A Brief Acceptance and Commitment Therapy Protocol for Depression in an Inpatient Setting: An Effectiveness Study

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A BRIEF ACCEPTANCE AND COMMITMENT THERAPY PROTOCOL FOR DEPRESSION IN AN INPATIENT SETTING: AN EFFECTIVENESS STUDY

by

Lucas A. Broten

A dissertation submitted to the Graduate College in partial fulfillment of the requirements for the degree of Doctor of Philosophy
Department of Psychology
Western Michigan University
August 2013

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The present study sought to investigate the utility of a brief Acceptance and Commitment Therapy (ACT) protocol for the treatment of depression in an inpatient setting. ACT is a generally promising treatment for a variety of psychological issues. Thirty-nine participants were randomly assigned using and weighted, blocked distribution to either Treatment as Usual (TAU) or individual sessions of ACT in conjunction with treatment as usual (ACT). The study compared readmission rates between the ACT intervention group and the TAU group at 3 and 6 months. In addition, the study examined the proposed mechanisms of change between groups and depression rates between groups.

No differences were found between the TAU and ACT groups with regard to the primary outcome measure of re-hospitalization at 3- or 6-month follow-up. Additionally, ACT did not appear to move depression measures or the proposed mechanisms of action above and beyond the general improvement seen across the sample when compared at the group level. Differences were found in favor of ACT on one measure of mechanism of action proposed to be involved with ACT interventions, the ATQ-B, when the percent of participants that had an RCI were examined by group.
This could indicate that ACT, when received, was better decreasing the believability of thoughts.
ACKNOWLEDGMENTS

I have received an overwhelming amount of support, without which this project would not have been completed. First, I want to thank my wife, Cashmier Broten, for her encouragement, dedication and selflessness. I would not have made it through this process without everything that she has sacrificed. Second, I would like to thank my advisor, Dr. Scott Gaynor, for his guidance, not only in support of my various projects and clinical work, but also in demonstrating how to commit to living a full, well-rounded life in this profession. His guidance has made me not only a better psychologist, but a better person. I would like to thank my committee for their wonderful input throughout the past two years. I want to thank Dr. Amy Naugle for her support and for always looking for opportunities to help me in my graduate career; Dr. Roberto Flachier, for his mentorship in research and in the clinic; and Dr. Galen Alessi, for teaching me to look at problems from angles that I would have never would have come to on my own. I would also like to thank the other members of my cohort, Christina Sheerin, Abby Blankenship, and Tanya Douleh. Their hard work motivated me to try and keep up and their support and selflessness allowed me to succeed. Finally, I want to thank my parents: my father, Eric Broten, for instilling a sense of curiosity about the world—without his encouragement I would have never thought this journey possible; and my mother, Loretta Barbieri, for teaching me compassion and patience.

Lucas A. Broten
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CHAPTER I

INTRODUCTION

Adult Depression

Major Depressive Disorder is a common psychological disorder. Lifetime prevalence rates are estimated to be 16.2% in the United States with the point prevalence estimated to be 6.6% (Kessler et al., 2003). Furthermore, results from the Kessler and colleagues (2003) survey suggest that younger generations appear to demonstrate earlier and higher prevalence rates than previous birth cohorts, suggesting that depression may be increasingly prevalent in the future. In fact, the World Health Organization estimates that by 2020 depression will be second leading cause of disability worldwide (WHO, 2010). In addition, it has been reported that a large proportion of patients with Major Depressive Disorder suffer a chronic (25%) or recurrent (75%) course (Rush et al., 2008), and there is no evidence that antidepressants alter the course of depression (Dimidjian et al., 2006). Since antidepressants do not appear to have enduring effects after use is discontinued, patients may be at significant risk for relapse and recurrence (Hollon et al., 2005).

Major Depressive Disorder

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM–IV–TR; American Psychiatric Association [APA], 2000a), Major Depressive Disorder (MDD) involves a change in previous functioning marked by depressed mood or loss of interest or pleasure in activities for a minimum of two weeks. Additionally, for
a diagnosis of depression, several additional behavioral, cognitive, and physiological symptoms must be present. These can include insomnia or hypersomnia, fatigue or loss of energy, feelings of worthlessness or excessive and inappropriate guilt, social withdrawal, diminished ability to think or concentrate, recurrent thoughts of death, or suicidal ideation. When at least five of nine symptoms are present, one of which being sadness, anhedonia, or irritability, a diagnosis of MDD applies. A diagnosis of MDD not otherwise specified (NOS) may be made when symptoms are clinically significant but do not meet the exact threshold for diagnosis, for example, a client who failed to endorse depressed mood or anhedonia every day for two weeks but had other symptoms that were clinically significant and related to depression. Also, many have come to suggest that depressive symptoms are continuous rather than discrete and that even sub-threshold symptoms are associated with functional impairment (Lewinsohn, Rohde, Seeley, Klein, & Gotlib, 2000).

**Behavioral Model of Depression**

Ferster (1973) describes the first task of a behavioral interpretation of disorders as “defining the behavior objectively, emphasizing functional classes of performance consistent with prevailing clinical facts, the component behaviors of which can be observed, classified and counted.” The function of this approach is to precisely define and specify the behavioral phenomena that are occasioned by the term depression. Additionally, as explicated by Kanter, Cautilli, Busch, and Baruch (2005), the term depression does not precisely map onto any particular or set of particular behavioral or empirical phenomenon and has no essential composition. Given the great amount of
variance between individual symptoms tacted as *having depression* or *being depressed*, it is important not to reify the term as an entity or explanation for symptoms but rather to see it as, at best, a summary label.

A behavior analytic account of depression has been proposed to have seven possible functional classes (Kanter et al., 2005). The first class of behavior is insufficient levels of positive reinforcement as described by Lewinsohn (1974). This is best described as low rate of response-contingent positive reinforcement (RCPR) due to environmental factors. It is well known that loss of reinforcement may result in a decrease or complete cessation of relevant behaviors altogether. This model emphasizes major losses of RCPR such as death of a spouse or job loss, coupled with skills deficits that limit an individual’s ability to (re-) obtain RCPR. Lack of positive reinforcement is proposed to lead to behavioral reductions that are commonly observed in depressive disorders. This finding is also essential to the empirically supported learned helplessness model of depression (Overmier & Seligman, 1967). Affective components (dysphoric reaction, fatigue) of the disorder are assumed to be elicited byproducts of behavior-environment interactions that result from insufficient levels or loss of RCPR. In addition to the loss of RCPR, positive reinforcement of depressed behavior must also be taken into account. Hopko, Lejuez, Ruggiero, and Eifert, (2003) analyzed depression in terms of matching law (Herrnstein, 1970) in order to evaluate this aspect of the propagation and maintenance of depression. This view necessitates the examination of the individual’s environment for loss of RCPR and RCPR of depressed behaviors. As the availability of reinforcers for adaptive behavior is decreased, control of non-depressed behavior by
previous controlling stimuli weakens. Negative reinforcement may come to prevail as the primary contingencies governing behavior, which leads to an increase in depressive behaviors. An example of this would be a person with poor social skills that is punished for attempts at pro-social behavior, leading to a decrease in these attempts. The individual may complain about his or her depressive symptoms around others and may actually re-gain this lost RCPR; however, now it is propagating depressive behavior.

Another manner in which RCPR can be reduced is ratio strain. It has been demonstrated that the accrual of multiple minor stressors is often associated with depression as opposed to major losses of reinforcement (Billings & Moos, 1984). This might be interpreted as an example of ratio strain. The multiple stressors, especially when increased rapidly, result in disruptions in responding that may appear similar to extinction. As with extinction, this may result in depressive behaviors. For example, a person that starts a new job does not know how to do the job competently and may be reprimanded repeatedly at work. This sudden increase in minor stressors may result in depressive behavior.

Finally, reinforcement erosion (Jacobsen & Margolin, 1979) refers to the process of habituation and satiation to reinforcing stimuli. This describes loss of the reinforcement properties, effectively decreasing the RCPR available although there is no actual loss of access to these situations in the environment. This decrease could result in a substantial loss of RCPR resulting in depressive behavior. One possible example is a person that is in a new relationship may desire to spend all of their time with the person as they find many of their behaviors and interactions to be rewarding. However, as the
novelty of the relationship wears thin the person may not find these behaviors as rewarding even though they may be spending just as much time with them as they did at the beginning of the relationship.

The second functional class is an increase in punishment. Punishment by definition reduces behavior. When punishment is generalized, such as through the failure to display effective operant behavior over time resulting in extinction of entire classes of operant behavior, chronic depression can result. As first espoused by Skinner (1953) and later by Ferster (1973), depression is also characterized by increased escape and avoidance behaviors. These are largely passive repertoires that often can contribute to the decrease of RCPR through avoidance or escape from an environment that may provide more opportunities for RCPR. Kanter, Busch, Weeks, & Landes (2008) suggest that the core elicited affective experience of depression can be a product of an increase in aversive control, especially aversive social control, as well as the associated decrease in appetitive control. Maladaptive or over-expansive avoidance and escape maintained behaviors are immediately effective but diminish access to RCPR in the long-term. This results in further decrease in behaviors and increase in the affective experience of depression as a byproduct of the environment behavior interaction. This has been demonstrated in research with children and adolescents and suggests that depression may be a function of negative reinforcement and high punishment density (Sheeber & Sorenson, 1998).

Thirdly, positive reinforcement of depressive behavior such as social solicitation of depressive behavior, complaining, reason giving, and expression of worry may help to
maintain depression, especially in situations of low density reinforcement. As an individual increases the social solicitation of depressive behavior as a result of positive social reinforcement, those giving this reinforcement may gradually reduce contact with the individual. This may be especially prevalent in cases where the individual also has a deficit in social skills, which reduces positive reinforcement for the listener even further, resulting in fewer opportunities for RCPR.

The fourth domain is negative reinforcement of depressive behaviors. Avoidance or escape of environmental stimuli that may elicit aversive private events while also reducing contact with potentially reinforcing stimuli negatively reinforces depressive behavior. Additionally, depressive behavior can result in a decrease in aggressive behavior from others toward the depressed individual (Biglan et al., 1985). By removing aversive aggressive behaviors, like anger of a husband towards a wife or parent towards a child, in response to depressive behaviors, the likelihood of further depressive behaviors and statements is increased.

Rule-governed behavior is the fifth class of behavior that may have an impact on depression. Both lack of appropriate rule-governed behavior as well as over-expansive rule-governed behavior can be a maintaining variable of depression. Lack of rule-governed behavior can be especially evident in weak rules (Malott, 1981) that have delayed, incremental, or unpredictable outcomes. This lack of rule governance results in insufficient contact with positive long-term consequences. This may result in over-control by immediate contingencies and over-reliance on avoidance or escape strategies,
which can, in turn, result in long-term reduction in RCPR, e.g., a teen staying home from school in order to avoid expected social ridicule.

Over expansive rule-governance can maintain depression by promoting experiential avoidance (Hayes, Strosahl, & Wilson, 1999). This rule governance leads to the long-term experiential avoidance repertoires and may allow them to persist in the face of direct histories of reinforcement. This over-reliance on verbal rules related to experiential avoidance may increase negative reinforcement in the short term while preventing RCPR in the long term. For example, a rule such as “I can’t show when I am sad” may result in avoiding school or social functions when feeling sad so as to keep their feelings hidden from others. This avoidance would prevent the child from receiving the natural social reinforcers that would occur at a party or hanging out with friends at school. This is especially the case for the avoidance of negative private events, which, according to Hayes et al. (1999), are not under the control of verbal rules. As such, rules that promote avoidance or unwillingness to experience negative private events often lead to solutions that limit RCPR in the long term and increase depressive behaviors in the short term.

In addition to rule governance, growing research in relational frame theory (RFT; Hayes, Barnes-Homes, & Roche, 2001) suggests that transformation of stimulus functions resulting from the behavior of framing events relationally may play an important role in the maintenance and propagation of depression. The implication is that relations between behaviors, cognitions, and mood need not be directly trained in order to become functionally connected. Therefore, vast arrays of cognitions, affective responses,
and behaviors can take on the function of eliciting stimuli by merely being associated verbally. This transfer of stimulus functions has been demonstrated in one type of relation, stimulus equivalence, or the relation of sameness. Augustson and Dougher (1997) have demonstrated that avoidance responding can be transferred through equivalence class and for relations that were not explicitly trained. According to the theory, stimulus function can also be transferred across other derived relational responding such as opposition and more or less than. This suggests that the behavior of relational framing has a transformative effect on the function of the stimuli in the environment, altering the contingencies that would be in place if the derived relations were not exerting control. This has a potential implication for treatment of depression directed at altering environmental (Jacobsen et al., 1996). If relational framing and transformation of stimulus functions are altering environmental contingencies in some cases of depression, it may implicate the necessity of an alternate treatment approach addressing the relational functions.

Finally, establishing operations may increase the likelihood of depressive behaviors. Dougher and Hackbert (2000) describe depression in terms of establishing operations and suggest that long-term and short-term establishing operations can be used to describe setting events in depression. Setting events can be described as stimuli that abolish non-depressive contingencies and establish depressive contingencies; for example, a long history of child abuse where assertive behavior is punished may establish such behavior as particularly aversive. This setting event may decrease the likelihood of
assertive behavior that may result in RCPR and potentiate more passive behaviors that are less likely to result in RCPR.

**Treatment of Depression**

**Pharmacotherapy**

Pharmacotherapy for depression is often a first line treatment for depressive symptoms. In most instances, access to antidepressant medication is readily available in primary care settings, unlike evidence-based psychosocial interventions, which generally require a specialized therapist. Pharmacotherapy has been shown to be of use for acute depressive symptoms and is initially cheaper and easier to initiate than an empirically supported psychotherapeutic intervention (Domino et al., 2008; Elkin et al., 1989). However, compliance with medication can often be an issue. In addition, the American Psychiatric Association (APA, 2000b) suggests that psychiatric management consist of a “broad array” of services including a diagnostic evaluation, evaluation of safety (suicide/homicide), establishment and maintenance of the therapeutic alliance, monitoring of symptoms, psychoeducation, and efforts to enhance treatment adherence, which increases the cost and availability to the general public and is not typically implemented in a primary care setting.

The Sequenced Treatment Alternatives to Relieve Depression (STAR*D; Rush et al., 2008) study was designed to investigate the impact of sequenced treatment strategies for pharmacotherapy and psychotherapy. The study implemented a SSRI antidepressant (Citalopram) as the first step in the model of treatment. Those who failed to respond to this initial step were then given the option of changing medications,
changing to cognitive psychotherapy, augmenting medication with Cognitive Therapy, or augmenting with another medication type. In total, 70% of those that completed the stepped protocol achieved remission (Fawcett, 2008). However, many of the participants needed several steps to achieve remission and those who required more steps showed higher intolerance for treatment and higher relapse rates (Rush et al., 2008).

In spite of these positive results, studies have suggested that an initial response to pharmacotherapy may not be as sustained as in Cognitive Behavioral Therapy (CBT) (Hollon et al., 2005; Rohde et al., 2008). Additionally, Friedman et al. (2009) in a further analysis of the STAR*D data, found that those with chronic depression were often not responsive to pharmacotherapy. For these chronically depressed patients, a switch to Cognitive Therapy was equally effective as augmenting pharmacotherapy with Cognitive Therapy but without any worrisome side effects that are inherent with psychiatric medications. Lengthier remission/recovery periods and lower recurrence/relapse rates may enhance the cost effectiveness of psychotherapeutic interventions when calculated over longer time spans (Dobson et al., 2008). Thus, exploring psychotherapeutic interventions may be useful in reducing remission rates for depression, especially amongst the chronically depressed.

**Cognitive Behavioral Therapy**

CBT has been shown to be effective in the treatment of depression in more randomized controlled trials than any other psychosocial treatment (Persons, Davidson, & Tompkins, 2001) and, as stated above, has the potential to increase positive long-term outcomes. However, a review of meta-analyses for depression yields mixed results
In general, it has been found that CBT is more effective than waitlist and placebo, and marginally more effective than other bona fide psychotherapeutic interventions (Dobson, 1989; Gloaguen, Cottraux, Cucherat, & Blackburn, 1998). The Treatment of Depression Collaborative Research Project (TDCRP) found CBT to be an effective treatment for mild to moderate depression but recommended medication management for those suffering from more severe depression (Elkin et al., 1989). However, more recent studies have shown CBT to be equally effective as medication for moderate to severe depression (DeRubeis et al., 2005). One strength of CBT is that its effects appear to be maintained after treatment is discontinued, with maintenance effects that compare favorably to ongoing antidepressant treatment (Hollon et al., 2005).

