ . At 3-month follow-up, 46.2% of the sample met the criteria for reliable change. No significant differences across conditions were observed,  $X^2(2) = 0.24, p = .89$ .

### **Psychological Inflexibility**

Longitudinal mixed-effects analyses examined change from baseline to 1-month and 3-month follow-up measurements. Results indicated a significant main effect of time,  $F(2, 263.41) = 34.67, p < .001$ . There was not a significant main effect of condition,  $F(2, 136.17) = 0.36, p = .70$ . The interaction between time and condition was also not significant,  $F(4, 263.41) = 0.57, p = .68$ .

Post-hoc analyses indicated that decreases in psychological inflexibility were observed between baseline and 1-month follow-up,  $t(263.99) = -3.45, p < .001, d = -0.42$ , and between baseline and 3-month follow-up ( $t(263.99) = -3.76, p < .001, d = -0.46$ ). All parameters are depicted in Table 6 and Figure 3.

### **Mindfulness**

Longitudinal mixed-effects analyses examined change from baseline to 1-month and 3-month follow-up. The total mindfulness score was used. There was a main effect of time,  $F(2, 265.63) = 8.34, p < .001$ . The main effect of condition was not significant  $F(2, 138.05) = 0.12, p = 0.88$ . The interaction between time and condition was not significant ( $F(4, 265.44) = 1.31, p = 0.27$ ).

Post-hoc analyses of the interaction indicated that a marginally significant difference was observed at 3-month follow-up between the 90-minute and 3-hour conditions ( $t(268.3) = 1.79, p = 0.08$ ). Also, a significant difference was observed between the 90-minute and 6-hour conditions at 3-month follow-up ( $t(268.3) = 2.18, p = 0.03$ ). All parameters are depicted in Table 6 and Figure 4.

### **Social Satisfaction**

Longitudinal mixed-effects analyses examined change from baseline to 1-month and 3-month follow-up measurements. Results indicated a significant main effect of time,  $F(2, 263.94) = 20.78, p < .001$ . The main effect of condition was not significant,  $F(2, 137.06) = 2.17, p = .12$ . There was not a significant interaction between time and condition,  $F(4, 263.83) = 1.29, p = .27$ .

Post-hoc analyses indicated that increases in satisfaction with participation in social roles and activities were observed between baseline and 1-month,  $t(264.78) = 2.67, p < .01, d = 0.34$ ,

and between baseline and 3-month,  $t(266.23) = 2.31, p < .05, d = 0.28$ . All parameters are depicted in Table 6 and Figure 5.

### **Psychological Treatment**

In addition to tracking continuous outcomes, participants were asked if they were using psychiatric medications or engaged in psychotherapy. Differences between conditions were not observed in medication usage at 1-month,  $X^2(2) = 1.88, p = 0.39$ , or 3-month follow-up,  $X^2(2) = 0.88, p = 0.64$ . Differences were observed in psychotherapy engagement at 1-month,  $X^2(2) = 8.68, p = 0.01$ , with the 90-minute group being more likely than the 3- and 6-hour groups to be engaged in psychotherapy. Significant differences in psychotherapy engagement between conditions were not observed at 3-month follow-up,  $X^2(2) = 2.08, p = 0.35$ .

### **Discussion**

The present study sought to examine the relative effectiveness of three single-session time-variant interventions in reducing depressive symptoms over the course of one and three months. A substantial body of psychotherapy research has focused on the amount of time required to make a clinically meaningful change in symptoms. However, much of this research has examined data from multiple studies via meta-analysis, or the data were collected in real-world settings where participants were not randomized to condition. As such, the current study was designed with these limitations in mind, and thus, directly compared three randomized, time-variant conditions longitudinally. The findings help to elucidate how much time in treatment is required to make both a statistically and clinically meaningful difference in depressive symptoms.

Mixed-effects analyses indicated that there was a main effect of time, such that depressive symptoms decreased across the sample over time. However, there was not a

significant time by condition interaction, indicating that there were no significant differences between conditions over time. As such, the conditions did *not* vary in terms of depressive symptoms after receiving the randomized group interventions. Furthermore, when comparing the metrics of clinically significant change, the groups did not vary in terms of reliable change or proportion beneath an established cutoff score. The superiority analyses suggest that the group intervention reduced depressive symptoms at both 1- and 3-month follow-up, and this was true regardless of the length of intervention provided. Though significant differences were not observed between conditions, equivalency analyses indicated that the 3- and 6-hour conditions were not equivalent at 1- or 3-month follow-up. As such, further examination of the processes by which brief interventions impact depressive symptoms is necessary for future research.

Depressive symptoms at 3-month follow-up ( $M = 16.73$ ,  $SD = 11.56$ ) were compared to findings from other randomized trials in order to contextualize the follow-up means within the broader literature. Given that other trials were treatments delivered over time and multiple sessions rather than in a single-session like the current study, comparisons with post-treatment values were closest in time to the 3-month follow-up time point. The post-treatment measurement that was closest in time to the 3-month follow-up data from this study was from a trial of Behavioral Activation (BA) versus a wait-list control, and the post-treatment BA mean was 14.00 (10.66). In the seminal NIMH treatment collaborative study (Elkin et al., 1989), the BDI was measured at termination of treatment, or 16 weeks (3.68 months). The means and standard deviations from all participants who began treatment, rather than just completers, were recorded for comparison among the psychotherapy participants in this study. The BDI mean among CBT participants was 13.4 (10.6), and among IPT participants was 12.0 (10.6). Finally, in a study comparing ACT to Cognitive Therapy, post-treatment depression was measured.

Treatment lasted an average of 15.6 sessions in the ACT condition (BDI  $M=12.84$ ,  $SD = 9.33$ ) and 15.27 sessions in the CT condition (BDI  $M = 12.75$ ,  $SD = 9.99$ ). The sessions were not delivered in a standardized format over time, so estimates of the time during which treatment was delivered varied across participants. Thus, when comparing the current findings to other randomized treatment studies, the findings are generally comparable to the other studies' post-treatment outcomes.

Analyses also indicated that psychological inflexibility decreased between baseline and both follow-up points. This decrease was expected given that psychological flexibility is the key targeted process in ACT, and the decrease observed was in the magnitude of a medium effect size. It is reassuring that there were no differences by condition or time by condition interaction. This is an indication that the ACT interventions, though variant in time, were not variant in the degree to which psychological flexibility was emphasized. This is further supported by the fidelity and competency data, which indicated that both fidelity and competency were high across randomly selected segments. Fidelity analyses indicated that in the majority of randomly selected segments, five or six of the processes were addressed by facilitators. The six ACT processes, in conjunction with competent delivery, contribute to the development of psychological flexibility, as evidenced by the results.

Change in mindfulness processes was observed at three months in the 3-hour (marginally significant) and 6-hour conditions. This finding suggests a potential benefit of the longer sessions in promoting awareness. No significant change was observed among individuals in the 90-minute group. Given the additional time in the longer groups, facilitators had more opportunities to promote present moment awareness. Given that present moment awareness was addressed in 100% of the randomly selected segments across all conditions, it is likely that differences in

condition are responsible for the observed difference. However, the way in which mindfulness was addressed may have differed, given that structured mindfulness exercises were not used in any of the 90-minute groups, but were used in the 3-hour (35.29%) and 6-hour (60%) groups. Nevertheless, future research should examine the impact of structured versus unstructured mindfulness exercises in creating change in both mindfulness processes and clinical outcomes.

Finally, an increase in satisfaction with participation in social roles and activities was observed over time. This increase is consistent with expectations, given that throughout all 43 groups delivered over the course of the study, social values (e.g., family, friends, colleagues, loyalty, community, engagement) were identified in every group. The increase in satisfaction observed may be representative of an increase in values-based behavior related to social values specifically. Future research should use this measure in conjunction with a measure of social values to ensure that increased satisfaction is in fact representative of values-driven action.

The lack of significant time by condition interaction across depression, psychological flexibility, and social satisfaction require close consideration. The lack of differences in depressive symptoms cannot be attributed to differences in baseline depression symptom level, given that this was included as a covariate. It is possible that the simple passage of time and regression to the mean can account for the observed longitudinal changes in depressive symptoms. Also possible is that the act of participating in a study reduces symptoms, which is consistent with findings from previous studies with multiple arms (Powell, Penick, Read, & Ludwig, 1985; Zettle & Rains, 1989). Differences in psychological flexibility over time likely cannot be attributed to the passage of time. Furthermore, fidelity data suggest that the conditions did not differ in the degree to which ACT processes were addressed, and competency data also did not differ across conditions. With regard to mindfulness, the interaction between conditions

at 3-month follow-up also likely cannot be attributed to the passage of time. Fidelity and competency data also support that change occurred as a result of participating in an intervention. Given that the 90-minute group was intended to serve as a control condition, the change observed in psychological flexibility and mindfulness is promising and may indicate that some change in these processes can be achieved in a relatively brief time period.

