EFFICACY OF AN AUDIO-BASED COGNITIVE BEHAVIORAL TREATMENT FOR OLDER ADULTS WITH DEPRESSION

by

AVANI SHAH

A DISSERTATION

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ABSTRACT

The purpose of this study was to develop and assess the efficacy of an audio-based cognitive behavioral therapy (ACBT) intervention for older adults with depressive symptoms. The process of developing this program included: 1) adaptation of a client and therapist manual developed for older adult caregivers (Dick, Gallagher-Thompson, Coon, Powers, & Thompson, 1996); 2) review of the ACBT program by older adults and cognitive behavioral therapists for acceptability; and 3) program revision. The revised program consists of 8 compact discs (CDs) and a workbook on the following topics: 1) introduction to CBT; 2) identifying and changing unhelpful thoughts; 3) addressing feelings; 4) relaxation; 5) engaging in pleasant events; 6) assertiveness; and 7) problem-solving. The next phase of this study entailed testing the efficacy of the ACBT program. Eligible participants ($N = 34$) were recruited from mainly medical settings and rural communities (e.g. above age 54 with a score greater than 9 on the Geriatric Depression Scale; GDS). Participants were randomly assigned to an immediate treatment group or a minimal contact delayed treatment group. The delayed treatment group waited four weeks to begin treatment while the immediate treatment group received a brief training session and 4 weeks to complete the ACBT program. Both groups received brief weekly contact calls to monitor mood. Outcome analyses assessed change in depression with the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1967) and GDS. Intent-to-treat carry forward analyses revealed significant differences on only the HRSD by group and time. Analyses assessing change on the Somatization subscale of the Brief Symptom Inventory (Derogatis & Spencer, 1983) and GDS by group and time were not significant.
DEDICATION

I dedicate this in loving memory to my grandmother, Jaya Laxmi Sanghvi as a token to her service to others and my grandfather, Chabildaas K. Sanghvi, who believed in educating his daughters.

Also, I would like to dedicate this to Mala Shah, M. D. whose devotion to the mental and physical health of her patients is truly admirable.
LIST OF ABBREVIATIONS AND SYMBOLS

\( \alpha \)  
Cronbach’s alpha is an index of internal consistency or reliability

ANOVA  
Analysis of covariance

\( d \)  
Cohen’s d: a specific effect size statistic

\( F \)  
Fisher’s \( F \) ratio: A ratio of variance between samples to variance within samples

\( M \)  
Mean: sum of a set of observations divided by the number of observations in the set

\( n \)  
Sample size: the number in a given sample

\( p \)  
Probability of obtaining a test statistic as extreme as or more extreme than the observed

\( R^2 \)  
R squared: the proportion of variance in DV explained by all predictors

\( \Delta R^2 \)  
R square change: the proportion of additional variance explained by another model

\( r \)  
Pearson correlation

\( SD \)  
Standard deviation: an approximation of the average distance from the mean for a set of scores

\( t \)  
Calculated \( t \) - statistic

>  
Greater than

<  
Less than

=  
Equal to
ACKNOWLEDGMENTS

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CHAPTER 1

INTRODUCTION

Depression is a significant concern in late life with prevalence rates of depressive symptoms in community dwelling older adults as high as 25% and in primary care patients as high as 7 to 36% (Koenig & Blazer, 1992). Minor depression is even more common among older adults in the primary care setting (Koenig & Blazer, 1996). The consequences of late life depression can be grave and include: mortality, disability, and adverse health consequences.

Older adults have the highest suicide rates of any age group and older men are at the greatest risk of suicide (Conwell, 2001). Late-life depression is also related to mortality, independent of suicide. The Epidemiological Catchment Area study (ECA; Bruce & Leaf, 1989) found that mortality was four times more likely over a 15-month follow-up in a sample of older adults age 55 and above with a mood disorder. This association may be explained by the impact depression has on functional impairment and chronic health conditions. However, depression treatment can lead to improved health outcomes (Roose, 2003; Mussleman et al., 2003; Campbell, Clauw, & Keefe, 2003).

**Barriers to depression treatment.** Unfortunately, older adults face a number of challenges in obtaining adequate depression treatment. Geriatric depression is often complicated by the presence of medical conditions (Katon & Ciechanowski, 2002) and polypharmacy (Pollock, 1999), requiring more specific care. Other barriers to adequate depression treatment for older adults include: lack of physician time (Glasser & Gradval, 1997; Solberg, Korsen, Oxman,
under-recognition of depression (Allen-Burge, Storandt, Kinscherf, & Rubin, 1994; Cole & Yaffe, 1996; Johnson, 2006; Mulsant & Ganguli, 1999); lack of transportation and mobility limitations (Bruce, Citters, & Bartels, 2005); non-compliance with antidepressant medications (Osterberg & Blaschke, 2005); and stigma (Stirey et al., 2001). Older adults also wait longer before they seek treatment, with an average delay of six to eight years (Wang et al., 2005). Moreover, the lack of medical and mental health professionals specializing in geriatrics (LaMascus, Bernard, Barry, Salerno, & Weiss, 2005) indicates a gap in treatment availability for older adults that signals a significant problem especially with the expected growth of this population from 2010 to 2030.

These issues signify the importance of early depression detection and treatment opportunities for the geriatric population. A depressed mood or lack of interest in enjoyable activities along with a minimum of five of nine symptoms for a period of two weeks must be noted to diagnose major depression according to the American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders-TR, fourth edition (2000). For minor depression, the presence of dysphoria or anhedonia and one to three symptoms everyday for a period of at least one week must be noted. In one review (Pignone et al., 2002), depression screening followed by treatment in adults led to significant improvements in depression in the primary care setting. Based on the results of this review, the United States Preventive Service Task Force (USPSTF; 2002) recommended that adults be screened for depression in the primary care setting as long as systems for recognition, treatment, and follow-up exist. However, when examining studies of depression screening and treatment in older adults, though recognition improved, there were not significant differences in depression outcome likely due to sub-optimal treatment or insufficient statistical power (Callahan et al., 1994; Pignone et al., 2002; Whooley, Stone, & Soghikian,
These findings underscore the need for further study of depression treatment in older primary care patients.

**Cost and depression treatment.** Treatments that are both cost-effective and efficacious for older adults are also needed. Most older adults receive depression treatment from primary care providers in the form of antidepressant pharmacological treatment (Harmon, Crystal, Walkup, & Olfson, 2003). However, a large number of patients discontinue antidepressants early in the treatment or are noncompliant (Katon et al., 1996). Older adults are under-represented in clinical trials on antidepressant treatments, making such treatments less validated in this population (Giron, Fastbom, & Winblad, 2005). Despite the limited research on antidepressant efficacy in geriatric depression, antidepressant medications are the most frequent method of treatment.

In contrast to this finding, over half of primary care older adults prefer psychotherapy to antidepressants as their initial treatment preference (Gum et al., 2006). Though not specific to the primary care setting, a number of psychotherapies have been well supported for use with older adults (Scogin & McElreath, 1994; Scogin, Welsh, Stump, Hanson, & Coates, 2005). In light of these observations, considering other treatment methods may be advantageous. Psychotherapy either alone (Gloaguen, Cottraux, Cucherat, & Blackburn, 1999) or in combination with pharmacotherapy may have the advantage of preventing relapse as the course of depression in older adults tends to be chronic with a high relapse rate (Cole, Bellavance, & Mansour, 1997). Collaborative care treatments, which include components of pharmacotherapy and psychotherapy, are currently the only treatment methods that have evidenced efficacy for depressed older adults in a primary care setting (Skultety & Zeiss, 2006). Nearly 66% of older adults who receive standard depression treatment do not recover completely. In contrast, only 20% of older adults who receive optimal depression treatment do not recover (Reynolds et al., 2000).
1992). Still, the initial cost and ongoing effort in the integration of collaborative care and psychotherapy treatments may deter implementation in many primary care sites. However, treating depression may offset other medical expenditures.