CBT is a result of a merger of cognitive psychology based on the practice and research of Aaron T. Beck (1976) and behavior therapy. Beck proposed that depressive symptoms result when stressful external life events activate maladaptive schema or cognitive structures that bias the interpretation of experiences (Beck, Rush, Shaw, & Emery, 1979). These maladaptive schemas influence overt behaviors, cognitions or automatic thoughts, and emotions. The interactions among these elements are believed to be reciprocal and causal in nature, with a change in one affecting the others. In the context of a structured therapy session, CBT uses several interventions that are aimed at changing maladaptive schemas that influence overt behaviors, cognitions or automatic thoughts, and emotions in combination with behaviorally based treatment objectives.
aimed at increasing contact with naturally reinforcing contingencies through goal setting and homework assignments.

However, a component analysis by Jacobsen et al. (1996) found that Behavior Activation (BA) alone is equal in efficacy to a full CBT package suggesting that the Cognitive Therapy (CT) component may not have incremental validity or be a necessary component of treatment for adults. Time-course investigations have revealed a significant amount of the change in CBT occurs within the first four weeks of treatment (Ilardi & Craighead, 1994) and these rapid responders tend to experience superior outcome regardless of treatment condition (Busch, Kanter, Landes, & Kohlenberg, 2006; Renaud et al., 1998). Further, the National Institute of Mental Health sponsored Treatment of Depression Collaborative Research Project (Elkin, 1994) demonstrated a similarity in outcome for CBT patients that did not experience a sudden gain and those that received placebo plus clinical management. This suggests that positive treatment effects in CBT treatment may hinge on the presence of this sudden gain and draw the mechanisms of action further into question.

Behavior Therapy

There is solid empirical support for using a purely behavioral model among depressed adults (Jacobsen et al., 1996) and among older adults (Scogin, Jamison, & Gochneaur, 1989). Dimidjian et al. (2006) found BA to be as effective as antidepressant medications and superior to CT in acute treatment of moderately to severely depressed adults. Further support comes from the relatively weak evidence for the proposed mechanisms of action in CT as well as findings from a component analysis by Jacobsen
et al. (1996) demonstrating the purely behavioral component of CBT is equal in efficacy to a full CT package. This suggests that the CT component may not have incremental validity or be a necessary component of treatment for adults.

Jacobsen describes BA as “the application of behavioral principles such as goal setting, self-monitoring, activity scheduling, problem solving, and graded task assignment” to alter the avoidance and ruminative behaviors that are characteristic of depression. Furthermore, BA seeks to increase behaviors that put the participant in contact with natural reinforcing contingencies that will ultimately become self-maintained and to decrease activities that promote depressive symptomology. This is accomplished by performing an ideographic functional analysis to identify problematic avoidance behavior and alternative coping strategies to produce higher rates of meaningful response contingent positive reinforcement (Kanter, Mulick, Busch, Berlin, & Martell, 2007). Once identified, these maladaptive avoidance behaviors are then targeted for extinction and activities that are naturally reinforcing, sustainable, and adaptive for each individual are promoted through guided scheduling of these activities. BA seeks to increase these alternative behaviors though the assignment of homework to help lift dysphoric mood. This process focuses on a functional-experimental approach where a participant is encouraged to evaluate how behavior is serving them and making a choice to avoid or activate based on experience. If they chose to “activate” a new coping behavior, they are encouraged to evaluate the outcome with the hope that adaptive behaviors will be maintained post-intervention. The explicit goal of BA is to increase RCPR in order to facilitate long-term improvement in mood. Kanter, Baruch, and
Gaynor (2006) have suggested that taking such an approach might lead clients to better understand and manipulate the antecedent and consequential stimuli that control behavior and thus develop more accurate and effective rules facilitating treatment gains.

**Acceptance and Commitment Therapy**

Another promising behavioral treatment for depression is Acceptance and Commitment Therapy (ACT) (Hayes et al., 1999). ACT is behavior therapy that has recently shown promise in areas including psychopathology (anxiety, psychosis, PTSD, trichotillomania), stress, pain, job performance and negative affectivity (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). An early version of ACT individual therapy with depressed adult women demonstrated that participants were significantly less depressed at follow-up compared to a group assigned to CT (Zettle & Hayes, 1986). ACT has also shown promise as a group intervention for depressed adults (Zettle & Rains, 1989).

It has been suggested that the role of verbal behavior and psychological inflexibility may be one reason that some people are resistant to BA. In fact, it has been suggested that the theoretical choice point between the use of BA and ACT may lie in the extent to which verbal processes are influencing maladaptive behaviors, with ACT potentially being the treatment of choice for clients with an over-expansive, rigid verbal repertoire (Kanter et al., 2006). Theoretical support for many of the basic ACT processes that seek to alter ineffective verbal control and avoidance strategies is described by growing research in Relational Frame Theory (RFT; Hayes et al., 2001). ACT suggests weak or ineffective contextual control of language (faulty/rigid verbal rules) produces psychological inflexibility that limits the contact with direct contingencies and is the root
of psychopathology. Consistent with this possibility is the fact that clients whom endorse more reasons (verbal rules) for depression tended to have poorer outcomes in BA (Addis, Truax, & Jacobsen, 1996). ACT seeks to alter the functions of private events through “cognitive defusion,” a process that decreases the believability of private events, which in turn decreases psychological rigidity regarding the private experience. Additionally, ACT seeks to create psychological flexibility through acceptance/willingness and mindfulness of private events as a form of exposure to previously avoided contexts and sensations. BA does not have an explicit strategy to deal with this entrenched experiential avoidance or rigid verbal control. The final part of the ACT model is to assist the client to choose values of personal importance and take committed action in the direction of those values (Hayes et al., 2006), which is functionally similar to Behavior Activation. ACT attempts create psychological flexibility through the weakening of verbal control thus allowing for behavioral flexibility to contact the direct contingencies in this final phase of ACT. Differing from BA, the explicit goal of ACT is to increase values directed behavior rather than to lift dysphoric mood, although improved mood may be an associated consequence. It has been suggested that using ACT with treatment resistant clients may be particularly effective.

Inpatient Care

In cases of severe depression where acute suicidality or homicidality is present, inpatient care via voluntary or mandated commitment to a hospital setting is often utilized. This practice currently accounts for 50 to 60% of all psychiatric hospitalizations (Sullivan, Barren, Bezmen, Rivera, & Zapata-Vega, 2005). Inpatient care is not only the...
most restrictive form of care; it also represents the most expensive treatment available for depression. Cotterill and Thomas (2004) found the typical cost per case in inpatient treatment was between $5,000 and $7,000 for an average of $410–$638 per day. In addition to these concerns are concerns of stigma, disruption of family life, as well as the fact that those that are hospitalized may lose their jobs as a result of time missed. In addition, those that are admitted to an inpatient unit are re-admitted at a rate of 40–60% at one-year follow-up (Lin, Moyle, Chang, Chou, & Hsu, 2009). Thus, it is important to identify treatments that may decrease the length of stay in an inpatient unit as well as effectively prevent recurrence and re-hospitalization.

Treatment that is received in inpatient settings may vary greatly (Brabender, 1993), yet very few outcome studies have been conducted to evaluate short-term treatments in these settings (Jarrett, 1995). Given the expense and personal cost in time and freedom to an individual that has been hospitalized, briefer and more effective treatments are always being sought. This is especially important considering that depressive symptom severity at discharge is associated with risk of future hospitalization (Lieberman, Wiitala, Elliott, McCormick, & Goyette, 1998).

Currently, antidepressant medications are the “mainstay” in treatment with suicidal patients with acute, recurrent or chronic depression. However, there is little evidence to suggest that antidepressants reduce suicide risk (APA, 2000b). In fact, there is some evidence that antidepressants may increase suicidality. An increased risk for completed suicide of about twice that of the base rate for an at-risk population was found in the first 12 weeks following the beginning of antidepressant treatment (Valenstein
et al., 2009). These concerns necessitate further research into brief inpatient interventions. Additionally, a large proportion of patients with Major Depressive Disorder suffer a chronic (25%) or recurrent (75%) course (Rush et al., 2008), and there is no evidence that antidepressants alter the course of depression (Dimidjian et al., 2006). Since antidepressants do not appear to have enduring effects after use is discontinued, patients may be at significant risk for relapse and recurrence (Hollon, Thase, & Markowitz, 2002). The current recommendation for the treatment of chronic or recurrent episodes of depression is prescription of antidepressants indefinitely (American Psychiatric Association, 2000). Given that some psychotherapeutic interventions have been proven to have enduring effects and to be equally efficacious for the treatment of depression in adults as medication (Dimidjian et al., 2006), using psychotherapy for treatment of depression with antidepressants in adjunct or in response to a lack of improvement or relapse may provide significant long-term savings (Broten, Naugle, Kalata, & Gaynor, 2011).

Inpatient Treatments

Given the relative lack of empirical investigation into the effectiveness of brief inpatient treatments, it is logical to attempt to modify current empirically support treatments as previously described for this purpose. Hopko and colleagues have conducted one such investigation. The Brief Behavioral Activation Treatment for Depression (BATD; Hopko, Lejuez, LePage, Hopko, & McNeil, 2003; Lejuez, Hopko, & Hopko, 2001, 2002; Lejuez, Hopko, LePage, Hopko, & McNeil, 2001) is based on the Behavioral Activation treatment that has previously been demonstrated to be effective
with severely depressed individuals (Dimidjian et al., 2006). BATD provides a brief, manualized approach for intervention in a hospital setting. In a small trial, BATD plus antidepressant medication when compared to supportive treatment as usual plus antidepressant medication achieved favorable outcome with a large effect size of .73 after only a 2-week treatment period (Hopko et al., 2003).

However, given the limitations of BA as previously described, ACT may be may be a more appropriate intervention for inpatient treatment of depression. Given the fact that a high percentage of patients that have been hospitalized were admitted due to acute suicidality, it can be reasoned that they most likely have high levels of cognitive fusion, which is explicitly targeted by ACT. Additionally, since hospitalization is the most restrictive and expensive option in the treatment of depression (Broten et al., 2011), it is likely that many other approaches may have been implemented before this step that have not been effective for the patient. As stated above, the ACT model may be of particular utility for treatment resistant psychopathology (Kanter et al., 2006). There is also recent empirical support for brief ACT interventions in inpatient settings. Other research (Bach & Hayes 2002; Bach, Hayes, & Gallop, 2012; Gaudinano & Herbert, 2006) found that four sessions of ACT + treatment as usual was found to greatly decrease the number of patients re-admitted to an inpatient unit for psychosis over the following 3-month time period when compared to treatment as usual alone. In addition, ACT has been found to be an effective treatment for co-morbid depression and substance abuse in an inpatient setting (Petersen & Zettle, 2009). Since co-morbidity in severely depressed populations is the rule rather than the exception, ACT may be an appropriate intervention.
Statement of Purpose

The present study sought to investigate the utility of a brief Acceptance and Commitment Therapy protocol for the treatment of depression in an inpatient setting. ACT is a generally promising treatment for a variety of psychological issues. Given the positive, albeit modest, results in its use with adult depression, further evaluation is necessary. Participants were randomly assigned using and weighted, blocked distribution to either Treatment as Usual (TAU) or individual sessions of ACT in conjunction with treatment as usual (ACT). The study compared re-admission rates between the ACT intervention group and the TAU group at 3 months and 6 months. In addition, the study examined the proposed mechanisms of change and depression rates between groups.
CHAPTER II

METHOD

Participants

Forty-six adults were recruited from Borgess Medical Center’s adult inpatient mood disorder unit that were experiencing primary depressive type symptoms. These participants were recruited without regard to race, sex, socioeconomic status, or ethnicity. Participants were initially informed of the study by inpatient unit intake personnel, social workers, or nursing staff who read a script detailing the study to the patient. Often patients entered the hospital after a crisis situation such as a suicide attempt, self-injury, or self-admittance to an emergency room. Recruitment took place as soon as the patient had been admitted to the inpatient unit and was deemed stable enough based on the clinical judgment of the Borgess clinical staff to understand the nature of the study. The hospital staff contacted the researcher if the patient was interested in hearing more about the study. A meeting time was then established between the hospital staff and the researcher to provide more information regarding potential participation with the possibility to consent for those interested in participating based on room and participant availability.

Inclusion/Exclusion Criteria

All participants that were admitted to the inpatient mood disorder unit were eligible to participate in the study with the following exclusionary criteria: primary diagnosis of a non-depressive disorder such as a formal diagnosis of mental retardation or
autism spectrum disorder on Axis I of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1994), severe obsessive-compulsive disorder, panic disorder, and schizophrenia spectrum disorders. Finally, those who are non-English speaking or whose primary residence is outside of the area covered within the SolCom computer system database would be excluded.

**Setting**

Initial assessment sessions and post-treatment assessment sessions, and all treatment sessions took place in the inpatient mood disorder unit of Borgess Medical Center in a private room by the Student Investigator, Lucas Broten. The electronic medical record was examined by the researcher and was used to conduct the exclusion/inclusion analysis. Phone-based follow-up assessment sessions were conducted either at Borgess Medical Center in a private room or in the laboratory of Dr. Scott Gaynor at Western Michigan University by Lucas Broten or by a trained and Human Subjects Institutional Review Board (HSIRB) approved doctoral student from the clinical psychology program. All information gathered outside of the laboratory of Dr. Scott Gaynor was transported to the aforementioned lab in a locked briefcase until it was stored in the locked laboratory and cabinet at Western Michigan University.

**Materials**

*The Montgomery Åsberg Depression Rating Scale* (MADRS; Montgomery & Åsberg, 1979) is a widely used clinician administered rating scale for depression used to measure overall severity of depression. It consists of 10 items that are rated on a 0-6 Likert-type scale and is based on functioning over the previous 7 days. The MADRS has
high inter-rater correlations that have recently been shown to be excellent when used in conjunction with the recently developed interview guide (Takahashi, Tomita, Higuchi, & Inada, 2004; Williams & Kobak, 2008). It has good concurrent validity with other clinical interviews for depression, such as the Hamilton Rating Scale of Depression (Maier & Philipp, 1985). The scoring is on a 0-60 scale with higher scores indicating more severe depressive symptomology. The typical cut-off points are 5: not at all ill; 11: Borderline; 19: Mild; 29: Moderate; >31: Severe. The MADRS takes roughly 15 minutes to administer. Additionally, the MADRS has been shown to be equally effective when administered by telephone as when administered face-to-face (Kobak, Williams, Jeglic, Salvucci, & Sharp, 2008).

*Acceptance and Commitment Therapy Hexaflex Diagnostic and Assessment–Revised* (Wilson & Groom, 2002) is a measure of each of the core processes of the ACT theoretical model including contact with the present moment, acceptance, values, defusion, self as context, and committed action. This was adapted by the researchers to include a quality and engagement metric that was rated at the end of each session. A 0-6 rating scale was used. This was a therapist report measure and was based on the therapist’s opinion of the level of participant contact with the ACT processes. Points were assigned based on therapist checks of understanding and therapist opinion of engagement for each of the relevant ACT processes. A 6 rating would represent that the session was of superior quality and engagement, while a 0 would indicate a lack of understanding for all aspects of the session or complete disengagement (such as sleeping).
Demographic Information Collection Sheet (see Appendix C) was created especially for this research study to track the demographics of subjects. This was used to help ensure that the groups were distributed equally and that randomization has occurred. Information on this sheet was gathered from the electronic medical record with the knowledge and consent of the participants.

Beck Depression Inventory–II (BDI-II) (Beck, Steer, & Brown, 1996) is a widely used 21-item self-report instrument administered at pre- and post-treatment and follow-up. Items are scored on a 4-point Likert scale with item-specific content defining each point (where 0 = no endorsement of the symptom, and 3 = extreme endorsement), resulting in total scores ranging from 0 (not at all depressed) to 63 (extremely depressed). Items assess various emotional, cognitive, and overt behavioral aspects of depression (e.g., “sadness,” “pessimism,” and “changes in sleeping pattern”). Elevated BDI-II scores correlate well with diagnoses of depression achieved with the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I; First, Spitzer, Gibbon, & Williams, 1995), with mean scores of 18 indicating mild Major Depressive Episodes, mean scores of 27 indicating a moderate Major Depressive Episodes, and mean scores of 34 indicating a severe Major Depressive Episodes with 99% accuracy (Steer, Brown, Beck, & Sanderson, 2001). Additionally, the instrument has a test-retest reliability of between .93 and .96 (see Beck et al., 1996).