It is also possible, however, that the lack of significant differences in the time by condition interaction may indicate that the 90-minute condition was an inadequate control. As such, it is possible that all of the time intervals of ACT had a similar effect on outcomes. However, in terms of the equivalence analyses, it is important to note that this effect, though similar, cannot be considered clinically equivalent. Thus, differences between the 3- and 6-hour conditions do in fact exist. Because of the lack of significant differences in the superiority analyses, the findings pose an interesting question as to how such change is possible after single-session, and in some cases very brief, interventions. If improvement in psychological functioning was a result of the intervention, these results provide an opportunity to consider how this change occurs, as well as how it is sustained over time. While several studies have demonstrated the effectiveness of ACT in relatively limited time intervals, few studies have speculated as to *why* such change is observed and sustained. Research on patterns of change considers post-traumatic growth, a process by which individuals who experience adversity make meaning or positively reinterpret the adverse events in order to transform the struggle and promote self-growth (Tedeschi & Calhoun, 2004). One factor that is said to promote growth in adversity is affective engagement (Pals & McAdams, 2004), which is described as embracing the emotions surrounding the adversity, rather than engaging in avoidance. Affective engagement resembles the targeted processes in exposure-based therapies (Whelton, 2004). One study of exposure

therapy with individuals who reported depressive symptoms found that engaging with negative affect produced a temporary increase in emotional pain, but long-term improvement in affect (Hunt, 1998). Appropriately titled “the only way out is through,” this study underscores the importance of experiencing one’s emotions rather than avoiding them. This perspective mirrors the approach taken in ACT, whereby experiential exploration of the effectiveness of avoidance takes center stage.

*Quantum change* is a concept discussed in the motivational interviewing literature, and it is defined as “sudden, dramatic, and enduring transformations that affect a broad range of personal emotion, cognition, and behavior” (Miller, 2004). Qualitative examinations of this phenomenon indicated that people often report a “deep shift in core values, attitudes, or actions” (Miller & C’deBaca, 2004). ACT seeks to promote values-based behavior change by clarifying who and what matters most, as well as how values can be directly pursued with consistent and flexible action. Affective engagement is also a major focus of ACT. Avoidance is targeted as the cause of human suffering, and creative hopelessness aims to facilitate understanding that avoidance, while effective in creating short-term relief, ultimately worsens the avoided experience in the long-term and takes away from devoting time to the pursuit of values. The proposed alternative to avoidance is acceptance, whereby engagement with the emotions, thoughts, and urges associated with one’s experience is a necessary step. Importantly, acceptance is encouraged so long as it is in service of one’s values. In short, it is critical that acceptance does not become yet another mental rule to which the mind can rigidly adhere. Thus, ACT seeks to promote purpose-driven, intentional emotional engagement to create sustainable, values-based change in behavior.

ACT is supported by a large body of basic empirical research in Relational Frame Theory (RFT; S.C. Hayes, 2004). This research bridges the science of cognition, specifically human language, behavior analysis, and behavior change. A key concept in psychotherapy proposed in RFT is *transformation of stimulus function*, which is selecting, amplifying, or creating new meanings of an experience in order to change the response to this experience (Villatte, Villatte, & Hayes, 2016). This concept is important to consider in conjunction with aforementioned affective engagement and quantum change. When facilitated effectively by a psychotherapist, engagement with emotions that have been previously avoided can evoke a transformation of stimulus function, such that these emotions serve a new purpose. For example, an individual experiencing depression after a significant loss may come to say that the pain and sadness associated with that loss act as a symbol of the meaning associated with the relationship. ACT seeks to transform the function of pain by creating new derived relations between pain and meaning, as well as pain and acceptance, encouraging clients to approach pain rather than run away. In addition, it is possible that transformation of stimulus functions in therapy promote the epiphanies and quantum change that Miller proposed. Examples of epiphanies that ACT seeks to guide clients to experientially recognize are provided below, as well as what clients might say in said cases. The examples below are based on actual participants' comments from the current study across the three conditions.

- 1) Making meaning out of adversity (“Going through that helped me to understand myself (or others) better”; “Having thoughts of suicide made me realize just how much I want to be alive and honor my relationships.”)
- 2) Internal experiences (thoughts, emotions, memories, urges, physical sensations) are transient, part of the human experience, and distinct from behavior (“I noticed that

- sadness comes and goes throughout the day”; “I always thought I was the only one who had that feeling until today”; “I felt sad and wanted to stay in bed, but after noticing the sadness, I decided to go to the event instead.”)
- 3) Willingness to experience emotions is an alternative to avoidance (“When I felt the emotion, it wasn’t as terrible as I had built it up to be”; “I went to the job interview even though I felt unqualified”; “It was painful, but I was proud of myself for moving toward my value.”)
  - 4) Values-based behavior is the method by which we make values important (“My family is important, but given that I never call or see them, they would not know how much they mean to me”; “Arguing with my husband is not allowing for effective communication”)
  - 5) Ongoing awareness of internal and real-world experiences allows for greater effectiveness (“I want to be more engaged when I am reading to my children instead of thinking about what I need to get done after they fall asleep”; “When I am present at work instead of thinking about stress at home, I get so much more done, and I am more pleasant to be around”)
  - 6) Awareness of the *self* as encompassing all of life’s experiences, rather than being defined by those that attract the most attention (“I am not just what happened to me”; “Even when my mind tells me that I am worthless, that is one of many thoughts that I have in a day”)
  - 7) Values are freely chosen directions that can serve as a compass in life, and values are the qualities of action that one wants to exhibit (“I can choose what matters to me”; “When I look back on my life, this is what I want to stand for.”)

- 8) Thoughts are verbal content that the mind produces, not rules or facts by which one has to live life (“When I have the thought that I will fail, I don’t even try”; “When I notice my thoughts as thoughts instead of rules, I can choose whether or not to follow them”)

As is evident, ACT incorporates processes of making meaning and emotional engagement (numbers 1 and 2 above), but it also introduces several other transformations of stimulus function, and it is hypothesized that these, among many others, create the opportunity for rapid, sustainable change. The change may be maintained over time because the functions of the stimuli continue to transform as the individual moves forward in life. This underscores the importance of experiential learning in ACT because individuals are best able to learn in the context in which they live. After the single-day intervention, individuals have the opportunity to apply the concepts, which may strengthen the new learned contingencies and relations. Importantly, fidelity ratings of the time-variant interventions in this study indicated that the transformations of stimulus functions listed above were addressed via the use of ACT processes. Further research into *how* brief ACT works to facilitate change is necessary to examine the mechanisms by which behavior change occurs. Bridging RFT, research regarding transformation of stimulus function, and the process of quantum change would be useful in understanding how ACT is distinct from other therapeutic modalities in creating change.

The results have implications for public health initiatives to increase access to mental health care. First, group psychotherapy is undoubtedly more efficient in reach than individual psychotherapy, given the ability to reach multiple people in the same time frame. In addition, the findings suggest that condition (or the duration of the intervention received) did *not* impact superiority outcomes, which points to an additional opportunity for efficiency in reaching more

people in need of treatment. Furthermore, participants were most likely to attend the assigned intervention when in the 90-minute condition, which may suggest that this duration of intervention was least burdensome to participants. Notably, there were still a number of participants in the 90-minute condition who elected not to complete the intervention. While there is undoubtedly individual variability in how much treatment is necessary to create sustainable behavioral change, results indicate that across all conditions, about half (46.2%) of individuals reported reliable change in depressive symptoms. Important to consider is the possibility that brief groups may be enough for half of those suffering from depression, and for the other half, further referrals may be necessary, or a second course of brief ACT may be helpful. The findings indicated that there were not between-condition differences in those who were engaged in psychotherapy or taking psychiatric medication at 3-month follow-up. However, at 1-month follow-up, the 90-minute condition was more likely to be engaged in psychotherapy. At 3-month follow-up, there were no significant differences between conditions in terms of psychotherapy engagement. Differences in psychotherapy engagement did not impact the depression results, however, when included as a covariate. The results are promising in expanding the reach of interventions to reduce human suffering in a relatively short time frame. Finally, the single-day treatment modality is also compelling from a public health perspective. For many individuals with physical and mental disabilities, those who live in rural or underserved communities, or those with a high number of life demands, weekly treatments may simply not be feasible, which limits access to care. A single-day intervention does not eliminate the need for travel or dedication of time, but it does reduce the burden of these variables on the client. For example, several participants in the current study reported driving from out-of-state and traveling many hours to participate in the intervention, which indicates the high need and lack of accessible

services, but also the perceived acceptability of a single-session intervention. Further research on the reach, accessibility, and feasibility of single-session interventions would clarify the perceptions and engagement of clients who partake in such interventions as compared to those who complete a more traditional course of psychotherapy.

A review in 2004 explored the utilization of mental health services across the countries in the World Health Organization by reviewing studies examining access and use of treatment (Kohn, Saxena, Levav, & Saraceno, 2004). Studies examined the difference between the number of individuals in need of mental health treatment and the number receiving treatment. Overall, the gap in the treatment of depression was 56.3%, dysthymia 56%, and GAD 57.5% (Kohn et al., 2004). These gaps are alarming. When considering the gaps in light of the current findings, however, there is promise that increasing access to treatment is in fact possible. In a relatively limited time period, and by delivery via group instead of individual therapy, psychotherapists' time can be maximized to increase the reach of psychotherapy. The current findings also create possibilities for future research in which other therapeutic modalities can examine the amount of time necessary to make significant changes in psychiatric symptoms. Similar methodology should also be employed in studies examining other psychiatric symptomatology.