Research indicates (Unutzer et al., 1997) that depressed outpatients have higher outpatient medical costs than others even after controlling for medical comorbidity and that treating depression could reduce costs. For example, a randomized control trial of nurse-administered depression care management found significantly decreased costs in a primary care adult population (Rost, Pyne, Dickinson, & LoSasso, 2005). On further examination of these results, Dickinson et al. (2005) observed that those who reported mainly psychological complaints achieved greater clinical benefit and reduced medical costs, while those who reported mainly somatic complaints had less clinical benefit and significantly higher medical costs over time. They noted that cognitive behavioral therapy might be beneficial for such cases as it has been useful for patients with somatic complaints (Looper & Kirkmayer, 2002; Raine et al., 2002). Somatic complaints have also been associated with depression in older adults (Sheehan, Bass, Briggs, & Jacoby, 2003) and treatment with cognitive behavioral therapy could reduce outpatient costs in this population.

Scogin, Hanson, and Welsh (2003) have suggested that a stepped-care model of depression treatment may also reduce cost. A stepped-care approach is a method that begins with a low intensity treatment and gradually increases in treatment intensity until appropriate client response has been achieved. Self-administered cognitive therapy has been suggested as the first step in a stepped care model in the treatment of depression and could be effective in reducing somatic complaints prior to more intensive treatments, thereby potentially reducing outpatient medical costs. A stepped-care model has been tested with the STAR-D trial in primary care settings but
involves antidepressant treatment at the first level and an augmentation with cognitive therapy at later levels (Fava et al., 2003). Use of a self-administered cognitive bibliotherapy intervention may be the best initial step not only because of lower costs but also because of risk of fewer health related side effects. Moreover, older adults have expressed a preference for psychotherapy and cognitive bibliotherapy above antidepressant treatment for mild to moderate depression (Landreville, Landry, Baillargeon, Guerette, & Matteau, 2001).

**Self-administered treatments.**

**Cognitive bibliotherapy.** One of the evidence-based depression treatments for older adults is a self-administered treatment for depression based on cognitive therapy (Scogin et al., 2005). Self-administered treatments using principles of cognitive therapy have been shown to be efficacious for treating depression across five studies with a pooled population of 188 subjects (Scogin et al., 1996). Cognitive therapy targets dysfunctional thoughts and endeavors to replace them with more adaptive thoughts (Beck, Rush, Shaw, & Emery, 1979). As cognitive therapy already incorporates a number of psychoeducational components such as reading and homework assignments, it is not surprising that the cognitive therapy principles are available in various media formats: books, video, audio, and computer software. Due to the availability of a variety of modes of cognitive therapy delivery, this therapy has the potential to reach a large audience. Cognitive bibliotherapy, cognitive therapy delivered through a book, is perhaps one of the earliest and best supported in the self-help arena. According to Campbell and Smith (2003), bibliotherapy can also be an adjunct to therapy and reduce session length. Further, Beutler, Clarkin, and Bongar (2000) suggest that bibliotherapy may be especially effective in resistant therapy clients.
According to a meta-analysis of self-administered treatment programs by Scogin, Bynum, Stephens, and Calhoun (1990), self-administered treatments have been used effectively for a number of problems including: habit control, anxiety, depression, phobias, parenting, study skills, sleep, memory, and sexual dysfunction. In a recent meta-analysis (Gregory, Canning, Lee, & Wise, 2004), a total of nine bibliotherapy studies for depression in older adults yielded an effect size of .57, much lower than that obtained by 15 studies in the general adult population which yielded an effect size of 1.18. The researchers explained that lower pretreatment depression scores probably accounted for this difference in older adults.

Another explanation may be that the cognitive bibliotherapy treatments were not adapted to the needs of older adults. In one bibliotherapy study of disabled older adults (Landreville & Bissonnette, 1997), participants suggested that the *Feeling Good* book (Burns, 1980), which is the most frequently studied text in the cognitive bibliotherapy literature, should be adapted to older adult situations. Thus, a need exists for a self-administered cognitive bibliotherapy treatment specific to older adults.

**Self-administered treatment in the primary care setting.** Self-administered treatments have been tested with a primary care population with depression and anxiety. The Self-Help in Anxiety and Depression (SHADE; Mead et al., 2005) trial randomized 114 patients referred for mental health services by primary care physicians to either the guided minimal intervention bibliotherapy provided by a paraprofessional ($n = 57$) or the wait-list control group ($n = 57$). The wait-list control group received usual treatment from their primary care physician. The minimal intervention involved four visits of 30 minutes each with a Bachelor’s level mental health professional as well as a bibliotherapy treatment created specifically for the trial. The bibliotherapy intervention provided information on anxiety and depression, available treatments,
and cognitive behavioral exercises (such as behavioral activation, exposure, problem-solving, cognitive restructuring, and lifestyle strategies). They found no significant difference between the self-help treatment group and the usual care wait-list control group at three months but it is possible that relapse rates over an extended period of time could have been lower for the treatment group. It is also possible that the intervention developed for the trial was ineffective.

**Bibliotherapy.** Most bibliotherapy studies have been conducted outside the primary care setting and the treatment of depression is most supported in this literature. In 1987, Scogin, Hamblin, and Beutler compared cognitive bibliotherapy using the *Feeling Good* book (Burns, 1980; n=10) to a delayed treatment control group (n = 11) and an attention control group (n=8) using *Man’s Search for Meaning* (Frankl, 1959). In this sample of older adults, they found that cognitive bibliotherapy successfully treated mild to moderate depressive symptoms when compared to the delayed treatment and attention control groups. In another study, Scogin, Jamison, and Gochneur (1989) compared cognitive bibliotherapy (n = 22) using the *Feeling Good* book to behavioral bibliotherapy (n = 23) using *Control Your Depression* (Lewinsohn, Munoz, Youngren, & Zeiss, 1986) and a delayed treatment control group (n = 22). Participants in both bibliotherapy conditions evidenced significant change on the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1967) and the Geriatric Depression Scale (GDS; Yesavage et al., 1983) with 66% achieving a clinically significant change (one standard deviation below the cut-point for depression). These gains were maintained on six-month and two-year follow-up with 30 of the original 67 older adults (Scogin, Jamison, & Davis, 1990).

Most participants rated the book as useful with at least half of the participants referring back to one of the books an average of five times during the two-year period. This may be advantageous for relapse prevention if primary care physicians or mental health providers wish
to provide cognitive bibliotherapy as an adjunct to treatment. Of the 29% who dropped out of the study, a few cited visual impairments as a reason, suggesting that for a segment of older adults self-administered treatment in the form of a book is not the most feasible method of delivery. Significant visual impairments caused by farsightedness, glaucoma, cataracts, and age-related macular degeneration are quite common in older adults with prevalence ranging from 4% to 20% (Horowitz, 2004). Thus, a treatment that reduces the burden on visual abilities may be helpful for older adults.