Acceptance and Action Questionnaire–II (AAQ-II) (Bond et al., 2011) is a self-report measure of assesses the construct referred to as, variously, acceptance, experiential avoidance, and psychological inflexibility. Results from 2,816 participants across six
samples indicate the satisfactory structure, reliability, and validity of this measure. The mean alpha coefficient is .84 (.78 – .88), and the 3- and 12-month test-retest reliability is .81 and .79, respectively. Results indicate that AAQ-II scores concurrently, longitudinally, and incrementally predict a range of outcomes, from mental health to work absence rates, which are consistent with its underlying theory. The AAQ-II also demonstrates appropriate discriminant validity. The AAQ-II appears to measure the same concept as the AAQ-I ($r = .97$), but with better psychometric consistency. Consistent with the theory underlying acceptance and commitment therapy (ACT), items converged into a 7-item scale.

*Environment Reward Observation System (EROS)* (Armento & Hopko, 2007) is a 10-item questionnaire designed to measure response-contingent positive reinforcement. Responses are rated on a 4-point Likert scale (1 = strongly disagree, to 4 = strongly agree). This measure has demonstrated strong internal consistency, test-retest reliability, and convergent, discriminate, and ecological validity. The scale has been developed using college student samples; however, more recent work has been done with adult depressed populations. Armento and Hopko found that changes EROS scores significantly predicted time spent in low and high reward value behaviors above and beyond depression scores alone. Given that ACT specifically attempts to increase valued behavior, this measure was selected to sample these changes.

*Automatic Thoughts Questionnaire–Frequency and Believability (ATQ-B)* (Addis et al., 1996) is a 30-item self-report measure that assesses separately the frequency and believability of automatic negative self-thoughts associated with depression. The ATQ
(Hollon & Kendall, 1980) has typically been used to investigate the efficacy of cognitive therapy in depression research. Addis, Truax, and Jacobson revised this measure to add a believability component, which is now commonly used as a measure of cognitive defusion in ACT research. Responses to items range on a 5-point Likert scale from 1 (never) to 5 (always) with higher scores indicating increasing severity on both the believability and frequency measures. Normative samples indicate a frequency scale mean of 52.91 (SD = 18.18) (Dozois, 2003).

Inventory of Interpersonal Problems–Personality Disorders–25 (IIP-PD; Kim & Pilkonis, 1999) is a 25-item self-report scale that screens for personality disorders. Responders rate each item on a 5-point Likert scale. The items on the measure compose five scales: Interpersonal Sensitivity, Interpersonal Ambivalence, Aggression, Need for Social Approval, and Lack of Sociability. Subscale scores are calculated by obtaining the mean of the items that comprise the subscale. Of these subscales, the mean scores of the Interpersonal Sensitivity, Interpersonal Ambivalence, and Aggression can be used to screen for personality disorders. The authors suggest that a PD index score of .7 – 1.1 indicate a possible personality disorder, and a score above 1.1 indicates that a personality disorder is probably present. In a clinical sample (N = 1149), the IIP-PD was administered along with a diagnostic personality disorders interview, the items that would later comprise the IIP-PD-25 were then investigated. The five subscales and a high internal consistency $\alpha = .8$, additionally there was strong agreement with subscale scores from the IIP-PD with Pearson product-moment correlations ranging from .92 – .97. The IIP-PD was administered at pre-treatment assessment sessions.
Design

A randomized controlled trial was utilized in which each participant was randomly assigned to either Treatment As Usual (TAU) or treatment as usual with the addition of individual sessions of Acceptance and Commitment Therapy (referred to as ACT from here forward). Random assignment to the groups took place at a ratio of 2 to 1 in favor of TAU, that is, for each participant assigned to ACT, two were assigned to TAU. Each participant was assigned an identification number upon consenting to the study according to the order in which they joined. Using a computer-generated randomizer, the numbers were pre-assigned to either the TAU or ACT in blocks of 3 stratified by gender. Based on gender, each participant was given a number in blocks of 3 and was randomly assigned (2 to TAU and 1 to ACT) to ensure equal gender distribution for the duration of the study. This assignment was indicated in a sealed envelope that was not opened until after the consent process and prior to implementation of any interventions to prevent researcher bias. The purpose of the weighted assignment was to allow for the highest number of participants to be included in the study while maintaining a feasible number of participants for the researcher to conduct the ACT sessions given the limited time and space for these sessions.

Data regarding re-hospitalization were collected at 3 months after discharge using the SolCom computer system. The SolCom system tracks all hospital admissions (including emergency room visits) in the Borgess Medical Center system, which is the primary mental health crisis center in the region. Therefore, if a mental health hospitalization were to occur, provided the participant stayed in the area, it would likely
be documented in this database. If re-hospitalization or an ER visit occurred, it was measured from day of release from the index hospitalization at Borgess Medical Center during which the treatment took place to the first day of re-hospitalization subsequent to their release within the 3-month follow-up.

Length of stay was calculated as the number of days of hospitalization in which the participant consented to the study. This was measured from admittance to discharge.

The baseline days preceding the index hospitalization was collected in the same manner, except records of hospitalizations in the year prior to the index hospitalization were examined. Baseline days to hospitalization were measured as the number of retrospective days from the first day of the index hospitalization to the previous hospitalization, up to 1 year. The purpose of these data is to allow for a comparison of the frequency, duration, and number of hospitalizations prior to and after the index hospitalization. Thus, the time to and in between hospitalizations and the duration of each hospitalization were documented.

**Conditions**

**TAU.** TAU on the inpatient unit generally consisted of medication, attendance of up to three 45-minute psychoeducational groups per day, and one 75-minute group therapy session per day. Each patient also received case management services (including relevant referrals upon discharge), individual meetings and therapy sessions with these case managers, and consultation with a psychiatrist on a minimum of a weekly basis. The program was generally Cognitive Behavior Therapy oriented. This is partially apparent in the topics of psychoeducational groups, which typically focused on
interpersonal difficulties, recognition and challenging of maladaptive thoughts, anger/anxiety management, and conflict resolution. Group therapy sessions typically focused on discussing and “processing” the experience that brought them to the hospital.

**ACT.** ACT is based on a model of psychopathology that has at its core the construct of psychological inflexibility. Psychological inflexibility is exemplified when an individual’s behavior is directed at attempts to avoid or escape private events, in a way that significantly limits or restricts behavior directed towards important life domains. For instance, a depressed individual may be preoccupied with terminating negative self-thoughts, guilt, and painful attributions. This experiential avoidance may be codified into rules—“I shouldn’t feel like this, I can’t stand this, If only I felt/thought better I could…”— that inhibit adaptive behavior (e.g., attending a social function, seeing one’s children) or promote avoidance/escape (e.g., oversleeping or overeating).

An ACT approach emphasizes increasing psychological flexibility through an integrated combination of acceptance-based practices to address how the individual relates to and experiences private events and behavior change strategies to increase goal-directed, values-based activity.

**ACT Intervention**

The following is meant to give a general description of the treatment. A more thorough description of the treatment protocol is included in Appendix A. Participants may or may not have received the entire treatment package based on the length of the hospital stay. Each therapy session was specifically designed to “stand alone,” that is, provide a therapeutic benefit without relying on future sessions.
Participants that were randomized to ACT received an initial assessment, which included the MADRS, BDI-II, ATQ-B, AAQ-II, EROS, IIP, Demographic Questionnaire, and Baseline Hospitalization information. This was followed immediately by the first ACT session. The assessment period typically took approximately 50 minutes. All treatment sessions varied in length based on availability, engagement, and willingness to participate. Sessions length was recorded in minutes to ensure that treatment time was consistent for analysis. The ACT sessions were arranged at the end of the day to ensure there was no interference with TAU. The session took place after all other therapy sessions were concluded and was conducted around scheduled personal visits and dinner at the convenience of the participant.

The first session took place as soon as possible after Assessment #1. This session consisted of consent to participate and was followed by intake measures and the first session of ACT material. Due to the variable duration of the length of stay, each ACT session was a self-contained session. That is, each had a primary focus but incorporated multiple aspects of ACT. The focus of the first session was primarily oriented to getting an overview of the patient’s personal struggle with depression, obtaining the baseline measure for the ACT daily dairy card, rapport building and “creative hopelessness.” Creative hopelessness is an ACT intervention that focuses on challenging the normal agenda that the patient has been using to interact with his or her environment. The goal is to demonstrate that the problem is not that the patient is not trying hard enough; it is that something new needs to be done. This is fostered through metaphor and experiential exercises. Finally, values were introduced and the bull’s eye was assigned as homework.
The therapist filled out the Hexaflex Diagnostic and Assessment–Revised as a measure of quality and engagement in the session and noted the length of the session.

The second session took place within 72 hours of the first. It began with filling out the ACT daily dairy card and reviewing the homework. The session focus was on identifying areas where attempts to control internal experiences were actually the problem. This was discussed in the context of how thoughts and feelings can prevent living a valued life. Finally, one small values consistent goal was assigned as homework. The therapist filled out the Hexaflex Diagnostic and Assessment–Revised and noted the length of the session.

The third session took place within 72 hours of the last and began by reviewing the homework and filling out the ACT daily dairy card. The objective of the session was to draw upon the client’s experience to strengthen the recognition that control is the problem through defusion exercises. The patient was assigned a behavioral goal related to an uncomfortable emotion as homework as well as carrying thoughts on cards. The therapist filled out the Hexaflex Diagnostic and Assessment–Revised and noted the length of the session.

The fourth session took place within 72 hours of the last and began by reviewing the homework and filling out the ACT daily dairy card. This session focused on defusion and the introduction of mindfulness in order to foster a sense of self as context. Part of this session included an in-vivo exercise practicing executing a valued activity in the face of unwanted thoughts and feelings in an adaptation of the “take your mind for a walk”
exercise (Hayes et al., 1999). The therapist filled out the Hexaflex Diagnostic and Assessment–Revised and noted the length of the session.

The fifth session began by reviewing the homework and filling out the ACT daily dairy card. The objective of the session was to explore the relationship between goals and actions, and to firmly root the components of defusion and willingness in the service of valued actions. The session also included a discussion of how to deal with barriers that may be encountered upon discharge. The patient was asked to record future goals including short- and long-term plans. The therapist filled out the Hexaflex Diagnostic and Assessment–Revised and noted the length of the session.

All participants received the assessment battery after the fifth ACT session or just prior to discharge if five ACT sessions could not be completed before discharge. This assessment included the MADRS, BDI-II, ATQ-B, AAQ-II, EROS, and ACT diary card. The Length of Stay and dose of ACT sessions (in minutes) was recorded.

Additional sessions took place as frequently as possible for patients that remained admitted to the hospital after completion of the fifth session. The focus was to emphasize specific components of ACT that may address particular issues for each individual patient. These sessions began by reviewing progress and difficulties and filling out the ACT daily dairy card. Homework continued to focus on values-based behavior assignments, and each session ended with the therapist filling out the Hexaflex Diagnostic and Assessment–Revised and noting the length of the session (Table 1).
Table 1

*ACT Inpatient Sequence*

<table>
<thead>
<tr>
<th>Session</th>
<th>Focus</th>
<th>Assessments and Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assessment # 1</td>
<td>MADRS, BDI-II, ATQ-B, AAQ-II, EROS, Demographic info, Baseline hospitalization info</td>
</tr>
<tr>
<td>1</td>
<td>ACT # 1</td>
<td>Creative Hopelessness/Values</td>
</tr>
<tr>
<td>2</td>
<td>ACT # 2</td>
<td>Defusion/Values</td>
</tr>
<tr>
<td>3</td>
<td>ACT # 3</td>
<td>Defusion/Values</td>
</tr>
<tr>
<td>4</td>
<td>ACT # 4</td>
<td>Defusion/Self as Context/Mindfulness/Values</td>
</tr>
<tr>
<td>5</td>
<td>ACT # 5</td>
<td>Willingness/Barriers/Values</td>
</tr>
<tr>
<td>5</td>
<td>Assessment # 2</td>
<td>MADRS, BDI-II, ATQ-B, AAQ-II, EROS, Length of Stay, Treatment Receipt Measure</td>
</tr>
<tr>
<td>6 and beyond (if necessary)</td>
<td>ACT Booster Sessions</td>
<td>Variable ACT strategies</td>
</tr>
<tr>
<td>Variable (if the patient remains hospitalized)</td>
<td>Assessment # 3</td>
<td>MADRS, BDI-II, ATQ-B, AAQ-II, EROS, Length of Stay, Treatment Receipt Measure</td>
</tr>
</tbody>
</table>

**Treatment as Usual Intervention**

Participants that were randomized to TAU received an initial assessment, which included the MADRS, BDI-II, ATQ-B, AAQ-II, EROS, IIP, Demographic Questionnaire, and Baseline Hospitalization information. This was followed by an assessment prior to release, which consisted of MADRS, BDI-II, ATQ-B, AAQ-II, EROS, and the Length of Stay (Table 2).
Table 2

**TAU Inpatient Sequence**

<table>
<thead>
<tr>
<th>Session</th>
<th>Focus</th>
<th>Assessments and Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assessment # 1</td>
<td>MADRS, BDI-II, ATQ-B, AAQ-II, EROS, IIP, Demographic Questionnaire, Baseline Hospitalization information</td>
</tr>
<tr>
<td>2</td>
<td>Assessment # 2</td>
<td>MADRS, BDI-II, ATQ-B, AAQ-II, EROS, Length of Stay, Treatment Receipt Measure</td>
</tr>
</tbody>
</table>

**Follow-up**

All participants were asked to meet with the researcher for follow-up interviews at 3- and 6-months post-treatment. These interviews consisted of MADRS, BDI-II, ATQ-B, AAQ-II, EROS, and data on re-hospitalization were collected from the SolCom electronic medical record system (Table 3). In cases where the patient could not be present for the follow-up assessment sessions, they were contacted and asked to complete the measures by phone.

Table 3

**Follow-up Assessment Sequence for All Participants**

<table>
<thead>
<tr>
<th>Session</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 month</td>
<td>MADRS, BDI-II, ATQ-B, AAQ-II, EROS, Re-hospitalization</td>
</tr>
<tr>
<td>6 month</td>
<td>MADRS, BDI-II, ATQ-B, AAQ-II, EROS, Re-hospitalization</td>
</tr>
</tbody>
</table>
Human Subjects Protection

Prior to any treatment, each prospective participant had an informed consent document (Appendix B) read aloud to him or her by a doctoral student from Western Michigan University. Should the prospective participant agree to participate in the study, he or she was asked to sign two copies of the informed consent document. One copy was retained in his or her file at Western Michigan University and the other copy was placed in the participant’s file to be given to the participant for his or her records. The informed consent document included information about the procedures used, the time commitment involved, potential risks, potential benefits, confidentiality, and protections for participants involved in the study. This document was made available to the participant at any time during the course of the inpatient treatment upon request. The informed consent documents also notified the participant that he or she has the right to discontinue his or her participation in the study at any time without prejudice or penalty. Finally, the informed consent documents included the names and phone numbers of the principal and student investigator, in addition to the phone numbers for the Chair of the Human Subjects Institutional Review Board and for the Vice President of Research as well as the phone numbers of the Borgess IRB Chair, and informed the subject that he or she could contact any of these individuals during the course of the study should any questions or concerns about the study arise.
CHAPTER IV
RESULTS

Participants
Forty-six inpatients at Borgess Medical Center who were experiencing primary depressive symptoms at the time of admission agreed to attend an informed consent session to hear more about potential study participation. Of these 46, 7 declined to participate after hearing a more thorough description of the study, leaving 39 remaining participants that were randomized. Given the 2 to 1 ratio for randomization in favor of TAU to ACT, 25 participants were randomized to TAU and 14 to ACT. Everyone who was randomized received at least one day of treatment. Everyone in both samples received a post-treatment assessment with the exception of one participant in the TAU group, who was released early and was unreachable at the contact information that was provided (disconnected phone).