The findings reported herein have substantial implications for clinical practice. As such, the popularly held belief that more therapy is always better is inconsistent with the present results. Previous research has made the assumption that change is linear and gradual, but examination of individual outcomes over time indicates that change can be discontinuous and nonlinear (A.M. Hayes, Laurenceau, Feldman, Strauss, & Cardaciotto, 2007). The present findings are more consistent with the findings of Baldwin et al. (2009), which indicated that the number of sessions was not a predictor of treatment outcome and that participating in *any* length

of treatment was generally beneficial for depressive symptoms. In addition, research with a depressed sample indicated a rapid response pattern, finding that depressive symptoms decreased by session four, after which change was not substantial (Ilardi & Craighead, 1994). Thus, psychotherapists should be mindful of the variability in rapid responses to psychotherapy and allow patients to determine the course of psychotherapy. The current results support a brief approach, indicating that a small dose of ACT can impact depressive symptoms, and this change is sustained at three months post-treatment.

### **Limitations**

The current findings should be considered in light of several limitations. Despite substantial effort to retain participants who consented to participate in the study, many participants completed the baseline survey, were randomized, but did *not* participate in their assigned group. Nevertheless, for those participants who did attend the group, minimal attrition was observed at follow-up. In addition, while the single-day approach ensured that all participants would complete full “dose” of the assigned time interval for the intervention, this approach did not allow for examination of the rates of change across conditions. As such, conclusions cannot be drawn as to whether assigned condition predicted accelerations in change. Data on the acceptability of the treatment were not collected, so determinations about whether or not participants felt that the amount of time was adequate cannot be made. Future research that examines acceptability of treatment length would extend current findings and provide an important public health perspective. Additionally, the sample was substantially biased to females, though recruitment efforts were not targeted toward females. This bias likely cannot be entirely attributed to the increased likelihood of females to experience depression (Piccinelli & Wilkinson, 2000), but the results of the current study may be more generalizable to females than

males. Furthermore, the sample consisted of primarily Caucasian, well-educated individuals, which also indicates that the results may not be generalizable to all populations. Nevertheless, limited exclusion criteria were utilized in recruitment in an effort to improve the generalizability of results and avoid strict inclusion criteria that may not apply to real-world, community settings. As such, individuals with a variety of conditions known to coexist with depression (e.g., anxiety, chronic pain) were *not* excluded. Finally, the study was designed for the 90-minute condition to serve as a minimal treatment condition or active control condition. However, the superiority results indicated that this treatment was no less effective than the 3- and 6-hour conditions. The study would have likely benefited from a no-treatment control group in order to draw comparisons between the active conditions and a control group. Future research should examine the effectiveness of brief time-variant ACT groups in comparison with a control group.

## **Conclusion**

In summary, the present study compared three time-variant group ACT interventions in a sample of individuals with elevated depressive symptoms. The results indicated that depressive symptoms decreased over time, and this decrease was observed regardless of condition. This indicates that improvements in depression can occur in as little as 90 minutes of group ACT (and as much as 6 hours of group ACT), and this change is sustained at three months post-intervention. The findings have public health implications in terms of reaching more individuals in need of mental health services, increasing efficiency in delivery of said services, and improving access to care among individuals for whom traditional psychotherapy services are inaccessible. In parallel, the findings also have implications clinically in that the course of psychotherapy (whether delivered in a group or individual format) does not have to be extensive if the client makes rapid change because this change *can* be sustained over time. Importantly,

gradual change may also occur for other clients, but the findings herein suggest that a tailored, patient-centered approach to the determination of how long therapy will last may allow for more efficient, change-centered therapeutic interaction. In addition, clinicians should be mindful of the existence of rapid responses to therapy from the first encounter with clients so as to maximize time spent in sessions and allow clients to flourish outside of the sessions.

In conclusion, a large body of research supports the effectiveness of ACT in the treatment of a number of psychiatric and physical conditions. Several studies have established that ACT can effectively promote change in very small doses (e.g., 6 hours; (Dindo et al., 2015; Lillis et al., 2009). Nevertheless, research has yet to examine exactly how much is enough to promote said behavioral changes among individuals with depression. The present study established that as little as 90 minutes of an ACT group resulted in reductions in depression. The findings are important to consider in light of public health and clinical implications, given that far more people suffering from depression and other co-morbid conditions could be reached if brief interventions were utilized effectively.

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Table 1.

*Comparisons between group attenders and non-attenders.*

	Total ( <i>N</i> = 271), M(SD)	Attenders ( <i>N</i> = 139), M(SD)	Non-attenders ( <i>N</i> = 132), M(SD)	Between-group differences
Age	33.2 (14.39)	36.04 (14.7)	30.19 (13.46)	$t(268) = -3.40, p = .001$
Females, N(%)	217 (80.1%)	114 (86.4%)	103 (74.1%)	$X^2(1) = 6.38, p = 0.01$
Years of Education	16.15 (2.68)	16.64 (2.79)	15.64 (2.48)	$t(267) = -3.12, p = 0.002$
Caucasian, N(%)	218 (79.9%)	113 (82.5%)	105 (78.9%)	$X^2(1) = 0.54, p = 0.46$
BDI-II	24.65 (9.43)	25.44 (9.23)	23.82 (9.59)	$t(269) = -1.42, p = 0.16$
AAQ-II	28.15 (7.63)	28.90 (7.10)	27.36 (8.10)	$t(266) = -1.66, p = 0.10$
FFMQ-Mindfulness	111.06 (17.07)	111.48 (16.93)	110.60 (17.28)	$t(263) = -0.42, p = 0.68$
Social Satisfaction	20.16 (7.18)	19.68 (6.69)	20.66 (7.65)	$t(267) = 1.11, p = 0.27$

*Note.* BDI-II = Beck Depression Inventory, 2<sup>nd</sup> edition. AAQ-II = Acceptance and Action Questionnaire, 2<sup>nd</sup> edition. FFMQ = Five Facet Mindfulness Questionnaire. Social Satisfaction = PROMIS Satisfaction with Participation in Social Roles and Activities.

Table 2.

*Details regarding group condition, facilitators, and attendance.*

Date	Condition	Facilitators	Attended	Confirmed
5/21/2016	6	Emily & Michelle	4	6
5/24/2016	3	Emily & Marianne	6	6
5/31/2016	90	Emily & Kelsey	4	7
6/18/2016	6	Marianne & Michelle	4	10
6/19/2016	3	Marianne & Michelle	6	8
6/21/2016	90	Emily & Michelle	6	7
6/29/2016	6	Marianne & Kelsey	5	6
6/30/2016	3	Kelsey & Annie	4	5
7/10/2016	3	Marianne & Michelle	2	5
8/8/2016	3	Annie & Michelle	2	3
8/13/2016	6	Annie & Marianne	4	5
8/14/2016	90	Annie & Emily	2	5
8/18/2016	6	Kelsey & Michelle	5	5
9/1/2016	90	Annie & Emily	5	5
9/8/2016	3	Emily & Kelsey	3	4
9/10/2016	6	Annie & Michelle	4	5
9/17/2016	6	Annie & Emily	4	6
9/18/2016	3	Kelsey & Marianne	2	4
9/21/2016	90	Annie & Marianne	4	5
9/25/2016	6	Emily & Kelsey	4	6
9/26/2016	3	Emily & Michelle	2	3
10/3/2016	3	Annie & Kelsey	3	4
10/11/2016	90	Marianne & Michelle	3	3
10/17/2016	6	Annie & Marianne	2	3
10/18/2016	90	Kelsey & Michelle	2	3
10/20/2016	3	Emily & Marianne	2	4
10/22/2016	3	Annie & Marianne	2	5
11/6/16	3	Annie & Kelsey	2	4
11/13/2016	6	Annie & Kelsey	2	3
11/14/2016	90	Michelle & Marianne	3	4
11/17/2016	3	Annie & Emily	3	3
12/20/2016	6	Annie & Marianne	2	3
2/7/2017	3	Kelsey & Michelle	3	5
2/12/2017	90	Annie & Kelsey	4	4
2/25/2017	6	Annie & Kelsey	3	4
2/26/2017	3	Annie & Marianne	2	2
3/11/2017	6	Annie & Emily	3	6
3/26/2017	6	Annie & Marianne	3	5
3/28/2017	3	Emily & Michelle	3	5
4/22/2017	6	Marianne & Michelle	4	4

Table 2—continued

4/24/2017	3	Marianne & Michelle	3	4
5/1/2017	90	Kelsey & Marianne	3	4

*Note.* Facilitators specifies the two individuals who facilitated the group. Attendance notes the number of patients who attended the groups. Confirmed column notes the number of patients who confirmed planned attendance via email or phone.

Table 3.

*Fidelity and competency ratings and comparisons across conditions.*

N (%)	Total N=33	90-minute N = 3	3-hour N = 12	6-hour N = 18	Between-condition comparison
Self-as-context	28 (84.8%)	3 (100%)	9 (75%)	16 (88.9%)	$X^2(2) = 1.67, p = 0.43$
Present moment awareness	33 (100%)	3 (100%)	12 (100%)	18 (100%)	N/A
Defusion	32 (97%)	3 (100%)	12 (100%)	17 (94.4%)	$X^2(2) = 0.86, p = 0.65$
Acceptance	31 (93.9%)	3 (100%)	11 (91.7%)	17 (94.4%)	$X^2(2) = 0.31, p = 0.86$
Values	32 (97%)	3 (100%)	12 (100%)	17 (94.4%)	$X^2(2) = 0.86, p = 0.65$
Committed Action	20 (60.6%)	2 (66.7%)	9 (75%)	9 (50%)	$X^2(2) = 1.94, p = 0.38$
Competency, M(SD)	6.30 (.29)	6.42 (.11)	6.23 (.34)	6.33 (.27)	$F(2,30) = .73, p = .49$

*Note.* N(%) are indications of when the process was covered in the coded segment.