**Bibliotherapy and individual therapy.** Cognitive bibliotherapy has demonstrated similar results to individual cognitive therapy. In a meta-analysis of depression studies comparing individual therapy to bibliotherapy, Cuijpers (1997) found that both treatments were beneficial without a significant difference in the effect sizes. In a study of adults with depression, Jamison and Scogin (1995) found that following receipt of the *Feeling Good* book (Burns, 1980) the minimal-contact cognitive bibliotherapy treatment group (*n* = 40) achieved statistically significantly improvements on depression scores compared to the delayed treatment control group (*n* = 40). These changes in depression scores were comparable to a National Institute for Mental Health (NIMH) Collaborative study using individual cognitive behavioral therapy (Elkin et al., 1989). Over half the participants achieved clinically reliable change on the BDI (59%) and HRSD (62%).

In a later study of depressed older adults (Floyd, Scogin, McKendree-Smith, Floyd, & Rokke, 2006), individual cognitive therapy (*n* = 8) was superior to cognitive bibliotherapy (*n* = 13) and the delayed treatment control group (*n* = 14) immediately following treatment. However, depression scores in bibliotherapy did not differ significantly from individual therapy at a three-month follow-up, pointing to the value of a self-administered treatment over a brief interval.
Similarly, after two years there was not a significant difference in the rate/presence of depression in the individual and bibliotherapy treatment groups, yet there were differences in the number of recurrent episodes, which favored the individual CBT intervention. Still, it seems that bibliotherapy is effective at helping with self-management of the disorder.

Overall, a self-administered treatment delivered via a book is about as effective as individual therapy. It is also an effective treatment for depression in adults and older adults. Still, it is possible that cognitive therapy delivered using alternative modes may be even more effective. One meta-analytic study (Gould & Clum, 1993) compared a number of modalities by which self-administered treatments are delivered. They observed that if print material was combined with audiotape to deliver the self-administered treatment, then the effect size was twice as large than if it were delivered only via print material ($d = 1.53$ and $d = .64$).

**Audio-therapy.** Audio-based self-administered treatment has been available for years and may be especially valuable for older adults who are not as comfortable with bibliotherapy delivered via books or other media. Ellis (1993), the founder of rational emotive therapy, endorsed the use of self-help audiotapes as he noted that they sped recovery in his therapy clients. He has found that even those who rarely read bibliotherapy materials will report improvement with the use of self-help audiotapes and videotapes.

A study by Hill and Harmon (1976) indicates the potential value of self-help tapes as a mental health treatment adjunct. This study assessed response to a self-help tape program available through the telephone. The telephone-based audio program had a high rate of response with 100 tapes being requested on a daily basis. Eighty callers completed a follow-up satisfaction survey of the program. Seventy percent of the respondents indicated that the information found in the tapes was useful to them and most indicated that they would refer a friend to the service.
With another sample of respondents, researchers (Iscoe, Hill, Harmon, & Coffman, 1979) found that undergraduate students, graduate students, faculty, and community residents used the service, which indicated the wide potential audience and acceptability of an audio-based service. Forty requests per month were for depression related information. A similar study (Thurman, Baron, & Klein, 1979) assessed university student response to the same type of program. Over a three-year period, a total of 76,895 requests were made for self-help tapes. One-fifth of the tapes requested annually were for mental health self-help. Sixty requests per month were for *Dealing with Depression* and *Dealing with Loneliness*. The high rate of response indicates the popularity of such a program, which was self-paced, free of cost, and confidential. Unfortunately, data were not collected on the clinical utility of these tapes. Maierle (1981) replicated these findings with a similar study in a rural area, but also does not provide information on the clinical impact of the tapes on the users.

Audio-based treatments have been evaluated as an intervention for many problems. One study (Dunn, 2002) compared the use of a sleep induction audiotape and standard behavioral treatment to standard behavioral treatment alone for insomnia on a number of outcome measures. Though there were no significant differences between the groups at posttest, the group who listened to the sleep induction audiotape in addition to standard treatment achieved clinically significant improvement in depression. This suggests the potential value of an audio-treatment adjunct. Another study (Morawetz, 1989) of an audio-based sleep treatment found that a brief one-hour audiotape treatment combined with a printed manual was as effective as standard behavioral sleep treatment for those not concurrently taking sleep medication, indicating the value of a combination audio-based treatment as a stand-alone treatment for sleep. Smoking has
also been effectively treated with audiotapes in one study comparing two self-administered audio-based treatments for smoking to a control group (Danaher, Jeffery, & Zimmerman, 1980).

Even tension headaches have been treated effectively with an audio-based treatment (Blanchard et al., 1990). This study employed a placebo control evaluation (monitoring headaches only) with two treatment conditions consisting of both a thermal biofeedback and relaxation training delivered in three office visits (supplemented with audiotapes and manuals) as well as a thermal biofeedback, relaxation, and cognitive stress coping training provided in five office visits. Both treatment groups achieved statistically significant improvements with reductions in headaches and medication usage when compared to the placebo control. These findings suggest that an audio-based adjunct to treatment could reduce the number of in-person sessions, thereby decreasing cost.

Though less successful, audio programs for memory treatments have also been examined in older adults (Rebok, Rasmusson, Bylsma, & Brandt, 1997). Findings from this randomized controlled study testing two commercially available memory programs did not find improvements in memory but did find improvements in confidence. Most of the older adults also reported satisfaction with the audio program.

Other researchers have examined the efficacy of audio-based treatments for phobias. Baker, Cohen, and Saunders (1973) randomized participants to audio-based desensitization ($n = 9$), therapist administered desensitization ($n = 7$), or a wait-list control group ($n = 13$). Though both treatment groups improved significantly, only the self-administered audio-based treatment group engaged in more exposure and experienced further improvements during an 8-month follow-up period. The viability of an audio-based desensitization treatment has also been supported by another study (Cotler, 1970).
One primary care study of a self-help treatment for anxiety suggests the benefits of audio-therapy in patients with mixed depression and anxiety (Donnan, Hutchinson, Paxton, Grant, & Firth, 1995). The intervention consisted of a brief one-hour audiotape of information on anxiety, techniques to reduce anxiety, and relaxation. It also included a 27-page manual. Participants were randomized to either treatment as usual \((n = 50)\) or the audio-therapy intervention \((n = 51)\). Significant improvements were noted on measures of anxiety and depression. These differences were surprisingly more pronounced and sustained on the depression measure than the anxiety measure. However, little information was provided on the clinical meaningfulness of these improvements or the availability of this intervention.

Another study assessing the efficacy of audio-therapy focused on cognitive bibliotherapy delivered through a book and audio-therapy as the primary treatment modes for anxiety. Kassinove, Miller, and Kalin (1980) compared 16 sessions of rational emotive audio-therapy \((\text{Solving Emotional Problems, Rational Living in an Irrational World, Twenty One Ways to Stop Worrying; } n = 11)\), bibliotherapy \((A \text{ New Guide to Rational Living, Ellis & Harper, 1975; } n = 11)\), and a no-contact control group \((n = 12)\) in a sample of clients with anxiety on the waiting list for treatment at a mental health center. Treatment consisted of visiting the mental health center to listen to the audiotapes or to read the self-help materials twice a week for an hour each week for eight weeks. The researchers found a significant improvement in both treatment groups compared to the no-contact control on the endorsement of irrational thoughts. The bibliotherapy condition was not significantly different from the audio-therapy condition though the bibliotherapy condition had slightly more improvement on irrational beliefs. The bibliotherapy condition also had significant improvement on the Neuroticism Scale and the State-Trait Anxiety scale when compared to the no contact control group. There was no difference between the
audio-therapy and no contact controls. However, the participants may have had greater improvements in anxiety if they had been given more time to listen to the audiotapes. One weakness of the study was that very little information was provided about the audio-based and bibliotherapy interventions and references were not included about the interventions to enable location of the materials.