All participants from both groups were available for electronic medical record review for all initial, post, and follow-up assessments. In the ACT group, all participants completed all measures for initial and post-treatment self-report measures. For the TAU group, 24 were analyzed for interview and self-report measures with the exception of the BDI-II, for which responses for 23 participants were available for analysis. The small amount of missing data was due to a failure to complete these measures (see Figure 1).
Characteristics of the Sample

Across measures of demographics, no significant differences were found between the experimental (ACT) group and the control (TAU) group with the exception of age (see Table 4). The ACT group was statistically significantly older on average than the TAU group (47.9 years vs. 39.4 years, respectively). There were no significant differences in gender, number of children, racial/ethnic status, income, relationship status, occupational status, or education.
### Table 4

**Demographic Characteristics of Participants in the ACT and TAU Conditions**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total ($n=39$)</th>
<th>ACT ($n=14$)</th>
<th>TAU ($n=25$)</th>
<th>Test/p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2; p=.86$</td>
</tr>
<tr>
<td>Male</td>
<td>41%</td>
<td>43%</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>59%</td>
<td>57%</td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td><strong>Average Age</strong></td>
<td></td>
<td></td>
<td></td>
<td>$F=5.489; p=.03^*$</td>
</tr>
<tr>
<td>Age</td>
<td>42.41 (11.49)</td>
<td>47.85 (10.78)</td>
<td>39.36 (10.91)</td>
<td></td>
</tr>
<tr>
<td><strong>Children</strong></td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2; p=.73$</td>
</tr>
<tr>
<td>Yes</td>
<td>46%</td>
<td>43%</td>
<td>48%</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>54%</td>
<td>57%</td>
<td>52%</td>
<td></td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2; p=.21$</td>
</tr>
<tr>
<td>Caucasian</td>
<td>74.4%</td>
<td>64%</td>
<td>80%</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>17.9%</td>
<td>29%</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>2.6%</td>
<td>7%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Multiracial</td>
<td>5.1%</td>
<td>0%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td><strong>Household Income ($n=38$)</strong></td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2; p=.60$</td>
</tr>
<tr>
<td>$0-19,999</td>
<td>63%</td>
<td>57%</td>
<td>66%</td>
<td></td>
</tr>
<tr>
<td>$20,000-34,999</td>
<td>24%</td>
<td>14%</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>&gt; $35,000</td>
<td>13%</td>
<td>29%</td>
<td>21%</td>
<td></td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2; p=.15$</td>
</tr>
<tr>
<td>Single</td>
<td>28%</td>
<td>14%</td>
<td>36%</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>23%</td>
<td>42%</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Domestic partnership</td>
<td>8%</td>
<td>14%</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Separated</td>
<td>5%</td>
<td>0%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
<td>13%</td>
<td>7%</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>23%</td>
<td>21%</td>
<td>24%</td>
<td></td>
</tr>
<tr>
<td><strong>Occupational Status</strong></td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2; p=.17$</td>
</tr>
<tr>
<td>Employed</td>
<td>29%</td>
<td>31%</td>
<td>28%</td>
<td></td>
</tr>
<tr>
<td>Retired</td>
<td>16%</td>
<td>20%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>31.8%</td>
<td>31%</td>
<td>32%</td>
<td></td>
</tr>
<tr>
<td>On disability</td>
<td>15.8%</td>
<td>12%</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td>Stay at home parent</td>
<td>2.6%</td>
<td>8%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td>$\chi^2; p=.48$</td>
</tr>
<tr>
<td>Did not graduate HS</td>
<td>7.7%</td>
<td>7%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>GED</td>
<td>12.8%</td>
<td>29%</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Graduated HS</td>
<td>12.8%</td>
<td>21.5%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Some college</td>
<td>28.2%</td>
<td>21.5%</td>
<td>32%</td>
<td></td>
</tr>
<tr>
<td>2-year college degree</td>
<td>15.4%</td>
<td>7%</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>4-year college degree</td>
<td>12.8%</td>
<td>14%</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Graduate degree</td>
<td>10.3%</td>
<td>0%</td>
<td>16%</td>
<td></td>
</tr>
</tbody>
</table>

* Statistically significant difference
The sample was also compared on clinical characteristics assessed prior to the initial session. Across measures, no significant differences were found between the experimental (ACT) group and the control (TAU) group. Specifically, there were no significant differences on the MADRS interview, the BDI-II, ATQ-B, AAQ-II, or the EROS. The sample was significantly elevated on all measures compared to normative samples and comparable to previous depressed inpatient samples. Pre-intervention MADRS scores had a mean of 43.1, which is two standard deviations greater than a depressed outpatient sample from the literature (20.5; Williams & Kobak, 2008). The pre-intervention BDI score mean was 36.8, which is similar to previous studies with a depressed geriatric inpatient sample (32.69; Steer et al., 2001). The ATQ-B pre-intervention score had a mean of 100.3, which is equivalent to previous studies with a depressed outpatient sample (100.26; Zettle, Rains, & Hayes, 2011). The AAQ pre-intervention score had a mean of 33.3, which is equivalent to previous studies with a substance abusing inpatient sample (33.34; Bond et al. 2011). The EROS pre-intervention score had a mean of 19.2, which is more than two standard deviations lower (indicating less contact with reinforcement) than the mean score obtained in a sample of non-depressed college students (29.46; Armento & Hopko, 2007).

All participants had a hospital physician assigned DSM-IV depressive disorder diagnosis. In addition, high co-morbidity with other mental and physical health diagnoses was apparent. When considering the total sample, 61% had multiple Axis I diagnoses from the DSM-IV, one of which was depression related as required for participation. Eighteen percent of the total had a diagnosed Axis II disorder. However, when examined
using the IIP, the percentage with a likely personality disorder increased. The IIP uses a cut score of 1.1 to determine the likely presence of a personality disorder. When this score was used, 72% of the total \((n = 32)\) were indicated as probably having a personality disorder. This was evenly distributed across groups (73% of ACT vs. 71% of TAU, respectively, \(p = .94\)). Additionally, 51% of the sample had a diagnosis on Axis III as well. The sample clearly was experiencing significant depressive symptoms and a range of co-morbidities consistent with previous depressed inpatient samples (see Table 5).

Correlations between the primary measure of depressive symptoms, the MADRS, and other measures of symptomology were examined. These are presented in Table 6.

These correlations are as expected, with relatively high positive correlations between measures of depression (BDI), psychological inflexibility (AAQ-II), and frequency and believability of negative self thoughts (ATQ-F/B). There was a negative correlation between response contingent reward (EROS), which would be predicted in a highly depressed population.

**Re-hospitalization Data**

The primary (and most objective) measure of outcome was re-hospitalization data. The data in the present report consist of data collected from the previously described SolCom system records regarding re-hospitalization. Patient data that were part of the SolCom system during the previous year and subsequent 6 months from the index hospitalization were used in the analyses.
Table 5

Clinical Characteristics of Participants in the ACT and TAU Conditions

<table>
<thead>
<tr>
<th>Measure</th>
<th>Total (n=39)</th>
<th>ACT (n=14)</th>
<th>TAU (n=25)</th>
<th>Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>MADRS</td>
<td>43.10 (9.16)</td>
<td>43.86 (9.30)</td>
<td>42.68 (9.25)</td>
<td>F=1.15; p=.71</td>
</tr>
<tr>
<td>BDI - II</td>
<td>36.81 (12.46)</td>
<td>36.15 (10.57)</td>
<td>37.16 (13.57)</td>
<td>F=.05; p=.82</td>
</tr>
<tr>
<td>AAQ</td>
<td>33.3 (11.09)</td>
<td>33.21 (9.15)</td>
<td>33.42 (12.27)</td>
<td>F=.00; p=.96</td>
</tr>
<tr>
<td>ATQ-B</td>
<td>100.26 (31.21)</td>
<td>103.14 (28.18)</td>
<td>98.58 (33.32)</td>
<td>F=.19; p=.67</td>
</tr>
<tr>
<td>ATQ-F</td>
<td>108.4 (32.20)</td>
<td>106.00 (28.40)</td>
<td>109.83 (34.74)</td>
<td>F=1.22; p=.73</td>
</tr>
<tr>
<td>EROS</td>
<td>19.2 (6.50)</td>
<td>17.83 (6.26)</td>
<td>19.88 (6.62)</td>
<td>F=.80; p=.38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Personality Assessment</th>
<th>Total (n=32)</th>
<th>ACT (n=11)</th>
<th>TAU (n=21)</th>
<th>Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIP</td>
<td>1.69 (.82)</td>
<td>1.48 (.53)</td>
<td>1.79 (.93)</td>
<td>F=1.05; p=.31</td>
</tr>
<tr>
<td>Met or exceed IIP cut score</td>
<td>72%</td>
<td>73%</td>
<td>71%</td>
<td>p = .938</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diagnostic Data</th>
<th>Total (n=31)</th>
<th>ACT (n=9)</th>
<th>TAU (n=25)</th>
<th>Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axis I</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDD</td>
<td>68%</td>
<td>77%</td>
<td>52%</td>
<td>$\chi^2$; p=.429</td>
</tr>
<tr>
<td>Anxiety</td>
<td>19%</td>
<td>22%</td>
<td>16%</td>
<td>$\chi^2$; p=.067</td>
</tr>
<tr>
<td>Bipolar</td>
<td>32%</td>
<td>22%</td>
<td>32%</td>
<td>$\chi^2$; p=.228</td>
</tr>
<tr>
<td>Substance Abuse</td>
<td>16%</td>
<td>22%</td>
<td>12%</td>
<td>$\chi^2$; p=.348</td>
</tr>
<tr>
<td>PTSD</td>
<td>13%</td>
<td>11%</td>
<td>12%</td>
<td>$\chi^2$; p=.236</td>
</tr>
<tr>
<td>Dysthymia</td>
<td>3%</td>
<td>0%</td>
<td>4%</td>
<td>$\chi^2$; p=.423</td>
</tr>
<tr>
<td>Postpartum Depression</td>
<td>3%</td>
<td>11%</td>
<td>0%</td>
<td>$\chi^2$; p=.290</td>
</tr>
<tr>
<td>Alcohol Dependence</td>
<td>3%</td>
<td>11%</td>
<td>0%</td>
<td>$\chi^2$; p=.290</td>
</tr>
<tr>
<td>Mood Disorder</td>
<td>6%</td>
<td>0%</td>
<td>8%</td>
<td>$\chi^2$; p=.429</td>
</tr>
<tr>
<td>Gender Identity</td>
<td>3%</td>
<td>11%</td>
<td>0%</td>
<td>$\chi^2$; p=.290</td>
</tr>
<tr>
<td>Acute Stress</td>
<td>3%</td>
<td>0%</td>
<td>4%</td>
<td>$\chi^2$; p=.423</td>
</tr>
<tr>
<td>Multiple Axis I</td>
<td>61%</td>
<td>67%</td>
<td>50%</td>
<td>$\chi^2$; p=.418</td>
</tr>
<tr>
<td>Axis II</td>
<td>18%</td>
<td>8%</td>
<td>25%</td>
<td>$\chi^2$; p=.673</td>
</tr>
<tr>
<td>Axis III</td>
<td>51%</td>
<td>36%</td>
<td>61%</td>
<td>$\chi^2$; p=.364</td>
</tr>
</tbody>
</table>
Table 6

**Correlation Matrix for Outcome Measures at Index**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Correlation Coefficient with the MARDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI</td>
<td>.73</td>
</tr>
<tr>
<td>AAQ-II</td>
<td>.69</td>
</tr>
<tr>
<td>ATQ-F</td>
<td>.69</td>
</tr>
<tr>
<td>ATQ-B</td>
<td>.87</td>
</tr>
<tr>
<td>EROS</td>
<td>-.74</td>
</tr>
</tbody>
</table>

**Prior Hospitalization**

After consent, data from 12 and 3 months prior to the index hospitalization were recorded. Days from the index hospitalization to the most recent previous mental health related hospital contact and inpatient admission were also recorded (see Table 7).

Among the entire sample, 21% had hospital contact in the past 3 months and 54% within the past year, while 10% had been admitted in the past 3 months and 31% within the past year. In the ACT and TAU groups, the percentages with hospital contact were 64% and 36%, respectively, across the prior year, and 21% and 20%, respectively, across the prior 3 months. The between-groups percentages in terms of admission were 43% and 24% across the prior year, and 14% and 8% across the prior 3 months for the ACT and TAU groups, respectively. For those who were hospitalized at either interval, the groups were statistically comparable in average days from index hospitalization to any prior hospital contact ($F = 1.96, p = .201$) and prior inpatient admission ($F = 1.64, p = .260$).
Table 7

*Average Days From Index Hospitalization*

<table>
<thead>
<tr>
<th>Category</th>
<th>Total</th>
<th>ACT</th>
<th>TAU</th>
<th>P-Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any Hospitalization in the previous 12 months</td>
<td>61.82 (95.03)</td>
<td>88.07 (106.37)</td>
<td>47.12 (86.84)</td>
<td>$F= 1.96; p=.201$</td>
</tr>
<tr>
<td>Inpatient Admission in the previous 12 months</td>
<td>49.72 (89.41)</td>
<td>71.5 (100.29)</td>
<td>37.52 (82.34)</td>
<td>$F= 1.64; p=.260$</td>
</tr>
<tr>
<td>Length of Index Hospitalization</td>
<td>8.77 (3.80)</td>
<td>9.14 (3.84)</td>
<td>8.56 (3.84)</td>
<td>$F= .035; p=.652$</td>
</tr>
</tbody>
</table>

*Note.* Total = Total combined sample; ACT = Acceptance and Commitment Therapy; TAU = Treatment as Usual.

Upon discharge, the length of the index hospitalization was recorded. Again, both the ACT (9.14 days) and TAU (8.56 days) groups were statistically comparable ($F=.35, p=.784$) in terms of the mean number of days in the hospital.

**ACT Intervention**

Given that that ACT intervention varied in length based on the patient’s length of stay in the inpatient unit and willingness to participate, an attempt was made to quantify the amount of engagement in the intervention. First, the number of ACT sessions and the mean number of minutes receiving ACT were recorded. The mean minutes of therapeutic intervention for the ACT group was 167.83 (80.25) minutes. The average number of sessions for the ACT group was 3.67. There was a large variation in the amount of ACT treatment received. In terms of minutes of therapeutic contact the range was from 57 to 333, and the number of sessions ranged from 1 to 6. The variability was the result of multiple factors including length of stay, willingness of the participant to meet, and
number of weekend days included in the stay (as ACT sessions were not delivered on the weekend). Data were also collected on the Hexaflex Diagnostic and Assessment–Revised, which was used as a session evaluation completed immediately following the session by the therapist. For each area of the Hexaflex that was covered in the session, the therapist made a rating of the extent to which the content was actively received and engaged by the client. The average for the session provided an indicator of the quality of ACT engagement by the participant. The average score in session quality and engagement was 4.59 ($SD = 1.62$, range = $1–6$).

**Prior to Follow-up Hospitalization Data**

Data regarding post-index hospital contact were recorded from the SolCom system and also included a review of patient charts and cross-check of weekly admission records. The status of each participant was recorded at 90 (3 months) and 180 days (6 months) post discharge. The status of each participant was coded as either any mental health related hospital visit (which combines inpatient admission and ER visits), inpatient admission, ER visit with no inpatient admission, or no contact. Since the groups were not equivalent in size due to the weighted randomization process, the data were broken down by percent for each group so as to provide a comparable metric to examine differences. Each condition was compared at each time point for each criterion of interest (any hospital contact, inpatient admission, ER, no contact). These data are summarized in Tables 8 and 9.
### Table 8

**Hospital Contact Percentage Data for ACT and TAU**

<table>
<thead>
<tr>
<th>Category</th>
<th>Hospital visits</th>
<th>12 Months Prior to Index</th>
<th>3 Months Prior to Index</th>
<th>3 Months Post Index</th>
<th>6 Months Post Index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACT</td>
<td>TAU</td>
<td>ACT</td>
<td>TAU</td>
<td>ACT</td>
</tr>
<tr>
<td>Any Mental Health Related Visit</td>
<td>&gt; 0</td>
<td>64%</td>
<td>36%</td>
<td>21%</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>36%</td>
<td>64%</td>
<td>79%</td>
<td>80%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>29%</td>
<td>16%</td>
<td>14%</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>21%</td>
<td>4%</td>
<td>7%</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>7%</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>7%</td>
<td>4%</td>
<td>0%</td>
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<tr>
<td></td>
<td>5</td>
<td>0%</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
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<tr>
<td></td>
<td>6</td>
<td>0%</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>ER Visits</td>
<td>&gt; 0</td>
<td>43%</td>
<td>16%</td>
<td>14%</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>57%</td>
<td>84%</td>
<td>86%</td>
<td>88%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>36%</td>
<td>8%</td>
<td>14%</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0%</td>
<td>4%</td>
<td>0%</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>7%</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Inpatient Admission</td>
<td>&gt; 0</td>
<td>43%</td>
<td>24%</td>
<td>14%</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>57%</td>
<td>76%</td>
<td>86%</td>
<td>92%</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>21.5%</td>
<td>8%</td>
<td>14%</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>21.5%</td>
<td>4%</td>
<td>0%</td>
<td>4%</td>
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<td>0%</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
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<td>6</td>
<td>0%</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Table 9

*Hospital Contact Data for Full Sample*

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage of Total Sample with Hospital Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12 Months Prior to Index</td>
</tr>
<tr>
<td>Inpatient Admission</td>
<td>31%</td>
</tr>
<tr>
<td>ER visit</td>
<td>26%</td>
</tr>
</tbody>
</table>

As summarized in Table 10, the groups did not differ in a statistically significant manner across time points or hospital variables of interest when analyzed using Fischer’s exact tests. The Fischer’s exact test is the preferred choice for categorical data and examining the contingency between two types of classifications as it provides an exact calculation of deviation from the null hypothesis rather than an approximation. Since no statistical difference was found between groups, treatment did not appear to have a significant effect on outcome with regards to hospitalization data. Since a survivor analysis would be most informative in the event of significant differences between groups, it was omitted. However, examination of the groups across the 4 time points does provide some additional context for understanding the null findings.
### Table 10

*Results of Fischer’s Exact Tests Comparing Rate of Hospital Contact at Each Time Point*

<table>
<thead>
<tr>
<th>Hospital Contact</th>
<th>−12 Months</th>
<th>−3 Months</th>
<th>3 Months</th>
<th>6 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any</td>
<td>p = .11</td>
<td>p = 1.0</td>
<td>p = 1.0</td>
<td>p = .74</td>
</tr>
<tr>
<td>ER</td>
<td>p = .12</td>
<td>p = .33</td>
<td>p = .33</td>
<td>p = .12</td>
</tr>
<tr>
<td>Inpatient</td>
<td>p = .11</td>
<td>p = 1.0</td>
<td>p = 1.0</td>
<td>p = .12</td>
</tr>
</tbody>
</table>

As demonstrated in Figures 2-4, numerical differences were present between groups across time points on each of the hospital criteria, albeit not statistically significant differences. This analysis was completed by coding the data for each participant in a binary yes or no fashion based on whether or not the participant had at least one occurrence of the hospital criterion of interest from the given time period to the index hospitalization. This allowed examination of any differences in hospitalization data prior (which can be conceptualized as baseline pre-intervention data) that might be relevant to the lack of differences in hospitalization data post-treatment. That is, differences between groups can be examined as well as compared to the baseline data. In order to consider that a treatment effect had occurred, a difference between groups would have to be present post-intervention, but should also be significantly different than the pre-intervention baseline data.