Table 4.

*Correlations between baseline measures among attenders, N = 139.*

	1	2	3	4	5
1. Age					
2. BDI-II	-.18*				
3. AAQ	-.36***	.65***			
4. FFMQ	-.12**	.09	.12		
5. Social Satisfaction	.10	-.42***	-.32***	-.01	

*Note.* \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ . BDI-II = Beck Depression Inventory, 2<sup>nd</sup> edition. AAQ-II = Acceptance and Action Questionnaire, 2<sup>nd</sup> edition. FFMQ = Five Facet Mindfulness Questionnaire.

Table 5.

*Means of depressive symptoms, psychological inflexibility, mindfulness, and social satisfaction by time and condition, M(SD).*

	Total	90-minute	3-hour	6-hour
<b>Depressive Symptoms</b>				
Baseline	25.44 (9.23)	24.13 (9.04)	26.89 (10.11)	24.96 (8.46)
Pre-intervention	24.65 (10.05)	23.81 (10.86)	25.68 (10.39)	24.28 (9.22)
1-month follow-up	17.46 (10.92)	16.63 (10.45)	19.80 (11.81)	15.80 (10.13)
3-month follow-up	16.73 (11.56)	16.30 (12.23)	17.06 (12.23)	16.71 (10.60)
<b>Psychological Inflexibility</b>				
Baseline	28.90 (7.10)	28.83 (7.72)	29.61 (6.77)	28.27 (7.04)
1-month follow-up	25.59 (8.60)	25.14 (9.30)	26.70 (8.66)	24.83 (8.12)
3-month follow-up	24.31 (8.46)	24.81 (9.69)	24.21 (8.77)	24.04 (7.34)
<b>Mindfulness</b>				
Baseline	111.48 (16.93)	115.06 (19.57)	110.34 (17.47)	110.27 (14.42)
1-month follow-up	117.92 (22.03)	116.36 (20.83)	117.84 (22.41)	119.01 (22.75)
3-month follow-up	120.36 (22.77)	115.71 (23.23)	120.92 (24.60)	122.99 (20.52)
<b>Social Satisfaction</b>				
Baseline	19.68 (6.69)	21.86 (5.76)	19.18 (7.01)	18.72 (6.74)
1-month follow-up	22.93 (7.39)	25.03 (7.91)	21.83 (7.19)	22.65 (7.10)
3-month follow-up	23.36 (7.96)	24.50 (7.60)	24.15 (8.46)	21.82 (7.61)

*Note.* Depressive symptoms = Beck Depression Inventory, 2<sup>nd</sup> version. Psychological Inflexibility = Acceptance and Action Questionnaire, 2<sup>nd</sup> version. Mindfulness=Five Facet Mindfulness Questionnaire. Social Satisfaction = PROMIS Satisfaction with Participation in Social Roles and Activities.

Table 6.

*Longitudinal mixed-effects modeling analyses of depressive symptoms from baseline, pre-intervention, and follow-up measurements.*

Parameter	Estimate	SE	df	t value	p value
Outcome: Depressive Symptoms					
<b>Intercept</b>	<b>20.49</b>	<b>1.89</b>	<b>264.3</b>	<b>10.85</b>	<b>&lt;.001</b>
<b>Time, Pre-1 month</b>	<b>-7.21</b>	<b>1.50</b>	<b>249.5</b>	<b>-4.80</b>	<b>&lt;.001</b>
<b>Time, Pre-3 month</b>	<b>-7.54</b>	<b>1.50</b>	<b>249.5</b>	<b>-5.02</b>	<b>&lt;.001</b>
Condition, 90-minute vs. 3-hour	1.30	2.23	213.4	0.58	0.56
Condition, 90-minute vs. 6-hour	-0.16	2.21	212.8	-0.07	0.94
<b>Baseline depressive symptoms</b>	<b>0.14</b>	<b>0.03</b>	<b>375.2</b>	<b>4.03</b>	<b>&lt;.001</b>
Time x Condition, Pre-1 month, 90-minute vs. 3-hour	1.56	1.97	248.8	0.80	0.43
Time x Condition, Pre-3 month, 90-minute vs. 3-hour	-0.73	1.98	249.3	-0.37	0.71
Time x Condition, Pre-1 month, 90-minute vs. 6-hour	-0.75	1.94	249.1	-0.39	0.70
Time x Condition, Pre-3 month, 90-minute vs. 6-hour	0.42	1.96	249.8	0.21	0.83
Outcome: Depressive Symptoms					
<b>Intercept</b>	<b>24.13</b>	<b>1.74</b>	<b>232.2</b>	<b>13.90</b>	<b>&lt;.001</b>
Time, Baseline-Pre	-0.32	1.42	395.3	-0.23	0.82
<b>Time, Baseline-1 month</b>	<b>-7.69</b>	<b>1.49</b>	<b>399.5</b>	<b>-5.15</b>	<b>&lt;.001</b>
<b>Time, Baseline-3 month</b>	<b>-8.24</b>	<b>1.46</b>	<b>398</b>	<b>-5.64</b>	<b>&lt;.001</b>
Condition, 90-minute vs. 3-hour	2.76	2.28	232.2	1.21	0.23
Condition, 90-minute vs. 6-hour	0.83	2.25	232.2	0.37	0.71
Psychotherapy	1.82	1.37	442.7	1.32	0.19
Time x Condition, Baseline-Pre, 90-minute vs. 3-hour	-1.13	1.87	395.5	-0.61	0.55
Time x Condition, Baseline-1 month, 90-minute vs. 3-hour	0.46	1.90	397	0.24	0.81
Time x Condition, Baseline-3 month, 90-minute vs. 3-hour	-1.79	1.89	396.5	-0.95	0.34
Time x Condition, Baseline-Pre, 90-minute vs. 6-hour	-0.36	1.84	395.3	-0.20	0.84
Time x Condition, Baseline-1 month, 90-minute vs. 6-hour	-1.60	1.89	397.2	-0.85	0.40
Time x Condition, Baseline-3 month, 90-minute vs. 6-hour	-0.50	1.88	396.8	-0.27	0.79

*Note.* Bolded rows indicate significant parameters. The first set of analyses examined depressive symptoms from pre-intervention to follow-up, while controlling for baseline depressive symptoms. The second set of analyses examined change in depressive symptoms from baseline to pre-intervention to follow-up, while controlling for initiation of psychotherapy.

Table 7.

*Longitudinal mixed-effects modeling of psychological inflexibility, mindfulness, and social satisfaction between baseline and follow-up measurements.*

Outcome: Psychological Inflexibility					
<b>Intercept</b>	<b>28.83</b>	<b>1.35</b>	<b>201.55</b>	<b>21.33</b>	<b>&lt;.001</b>
<b>Time, Baseline-1 month</b>	<b>-3.59</b>	<b>1.04</b>	<b>263.99</b>	<b>-3.45</b>	<b>&lt;.001</b>
<b>Time, Baseline-3 month</b>	<b>-3.91</b>	<b>1.04</b>	<b>263.99</b>	<b>-3.76</b>	<b>&lt;.001</b>
Condition, 90-minute vs. 3-hour	0.88	1.78	202.67	0.49	0.62
Condition, 90-minute vs. 6-hour	-0.61	1.75	202.57	-0.35	0.73
Time x Condition, Baseline-1 month, 90-minute vs. 3-hour	0.58	1.36	263.46	0.43	0.67
Time x Condition, Baseline-3 month, 90-minute vs. 3-hour	-1.15	1.38	264.02	-0.84	0.40
Time x Condition, Baseline-1 month, 90-minute vs. 6-hour	0.19	1.35	263.46	0.14	0.89
Time x Condition, Baseline-3 month, 90-minute vs. 6-hour	0.03	1.36	263.97	0.02	0.98
Outcome: Mindfulness					
<b>Intercept</b>	114.76	3.54	324.6	32.46	<.001
Time, Baseline-1 month	1.71	4.02	266.2	0.43	0.67
Time, Baseline-3 month	1.18	4.04	270.6	0.29	0.77
Condition, 90-minute vs. 3-hour	-4.42	4.59	321.0	-0.96	0.33
Condition, 90-minute vs. 6-hour	-4.50	4.54	321.1	-0.99	0.32
Time x Condition, Baseline-1 month, 90-minute vs. 3-hour	5.79	5.20	264.4	1.11	0.27
Time x Condition, Baseline-3 month, 90-minute vs. 3-hour	9.40	5.26	268.3	1.79	0.08
Time x Condition, Baseline-1 month, 90-minute vs. 6-hour	7.14	5.15	264.8	1.39	0.17
<b>Time x Condition, Baseline-3 month, 90-minute vs. 6-hour</b>	<b>11.30</b>	<b>5.19</b>	<b>268.3</b>	<b>2.18</b>	<b>0.03</b>
Outcome: Social Satisfaction					
<b>Intercept</b>	<b>21.74</b>	<b>1.23</b>	<b>262.34</b>	<b>17.73</b>	<b>&lt;.001</b>
<b>Time, Baseline-1 month</b>	<b>3.25</b>	<b>1.22</b>	<b>264.78</b>	<b>2.67</b>	<b>0.01</b>
<b>Time, Baseline-3 month</b>	<b>2.77</b>	<b>1.20</b>	<b>266.23</b>	<b>2.31</b>	<b>0.02</b>
Condition, 90-minute vs. 3-hour	-2.56	1.60	260.27	-1.60	0.11
Condition, 90-minute vs. 6-hour	-3.03	1.58	260.34	-1.91	0.06
Time x Condition, Baseline-1 month, 90-minute vs. 3-hour	-0.60	1.57	263.39	-0.38	0.70
Time x Condition, Baseline-3 month, 90-minute vs. 3-hour	2.08	1.58	264.10	1.32	0.19
Time x Condition, Baseline-1 month, 90-minute vs. 6-hour	0.63	1.56	263.69	0.41	0.68
Time x Condition, Baseline-3 month, 90-minute vs. 6-hour	0.41	1.56	265.09	0.26	0.79

*Note.* Bolded rows indicate significant parameters. The analyses examined change from baseline to follow-up.