A renewed interest in audio-based treatment seems to be emerging. A recent randomized controlled trial (Gil et al., 2006) used an audio-based treatment to manage uncertainty about cancer recurrence in a large sample of women in remission from breast cancer. The intervention consisted of three audiotapes based on cognitive behavioral strategies (calming self-talk, imagery, and relaxation), a 125-page workbook, and four 30-minute telephone-administered treatment sessions delivered by nurses. Data about the usefulness and helpfulness of the treatment was collected monthly for a ten-month period. Most of the participants found the treatment helpful. Despite the strategies being provided in an ethnically sensitive manner, African-American participants used them less frequently. Unfortunately, no information is provided about the use of the audiotapes or how the control group differed from the treatment group on symptomatology.

Surprisingly, only two studies assessing the effectiveness of a self-administered audio program for depression could be found. Neumann (1981) tested the efficacy of an audiotape intervention for a VA inpatient psychiatric sample of 14 participants with depression. The audiotape used was Lewinsohn’s (1975) Combating Depression: Practical Techniques. Even though the treatment lasted only 60 minutes, scores on the BDI improved significantly from pretest to posttest during a one-month period. However, information was not provided on the amount of improvement or on the means and standard deviations. No control group was used in
the study, making it difficult to determine if the changes were due to the treatment at the psychiatric hospital or to the audio-based program. Also, this tape is not available to the public.

Another more recent study (Karpe, 2004) assessed a multi-modal cognitive behavioral intervention *The Feeling Good Program* by Burns (2002) in a sample of depressed adults between the ages of 21 and 58. The intervention consisted of five CDs based on cognitive therapy covering how to overcome depression, anxiety, phobias, and obsessive-compulsive disorder. The topics included identifying and changing thoughts, using a mood log, and relapse prevention. The multi-component program also included a three-hour video of Dr. Burns providing cognitive behavioral therapy to patients while modeling techniques and three books totaling 450 pages on cognitive behavioral strategies to improve mood. There was a significant time-by-treatment interaction on BDI scores between the immediate treatment \( (n = 7) \) and delayed treatment groups \( (n = 6) \), indicating improvements in depression in the immediate treatment group. Moreover, 69% of the participants achieved a clinically significant change on the HRSD. This multi-component commercial program might be promising as a treatment for older adults but it was unfortunately discontinued and is no longer available to the public. When it was offered to the public, it cost over two hundred dollars.

In another study with a sample of 51 adults, Blenkiron (2001) studied the impact of *Coping with Depression* (Walling, 2002), a self-help tape including a cognitive behavioral component, a referral guide for support services, information about depression, and advice. Most participants listened to the tape three times, had improvements on attitudes towards depression, and rated the tape as helpful. Men seemed to especially benefit from the self-help tape. However, information on improvement of depression scores was not included, preventing the conclusion that the tape treated depression. Moreover, the audiotape intervention is extremely brief (only two hours).
CHAPTER 2
NEED FOR STUDY

Audio-based treatments for depression have the potential to be especially valuable for older adults, but they are currently unavailable and lack sufficient data supporting their use for clinically depressed populations. A stepped-care plan that begins with a self-administered audio treatment may be especially valuable for older adults with comorbid health conditions, limitations in mobility, time constraints, inadequate response to antidepressants, polypharmacy concerns, and/or a lack of financial resources. Self-administered cognitive treatments are one of the evidence-based treatments for depression in older adults (Scogin et al., 2005). However, these self-help treatments are often in the form of a book, which may pose a challenge to older adults with low literacy or certain visual impairments.

At this time, the selection of audio-based interventions is limited and the current programs available have not been validated as treatments for depression. The need to develop a more comprehensive audio-based intervention is apparent. Such an intervention would be relatively inexpensive. A cognitive therapy audio-based intervention would provide a valuable treatment option for mental health providers/primary care physicians to offer to their patients and has the potential for broad application across health care settings and in the community.
CHAPTER 3

HYPOTHESES

This study aims to increase depression treatment options for older adults. The primary goal was to develop and test the efficacy of a self-administered audio-based cognitive behavioral therapy (ACBT) in older adults with depressive symptoms.

Primary Hypotheses

1) Older adults who receive the ACBT program will demonstrate a significant decrease in depressive symptoms relative to a delayed treatment control group based on the baseline (Time 1) and posttreatment (Time 2) scores on the Hamilton Rating Scale for Depression (Hamilton, 1967).

2) Older adults who receive the ACBT program will demonstrate a significant decrease in depressive symptoms relative to a delayed treatment control group based on the baseline (Time 1) and posttreatment scores (Time 2) on the Geriatric Depression Scale (Yesavage et al., 1983).

Exploratory Hypothesis

3) Older adults who receive the ACBT program will demonstrate a significant decrease in somatic symptoms relative to a delayed treatment control group based on the baseline (Time 1) and posttreatment scores (Time 2) on the Somatization subscale of the Brief Symptom Inventory (BSI; Derogatis & Spencer, 1982).
CHAPTER 4

METHOD

Participants

Exclusion/Inclusion criteria. Potential participants were screened using the following criteria for inclusion: a) above age 54; b) a score of 10 or higher on the GDS (Yesavage et al., 1983); c) self-reported reading ability; d) self-reported hearing ability based on observed ability to hear over the telephone; e) no concurrent psychological or psychiatric treatment (those currently receiving antidepressant treatment must have been stabilized on the treatment for a period of three months); f) no self-reported or identifiable bipolar disorder, active or previous psychosis or thought disorder; g) no self-reported alcoholism/substance abuse disorder as a primary diagnosis; h) absence of cognitive impairment as evidenced by a score greater than 27 on the Telephone Interview for Cognitive Status-Modified (TICS-m; Welsh, Brietner, & Magruder-Habib, 1993); i) absence of a medical condition that may interfere with the completion of the study based on self-report; and j) no current suicidal ideation.

Participant characteristics.