When examining any mental health related hospital visit across time, the ACT group had a numerically higher percentage of individuals with hospital contact 12 months prior to the index hospitalization (64% vs. 36%, p = .11) (see Figure 2). The ACT and
TAU groups are nearly identical (21% vs. 20%, \( p = 1.0 \)) in the 3-month prior and 3-month post index data (29% vs. 28%, \( p = 1.0 \)) with regard to any mental health related hospital visit. They slightly diverge at the 6-month post time point, with 50% the ACT group and 40% of the TAU group (\( p = .74 \)) having a hospital contact. These data do not suggest an effect of ACT or TAU in reducing mental health related hospital visits.

![Figure 2](image-url). Percent of each condition that had any mental health related hospital contact.

When comparing emergency room (ER) visits without inpatient admissions across time, the ACT group had a numerically higher percentage of individuals with ER contact 12 months prior to the index hospitalization (43% vs. 16%, \( p = .12 \)) (see Figure 3). These differences were greatly narrowed in the 3-month prior to index hospitalization data with 14% of the ACT group having ER visits compared to 12% in TAU (\( p = 1.00 \)). Post-index data indicated that 14% of the ACT group had an ER visit at 3-months post-treatment compared to 20% in the TAU group (\( p = 1.00 \)), a reversal from baseline. At the 6-month
data point, 14% of the ACT group had ER visits compared to 28% in the TAU condition \((p = .45)\).

![Graph showing emergency room visits without inpatient admission by condition.]

**Figure 3.** Emergency room visits without inpatient admission by condition.

Comparing inpatient admissions across time, the ACT group had 43% with inpatient admissions in the 12 months prior to the index hospitalization compared to 24% in TAU \((p = .29)\) (see Figure 4). In the 3 months prior to the index hospitalization, 14% of the ACT group had an inpatient stay compared to 8% in TAU \((p = .61)\). Post-index data indicated that 21% of the ACT group had an inpatient admission at 3-months follow-up compared to 8% of the TAU group \((p = .33)\), a result that is fairly consistent with 3-month prior baseline data. At the 6-month post time point, both groups appeared to move toward a return to baseline pre-index hospitalization rates. In the ACT group 43% had an inpatient hospitalization compared to 16% of TAU \((p = .12)\). These data suggest that the addition of ACT to TAU did not appear to have an effect in reducing the number of
inpatient hospitalizations. The ACT group was admitted more frequently than the TAU group; it appears that both groups are returning to pre-admission rates rather than ACT having an iatrogenic effect.

Figure 4. Inpatient admission by condition.

Given that both groups appeared to be demonstrating a return to baseline across most measures of post-index hospital contact, it was important to attempt to determine if the ACT group showed any significant changes on mechanisms of action as proposed by the ACT theoretical conceptualization. In order to say that the ACT intervention was delivered and received but was ineffective in influencing re-hospitalization rates, significant differences should be evident on the measures of proposed mechanisms of action between groups. If no significant differences occurred between groups from pre-to post-treatment on these measures when the variable of time was accounted for, then it is difficult to determine if the treatment was ineffective or if the treatment was not
delivered or received. As shown in Table 11, both groups demonstrated statistically significant improvement across measures of depression and mechanism of action during the course of the index hospitalization. The improvement on measures of depressive symptomology was an expected finding considering the nature of inpatient hospitalization and the criteria used for release. However, it is worth noting that both groups demonstrated significant improvements on the measures of ACT mechanisms of action as well.

No statistically significant differences were demonstrated between groups on any of the measures intended to examine the mechanisms of action between treatment groups. That is, ACT did not significantly move the proposed mechanisms of action in comparison to TAU when analyzed at the group level. Additionally, there were no significant trends consistently found across the measures, with half of the measures moving in the direction of change for TAU and the other half moving in the direction of change for ACT. These results suggest random variations in the measures and thus the ACT intervention did not appear to move any of the process variables (i.e., ATQ-B, AAQ) above and beyond the general improvement seen across both groups from pre to post.
### Table 11

**Between-Groups Differences From Pre- to Post-Treatment**

<table>
<thead>
<tr>
<th>Measure</th>
<th>ACT Pre</th>
<th>ACT Post</th>
<th>TAU Pre</th>
<th>TAU Post</th>
<th>Effect Time</th>
<th>Effect Time x Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>MADRS</td>
<td>43.86 (9.30)</td>
<td>22.43 (11.79)</td>
<td>42.68 (9.25)</td>
<td>21.25 (11.75)</td>
<td>F=91.31; p=.00</td>
<td>F=.00; p=.98</td>
</tr>
<tr>
<td>BDI-II</td>
<td>36.15 (10.57)</td>
<td>25.54 (13.00)</td>
<td>37.17 (13.57)</td>
<td>22.00 (15.69)</td>
<td>F=25.76; p=.00</td>
<td>F=.80; p=.38</td>
</tr>
<tr>
<td>AAQ-II</td>
<td>33.21 (9.16)</td>
<td>27.21 (10.44)</td>
<td>33.42 (12.27)</td>
<td>26.33 (11.43)</td>
<td>F=12.63; p=.00</td>
<td>F=.087; p=.77</td>
</tr>
<tr>
<td>ATQ-B</td>
<td>103.14 (28.18)</td>
<td>80.21 (33.87)</td>
<td>98.58 (33.32)</td>
<td>82.88 (36.86)</td>
<td>F=9.64; p=.00</td>
<td>F=.34; p=.57</td>
</tr>
<tr>
<td>ATQ-F</td>
<td>106.00 (28.40)</td>
<td>88.21 (33.71)</td>
<td>109.83 (34.74)</td>
<td>83.50 (38.00)</td>
<td>F=14.41; p=.00</td>
<td>F=.54; p=.47</td>
</tr>
<tr>
<td>EROS</td>
<td>17.83 (6.26)</td>
<td>24.36 (5.54)</td>
<td>19.88 (6.63)</td>
<td>24.29 (6.29)</td>
<td>F=27.68; p=.00</td>
<td>F=1.63; p=.21</td>
</tr>
</tbody>
</table>
Since no differences in process variables were found between groups during the course of the index hospitalization, the next step was to consider treatment differences on these measures at 3- and 6-month follow-up. Unfortunately, there were not enough data to analyze due to poor return of the mailed follow-up measures. Phone data were collected for the MADRS and thus had the most complete follow-up data (25/39 collected at follow-up). The MADRS data (see Table 12) did not demonstrate any significant differences between the ACT or TAU groups ($F = .37, p = .69$). The collection of the BDI-II, AAQ-II, ATQ, and EROS did not yield a sufficient return (5/39 completed both 3- and 6-month follow-up) to allow for analysis.

Table 12

**Between-Groups Differences Pre, Post, and 3-Month Follow-up**

<table>
<thead>
<tr>
<th></th>
<th>ACT ($n=14$)</th>
<th>TAU ($n=11$)</th>
<th>Time Effect</th>
<th>Time × Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre  Post  Follow</td>
<td>Pre  Post  Follow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MADRS</td>
<td>42.72  20.18  15.28</td>
<td>42.78  25.5  18.21</td>
<td>$F=39.63; p=.00$</td>
<td>$F=.37; p=.69$</td>
</tr>
</tbody>
</table>

Changes occurring during the inpatient treatment interval were also examined by determining whether participants experienced clinically significant changes in depressive symptoms and reliable change on process measures. These data allow for examination of between-group differences but also for examination of change indices linked to theoretically proposed processes of change. For instance, distinguishing those who were in the ACT condition and demonstrated movement on at least one ACT consistent process variable and demonstrated a clinically significant movement on depressive
symptomology from those in the ACT group that did not appear to move on a proposed process variable or achieve a clinically significant change in depression. On the MADRS, a criterion score of greater than or equal to 18 was used. This criterion is based on data from a depressed outpatient sample suggested by Williams and Kobak (2008) wherein this cut-off criterion achieved 87% sensitivity and 61% specificity in discriminating depressed from non-depressed individuals. Next, a Reliable Change Index (RCI; Jacobsen, Follette, & Revenstorf, 1984) score, a level of change that is beyond what is likely due to measurement variability alone, was calculated using the \( \alpha = .90 \) from two previous studies (Kobak et al., 2010; Williams & Kobak, 2008) and the MADRS standard deviation (9.16) from the current study. The square root of the initial standard deviation is multiplied by the square root of the reliability coefficient, which allows for the calculation of the RCI. The RCI is calculated such that 95% of the time, a value equal or greater than this would be due to change unrelated to the unreliability of the measurement. The RCI for the MADRS was calculated to be 8.03. Therefore, a score that demonstrated a reduction on the MADRS that was equal to or below 18 at post and achieved a drop from pre- to post-treatment of greater than 8 points would be said to have met criteria for a clinically significant change.

Clinically significant change was also calculated for the BDI-II. To do this, a criterion score of less than 11 was determined from the literature for the BDI-II, which is a standard cut off score use to determine depressed from non-depressed samples. A standard deviation of 12.46 from the current sample was used with \( \alpha = .90 \) from a depressed geriatric inpatient sample (Steer, Rissmiller, & Beck, 2000). This resulted in a
RCI score of 10.92; thus, anyone who demonstrated a reduction of 11 or more from pre to post-treatment on the BDI resulting in a score of 10 or lower would be considered to have demonstrated a clinically significant response.

For the process measures, no criterion cut-off scores are available as these measures are not intended to be used for diagnostic purposes. Therefore, only the RCI was calculated for these measures. For the ATQ-B, the standard deviation from the current sample (31.21) was used with \( \alpha = .95 \) from a depressed outpatient sample depressed from the literature (Zettle et al., 2011). This resulted in an RCI of 19.34. Any change of 20 or greater on the ATQ-B from pre to post was said to be a treatment responder. For the ATQ-F, the standard deviation from the current sample (32.20) was used with \( \alpha = .94 \) from a depressed outpatient sample from the literature (Harrell & Ryon, 1983). This resulted in an RCI of 21.86. Any change of 22 or greater on the ATQ-F from pre to post was said to be a treatment responder.

For the AAQ-II, the standard deviation from the current sample (11.09) was used with \( \alpha = .84 \) from a substance abusing inpatient sample from the literature (Bond et al., 2011). This resulted in an RCI of 12.30. Any change of 13 or greater on the AAQ-II from pre to post was said to be a treatment responder.

For the EROS, the standard deviation from the current sample (6.50) was used with \( \alpha = .86 \) from a normal college student population from the literature (Armento & Hopko, 2007). This resulted in an RCI of 6.74. Any change of 7 or greater on the EROS from pre to post was said to be a treatment responder. See Table 13.
Table 13

*Reliable Change and Cut Score Calculation Data*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Co-efficient Alpha</th>
<th>Standard Deviation</th>
<th>Reliable Change Index Score</th>
<th>Cut Score Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>MADRS</td>
<td>$\alpha = .90$</td>
<td>9.16</td>
<td>8.03</td>
<td>$\geq 18$</td>
</tr>
<tr>
<td>BDI-II</td>
<td>$\alpha = .90$</td>
<td>12.46</td>
<td>10.92</td>
<td>&gt; 10</td>
</tr>
<tr>
<td>ATQ-B</td>
<td>$\alpha = .95$</td>
<td>31.21</td>
<td>19.34</td>
<td>N/A</td>
</tr>
<tr>
<td>ATQ-F</td>
<td>$\alpha = .94$</td>
<td>32.20</td>
<td>21.86</td>
<td>N/A</td>
</tr>
<tr>
<td>AAQ-II</td>
<td>$\alpha = .84$</td>
<td>11.09</td>
<td>12.30</td>
<td>N/A</td>
</tr>
<tr>
<td>EROS</td>
<td>$\alpha = .86$</td>
<td>6.50</td>
<td>6.74</td>
<td>N/A</td>
</tr>
</tbody>
</table>

The percent of each group that met the RCI was examined for each of the depression and process measures. Significant differences were found on the ATQ-B ($p = .037$) in favor of the ACT group (see Table 14). No other significant differences were found between the groups on measure of process or depressive symptomology.

Table 14

*Percentage of People in Each Group That Met the Reliable Change Index by Measure*

<table>
<thead>
<tr>
<th>Measure</th>
<th>ACT</th>
<th>TAU</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MADRS</td>
<td>86% ($n=14$)</td>
<td>67% ($n=24$)</td>
<td>.268</td>
</tr>
<tr>
<td>BDI-II</td>
<td>39% ($n=13$)</td>
<td>50% ($n=24$)</td>
<td>.731</td>
</tr>
<tr>
<td>ATQ-B</td>
<td>64% ($n=14$)</td>
<td>25% ($n=24$)</td>
<td>.037*</td>
</tr>
<tr>
<td>ATQ-F</td>
<td>57% ($n=14$)</td>
<td>33% ($n=24$)</td>
<td>.187</td>
</tr>
<tr>
<td>AAQ-II</td>
<td>21% ($n=14$)</td>
<td>21% ($n=24$)</td>
<td>.635</td>
</tr>
<tr>
<td>EROS</td>
<td>42% ($n=14$)</td>
<td>33% ($n=24$)</td>
<td>.447</td>
</tr>
</tbody>
</table>
Next, between-groups differences in clinically significant change were examined. No statistical differences were found between the ACT and TAU groups when MADRS ($p = .396$), BDI-II ($p = .136$), either measure ($p = .219$) or both measures ($p = .328$) were compared (see Table 15). This suggests that the ACT intervention did not produce a greater response to depressive type symptoms than TAU.