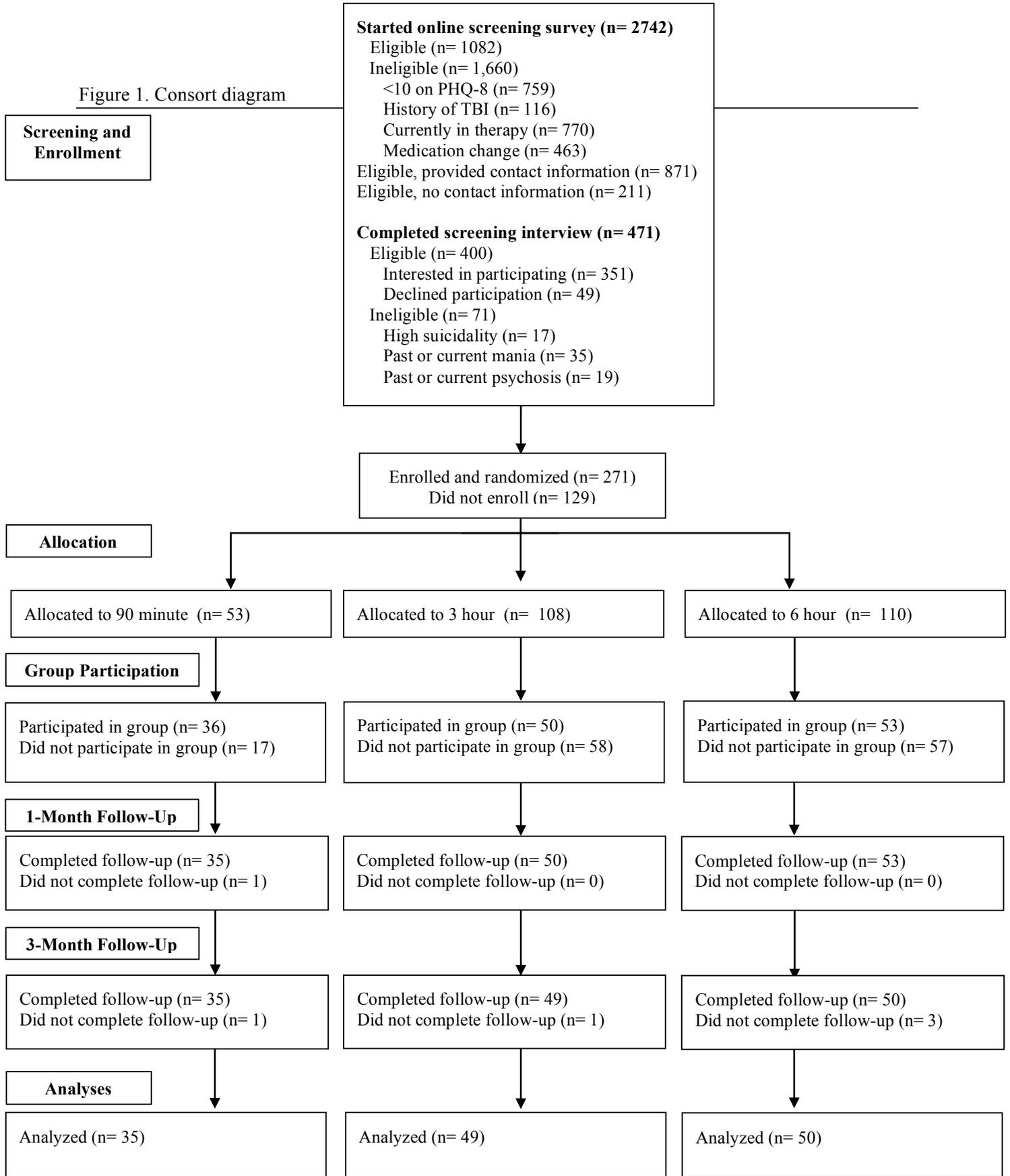
Table 8.

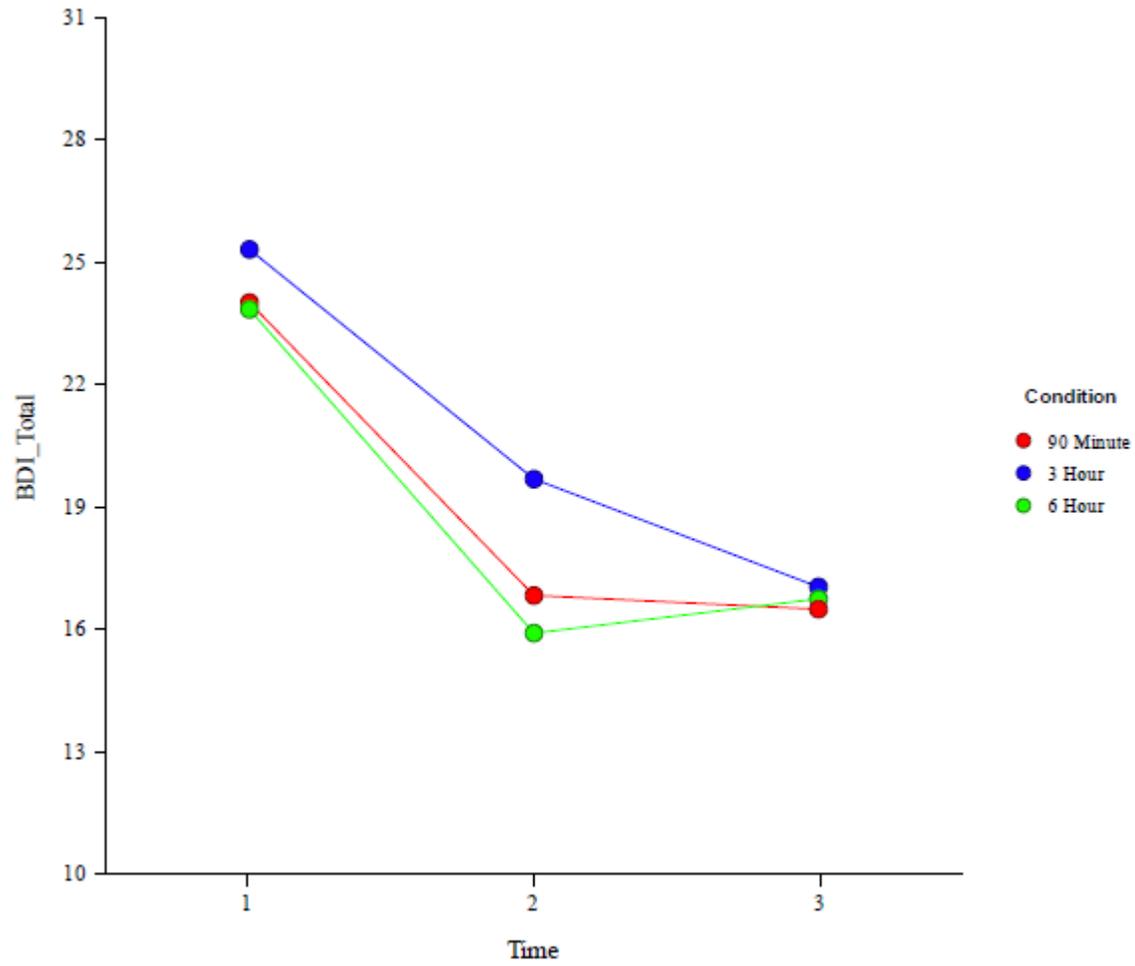
*Equivalency analyses with depressive symptoms between the 3- and 6-hour conditions*

<b>Time</b>	<b>Mean difference</b>	<b>SE<sub>diff</sub></b>	<b>CI<sub>diff</sub></b>	<b>df</b>
1-month	4.00	2.16	-0.29, 8.29	101
3-month	0.35	2.31	-4.24, 4.93	96

*Note.* Depressive symptoms were measured using the BDI-II.