The sample consisted of 34 participants. Participants ranged in age from 55 to 88, $M = 63.62$ ($SD = 7.39$). Females represented 80% of the sample. This sample consisted primarily of Caucasian (88%) older adults with a high school education ($M = 12.3$; range: 6-17). A third (33%) of the sample reported that their income was insufficient for their needs. Most (95%) of the participants reported being regular primary care attenders and 62% scored 3 or greater on the VES-13, indicating risk for disability and mortality.
Table 1

Sample Characteristics at Time 1 by Group

<table>
<thead>
<tr>
<th>Participants</th>
<th>Immediate Treatment</th>
<th></th>
<th>Delayed Treatment Control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD) or %</td>
<td>n = 17</td>
<td>M (SD) or %</td>
<td>n = 17</td>
</tr>
<tr>
<td>Age</td>
<td>65.71 (8.51)</td>
<td></td>
<td>61.53 (5.57)</td>
<td></td>
</tr>
<tr>
<td>Educationa</td>
<td>12.75 (2.59)</td>
<td></td>
<td>12.41 (2.55)</td>
<td></td>
</tr>
<tr>
<td>TICS-m</td>
<td>33.76 (3.68)</td>
<td></td>
<td>34.12 (4.87)</td>
<td></td>
</tr>
<tr>
<td>VES-13</td>
<td>4.18 (2.53)</td>
<td></td>
<td>2.88 (2.18)</td>
<td></td>
</tr>
<tr>
<td>HRSD Baseline</td>
<td>17 (7.79)</td>
<td></td>
<td>15.53 (8.43)</td>
<td></td>
</tr>
<tr>
<td>GDS Baseline</td>
<td>16.41 (5.40)</td>
<td></td>
<td>18.53 (5.84)</td>
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</tr>
<tr>
<td>Somatization Baseline</td>
<td>65.12 (11.99)</td>
<td></td>
<td>65.35 (10.85)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>23.5% (4)</td>
<td></td>
<td>17.6% (3)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>76.5% (13)</td>
<td></td>
<td>82.4% (14)</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African-American</td>
<td>5.9% (1)</td>
<td></td>
<td>11.8% (2)</td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>94.1% (16)</td>
<td></td>
<td>82.4% (14)</td>
<td></td>
</tr>
<tr>
<td>Native American</td>
<td>-</td>
<td></td>
<td>5.9% (1)</td>
<td></td>
</tr>
<tr>
<td>Marital Statusb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>52.9% (9)</td>
<td></td>
<td>50% (8)</td>
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<tr>
<td>Widowed</td>
<td>11.8% (2)</td>
<td></td>
<td>18.7% (3)</td>
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<tr>
<td>Divorced</td>
<td>35.3% (6)</td>
<td></td>
<td>31.25% (5)</td>
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<tr>
<td>Income adequacitya</td>
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<td></td>
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<tr>
<td>No</td>
<td>41.2% (7)</td>
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<td>23.5% (4)</td>
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</tr>
<tr>
<td>Somewhat</td>
<td>23.5% (4)</td>
<td></td>
<td>35.3% (6)</td>
<td></td>
</tr>
<tr>
<td>Mostly</td>
<td>11.8% (2)</td>
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<td>11.8% (2)</td>
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<tr>
<td>Yes</td>
<td>17.6% (3)</td>
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<td>29.4% (5)</td>
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<td>Self-rated health</td>
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<tr>
<td>Poor</td>
<td>35.3% (6)</td>
<td></td>
<td>11.8% (2)</td>
<td></td>
</tr>
<tr>
<td>Fair</td>
<td>23.5% (4)</td>
<td></td>
<td>35.3% (6)</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>35.3% (6)</td>
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<td>41.2% (7)</td>
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<tr>
<td>Very Good</td>
<td>5.9% (1)</td>
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<td>5.9% (1)</td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>-</td>
<td></td>
<td>5.9% (1)</td>
<td></td>
</tr>
<tr>
<td>Antidepressant useb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>52.9% (9)</td>
<td></td>
<td>56.2% (9)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>47.1% (8)</td>
<td></td>
<td>43.8% (7)</td>
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</tr>
</tbody>
</table>

*Note.* a Indicates n = 16 in Immediate Treatment group. b Indicates n = 16 in Delayed Treatment group.
Over 80% of the sample were from rural areas. Nearly half (46%) of the sample reported current antidepressant use and all had been stabilized on medications for a period of at least 3 months prior to study participation. See Table 1 for sample characteristics by group.

Sampling procedures.

Recruitment from health care settings. A number of recruitment strategies were used to recruit older adults from Alabama. See Table 2 for a list of recruitment strategies by county. The main site for recruitment was primary care settings, as this method has been found to be effective in recruiting an ethnically diverse sample in prior clinical geropsychology studies (Arean, Alvidrez, Nery, Estes, & Linkins, 2003). Previous bibliotherapy studies have not focused on recruiting participants who were low income or rural; two populations that are likely to experience barriers to accessing mental health care (Choi, 2009; Fortney, Harman, Xu, & Dong, 2010). As such, primary care sites in rural areas as well as those serving low-income older adults were targeted as part of the recruitment strategy. Participants were recruited via multiple health care settings both urban and rural. All primary care clinics serving older adults in Tuscaloosa County were contacted for inclusion as potential recruitment sites. Of these sites, two sites agreed to assist in recruitment efforts. One of the sites serves predominantly low-income African-Americans and participants at this location were recruited through an ongoing depression screening study for older adults. At the other site, a university-based medical center serving a demographically diverse population, targeted mailing to 137 depressed older adults above age 54 was conducted. An example of the letter that accompanied the brochure and the brochure itself have been provided in Appendix A. Pre-stamped and self-addressed brochures were provided to a rural primary care setting serving Lamar County. This primary care site mailed the brochures to 31 older adults age 55 who had been identified as depressed.
Additionally, brochures were displayed in a literature rack at four rural primary care settings in Oakman (Walker County), Parrish (Walker County), Selma (Tallapoosa County), and Millport (Lamar County) as well as two other healthcare settings (Tuscaloosa County).

Table 2

Recruitment Strategies by County

<table>
<thead>
<tr>
<th>County</th>
<th>Media</th>
<th>Depression Screening</th>
<th>Brochures or Mailings</th>
<th>Church</th>
<th>Patient Referral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dallas</td>
<td>N</td>
<td>SC (1)</td>
<td>PC (1)</td>
<td></td>
<td>PC (1)</td>
</tr>
<tr>
<td>Etowah</td>
<td>SC (1)</td>
<td>SC (1)</td>
<td></td>
<td>PC (1)</td>
<td></td>
</tr>
<tr>
<td>Greene</td>
<td>SC (1)</td>
<td>SC (2)</td>
<td></td>
<td>PC (1)</td>
<td></td>
</tr>
<tr>
<td>Hale</td>
<td>SC (2)</td>
<td></td>
<td></td>
<td>PC (1)</td>
<td></td>
</tr>
<tr>
<td>Lamar</td>
<td>SC (3)</td>
<td></td>
<td></td>
<td>PC (1)</td>
<td>PC (1)</td>
</tr>
<tr>
<td>Pickens</td>
<td>SC (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tallapoosa</td>
<td>N</td>
<td>SC (1)</td>
<td>PC (1)</td>
<td>T (2)</td>
<td></td>
</tr>
<tr>
<td>Tuscaloosa</td>
<td>SC (1)</td>
<td>SC (1)</td>
<td>C (1)</td>
<td>T (5)</td>
<td>D (1)</td>
</tr>
<tr>
<td></td>
<td>N (2),</td>
<td>SR (3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I, TV</td>
<td>PC (1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walker</td>
<td>SC (1)</td>
<td></td>
<td></td>
<td>PC-M (1)</td>
<td>CMHA-M (1)</td>
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<tr>
<td></td>
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</table>

Note. The number inside the parentheses indicates the number of sites. A dash followed by an M indicates that mailing was the primary strategy. C = Community Setting; CMHA = Center for Mental Health and Aging Older Adult Research Database; D = Dialysis Center; I = Internet; MS = Medical Setting; N = Newspaper; PC = Primary Care; SC = Senior Center; SR = Senior Residence; T = Talk; and TV = Television.