**Table 15**

*Percentage of Treatment Responders by Group and Measure*

<table>
<thead>
<tr>
<th>Measure</th>
<th>ACT</th>
<th>TAU</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MADRS</td>
<td>36%</td>
<td>46%</td>
<td>.396</td>
</tr>
<tr>
<td>BDI-II</td>
<td>7%</td>
<td>29%</td>
<td>.136</td>
</tr>
<tr>
<td>Both</td>
<td>15%</td>
<td>33%</td>
<td>.219</td>
</tr>
<tr>
<td>Either</td>
<td>36%</td>
<td>54%</td>
<td>.328</td>
</tr>
</tbody>
</table>

Given that there was a significant difference in the percentage of participants demonstrating an RCI on the ATQ-B in ACT compared to TAU, the impact on 6-month inpatient hospitalization rates of having received ACT and having reached criterion for an RCI on the ATQ-B was examined. Of the 14 ACT participants, 4/6 (67%) who were rehospitalized in the 6 months following the index admission met the criterion for an RCI on the ATQ-B, which was similar to the percentage of participants in the subgroup that was not rehospitalized that had an RCI on the ATQ-B, 5/8 (63%, $p = 1.0$). Thus, while ACT appeared to produce differential rates of meeting the RCI on the ATQ-B, the ATQ-B change was not predictive of later hospitalization.
Given the absence of group differences in inpatient admissions between the treatment conditions, we examined whether pretreatment variables were predictive of having an inpatient admission in the 6 months following the index hospitalization. Ten out of 39 patients (26%) were readmitted within 6 months. Patients were grouped by whether they had an inpatient hospitalization or not in the 6 months following the index hospital visit and compared on pretreatment variables of age, total number of hospitalizations in the prior 12 months, IIP, MADRS, BDI-II, AAQ, ATQ-F, ATQ-B, and EROS (see Appendix I). Two statistically significant differences were found. Those who were re-hospitalized within 6 months had significantly lower mean scores on the ATQ-F ($x = 117.79(28.12)$ vs. $x = 82.20(29.21); p = .002$) and ATQ-B ($x = 106.32(29.57)$ vs. $x = 83.30(30.77); p = .044$). These results are counterintuitive as one might expect those with lower frequency and believability of negative thoughts to be less, not more, likely to be re-admitted. Multiple diagnoses on Axis I, co-morbid Axis I and Axis II, and participants that exceeded a cut score of 1.1 on the IIP (the cut score that indicates a probable personality disorder) were also examined. None of these pre-treatment variables had a significant effect on 6-month inpatient admission (see Appendix H).

Also examined was whether any variables associated with improvement in symptoms during the index hospitalization predicted readmission in the subsequent 6 months. Patients were grouped by whether they had an inpatient hospitalization or not in the 6 months following the index hospital visit and compared on variables of length of index hospitalization, discharge scores in the IIP, MADRS, BDI-II, AAQ, ATQ-F, ATQ-B, and EROS, and change scores on the MADRS, BDI-II, AAQ, ATQ-F, ATQ-B,
and EROS. No statistically significant differences were found (see Appendix J). Fisher’s Exact Test examined the relationship between 6-month readmission status and clinically significant change (on the MADRS and BDI) or reliable change (on the AAQ, ATQ, and EROS) during the index hospitalization. No statistically significant differences were observed.

Finally, given the individual differences in the ACT group (i.e., 6/14 = 43% readmitted within 6 months), ACT related treatment variables were examined in attempt to better characterize response (or lack thereof) within this group. Patients were grouped by whether they had an inpatient hospitalization or not in the 6 months following the index hospital visit and compared on hospitalizations in the prior 12 months, length of index hospitalization, the amount of time spent with ACT therapist, the number of ACT sessions, the quality of the ACT sessions, and change scores on the MADRS, BDI-II, AAQ, ATQ-F, ATQ-B, and EROS. One statistically significant difference was found (see Appendix H). The therapist rated quality of the ACT sessions in terms of engagement was significantly higher among the 8 patients who were not rehospitalized in the subsequent 6 months ($M = 4.78, SD = .96$) compared to the 6 who were ($M = 3.58, SD = 1.14$), $t(12) = 2.24, p = .05$.

As presented previously, Fisher’s Exact Test examining the relationship between 6-month readmission status and reliable change on the AAQ and ATQ-B during the index hospitalization revealed no statistically significant differences. Among the 8 ACT recipients who were not rehospitalized, 5/8 (63%) showed a reliable change on the
ATQ-B, while among the 6 ACT recipients who were rehospitalized, 4/6 (67%) showed a reliable change on the ATQ-B ($p = 1.0$).

The two preceding findings are interesting: therapist ACT session evaluations predicted 6-month readmission rates, but reliable changes on the ATQ-B (an ACT process measure in which ACT outperformed TAU) did not. Post hoc analyses further examined the relationships between ACT session evaluations, reliable change on the ATQ-B, and 6-month readmission likelihood. Nine participants had a RCI on the ATQ-B, 5 were not rehospitalized, 4 were. The mean (SD and range) ACT session evaluation was 5.25 (0.83, 4.0–6.0) for those who were not rehospitalized compared to 3.21 (1.23, 2.33–4.5) for those who were, $t = 2.99, p = .04$. This is a small sample and post hoc analysis, but the consistency is interesting as there was little overlap in the individual ACT session evaluation scores between the two groups. Thus, there appears to be a subgroup that had high therapist rated ACT session evaluations and evinced a reliable change on the ATQ-B and it was this subgroup that went on to remain free of subsequent hospitalizations in the next 6 months. Those who were readmitted had reliable change on the ATQ-B, but lower ACT session evaluations (see Figure 5).

Among those who did not have an RCI on the ATQ-B, ACT session evaluations had a mean of 4.0 (.60, 3.50–4.67) for the 3 who were not hospitalized and 4.33 (4.00 and 4.67) for the 2 who were hospitalized. Thus, to the extent that there was an ACT specific effect for a subgroup who received ACT, it was associated with the combination of high ACT session evaluations and a change on the ATQ-B.
Figure 5. Individual ACT session evaluations and 6-month re-admission rates among the 9 participants showing a reliable change on the ATQ-B.
CHAPTER V
DISCUSSION

The present study found that brief individual Acceptance and Commitment therapy did not significantly reduce the rate of subsequent hospital inpatient admission or mental health related ER visits compared to treatment as usual. This was found to be the case for not only for days from index hospitalization to the next mental health related visit, but also when total numbers of post-index hospital visits were examined at 3- and 6-month follow-up. Additionally, ACT did not appear to move the proposed mechanisms of action above and beyond the general improvement seen across the sample during the index hospitalization when compared at the group level. This is contrary to findings in previous ACT studies that have shown that ACT intervention typically moves different and theoretically consistent mechanisms of action when compared to other treatments (Bach & Hayes 2002; Bach et al., 2012; Gaudinano & Herbert, 2006). Differences, however, were found in favor of ACT on one measure of mechanism of action proposed to be involved with ACT interventions, the ATQ-B, when the percent of participants that had an RCI were examined by group. This could indicate that ACT, when received, was better decreasing the believability of thoughts. This finding is consistent with previous research (Bach & Hayes 2002; Bach et al., 2012; Gaudinano & Herbert, 2006; Zettle, 2005). However, these differences were not related to less frequent mental health related hospital visits.
Additionally, there were no statistically significant improvements on measures of depression between groups at any time point. This is in contrast to findings that have found ACT to differentially demonstrate improvement for depressed adolescents (Broten & Gaynor, in preparation), adults (Zettle et al., 2011), and adult inpatients with co-morbid substance abuse (Bond et al., 2011).

The lack of differential treatment effect on measures of depression and re-hospitalization in the current study are in contrast to previous findings that have found brief ACT interventions not only to have reduced re-hospitalization rates for patients with severe and persistent mental illness (Bach & Hayes 2002; Bach et al., 2012; Gaudinano & Herbert, 2006) but also to have done so according to proposed mechanisms of action.

One possible explanation for these findings is that the dosage or quality of ACT sessions was not sufficient to move the mechanisms of action consistently and produce meaningful change in a between-groups comparison. Some evidence to support this hypothesis was found when the ACT group was analyzed by ATQ-B RCI and therapist quality ratings, and examined by 6-month inpatient hospitalization rates. This analysis indicated that ACT participants that had both an RCI on the ATQ-B and were rated highly on the therapist rating of quality appeared to have reduced remittance to the hospital. However, these groups are too small to make any statements with certainty. Additionally, no measure of overall engagement in the treatment while on the inpatient unit in the hospital was available; therefore, these participants may have been more engaged in all modalities of treatment rather than just ACT. This makes it impossible to determine if ACT engagement or overall engagement was the necessary component in
reducing hospital recidivism. Additionally, the average amount of ACT delivered was 168 (80.25) minutes. In previous studies, the number of minutes was 180 minutes and was standardized across participants. The variability and brief nature of the treatment length raise questions about the quantity of ACT necessary to elicit change in such a severe population.

Another reason the ACT treatment may have struggled to outperform TAU was the robust nature of the TAU used in the study. The Borgess inpatient hospitalization program for mood disorders involves several components included in the best practices for inpatient hospitalization programs. Inpatient treatments vary greatly (Brabender, 1993), with medication management appearing to be the one “mainstay” across settings. While no guidelines exist to detail the “gold standard” for inpatient care given the rather limited outcome studies available, there is significant evidence suggesting that a proactive community-based approach is indicative of improved outcomes for suicidal patients (Jarrett, 1995). Additionally, programs that employ evidence-based treatments for mood disorders would be likely to achieve more promising outcomes than programs that employed eclectic or non-evidenced based interventions (Broten et al., 2011).

Borgess includes several of the suggested components including psychoeducation, daily evidenced-based CBT based group therapy, medication management, as well as community-based support and intervention (assistance in finding housing, connection to outpatient therapeutic services, and social support, if deemed necessary). In spite of this relatively intensive set of interventions, prospective rates of hospital recidivism for the
program at Borgess Hospital appeared to be comparable to those collected from other samples (Lin et al., 2009) who found a 57% rate at 1-year follow-up.

Finally, it is possible that the setting is not conducive to treatment outcome research that is predicated on long-term improvement in symptomology. The nature of inpatient hospitalization settings has shifted from a treatment orientation one of stabilization. Increasing financial pressures have contributed to a decrease in the length of hospitalization and frequently hospitals and patients are pressured to leave the inpatient setting as soon as they no longer pose a risk to themselves or others. With this shift in focus, inpatient units may not be a setting where long-term change in behavior or decreased depressive symptomology should, or can, be expected. It may be more beneficial to focus these interventions in outpatient or long-term inpatient care.

**Limitations and Weaknesses**

There are several limitations to the current study. The small sample size was a significant limitation to the study. While the study did have enough subjects to detect differences, these differences would have had to have been robust for statistical significance. Depression is waxing and waning in nature and often achieves robust placebo effects and a likely regression towards the mean. This is in contrast to other conditions, such as psychosis, which have shown greater treatment response. The small sample size may not have allowed for enough power to account for these effects. However, given the small sample size, the direction of effects does not seem to suggest that larger sample with similar results would have produced a statistically significant difference in favor of ACT. The small sample size also limited the conclusions that can
be drawn from post hoc analyses such as the investigation of ACT quality ratings, ATQ-B RCI, and the relationship with 6-month rehospitalization.

Also, the lack of independently monitored treatment integrity does not allow us to say with any certitude that the intervention delivered was ACT consistent or delivered with sufficient competency. These concerns were addressed to a certain extent by previous therapist training and experience administering an ACT based research protocol as well as ratings of quality of the ACT sessions, but the nature of the hospital setting would not allow for independent coding of videotaped sessions to ensure the adherence and competency of the treatment. The variability in treatment length and treatment quality also made accurate comparison between groups difficult. Determining how much therapy and what level of quality to say a meaningful therapeutic interaction has occurred has not been researched sufficiently.

There was also a significant difficulty in contacting research subjects to collect follow-up data for self-report measures of depression and mechanisms of action. Given the low SES and highly transient nature of the population, research subjects frequently had moved residences, were living in shelters, or had their phone disconnected, making collecting follow-up data difficult. This greatly impeded the ability to analyze the follow-up data to determine if ACT had moved measures after the subjects had left the hospital and had greater freedom to apply the intervention in practice. Given that previous research has demonstrated that effects in ACT may become more robust over time, these data would have been useful in determining if some participants also continued to move on ACT process measures over time.
Another possible limitation is that the nature of the inpatient program limited the values-based activities that were available to the subjects. Since the values-based activity portion of ACT most closely resembles another empirically supported intervention for depression, Behavioral Activation, it can be hypothesized that this may one of the most important components of ACT for the treatment of depression. It is possible that subjects did not have an opportunity to try meaningful or “real world” activities, which may have helped treatment generalization outside of the inpatient unit.

Additionally, given the general CBT orientation of the inpatient program at Borgess, it is likely that subjects in the ACT condition may have heard different approaches to dealing with thoughts and feelings. This may have impeded in the understanding and retention of the newer and often counter intuitive ACT intervention. The ACT intervention also took place at the end of the day, when patients may have been less receptive to new material as they had received 4 hours of therapy previously in the day.

As previously described, the inpatient program at Borgess is fairly robust and intensive, and the population is typically a chronically depressed population. It is possible that the gains made by the program are approaching the upper limit of recovery for the limited treatment time and the level of severity at admission. Interventions to decrease hospital recidivism may have to focus on changing contextual components of the environment (finding work, marital therapy) or be supplemented outside of the brief inpatient stay such as transitioning to a day treatment or intensive outpatient treatment.
program to help facilitate generalization. These are empirical questions that merit further exploration.

Future research to determine the dosage of ACT required to achieve a meaningful and clinically significant change is necessary. ACT has been demonstrated to be a brief and powerful intervention for psychosis (Bach & Hayes, 2002; Bach et al., 2012; Gaudinano & Herbert, 2006) and potentially adolescent depression (Broten & Gaynor, in preparation); however, more research regarding the minimum amount of treatment necessary to achieve these outcomes is needed. Additionally, exploration specific mechanisms of action and their effect on treatment outcome may help improve the effectiveness of brief ACT interventions. While ACT has more research demonstrating change that is mediated by its theoretically proposed mechanisms of action than many treatments, further exploration of techniques aimed at moving these proposed mechanisms may help improve the potency of brief ACT interventions.

ACT may prove to be more useful as a post-hospitalization or continuation of care intervention as opposed to an intervention for an acute, stabilization focused program for depression. Future research should examine the utility of ACT for the prevention of rehospitalization after stabilization has occurred, as this may be a more beneficial utilization of resources.
REFERENCES


Appendix A

Acceptance and Commitment Therapy for the Treatment of Depression
Acceptance and Commitment Therapy for the Treatment of Depression

Sessions should follow the following format:
- Brief Update and Mood Check
- Bridge from Previous Session
- Set Agenda
- Review Homework
- Potential supporting exercises (see below)
- Final Summary
- Assign Homework
- Feedback

Session-by-Session Information: Objectives, Possible Strategies, and Suggested Homework Assignments

Note: The therapist should attempt to move sequentially through the below list of components while recognizing that to maximize the fit to the client’s issues, it may be necessary to alter the exact sequence of components, as well as omit or revisit certain components. It is to be expected that some of these components would be discussed over multiple sessions.

Session 1
- Objectives:
  - The objective of this session is to induce Creative Hopelessness by soliciting goals and failed attempts to achieve those goals as a way of examining the unsuccessful client’s use of control strategies to cope with depression. The therapist should also begin to understand the depression presentation from an ACT perspective (examples of fusion, emotional control strategies, distance from values).
  - Potential supporting exercises:
    - Solicit basic goals from the client
    - Solicit past attempt to accomplish those goals
    - Finger trap exercise / Quicksand metaphor
    - Discuss where energy has been spent – where it could be redirected
    - Initial Lemon exercise (don’t think about a lemon)
    - Values explanation
- Homework:
  - Mini Values Bull’s eyes

Session 2
- Objectives:
  - The objective of this session is to elaborate on the prior session’s conclusion that the client’s depressive state shows limited responsiveness to control strategies. Experiential exercises should be used to further test
the efficacy of control strategies. Therapist should introduce the idea that “control is the problem, not the solution.” The therapist should also teach client about the relationship between depressed mood and behavior using examples from the client’s own life, and aim to increase the client’s engagement in activities to engender a sense of mastery or pleasure.

- Potential supporting exercises:
  - Mind is not your friend
  - Flat tire metaphor
  - Mind and body misinformation discussion
  - Reason giving + Ice cream metaphor
  - “but” & “and” exercise
  - Initial behavioral goal setting

- Homework:
  - Performance of initial identified behavioral goal

**Session 3**

- **Objectives:**
  - The objective of this session is to continue to draw on the client’s experience to strengthen the recognition that “control is the problem,” and to introduce more defusion strategies related to thoughts and feelings. Therapist should also troubleshoot difficulties with behavioral activation, so as to increase the likelihood of the client’s success.

- **Potential supporting exercises:**
  - Apparent success of deliberate emotional control
  - How can you live a valued life with pain/ how could you without it?
  - Clean v Dirty pain
  - Evaluation v fact (pick me up at the airport exercise)
  - Lemon Exercise 2: (Milk Milk Milk defusion)
  - Trash can exercise
  - Identification of simple behavioral goal requiring the patient to act while experiencing emotion

- **Homework:**
  - Performance of identified behavioral goal with emotion
  - Thoughts on cards

**Session 4**

- **Objectives:**
  - The objective of this session is to assess the client’s ability to defuse from depressive thoughts and feelings and to introduce additional practical ways to foster defusion as well as to foster self as context and introduce mindfulness.