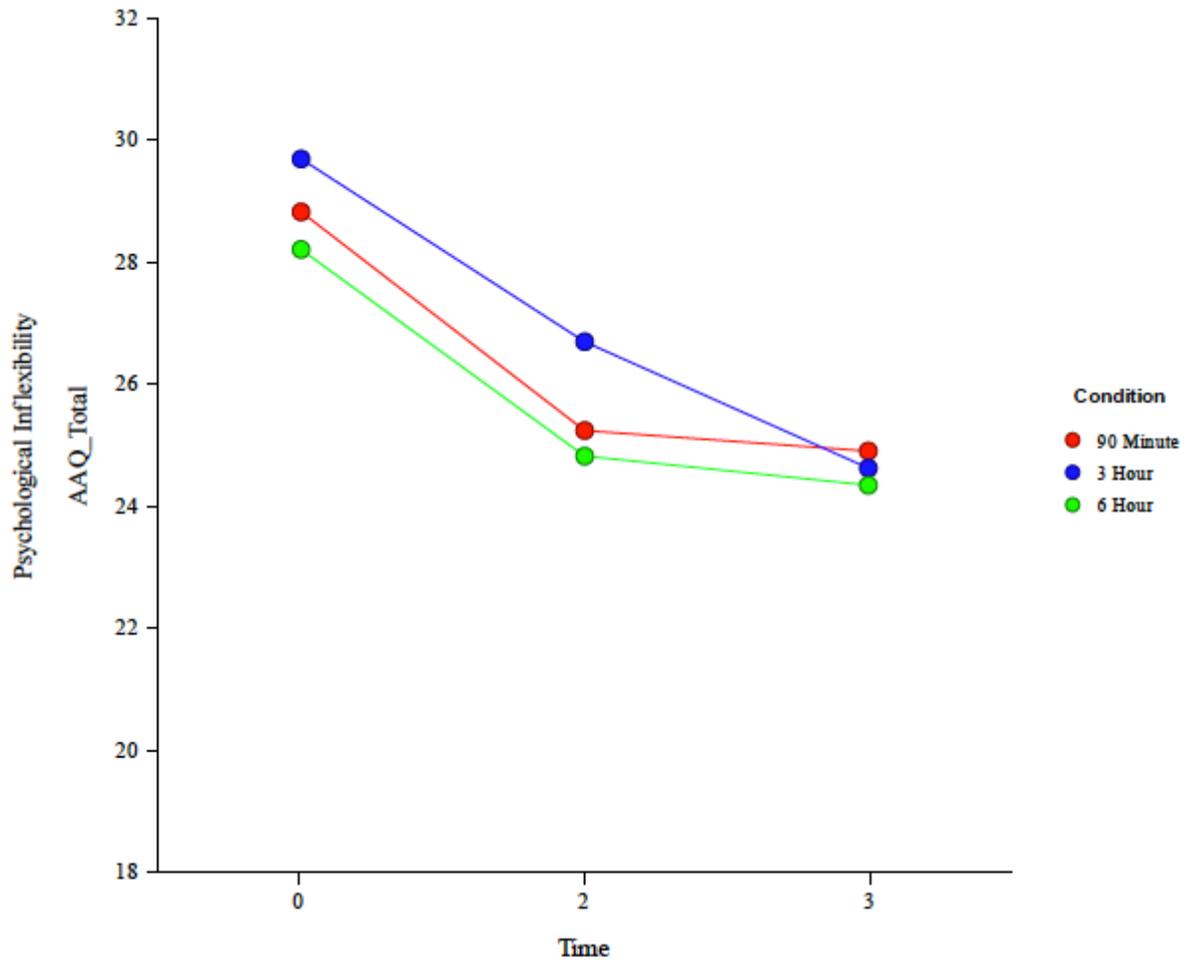
Figure 1. Consort diagram





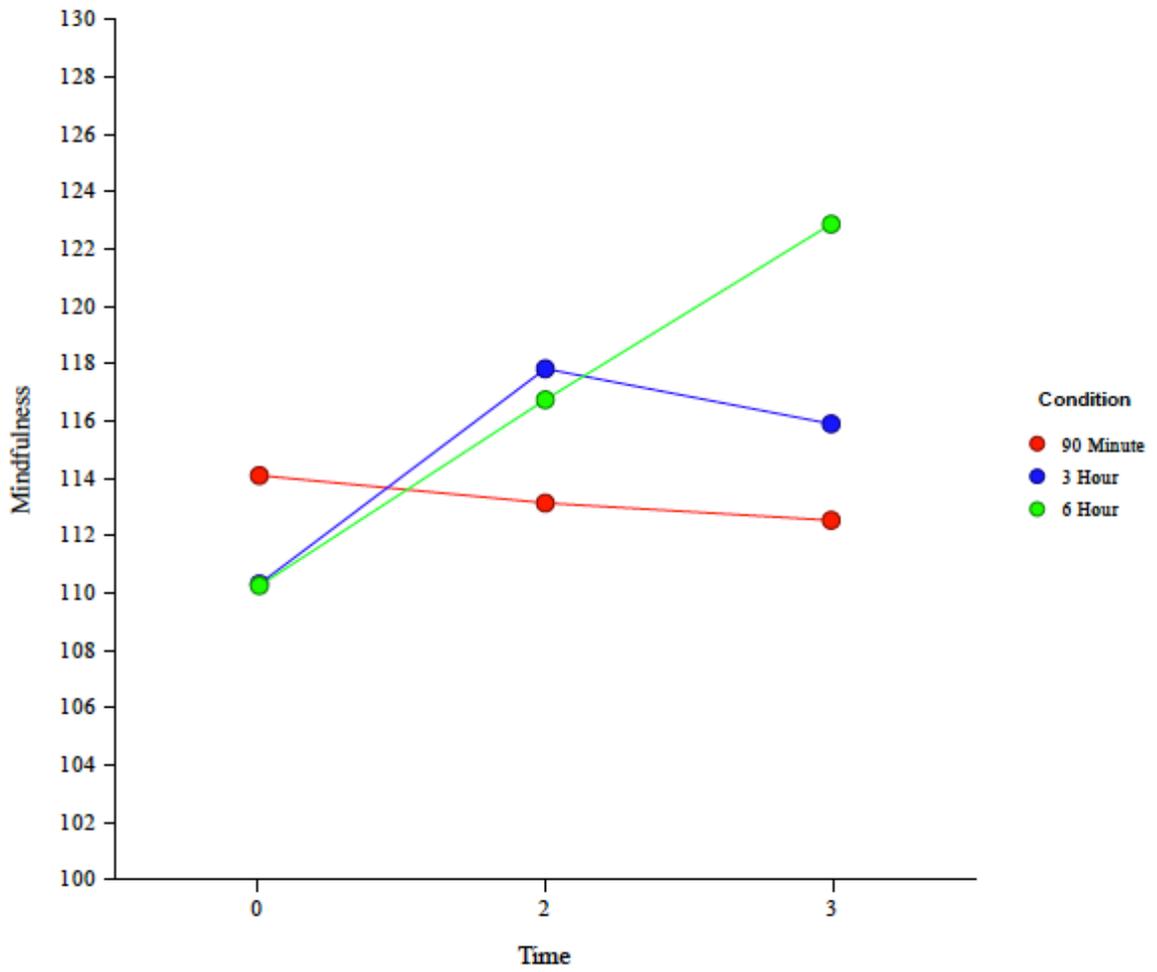
*Figure 2. Mixed-effects modeling of depressive symptoms by time and condition.*

*Note.* Baseline depressive symptoms were included as a control variable. Time: 1 = Pre-intervention, 2 = 1-Month Follow-Up, 3 = 3-Month Follow-Up.

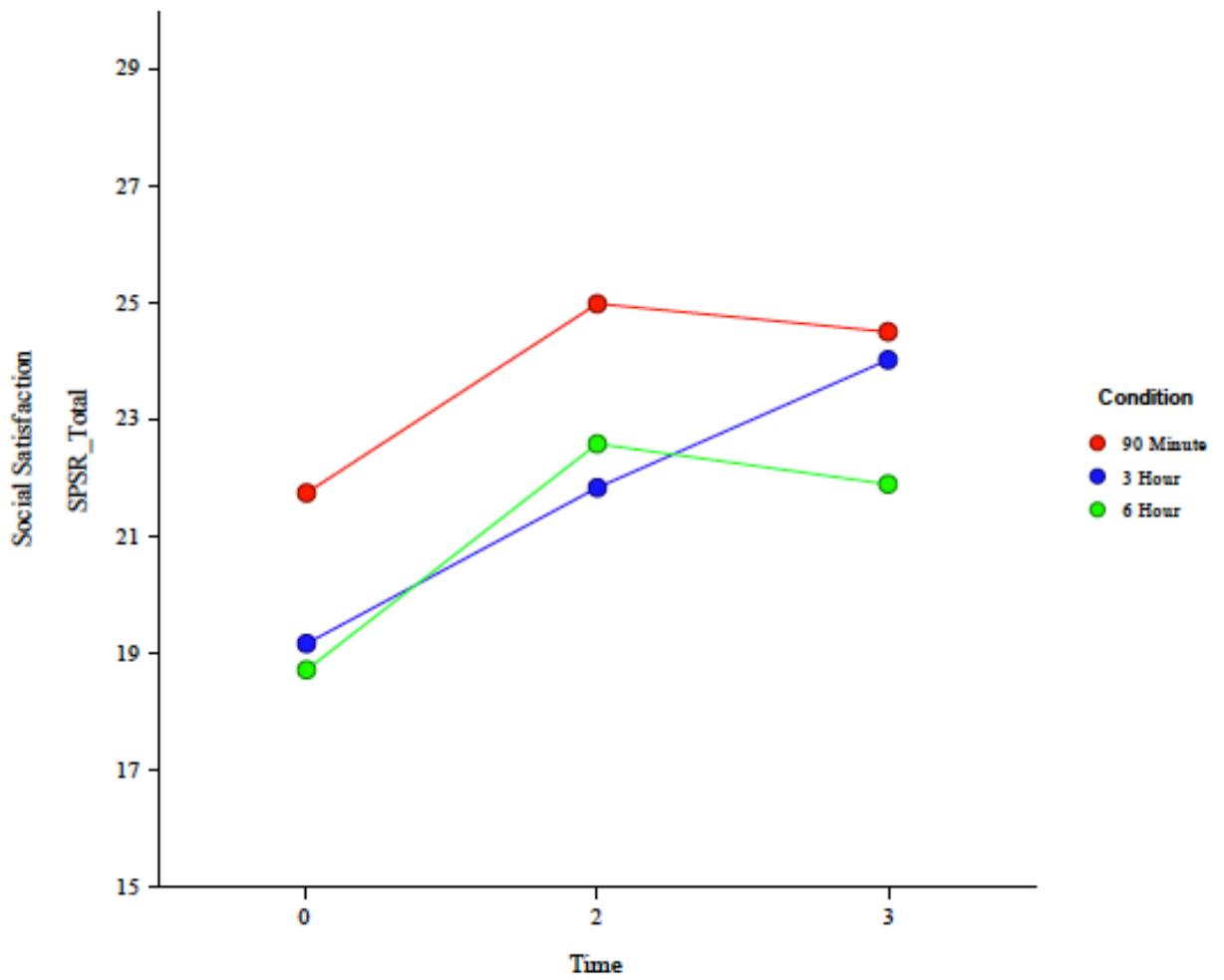


*Figure 3.* Mixed-effects modeling of psychological inflexibility by time and condition.