Nurse practitioners and physicians from recruitment sites were also encouraged to refer patients directly to the study and were presented with information about the intervention, inclusion criteria, and IRB approved methods of assisting with recruitment. Health professionals interested in referring a patient were instructed to briefly describe the depression treatment study and obtain permission from the patient to disclose their name and contact information to a research assistant who would contact them regarding additional details. One site (Lamar County) discontinued direct referral of patients when one patient expressed discomfort after being assessed for depression and was provided with information about the ACBT treatment. At the
Etowah and Perry County primary care sites, physicians also chose to directly refer patients to the study. Individuals referred by the physician or nurse practitioner were contacted by the study researchers, provided information about the study, and assessed for eligibility if interested.

**Recruitment from community settings.** Participants were also recruited from a research database, churches, senior housing, special senior events, community nutrition programs, dialysis centers, and media in Tuscaloosa County. Fliers and brochures were posted at senior centers and the library. Brochures were mailed to 250 older adults listed in a research database housed at the University of Alabama Center for Mental Health and Aging. Thirty-three senior church groups from Tuscaloosa and its surrounding areas were also mailed a brochure and a letter requesting that the study brochure be posted on their bulletin board. In addition, the groups were offered the opportunity for a doctoral student to provide a lecture on a health wellness topic of their preference: depression, sleep, or memory. Five of the senior church groups responded to this invitation. Following the lecture on the preferred topic at these sites, a brief description of the treatment study was provided and brochures were distributed. This approach was also used to recruit individuals from three senior residential facilities, a senior activity center, a low-vision group, and the Foster Grandparents program. In addition, brochures and information about the study were disseminated to 40 community mental health professionals through a lecture on suicide and depression in the elderly as part of a workshop presented by the Mental Health Association. Brochures were provided to staff at Meals on Wheels and to a social worker at a dialysis center to distribute to potential participants. To disseminate information about the study more broadly, a feature story was printed in the Tuscaloosa News, the Northport Gazette, and University of Alabama’s Dialog. A brief story about the study also appeared in the evening news on the local television channel, WVUA.
Outside of the Tuscaloosa area, the primary recruitment strategy was presentation of information and brochures about the study at senior activity centers conducted in conjunction with a depression screening study for older adults. The principal investigator provided information about the study to nine senior activity centers in a number of rural counties including: Greene (1), Pickens (2), Lamar (3), Walker (1), Etowah (1), and Hale (1). In Dallas County, brochures were also distributed at two churches during Sunday school. Also, information about the study was placed in a newspaper advertisement in the Auburn-Opelika News for dissemination in Tuskegee, Auburn, Opelika as well as Tallapoosa County.

**Participant incentives.** As compensation for their time in completion of each assessment packet, participants received five dollars. The immediate treatment participants could receive as much as 10 dollars for completing two packets while those in the delayed treatment group could receive as much as 15 dollars for completing three packets.

**Informed consent.** This study has received Institutional Review Board (IRB) approval and a copy of the IRB approved informed consent can be found in Appendix D.

**Power calculations & sample size.** Power calculations indicated that a total of 34 older adults needed to be recruited for the intervention study based on an alpha of .05 and power set to .80 with an expected effect size of $d = 1.00$ (based on the mean of the effect size of bibliotherapy studies conducted in our own lab with older adults, $d = 1.11$ and the mean effect size of adult and older adult bibliotherapy studies, $d = .88$; Gregory et al., 2004).

**Measures**

Interviewers administered all assessments. Interviewers were trained and supervised by a licensed clinical psychologist to administer the clinical assessments. Interviewers were four graduate students in varying levels of the clinical psychology doctoral program. There were an
equal number of male and female interviewers. Baseline and posttest assessments were conducted.

The immediate treatment group received assessments in the following order: (Time 1: T1) immediately before treatment began and (Time 2: T2) immediately following treatment at one month. The delayed treatment group received assessments in the following order: (Time 1: T1) four weeks prior to treatment, (Time 2: T2) immediately before treatment at one month, and (Time 3: T3) immediately following treatment at two months. The GDS was scheduled to be administered every two weeks while the participant was in the study. For the immediate treatment group, it was administered in the middle of the treatment period at Time 1b. For the delayed treatment control group, it was administered midway during the delay at Time 1b and midway during the treatment period at Time 2b. With the exception of the HRSD and GDS (given first to prevent participant fatigue from influencing the score), all assessment packets were administered in a counterbalanced order to control for the effects that order may have in participant responses (See Table 3 for a table of assessments given by time. See Appendix B for measures).

**Interviewing and data entry.** All measures were read to the participant to prevent participant fatigue as has been suggested in conducting research with older adults (Shah et al., 2007). Responses were recorded on teleforms on most measures and scanned using TELEform technology (Cardiff, 1999). The teleform data were reviewed for accuracy by the principal investigator. Data not recorded on teleforms (VES-13 and eligibility information) were recorded on forms that were later hand entered into an Excel spreadsheet.

**Background form.** Participants were administered a demographics form at T1 (baseline). This form elicited basic information such as age, sex, marital status, education, ethnicity,
adequacy of income, prior use of self-help treatments, history of depression, self-rated health, current health conditions, medications being taken for mood or sleep, and frequency of primary care visits.

Table 3

Assessments by Time

<table>
<thead>
<tr>
<th>Measures</th>
<th>Screen\textsuperscript{ab}</th>
<th>Time 1\textsuperscript{b}</th>
<th>Time 1b\textsuperscript{a}</th>
<th>Time 2\textsuperscript{a} &amp; 3\textsuperscript{a}</th>
<th>Time 2b\textsuperscript{a}</th>
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<tbody>
<tr>
<td>Background Form</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSI</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COPPES</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CBTKT</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DAS</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>HRSD</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention Benefit\textsuperscript{c}</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>TICS-m</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VES-13</td>
<td></td>
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<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Note. The immediate treatment group completed Time 1, Time 1b, and Time 2 assessments and the delayed treatment group completed Time 1, 1b, 2, & 3 assessments and Time 2b GDS (two weeks into treatment). The GDS-5 was administered on a weekly basis to both groups. BSI = Brief Symptom Inventory; COPPES = California Older Persons Pleasant Events Schedule; CBTKT = Cognitive Behavior Therapy Knowledge Test; DAS = Dysfunctional Attitudes Scale; HRSD = Hamilton Rating Scale for Depression; TICS-m = Telephone Interview for Cognitive Screening-Modified; and VES-13 = Vulnerable Elders Survey-13.

\textsuperscript{a}Indicates that these assessments were administered via telephone. \textsuperscript{b}Indicates that assessments were in-person. \textsuperscript{c}The Intervention Benefit was administered to the immediate treatment group at Time 2 and to the delayed treatment group at Time 3.

Health. To characterize the health of the participants, the 13-item Vulnerable Elders Survey-13 (VES-13; Saliba et al., 2001) was administered as part of the T1 (baseline) assessment. The VES-13 assesses risk of functional decline and mortality with scores ranging from 0 to 10 (higher scores indicating greater risk). It consists of: a) one item on age (scored 1 point for ages 75 to 84 and 2 points for ages 85 and above); b) an item on self-rated health assessed on a scale
from 1 (poor) to 5 (excellent) (scored 1 point if 1 or 2 were endorsed); c) six items evaluating the ability to perform physical activities (scored 1 pt if unable to do or difficult to do for a maximum of 2 points); and d) five items assessing the ability to perform functional activities (scored 4 points if unable to do any one of the items without assistance). A score of 3 and above identified those with 4 times the risk of functional decline or mortality in a Medicare population over two years, achieving a sensitivity of .67 and a specificity of .79.