- **Potential supporting exercises**
  - Breathing regulation (mindful breathing)
  - Practice sitting with pain/noticing thoughts associated with pain
Sand in a jar exercise

“I’m having the thought that . . .”

Breath and labeling practice (I feel_____ and I am going to do ____)

Experiential practice with doing valued activity and negative thoughts (adapted from taking your mind for a walk) write a note telling someone how you feel while therapist criticizes.

**Homework:**
- Performance of identified behavioral goal
- Mindful breathing and sitting with feelings practice

**Session 5**

**Objectives:**
- The objective to explore the relationship between goals and actions, and to firmly root components of Willingness and Defusion in the service of achieving behavioral goals and discuss how to deal with barriers. Teach the client to be his or her own therapist. To maximize the likelihood that the client will continue to apply skills learned in therapy after termination. To address client’s concerns about termination, if applicable. To prepare for post-termination setbacks.

**Potential supporting exercises**
- If “hot” emotions come up – sitting with feelings
- Role of choice in committed actions (review choice vs. judgments/decisions): Why to choose you direction – because everyone else has their own interests in mind)
- Barriers to goals and willingness to accept them: Bubble in the Road Metaphor
- Willingness is like jumping exercise
- Solve the solvable discussion
- ACT acronym (Accept, Choose, Take Action)
- Identify a valued action (behavioral goal) to perform this week
- Record goals for self (i.e., in 1 month, 6 months, 1 year)

**Homework:**
- Performance of identified valued action

**Weekly Booster Sessions (subsequent sessions without impending termination)**

**Objectives**
- Continue to emphasize the components most relevant to specific client issues. Homework should continue to feature Behavioral Activation in the form of making commitments to specific actions that are inspired by the client’s larger goals and values.

**Possible Strategies:**
- All consistent ACT metaphors and exercises as needed
**Homework:**
Homework should continue to feature Behavioral Activation in the form of making commitments to specific actions that are inspired by the client’s larger goals and values.
Appendix B

Informed Consent for Research Study
1. GENERAL INFORMATION ABOUT THIS STUDY AND THE RESEARCHERS

1.1 Study Title:
THE USE OF A BRIEF ACCEPTANCE AND COMMITMENT THERAPY
PROTOCOL TO PREVENT REHOSPITALIZATION OF DEPRESSED
PATIENTS: A RANDOMIZED CONTROLLED TRIAL

1.2 Company or agency sponsoring the study:
Western Michigan University, Department of Psychology

1.3 Names, degrees, and affiliations of the researchers conducting the study:
Scott Gaynor, Ph. D.; Professor, Western Michigan University
Lucas Broten, M.A.; Clinical Psych Graduate Student, Western Michigan University
BK. Ramesh, M.D.; Michigan State University, Kalamazoo Center for Medical Studies
Robert Flachier, Ph.D; Michigan State University, Kalamazoo Center for Medical Studies

INFORMATION ABOUT THIS FORM

You may be eligible to take part in a research study. This form gives you important
information about the study. It describes the purpose of the study and the risks and
possible benefits of participating in the study.

Please take time to review this information carefully. After you have finished, you
should talk to the researchers about the research study and ask them any questions
you have. You may also wish to talk to others (for example, your friends, family, or
other doctors) about your participation in this study. If you decide to take part in
the study, you will be asked to sign this form. Before you sign this form, be sure you
understand what the study is about, including the risks and possible benefits to you.

2. NATURE AND PURPOSE OF THIS RESEARCH STUDY

2.1 Study Purpose:
This research study is intended to compare a therapy for depression for inpatients plus
standard treatment to see if it is better at preventing future hospitalizations than the
current standard treatment of the inpatient unit. This study is Lucas Broten’s dissertation
project.
3. RESEARCH STUDY PROCEDURES

3.1 What exactly will happen to me in this study? What kinds of research procedures will I receive if I agree to take part in this study?

The principal investigator of this research study is Scott Gaynor, Ph. D. of Western Michigan University. If you agree to participate in this study, you will be assigned to one of two treatment groups.

- Group 1 is Treatment As Usual, which includes meetings with a psychiatrist, case manager, group therapy and educational groups. This is the standard care that any patient admitted to the inpatient unit would receive, except you will be asked to participate in five assessment sessions with the researcher.

- Group 2 receives therapy in addition to the normal standard of care provided by Borgess Medical Center as described above, it will include individual discussions with the research therapist Lucas Broten, using a treatment called Acceptance and Commitment Therapy (ACT). ACT is a therapy that attempts to help people become more aware of promote acceptance of thoughts and feelings while helping people engage in more meaningful and rewarding activities.

All subjects will take part in an initial assessment session, which will consist of clinical interviews and paper and pencil questionnaires and will take approximately 50 minutes to complete. All subjects will also participate in an assessment session just before they are discharged from the hospital and at three, six and 12 months after discharge. These assessment sessions are about 50 minutes long. In addition to the assessments at three, six and 12 months, the researchers will also look at your electronic medical record to see if you have been rehospitalized during this period and to record any hospitalizations in the year prior to when you were admitted to the hospital.

3.2 How much of my time will be needed to take part in this study? When will my participation in the study be over?

In addition to the initial assessment, if you are assigned to participate in the therapy group, the therapy will take place in 50-minute sessions over the length of your stay. After completing five therapy sessions, a once per week booster session will take place every week that you are still admitted to the inpatient unit. The total one-on-one therapy time for this study is between 1 and 18 hours depending on the length of your stay and is completed while you are admitted to the hospital. You will also be asked to participate in four future assessment sessions.

In total, if you are assigned to the therapy group will be asked to participate in between 6.25 and 21.25 hours of assessment and therapy in addition to the standard care provided in the inpatient unit. The average amount of time is expected to be about 11.5 hours, but might differ depending on the length of your hospital stay.
If you are assigned to the Treatment As Usual group, you will be asked to participate in 5 hours of assessment in addition to the standard care provided in the inpatient unit. In addition to the initial assessment, which lasts 50 minutes, you will participate in another assessment session that will take approximately 50 minutes prior to discharge. You will also be asked to participate in an identical assessment at three, six, and 12 months after your discharge. You may be able to complete these sessions over the phone if you are not able to attend in person.

Participation in the research study will be over after you have been contacted and completed your final assessment at 12 months post discharge or at any time if you decide that you do not wish to continue with the study.

4. EXPLANATION OF PROCEDURE TO BE FOLLOWED

**Procedure**

Whether you get the research study therapy or the Treatment As Usual will be randomly assigned using a weighted random assignment, meaning you have a 1 in 3 chance of getting the therapy if you choose to participate. You will have a 33% chance of getting the study therapy and a 66% chance of getting Treatment As Usual. That means for each participant assigned to therapy, two will be assigned to Treatment As Usual.

If you are assigned to Treatment As Usual you will be assigned a study number and asked to participate in an hour and fifteen minute long assessment session. The researcher will look at your electronic medical record to gather study relevant information and determine if you qualify for the study. You will then participate in the normal activities of the inpatient unit with the exception that you will attend an additional assessment sessions before you are discharged that will take approximately 50 minutes. You will also be asked to participate in an assessment at three, six, and 12 months after your discharge and your medical records will be examined at these times. You may be able to complete these sessions over the phone if you are not able to attend in person.

If you are assigned to the therapy group, you will you will be assigned a study number and asked to participate in an hour and fifteen minute long assessment session. The researcher will look at your electronic medical record to gather study relevant information and determine if you qualify for the study. You will then participate in the normal activities of the inpatient unit with the exception that you will attend additional individual therapy sessions with the researcher. These sessions will take place in the evenings after the activities typically involved in the inpatient treatment. If you are still admitted to the hospital after the initial five sessions, you will meet for one additional session for every week you remain in the hospital.
You will then participate in the normal activities of the inpatient unit with the exception that you will attend an additional assessment sessions before you are discharged that will take approximately 50 minutes. You will also be asked to participate in an assessment at three, six, and 12 months after your discharge and your medical records will be examined at these times. You may be able to complete these sessions over the phone if you are not able to attend in person. These assessment session will either take place at Borgess Medical Center or Western Michigan University based on your preference. You will be responsible for travel to and from the assessment sessions after discharge if you choose to attend in person. Results of assessments and important information regarding your treatment disclosed during therapy sessions may be shared with the Borgess staff. At your request, the researcher may share information regarding your treatment and assessments with professionals such as your doctor, therapist, etc., to assist in your treatment after discharge. No information will be shared with persons outside of Borgess Medical Center without your consent.

During the follow-up assessment sessions, you will be asked about how you are progressing with your depressed thoughts and feelings through a series of paper and pencil measures and an interview by your therapist. If you are determined to be at risk for suicide, homicide, or are suspected of neglect or abuse, the therapist will provide crisis management, facilitate a referral to appropriate (crisis or non-crisis) service providers, and/or provide open treatment to the participant at the WMU Psychology Clinic (which is run by the Psychology Department and where the Principal Investigator is one of the supervisors) or alert a current therapist if necessary. The research therapist is a doctoral candidate who has had significant coursework related to psychopathology and experience working as a therapist in an outpatient clinical setting. The research therapist and will be supervised by the Principal Investigator. Anytime a participant is referred to these outside services, an adverse event report will be completed by the research therapist in consultation with the Principal Investigator, Dr. Gaynor and reported to the Borgess Medical Center IRB as well as to the Western Michigan University Human Subjects Review Board. The IRB is a committee that has reviewed this study to help ensure that your rights and welfare as a research subject are protected and that the study is carried out in an ethical manner.

Taking part in this research study is completely voluntary. You do not have to participate if you do not want to. You may also leave the study at any time. Refusal to participate in this study will in no way jeopardize your treatment at the hospital or any relationship with Western Michigan University in the present or future. If you leave the study before it is finished, there will be no penalty to you and you will not lose any benefits to which you are otherwise entitled.

Your participation in this research study may also be stopped, without your consent, by the principal or student investigator if, in their opinion, your safety or well being is in question.
4.2 Who can take part in this study?

Any patient admitted to the Borgess Inpatient Depression Unit over the age of 18 with the following exclusions: primary diagnosis of a non-depressive disorder such as a formal diagnosis:

- mental retardation
- autism
- severe obsessive-compulsive disorder
- panic disorder
- schizophrenia
- psychotic disorders.

Finally, those who are non-English speaking or whose primary residence is outside of the area covered within the electronic medical record computer system database use by Borgess would be excluded.

4.3 How many people (subjects) are expected to take part in this study?

Sixty participants are expected to complete the research study, with about twenty in the therapy group and forty in the Treatment As Usual group.

5. POTENTIAL BENEFITS

5.1 How could I benefit if I take part in this study? How could others benefit?

You may not receive any personal benefits from being in this research study.

For those assigned to the Treatment as Usual group, you may not receive any benefit from participating in this study other than helping add to the research base for this treatment.

You may receive several one-on-one therapy sessions involving ACT, which you would not have received in the standard treatment as usual, and may assist in preventing relapse and future hospitalization at no cost. In addition, as improvement is expected to occur, important carryover effects such as improved academic, social, and family functioning might occur.

Not many studies have been conducted with inpatients and ACT, therefore, this research study may add to the body of literature.

Participating in research may provide information that will benefit other patients with depression in the future.
6. POTENTIAL RISKS

6.1 What risks will I face by taking part in the study? What will the researchers do to protect me against these risks?

Known risks to you will be minimal. There are no known physical or economic risks. Like any treatment, it is possible you will not improve despite following the treatment protocol, which could lead to some worsening of feelings. Because the intervention involves frequent meetings with monitoring of symptoms at each meeting, any such worsening of symptoms should be readily detected and the therapist investigator can attempt to address them as part of your treatment. However, should you experience a dramatic worsening of symptoms, the therapist investigator will alert the staff of Borgess Medical Center to assist you. Due to the nature of the setting, trained staff and support are readily available should you need additional support.

In all research, there is the risk of disclosure of personal information. Upon signing the written consent document, all information regarding the participant will be placed into a folder with a randomly assigned number on it. All data collected from you will be referred to by this number. Your name and the number will be recorded on a master list by the researcher and will be stored in a locked cabinet on campus to protect client privacy and personal information. During transportation of this data from Borgess to Western Michigan University, your data will be stored in a locked briefcase.

6.2 What happens if I get hurt, become sick, or have other problems as a result of this research?

In the event that you may be upset by the content of the assessments or the therapy protocol, you can request to discontinue the session at anytime or discontinue the study at any time with no repercussions.

If an accidental injury occurs, appropriate emergency measures will be taken. However, no compensation or treatment will be made available except as otherwise specified in this consent form.

The researchers have taken steps to minimize the known or expected risks. However, you may still experience problems related to discussing uncomfortable topics, even when the researchers are careful to avoid them. If you believe that you have been harmed, notify the researchers listed in Section 9 of this form. By signing this form you do not give up any of your legal rights as a patient or research subject.

Please note: It is important that you tell the researchers about any injuries or other problems that you experience during this study.
7. ALTERNATIVE TREATMENTS

7.1 If I decide not to take part in this study, what other options do I have?

Your alternative is to simply participate in the standard treatment provided by the Borgess inpatient depression unit.

8. PARTICIPANT COMPENSATION

8.1 Will taking part in this study cost me anything? Will I be billed for any costs of the study?

All assessments, therapy sessions, and research study medications for this study are provided to you without charge.

8.2 Will I be paid or given anything for taking part in this study?

You are not paid for participating in the research study, but you will receive assessment and potentially several individual therapy sessions at no cost to you.

9. PHYSICIAN COMPENSATION

9.1 Who could profit or financially benefit from the study results?

There is no financial benefit for the researcher or anyone affiliated with the project; the research study is a thesis project. Dr. Ramesh, a physician at MSU/KCMS, and Dr. Flachier, a psychologist are participating on a voluntary basis.

10. VOLUNTARY PARTICIPATION/RIGHT TO WITHDRAW FROM THIS RESEARCH STUDY

10.1 If I want to stop participating in the study, what should I do?

This research study is for Lucas Broten’s dissertation. You are free to leave the research study at any time. If you leave the study before it is finished there will be no penalty to you and you will not lose any benefits to which you may otherwise be entitled. If you choose to tell the researchers why you are leaving the study, your reasons for leaving may be kept as part of the study record. If you decide to leave the study before it is finished, please notify one of the persons listed in Section 11 “Contact Information” (below).
10.2 Could there be any harm to me if I decide to leave the study before it is finished?

There is no harm to leaving the research study at any time, although be aware that without going through the entire therapy treatment, benefits associated with the treatment may not occur.

10.3 Could the researchers take me out of the study even if I want to continue to participate?

Yes. There are many reasons why the researchers may need to end your participation in the research study. Some examples are:

- The researcher believes that it is not in your best interest to stay in the study.
- You become ineligible to participate.
- You do not follow instructions from the researchers.
- The study is suspended or canceled.

11. CONTACT INFORMATION

11.1 Who can I contact about this study?

Please contact the researchers listed below to:

- Obtain more information about the research study
- Ask a question about the study procedures
- Leave the study before it is finished
- Express a concern about the study

Principal Investigator: Scott Gaynor, Ph.D.
Mailing Address: Department of Psychology, Room 3700 Wood Hall; Western Michigan University; Kalamazoo, MI 49008-5439
Telephone: (269)-387-4482

Student Investigator: Lucas Broten, M.A.
Mailing Address: Clinical Psychology, Room 3500 Wood Hall; Western Michigan University; Kalamazoo MI 49008-5439
Telephone: (269) 387-4482

Collaborating Investigator: B.K. Ramesh, M.D.
Michigan State University, Kalamazoo Center for Medical Studies
Telephone: (269) 532-3650
Collaborating Investigator: Roberto Flachier, Ph.D.
Michigan State University, Kalamazoo Center for Medical Studies
Telephone: (269) 532-3650

You may also express a concern about a research study by contacting the Institutional Review Board (IRB) and/or Human Subjects Institutional Review Board (HSIRB) listed below.

Borgess Medical Center Institutional Review Board
1521 Gull Road
Kalamazoo MI 49048

IRB chairperson: Richard Lammers, MD
Telephone: 269-226-7341
Fax: 269-226-6696
e-mail: research@borgess.com

Western Michigan University Human Subjects Review Board
HSIRB chairperson: Amy Naugle, Ph.D.
Telephone: 269-387-8293

If you are concerned about a possible violation of your privacy, contact the Borgess Health Privacy Officer at 269-226-8409.