*Note.* Time 0 = Baseline; 2 = 1-month follow-up; 3 = 3-month follow-up.



*Figure 4.* Mixed-effects modeling of mindfulness by time and condition.  
*Note.* Time 0 = Baseline; 2 = 1-month follow-up; 3 = 3-month follow-up.



*Figure 5.* Mixed-effects modeling of social satisfaction by time and condition.

*Note.* Time 0 = Baseline; 2 = 1-month follow-up; 3 = 3-month follow-up.

**Appendix A.**  
*Fidelity Tables.*

A. Table 2.

*Exercises or metaphors available to facilitators to address different areas of focus*

Area Addressed	Exercises
Values	80 Years Old, Big Life Small Life, Birthday Banner, Sweet Spot, True North, Writing My Autobiography
Committed action	Values as a Buffet, Behavior and Values worksheet, Well-Stocked Pantry
Self-as-context	Checkerboard, Conceptualized Self on Trial, Continuous You, Sky and Weather
Defusion	Don't Think About a Pink Elephant, Game Show, Hooks, I Can't Walk, Milk Milk Milk, Mind Train, Sunglasses, Name Your Mind
Present moment awareness	Mindfulness with Chocolate, Leaves on a Stream, Observer Self, What's Different About Me
Creative hopelessness or acceptance	Clipboard, Feeding the Hungry Tiger, Digging, Pain and Suffering (or Clean Pain/Dirty Pain), Tug of War, Quicksand, Uninvited Party Guest, And vs. But, Palm Up Palm Down, Willingness in Service of Values
Tying it all together	The Matrix, Life Path Turnaround, Choice Point, Stand and Commit, Demons on a Boat, Passengers on a Bus, Verbal Aikido

A. Table 2.

*Use of exercises or metaphors to address areas of focus by condition*

	Total N=42 N(%)	90 minute N=10 N(%)	3 hour N= 17 N(%)	6 hour N= 15 N(%)	Between- condition comparison
Values	32 (76.19%)	3 (30%)	14 (82.35%)	15 (100%)	$X^2 (2) = 16.81, p < .001$
Committed Action	19 (45.2%)	1 (10%)	7 (41.2%)	11 (73.3%)	$X^2 (2) = 9.91, p < .01$
Self-as-context	22 (52.38%)	0 (0%)	9 (52.94%)	13 (86.67%)	$X^2 (2) = 18.07, p < .001$
Defusion	20 (47.62%)	1 (10%)	7 (41.18%)	12 (80%)	$X^2 (2) = 12.26, p = .002$
Present Moment Awareness	15 (35.71%)	0 (0%)	6 (35.29%)	9 (60%)	$X^2 (2) = 9.41, p = .009$
Creative Hopelessness or Acceptance	36 (85.71%)	6 (60%)	15 (88.24%)	15 (100%)	$X^2 (2) = 7.99, p = .018$
Tying It All Together	42 (100%)	10 (100%)	17 (100%)	15 (100%)	N/A

*Note.* N(%) reflects the total number (and percentage) of groups during which the area of focus was addressed using an exercise or metaphor.

## Appendix B.

Measures utilized throughout the study

### Screening Survey

PHQ\_8. Over the last two weeks, how often have you been bothered by the following?

	Not at all	Several days	More than half the days	Nearly every day
Little interest or pleasure in doing things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling down, depressed, or hopeless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trouble falling or staying asleep, or sleeping too much	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling tired or having little energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poor appetite or overeating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling bad about yourself--or that you are a failure or have let yourself or your family down	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trouble concentrating on things, such as reading the newspaper or watching television	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Moving or speaking so slowly that other people could have noticed. Or the opposite--being so fidgety or restless that you have been moving around a lot more than usual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Do you have a history of traumatic brain injury?

- Yes  
 No

10. Are you currently (within the past month) participating in counseling or psychotherapy?

- Yes  
 No

11. Have you changed medication in the last 60 days? (This includes changes in dose.)

- Yes  
 No

12. Please enter your email address, phone number, and first name below so that the study team can contact you if you are eligible for this study.

First Name:

Email Address:

Phone Number:

13. If your responses indicate that you are eligible for the study, you will be contacted by the research team to schedule a phone interview to determine eligibility for the study. If your responses indicate that you are not eligible for the study, you will not be contacted by the research team.

14. For ineligible participants only:

Below is a list of psychological resources in the Iowa City area.

Emergency Numbers: University Hospital Emergency Room: 356-2233; Mercy Hospital Emergency Room: 339-3600; University Security: 5-5022;

University of Iowa Campus Services: University Counseling Services: (319) 335-7294; Adult Psychiatry at University of Iowa Hospitals and Clinics (psychotherapy and medication services): (319) 353-6314; Seashore Psychology Clinic (sliding scale fee structure; psychotherapy, assessment services): (319) 335-2467; Anderson, Arnold, and Partners (psychotherapy, counseling, psychodiagnostic services): (319) 354-3232

For other psychotherapy services, see website below for other options:

<https://therapists.psychologytoday.com/rms/state/IA/Iowa+City.html>

## Beck Depression Inventory, 2nd edition (BDI-II)

ID#: \_\_\_\_\_

Date: \_\_\_\_\_

Please read each group of statements carefully, and then pick out the one statement in each group that best describes the way you have been feeling during the past two weeks, including today. If several statements in the group seem to apply equally well, select the higher number for that group.

### 1. Sadness

- I do not feel sad.
- I feel sad much of the time.
- I am sad all the time.
- I am so sad or unhappy that I can't stand it.

### 2. Pessimism

- I am not discouraged about my future.
- I feel more discouraged about my future than I used to be.
- I do not expect things to work out for me.
- I feel my future is hopeless and will only get worse.

### 3. Past Failure

- I do not feel like a failure.
- I have failed more than I should have.
- As I look back, I see a lot of failures.
- I feel I am a total failure as a person.

### 4. Loss of Pleasure

- I get as much pleasure as I ever did from the things I enjoy.
- I don't enjoy things as much as I used to.
- I get very little pleasure from the things I used to enjoy.
- I can't get any pleasure from the things I used to enjoy.

### 5. Guilty Feelings

- I don't feel particularly guilty.
- I feel guilty over many things I have done or should have done.
- I feel quite guilty most of the time.
- I feel guilty all of the time.

### 6. Punishment Feelings

- I don't feel I am being punished.
- I feel I may be punished.
- I expect to be punished.
- I feel I am being punished.

### 7. Self-Dislike

- I feel the same about myself as ever.
- I have lost confidence in myself.
- I am disappointed in myself.
- I dislike myself.

### 8. Self-Criticalness

- I don't criticize or blame myself more than usual.
- I am more critical of myself than I used to be.
- I criticize myself for all of my faults.
- I blame myself for everything bad that happens.

### 9. Suicidal Thoughts or Wishes

- I don't have any thoughts of killing myself.
- I have thoughts of killing myself, but I would not carry them out.
- I would like to kill myself.
- I would kill myself if I had the chance.

### 10. Crying

- I don't cry any more than I used to.
- I cry more than I used to.
- I cry over every little thing.
- I feel like crying, but I can't.

### 11. Agitation

- I am no more restless or wound up than usual.
- I feel more restless or wound up than usual.
- I am so restless or agitated that it's hard to stay still.
- I am so restless or agitated that I have to keep moving or doing something.

12. Loss of Interest

- I have not lost interest in other people or activities.
- I am less interested in other people or things than before.
- I have lost most of my interest in other people or things.
- It's hard to get interested in anything.

13. Indecisiveness

- I make decisions about as well as ever.
- I find it more difficult to make decisions than usual.
- I have much greater difficulty in making decisions than I used to.
- I have trouble making any decisions.

14. Worthlessness

- I do not feel I am worthless.
- I don't consider myself as worthwhile and useful as I used to.
- I feel more worthless as compared to other people.
- I feel utterly worthless.

15. Loss of Energy

- I have as much energy as ever.
- I have less energy than I used to have.
- I don't have enough energy to do very much.
- I don't have enough energy to do anything.

16. Changes in Sleeping Pattern

- I have not experienced any change in my sleeping pattern.