**Depressive symptoms.**

*Monitoring mood.* The five-item version of the Geriatric Depression Scale (GDS-5; Hoyl, et al., 1999) was provided to both groups to monitor mood on a weekly basis by telephone. It has achieved a sensitivity of .94 and a specificity of .83 against the PRIME-MD mood module (Spitzer et al., 1994) when provided in a sample of 74 medically frail older adults at a VA geriatric outpatient facility.

*Self-reported mood.* The Geriatric Depression Scale (GDS: Yesavage et al., 1983) is a 30-item self-report instrument developed for use with older adults. It is based on a “yes” and “no” answer format, which is simpler to understand and administer than most other formats. Scores range from 0 to 30 with scores above 9 indicating depression (Spreen & Strauss, 1998). Though a cut-off score of 11 is commonly used, lower scores may be justified to prevent missing those with milder depression (Stiles & McGarrahan, 1998). Therefore, potential participants scoring 10 and above on the GDS were included. This cut-point has achieved an acceptable sensitivity of 89% and specificity of 73% in a sample of medical patients (Norris, Gallagher, Wilson, & Winograd, 1987). Similarly, lowering the cut-point to 9 in a community sample resulted in a sensitivity of 90% and a specificity of 80% (Brink et al., 1982). The GDS has also evidenced a Cronbach’s alpha of .94, indicating good reliability (Yesavage et al., 1983) as well as a test-retest
reliability of .85. It was administered at eligibility screening and every two weeks after study enrollment.

**Clinician interview.** The Hamilton Rating Scale for Depression (HRSD; Hamilton, 1967), another tool for depression assessment, was provided at T1 and T2 (and T3 for the delayed treatment control). The HRSD is a 17-item scale rated during a clinician interview that assesses symptoms of depression such as sleep, appetite, guilt, depressed mood, interest, suicidal ideation, and somatic symptoms. Scores range from 0 to 52 with higher scores indicating greater depression severity. Scores above 10 indicate the presence of a depressed mood. This instrument has evidenced a test-retest reliability of .81 (Williams, 1988). Interviewers received training from a clinical psychologist in how to administer the HRSD. A structured interview guide (GRID-HAMD-17; Williams et al., 2008) for the HRSD was utilized to standardize interviewer ratings. HRSD interviews were recorded to ensure adequate interrater reliability (Pearson’s $r$ of .7 or higher). Thirty percent of the recorded HRSD interviews were selected at random for review. A different interviewer scored each of the selected HRSD recordings. Excellent interrater reliability was achieved, $r = .99$, $n = 23$, $p = .001$.

**Somatic symptoms and psychological distress.** The Brief Symptom Inventory (BSI; Derogatis & Spencer, 1982) was provided at the same assessment intervals as the HRSD. It consists of nine symptom scales: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. Additionally, it consists of three scales assessing psychological distress demonstrating good reliability: the General Severity Index (number of symptoms and intensity of distress), Positive Symptom Total (number of reported symptoms), and Positive Symptom Distress Index (intensity of distress). It has demonstrated good validity when compared to the Symptom Checklist-90-R (Derogatis,
Rickels, & Rock, 1976) and the Minnesota Multiphasic Personality Inventory (Dalhstrom, 1969). The Somatization symptom scale was used from this measure to assess changes in somatic symptoms by group and time as part of the analyses. The Somatization subscale of the BSI has achieved a Cronbach’s alpha of .85, indicating good reliability (Boulet & Boss, 1991). Scores on the scales are represented as a $T$-score with scores above 50 indicating dysfunction.

**Dysfunctional thoughts.** The Dysfunctional Attitude Scale-A (DAS-A; Weismann & Beck, 1978) is a 40-item scale measuring maladaptive thinking patterns and dysfunctional cognitions that have been associated with depression. As cognitive behavioral therapy targets dysfunctional thinking, it is generally expected that dysfunctional thoughts mediate changes in depression outcome (Whisman, 1993). The measure’s psychometric properties have been assessed with a depressed older adult sample (Floyd, Scogin, & Chaplin, 2004). Items are rated on a scale from 1 to 7 (totally agree to totally disagree) and scores are summed for the total score. It was provided at T1 and T2 (and T3 if in the delayed treatment control group). In one study, (Nelson, Stern, & Cichetti, 1992) reliability ranged from .88 to .97 and the measure displayed adequate discriminate validity.

**Pleasant events.** The California Older Person’s Pleasant Events Schedule (COPPES; Rider, Gallagher-Thompson, & Thompson, 2004) was developed to evaluate the frequency of activity engagement and the amount of pleasure one experienced as a result of participating in that activity. The COPPES has adequate reliability and validity with older adults. It also has good test-retest reliability: .85 for frequency and .87 for pleasure. The scores are calculated by multiplying the frequency of pleasant events and the amount they enjoyed the activity. It was provided at T1 and T2 (and T3 if in the delayed treatment control group). Because cognitive behavioral therapy targets the increase of pleasant events as a means of improving depression, an
increase in the frequency of pleasant events or the ratings of the enjoyableness of the activities would be expected to mediate depression outcome.

**Cognitive status.** The TICS-m (Welsh et al., 1993) is a 12-question telephone screen for cognitive impairment that assesses orientation, immediate memory, language, calculation, and delayed recall. It was provided over the telephone during the eligibility screening. Scores range from 0 to 50 with lower scores indicating greater cognitive impairment. A cutoff of 27 has achieved excellent sensitivity (99%; Breitner et al., 1995) in determining the presence of cognitive impairment.

**Treatment receipt.** A brief 20-item true/false test to measure learning of ACBT material was provided at T1 and T2 (and T3 if in the delayed treatment control group). This measure was developed for this study. It consisted of items from the Cognitive Therapy Learning Test (Scogin, Jamison, Floyd, & Chaplin, 1998) as well as newly created items to assess the behavioral material in the ACBT intervention. Thirteen of the questions for this measure were based on a cognitive therapy learning test. This test has distinguished those who had received treatment from those who had not based on the *Feeling Good* book (Burns, 1980). Seven items were added based on the behavioral aspects of the treatment. The revised version was evaluated using the participants who had completed the ACBT treatment as well as participants who had completed a similar treatment (n = 26). The CBTKT achieved poor reliability in this sample (Cronbach’s α = .07). Therefore, the CBTKT was revised by dropping items with low item-total score correlations one at a time. After dropping 10 items with poor inter-item correlations, the new scale achieved a Cronbach’s alpha of .51. See Appendix B for the scale.

**Treatment enactment.** Participants were requested to recount the number of CDs that they had listened to over the past week to determine treatment enactment.
**Participant satisfaction.** A brief 9-item survey of both open-ended and anchored questions was provided at T2 (or T3 for the delayed treatment control group) to assess participant satisfaction and what participants found most and least helpful about the treatment.

**Design**

Participants were randomized to either the immediate treatment group \(n = 17\) or minimal contact delayed treatment control group \(n = 17\). The study is a 2 X 2, pretest/ posttest delayed treatment control group design. The response variables of interest are the scores on the HRSD, GDS, and Somatization subscale of the BSI based on group (immediate treatment and delayed treatment control) and time (T1 and T2).