When you call or write about a concern, please provide as much information as possible, including the name of the researcher, the study title (page 1 of this form), and details about the problem. This will help Borgess officials to look into your concern. When reporting a concern, you do not have to give your name unless you want to.

12. PROTECTED HEALTH INFORMATION (HIPAA)

Borgess Medical Center policies require that private information about you be protected. This is especially true for your personal health information.

On the other hand, sometimes the law allows or requires others to see your information. The information given below describes how your privacy and the confidentiality of your research records will be protected in this study.

12.1 How will the researchers protect my privacy?

This authorization is voluntary and any healthcare treatment you may seek will not be conditioned upon your signing this authorization. Signing this form gives the researchers, identified in Section 1.3, your permission to obtain, use, and share
information about you for this study, and is required in order for you to take part in the study. Information about you may be obtained from any hospital, doctor, and other health care provider involved in your care, as identified in section 6.

Information about you will include information about your health and your medical care before, during, and after the study. For example:

- Hospital/doctor's office records for one year prior to and one after your hospitalization
- General demographic information including age, sex, income, and employment status.
- All records relating to your condition, the treatment you have received, and your response to the treatment

There are many reasons why information about you may be used or seen by the researchers or others during this study. Examples include:

- The researchers may need the information to make sure you can take part in the study.
- The researchers may need the information to check your test results and hospitalization history and re-admittance.
- Borgess and government officials may need the information to make sure that the study is done properly.
- Safety monitors or committees may need the information to make sure that the study is safe.
- Insurance companies or other organizations may need the information in order to pay your medical bills or other costs of your participation in the study.
- The researchers may need to use the information to create a databank of information about your condition or its treatment.

The results of this study could be published in an article, but would not include any information that would let others know who you are.

Applicable federal and state laws protect information used or disclosed pursuant to this consent. However, information that is released may be subject to redisclosure by the recipient and will no longer be protected by these laws.

12.2 What happens to information about me after the study is over or if I cancel my permission?

As a rule, the researchers will not continue to use or disclose information about you, but will keep it secure until it is destroyed after a period of five years. Sometimes, it may be necessary for information about you to continue to be used...
or disclosed, even after you have canceled your permission or the study is over. Examples of reasons for this include:

- To avoid losing study results that have already included your information
- To provide limited information for research, education, or other activities (This information would not include your name, social security number, or anything else that could let others know who you are.)
- To help Borgess, Western Michigan University and government officials make sure that the study was conducted properly

If you decide not to give permission to release your personal health information during this informed consent process or before you are enrolled into the research study, you may not be able to participate in the study. This is because the study researcher and/or his/her/staff would not be able to collect the information needed to fully evaluate the study. If you do not authorize the use and disclosure of your protected health information or cancel it in the future, your current or future medical care will not be affected.

12.3 When does my permission expire?

Your permission expires at the end of the study, unless you revoke it sooner. You may revoke your permission at any time by writing to the researchers listed in Section 12 "Contact Information," but this will not affect disclosures made prior to receipt of the revocation.

13. SIGNATURES (CONSENT)
Research Subject:
I have read this form, discussing the information of the research study investigating the use of Acceptance and Commitment Therapy for Depression. I have read this informed consent document. I have discussed this study, its risks and potential benefits, and my other choices with researcher Lucas Broten. My questions so far have been answered. I understand that if I have more questions or concerns about the study or my participation as a research subject, I may contact one of the people listed in Section 11 (above). I understand that I will receive a copy of this form at the time I sign it and later upon request. I understand that if my ability to consent for myself changes, I may be asked to re-consent prior to my continued participation in this study. This consent document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB) as indicated by the stamped date and signature of the board chair in the upper right hand corner. Do not participate in this study if the stamped date is older than one year.

Signature of Subject: __________________________ Date: __________

Name (Print legal name): __________________________

Signature of Person Explaining Consent________________________ Date: __________

Name of Person Explaining Consent (Printed)________________________
Appendix C

Demographic Information Sheet
Demographic Information Sheet

Study Name: _____________________________________________________

Pt. Study ID #: ____________________

Pt. DOB: ___________________ (DD-MMM-YYYY)

Current Primary Diagnosis:
____________________________________________________________________

Secondary Diagnoses:
____________________________________________________________________

Race/Ethnicity (circle the most appropriate):

Euro-American/White     African-American/Black     Hispanic-American/Latino(a)
Asian-American          American Indian            Arab-American
Alaskan American        Multiracial               International/Non-US resident
Other _________________

Household Information

What is the combined income of all the adults living in the household where the participant spends most nights each week?

<table>
<thead>
<tr>
<th>Income Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $5,000</td>
<td></td>
</tr>
<tr>
<td>$5,000-$10,000</td>
<td></td>
</tr>
<tr>
<td>$10,000-$14,999</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>More than $100,000</td>
<td></td>
</tr>
</tbody>
</table>

Number of children that the participant cares for:

<table>
<thead>
<tr>
<th>Number of Children</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
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<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10+</td>
<td></td>
</tr>
</tbody>
</table>

Marital Status (circle the most appropriate):

Single     Married     Domestic partnership     Engaged
Separated  Widowed     Divorced/annulled     Other: ____________
Education Level (circle the most appropriate):

- Did not graduate high school
- General Educational Development (GED) Test
- Graduated high school
- Completed some college
- Graduated 2-year college or technical school degree
- Graduate 4-year college
- Some graduate school
- Graduate degree (Ph.D., MA, MS, MD)

Occupational Status (circle the most appropriate):

- Employed
- Unemployed
- On disability
- Stay at home parent
- Retired
- Other: __________________
Appendix D

Human Subjects Institutional Review Board
Letter of Approval
Date: August 12, 2011

To: Scott Gaynor, Principal Investigator
    Lucas Broten, Student Investigator for dissertation

From: Chris Cheatham, Ph.D., Vice Chair

Re: HSIRB Project Number 11-05-12

This letter will serve as confirmation that your research project titled “The Use of a Brief Acceptance and Commitment Therapy Protocol to Prevent Rehospitalization of Depressed Patients: A Randomized Control Trial” has been approved under the full category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: May 18, 2012
Appendix E

Recruitment Script for Borgess Staff
Recruitment Script for Borgess Staff

“Western Michigan University and Borgess Medical Center are currently working together on a research study. This study is for patients, like yourself, who have been admitted to the inpatient depression unit here at Borgess. The study is offering the possibility of additional assessment and individual treatment free of charge that is geared specifically towards depression and the prevention of future hospitalizations. Participation includes 5.25 hours of assessment, and the possibility of up to 8 hours of individual therapy in addition to the typical services in the Borgess inpatient unit. If you would like to learn more and find out if you qualify for this study, please tell the Borgess staff and they will schedule a meeting with a researcher where you can hear more about the study.”
Appendix F

Follow-up Data Collection Sheet
Follow-up Data Collection Sheet

Participant ID # ______________________________

Readmitted YES / NO

Mental Health Related YES / NO

Date of readmission ________________________________

Days after index discharge __________________________
Appendix G

Patient Face Sheet
Patient Face Sheet

Study Name: ____________________________________________________________
Pt. Study ID #: ____________________
Pt. DOB: ___________________ (DD-MMM-YYYY)
Pt. Address: ____________________________________________________________

Home Phone: ______________________
Work Phone: ______________________
Cell Phone: ______________________

Spouse / Significant Other / Caregiver (circle one)
Address: ____________________________________________________________

Home Phone: ______________________
Work Phone: ______________________
Cell Phone: ______________________
Emergency Contact Name: ____________________________________________
Phone #_______________________
Appendix H

Pre-Hospitalization Variables and Associated Prediction of Inpatient Hospitalization at 6-Month Follow-up
### Pre-Hospitalization Variables and Associated Prediction of Inpatient Hospitalization at 6-Month Follow-up

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M(Sd)</th>
<th>M(Sd)</th>
<th>df</th>
<th>t-score</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>6 Month Inpatient Admission</td>
<td>No Inpatient Admission at 6 Months</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0=29 1=10</td>
<td>43.50(10.00)</td>
<td>42.03(12.10)</td>
<td>37</td>
<td>-.344</td>
<td>.733</td>
</tr>
<tr>
<td>Total # Prior Hospitalizations</td>
<td>0=23 1=9</td>
<td>.80(1.32)</td>
<td>.62(1.32)</td>
<td>37</td>
<td>-.371</td>
<td>.713</td>
</tr>
<tr>
<td>Length of Index Hospitalization</td>
<td>0=29 1=10</td>
<td>7.90(3.64)</td>
<td>9.07(3.87)</td>
<td>37</td>
<td>.835</td>
<td>.409</td>
</tr>
<tr>
<td>IIP</td>
<td>0=29 1=10</td>
<td>1.41(.54)</td>
<td>1.80(.90)</td>
<td>30</td>
<td>1.176</td>
<td>.249</td>
</tr>
<tr>
<td>MADRS</td>
<td>0=29 1=10</td>
<td>39.10(9.70)</td>
<td>44.84(8.72)</td>
<td>37</td>
<td>1.64</td>
<td>.110</td>
</tr>
<tr>
<td>BDI</td>
<td>0=28 1=10</td>
<td>30.89(10.83)</td>
<td>38.71(12.52)</td>
<td>35</td>
<td>1.68</td>
<td>.102</td>
</tr>
<tr>
<td>AAQ-II</td>
<td>0=28 1=10</td>
<td>31.00(8.37)</td>
<td>30.89(10.83)</td>
<td>36</td>
<td>.774</td>
<td>.444</td>
</tr>
<tr>
<td>ATQ-F</td>
<td>0=28 1=10</td>
<td>82.20(29.21)</td>
<td>117.79(28.13)</td>
<td>36</td>
<td>3.40</td>
<td>.002</td>
</tr>
<tr>
<td>ATQ-B</td>
<td>0=28 1=9</td>
<td>83.30(30.77)</td>
<td>106.32(29.57)</td>
<td>36</td>
<td>2.90</td>
<td>.044</td>
</tr>
<tr>
<td>EROS</td>
<td>0=28 1=9</td>
<td>20.56(7.14)</td>
<td>18.79(6.36)</td>
<td>35</td>
<td>-.706</td>
<td>.485</td>
</tr>
<tr>
<td>Multiple Axis I Diagnoses</td>
<td>0= 1=</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-morbid Axis I &amp; II</td>
<td>0= 1=</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exceeded IIP cut score</td>
<td>0=23 1=9</td>
<td>9(.67)</td>
<td>23(.74)</td>
<td>30</td>
<td>.398</td>
<td>.693</td>
</tr>
</tbody>
</table>

*Note: 0 = Not hospitalized within 6 months post index hospitalization 1 = Hospitalized within 6 month post index*
Appendix I

During Index-Hospitalization Data and Associated Prediction of Inpatient Hospitalization at 6-Month Follow-up
**During Index-Hospitalization Data and Associated Prediction of Inpatient Hospitalization at 6-Month Follow-up**

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M(Sd)</th>
<th>M(Sd)</th>
<th>df</th>
<th>t-score</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Post- MADRS</strong></td>
<td>0=29 1=10</td>
<td>18.10(10.25)</td>
<td>22.96(11.98)</td>
<td>36</td>
<td>1.41</td>
<td>.261</td>
</tr>
<tr>
<td><strong>Post - BDI</strong></td>
<td>0=28 1=10</td>
<td>20.89(7.99)</td>
<td>24.00(16.35)</td>
<td>36</td>
<td>.546</td>
<td>.588</td>
</tr>
<tr>
<td><strong>Post - AAQ-II</strong></td>
<td>0=28 1=10</td>
<td>24.00(8.94)</td>
<td>27.61(11.57)</td>
<td>36</td>
<td>.893</td>
<td>.378</td>
</tr>
<tr>
<td><strong>Post - ATQ-F</strong></td>
<td>0=28 1=10</td>
<td>67.10(31.40)</td>
<td>91.71(35.68)</td>
<td>36</td>
<td>1.93</td>
<td>.062</td>
</tr>
<tr>
<td><strong>Post - ATQ-B</strong></td>
<td>0=28 1=9</td>
<td>69.20(69.20)</td>
<td>86.43(35.58)</td>
<td>36</td>
<td>1.34</td>
<td>.190</td>
</tr>
<tr>
<td><strong>Post - EROS</strong></td>
<td>0=28 1=9</td>
<td>26.40(26.40)</td>
<td>23.57(5.93)</td>
<td>36</td>
<td>-1.30</td>
<td>.201</td>
</tr>
<tr>
<td><strong>RCI MARDS</strong></td>
<td>0=28 1=10</td>
<td>21.00(12.67)</td>
<td>21.50(13.51)</td>
<td>36</td>
<td>.102</td>
<td>.919</td>
</tr>
<tr>
<td><strong>RCI BDI</strong></td>
<td>0=28 1=9</td>
<td>10.00(14.02)</td>
<td>14.71(14.99)</td>
<td>36</td>
<td>.833</td>
<td>.411</td>
</tr>
<tr>
<td><strong>RCI ATQ-F</strong></td>
<td>0=28 1=10</td>
<td>15.10(28.80)</td>
<td>26.07(36.15)</td>
<td>36</td>
<td>.313</td>
<td>.393</td>
</tr>
<tr>
<td><strong>RCI ATQ-B</strong></td>
<td>0=28 1=9</td>
<td>14.10(33.75)</td>
<td>19.89(38.31)</td>
<td>36</td>
<td>.512</td>
<td>.674</td>
</tr>
<tr>
<td><strong>RCI AAQ-II</strong></td>
<td>0=28 1=10</td>
<td>7.00(13.04)</td>
<td>6.57(10.71)</td>
<td>36</td>
<td>.480</td>
<td>.916</td>
</tr>
<tr>
<td><strong>RCI EROS</strong></td>
<td>0=28 1=9</td>
<td>-6.78(6.16)</td>
<td>-4.48(5.91)</td>
<td>36</td>
<td>1.00</td>
<td>.704</td>
</tr>
</tbody>
</table>

*Note: 0 = Not hospitalized within 6 months post index hospitalization 1 = Hospitalized within 6 month post index*
Appendix J

ACT Treatment Related Variables and Associated Prediction of Inpatient Hospitalization at 6-Month Follow-up
## ACT Treatment Related Variables and Associated Prediction of Inpatient Hospitalization at 6-Month Follow-up

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>6 Month Inpatient Admission</th>
<th>No Inpatient Admission at 6 Months</th>
<th>df</th>
<th>t-score</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Time</td>
<td>0=7, 1=6</td>
<td>156.17(98.85)</td>
<td>166.71(67.35)</td>
<td>11</td>
<td>-.60</td>
<td>.824</td>
</tr>
<tr>
<td>Number of ACT Sessions</td>
<td>0=8, 1=6</td>
<td>3.17(.74)</td>
<td>3.13(1.55)</td>
<td>12</td>
<td>.228</td>
<td>.953</td>
</tr>
<tr>
<td>Quality of ACT Sessions</td>
<td>0=8, 1=6</td>
<td>4.78(.96)</td>
<td>3.58(1.14)</td>
<td>12</td>
<td>2.24</td>
<td>.05*</td>
</tr>
<tr>
<td>Pre-post Δ on MADRS</td>
<td>0=8, 1=6</td>
<td>25.71(11.16)</td>
<td>18.63(9.24)</td>
<td>12</td>
<td>-1.20</td>
<td>.253</td>
</tr>
<tr>
<td>Pre-post Δ on BDI</td>
<td>0=8, 1=5</td>
<td>9.40(12.12)</td>
<td>11.38(16.12)</td>
<td>12</td>
<td>.23</td>
<td>.819</td>
</tr>
<tr>
<td>Pre-post Δ on ATQ-F</td>
<td>0=8, 1=6</td>
<td>19.50(37.44)</td>
<td>16.50(29.82)</td>
<td>12</td>
<td>-1.19</td>
<td>.870</td>
</tr>
<tr>
<td>Pre-post Δ on ATQ-B</td>
<td>0=8, 1=6</td>
<td>26.17(34.27)</td>
<td>20.50(35.91)</td>
<td>12</td>
<td>-.30</td>
<td>.771</td>
</tr>
<tr>
<td>Pre-post Δ on AAQ-II</td>
<td>0=8, 1=6</td>
<td>10.33(15.91)</td>
<td>2.75(7.51)</td>
<td>12</td>
<td>-1.19</td>
<td>.256</td>
</tr>
<tr>
<td>Pre-post Δ on EROS</td>
<td>0=7, 1=5</td>
<td>-9.80(4.76)</td>
<td>-4.71(7.43)</td>
<td>10</td>
<td>1.34</td>
<td>.211</td>
</tr>
</tbody>
</table>