---

- I sleep somewhat more than usual.
- I sleep somewhat less than usual.

---

- I sleep a lot more than usual.
- I sleep a lot less than usual.

---

- I sleep most of the day.
- I wake up 1-2 hours early and can't get back to sleep.

17. Irritability

- I am no more irritable than usual.
- I am more irritable than usual.
- I am much more irritable than usual.
- I am irritable all the time.

18. Changes in Appetite

- I have not experienced any change in my appetite.

---

- My appetite is somewhat less than usual.
- My appetite is somewhat greater than usual.

---

- My appetite is much less than before.
- My appetite is much greater than usual.

---

- I have no appetite at all.
- I crave food all the time.

19. Concentration Difficulty

- I can concentrate as well as ever.
- I can't concentrate as well as usual.
- It's hard to keep my mind on anything for very long.
- I find I can't concentrate on anything.

20. Tiredness or Fatigue

- I am no more tired or fatigued than usual.
- I get more tired or fatigued more easily than usual.
- I am too tired or fatigued to do a lot of the things I used to do.
- I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

- I have not noticed any recent change in my interest in sex.
- I am less interested in sex than I used to be.
- I am much less interested in sex now.
- I have lost interest in sex completely.

## Acceptance and Action Questionnaire (AAQ-II)

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

1	2	3	4	5	6	7
never true	very seldom true	seldom true	sometimes true	frequently true	almost always true	always true

1. My painful experiences and memories make it difficult for me to live a life that I would value.	1	2	3	4	5	6	7
2. I'm afraid of my feelings.	1	2	3	4	5	6	7
3. I worry about not being able to control my worries and feelings.	1	2	3	4	5	6	7
4. My painful memories prevent me from having a fulfilling life.	1	2	3	4	5	6	7
5. Emotions cause problems in my life.	1	2	3	4	5	6	7
6. It seems like most people are handling their lives better than I am.	1	2	3	4	5	6	7
7. Worries get in the way of my success.	1	2	3	4	5	6	7

## PROMIS Satisfaction with Participation in Social Roles—Short Form 8a

Please respond to each question or statement by marking one box per row.

In the past 7 days...		Not at all	A little bit	Somewhat	Quite a bit	Very much
1	I am satisfied with how much work I can do (include work at home) .....	<input type="checkbox"/>				
2	I am satisfied with my ability to work (include work at home).....	<input type="checkbox"/>				
3	I am satisfied with my ability to do regular personal and household responsibilities.....	<input type="checkbox"/>				
4	I am satisfied with my ability to perform my daily routines .....	<input type="checkbox"/>				
5	I am satisfied with my ability to meet the needs of those who depend on me.....	<input type="checkbox"/>				
6	I am satisfied with my ability to do household chores/tasks.....	<input type="checkbox"/>				
7	I am satisfied with my ability to do things for my family.....	<input type="checkbox"/>				
8	I am satisfied with the amount of time I spend performing my daily routines.....	<input type="checkbox"/>				

## Five Facet Mindfulness Questionnaire (FFMQ)

Please rate each of the following statements using the scale provided. Write the number in the blank that best describes your own opinion of what is generally true for you.

1	2	3	4	5
never or very rarely true	rarely true	sometimes true	often true	very often or always true

- \_\_\_\_\_ 1. When I'm walking, I deliberately notice the sensations of my body moving.
- \_\_\_\_\_ 2. I'm good at finding words to describe my feelings.
- \_\_\_\_\_ 3. I criticize myself for having irrational or inappropriate emotions.
- \_\_\_\_\_ 4. I perceive my feelings and emotions without having to react to them.
- \_\_\_\_\_ 5. When I do things, my mind wanders off and I'm easily distracted.
- \_\_\_\_\_ 6. When I take a shower or bath, I stay alert to the sensations of water on my body.
- \_\_\_\_\_ 7. I can easily put my beliefs, opinions, and expectations into words.
- \_\_\_\_\_ 8. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.
- \_\_\_\_\_ 9. I watch my feelings without getting lost in them.
- \_\_\_\_\_ 10. I tell myself I shouldn't be feeling the way I'm feeling.
- \_\_\_\_\_ 11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.
- \_\_\_\_\_ 12. It's hard for me to find the words to describe what I'm thinking.
- \_\_\_\_\_ 13. I am easily distracted.
- \_\_\_\_\_ 14. I believe some of my thoughts are abnormal or bad and I shouldn't think that way.
- \_\_\_\_\_ 15. I pay attention to sensations, such as the wind in my hair or sun on my face.
- \_\_\_\_\_ 16. I have trouble thinking of the right words to express how I feel about things
- \_\_\_\_\_ 17. I make judgments about whether my thoughts are good or bad.
- \_\_\_\_\_ 18. I find it difficult to stay focused on what's happening in the present.
- \_\_\_\_\_ 19. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.
- \_\_\_\_\_ 20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.
- \_\_\_\_\_ 21. In difficult situations, I can pause without immediately reacting.
- \_\_\_\_\_ 22. When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.
- \_\_\_\_\_ 23. It seems I am "running on automatic" without much awareness of what I'm doing.
- \_\_\_\_\_ 24. When I have distressing thoughts or images, I feel calm soon after.
- \_\_\_\_\_ 25. I tell myself that I shouldn't be thinking the way I'm thinking.
- \_\_\_\_\_ 26. I notice the smells and aromas of things.
- \_\_\_\_\_ 27. Even when I'm feeling terribly upset, I can find a way to put it into words.
- \_\_\_\_\_ 28. I rush through activities without being really attentive to them.
- \_\_\_\_\_ 29. When I have distressing thoughts or images I am able just to notice them without reacting.
- \_\_\_\_\_ 30. I think some of my emotions are bad or inappropriate and I shouldn't feel them.
- \_\_\_\_\_ 31. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.
- \_\_\_\_\_ 32. My natural tendency is to put my experiences into words.

- \_\_\_\_\_ 33. When I have distressing thoughts or images, I just notice them and let them go.
- \_\_\_\_\_ 34. I do jobs or tasks automatically without being aware of what I'm doing.
- \_\_\_\_\_ 35. When I have distressing thoughts or images, I judge myself as good or bad, depending  
what the thought/image is about.
- \_\_\_\_\_ 36. I pay attention to how my emotions affect my thoughts and behavior.
- \_\_\_\_\_ 37. I can usually describe how I feel at the moment in considerable detail.
- \_\_\_\_\_ 38. I find myself doing things without paying attention.
- \_\_\_\_\_ 39. I disapprove of myself when I have irrational ideas.

## Demographic Questions

1. How old are you?
2. With what gender do you identify?
  - Male
  - Female
  - I choose not to identify with a gender.
3. How many years of education do you have?
4. What race do you identify with?
  - American Indian or Alaska Native
  - Native Hawaiian or Other Pacific Islander
  - Asian American
  - White, Non-Hispanic
  - White Hispanic
  - African-American or Black
  - Biracial or Multiracial
5. Are you currently in a romantic relationship?
  - Yes
  - No

## Psychotherapy Engagement and Medication Usage Questions at Follow-Up

1. Are you taking any psychiatric medications for mood, anxiety, or other difficulties?
  - Yes
  - No
  
2. If yes, please indicate the name, dosage, and length of time you've been taking each medication below.
  - Medication: \_\_\_\_\_
  - Dose: \_\_\_\_\_
  - Length of Time Taking Medication: \_\_\_\_\_
  
3. Are you currently (within the past month) seeing a counselor or psychotherapist for your mood, anxiety, or other difficulties?
  - Yes
  - No
  
4. If yes, how long have you been seeing this counselor or psychotherapist?
  
5. How frequently do you see this counselor or psychotherapist?
  
6. What type of counseling or psychotherapy are you being provided?

## Fidelity Measure

Group Facilitators:

Time Interval:

ACT Processes Covered:

Present Moment Awareness

Self-as-Context

Defusion

Acceptance

Values

Committed Action

ACT-Inconsistent Behaviors:

(Challenging thoughts, encouraging experiential avoidance, evaluating the accuracy of a thought or feeling, implying that thoughts or emotions cause actions, reinforcing pliance)

## Competency Measure

	Never True	Very Seldom True	Seldom True	Sometimes True	Frequently True	Always True	Almost Always True
1) The facilitators realize that they are in the same soup as the clients and speak to the clients from an equal, vulnerable, genuine, and sharing point of view.							
2) The facilitators are willing to self-disclose about personal issues when it makes a therapeutic point.							
3) The facilitators avoid the use of “canned” ACT interventions. The interventions are responses to the group.							
4) The facilitators do not argue, lecture, coerce, or try to convince the group.							
5) The facilitators model willingness to hold contradictory or difficult ideas, feelings, memories, and the like without needing to “resolve” them.							
6) The facilitators help the group make direct contact with the paradoxical effect of emotional control strategies.							
7) The facilitators actively use “workability” in the group interactions.							
8) The facilitators create a separation between an individual and his or her thoughts, feelings, and experiences.							
9) Facilitators track content at multiple levels and emphasize the present when it is useful.							
10) The facilitators can defuse from content and direct attention to the moment.							
11) The facilitators help the client differentiate self-evaluations from the self that evaluates.							
12) Facilitators help the group clarify valued life directions.							
13) Facilitators actively encourages client to experiment with stopping the struggle for emotional control and suggests willingness as an alternative.							
14) Facilitators encourage clients to take small steps and to look at the quality of committed action.							