**Randomization.** Participants were allocated to a group by blocked assignment determined by a random number generator. This would ensure that an equal number of participants were assigned to each group. The randomization information was sealed into a security-lined envelope. Then, each envelope was numbered with a participant ID, accordingly. The interviewer took an envelope in this pile to the first assessment visit. This envelope remained unopened until the assessment was completed to ensure that the interviewer was blinded. Following the interview, the interviewer opened the envelope and informed the participant to which group they were assigned. Then, the interviewer proceeded with training if the participant was in the immediate treatment group. Participants in the delayed treatment group were randomized to either one of two treatments following the one-month delay (for the purposes of this manuscript, only data on the ACBT treatment are presented). During the delayed period, participants in the control group were not aware of their treatment assignment.
Procedure

Procedures for Intervention Development

*Foundation of the ACBT program.* The ACBT program is based on the client and therapist manuals used in a cognitive-behavioral intervention study with depressed older adults (Dick et al., 1996). It is supplemented with information from *Cognitive Therapy for Depression* (Beck et al., 1979) and *Control Your Depression* (Lewinsohn et al., 1986). Initially, a 257-page script was developed based on each of the chapters in the client manual (Dick et al., 1996). The amount of time spent on each topic in the manual is proportional to the amount of time spent on each topic in the audio program.

An effort was made to include other types of information such as, spirituality and health, in addition to the standard information on CBT in the client/therapist manuals. This treatment interweaves aspects of religion and spirituality based on experience from a National Institute on Aging study, Project to Enhance Aged Rural Living (PEARL; Scogin et al., 2007). The PEARL study examined the impact of cognitive behavioral therapy on quality of life in medically frail, rural older adults. The researchers found that questions regarding how CBT related to religion and spirituality were common among those receiving the treatment. Moreover, high levels of spirituality/religiosity have been associated with fewer depressive symptoms (Roff et al., 2004) and one large study has found that religious practice has been associated with lower levels of depression (Braam et al., 2001). Though no specific discussion took place in the ACBT materials about religious beliefs as they relate to the application of CBT, a number of client examples were provided to demonstrate how someone could use religious beliefs or spirituality in combination with CBT techniques. For example, in a section on how to decrease worrying, the older adult in the example combines prayer with thought stopping. Spiritual beliefs and activities were also
integrated in the section on increasing pleasant activities and are listed among some of the activities.

**Components of the audio program.** An 80-page workbook accompanied the audio program. Chapters in the workbook ranged from a 4th grade to 6th grade reading level with a 71% Flesch reading ease score. The workbook summarized the main points from each CD and included all of the practice exercises. The addition of the workbook was expected to strengthen the delivery of the intervention. One meta-analytic study (Gould & Clum, 1993) comparing the modalities by which self-administered treatments are delivered found that combining audiotape with print media doubled the effect size.

The main purpose of the workbook was to be an environmental support or memory aid for the auditory information that could potentially tax working memory, especially in older adults. Craik and Byrd (1982) suggested that the provision of environmental supports could ameliorate working memory concerns. Furthermore, it was expected that older adults who used this intervention would likely possess varying levels of visual and auditory impairments. For this reason, the workbook was double-spaced and in 14-point font to overcome minor visual limitations common in older adults (Shah, Coates, & Scogin, 2007). The audio program was multi-modal, with auditory and visual stimuli working in tandem to overcome individual sensory limitations. It was expected that this program might have an advantage over a treatment that is only delivered using one of these methods.

The audio program is titled *Making the Golden Years Golden Again* and consists of eight CDs in addition to the workbook noted above. All of the CDs contained information about a CBT topic area, client examples, and practice exercises (with the exception of CD 5 which is a relaxation CD). Practice exercises were followed by a brief period of music to allow the listener
to pause the CD and complete the exercise. There were also times when the listener is asked to think about the topic area and ten seconds of silence followed to permit cogitation. To review the material, each of the CDs included a few true/false questions or multiple-choice questions allowing the participants to periodically assess their comprehension of the material. All of the CDs were approximately one hour in length with the exception of CD 5, which was 30 minutes in length. The audio program used a male and female speaker to control for listener preferences for speaker gender. See Table 4 for the exact length of each CD, a brief description of the topic area, and information on the speaker gender by CD.

Table 4

**CD Descriptions**

<table>
<thead>
<tr>
<th>CD no.</th>
<th>Content description</th>
<th>Speaker gender</th>
<th>CD length</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD 1</td>
<td>Introduction, Goal setting, Cognitive behavioral model</td>
<td>Both</td>
<td>00:56:15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Both</td>
<td></td>
</tr>
<tr>
<td>CD 2</td>
<td>Identifying unhelpful thoughts, Unhelpful thoughts worksheet</td>
<td>F</td>
<td>01:00:00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Both</td>
<td></td>
</tr>
<tr>
<td>CD 3</td>
<td>Using tools to modify unhelpful thoughts, Imagery</td>
<td>F</td>
<td>00:55:00</td>
</tr>
<tr>
<td>CD 4</td>
<td>Dealing with anger and anxiety, Relaxation, Thought stopping, Scheduling worry time</td>
<td>M</td>
<td>00:59:20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>CD 5</td>
<td>Guided passive relaxation&lt;sup&gt;a&lt;/sup&gt;</td>
<td>F</td>
<td>00:28:00</td>
</tr>
<tr>
<td>CD 6</td>
<td>Increasing pleasant activities, Activities checklist&lt;sup&gt;b&lt;/sup&gt;, Pleasant events tracking form, Mood rating</td>
<td>F</td>
<td>00:58:30</td>
</tr>
<tr>
<td>CD 7</td>
<td>Assertive communication, Problem-solving skills</td>
<td>M</td>
<td>1:00:00</td>
</tr>
<tr>
<td>CD 8</td>
<td>Review, Revisiting goals &amp; relapse prevention</td>
<td>F</td>
<td>00:55:40</td>
</tr>
</tbody>
</table>

Note: <sup>a</sup>Obtained from Beverly Thorn (n.d.). <sup>b</sup>Obtained from Lejuez, Hopko, & Hopko, (2001).
The script for the audio program was developed under the supervision of a cognitive behavior therapist. The CDs were reviewed by three highly experienced cognitive behavior therapists to ensure that the ACBT program is in keeping with the principles of cognitive behavioral therapy. Two of the therapists have experience delivering CBT to older adults. One of the therapists was associated with the Beck Institute and was conducting research on CBT for the treatment of depression and suicide in male older adults. The expert therapists were given forms to provide feedback about the program (See Appendix C). Some of the reviewer comments included suggestions about increasing the volume of the CDs and font size of the workbook. Comments from the reviewers suggested that the program adheres to the principles of CBT and could possibly serve as a treatment for depression in older adults with additional revision. Four older adults also reviewed the program and provided comments regarding how to improve the intervention. One of the reviewers and one of the older adults commented that the CDs were helpful but would benefit from the use of older adult speakers for example cases. Reviewer comments were incorporated to modify the program. For example, older male and female speakers read sections of the script to make the ACBT program more relevant. See Figure 1 and 2 for procedures and participant flow chart.

**Procedures for Intervention Testing**

*Eligibility screening.* As noted previously, recruitment was conducted through a number of modalities. See Appendix C for the telephone eligibility script that was used. A research assistant made a contact call for eligibility screening for those whose names and phone numbers were provided by other studies, physician referral, or brochures that were mailed in. An eligibility screening call was also scheduled for older adults who responded by telephone or brochures.
Prior to the screening, a brief summary of the intervention was provided. If the participant was still interested in this treatment and provided assent, the interviewer completed the eligibility screening or scheduled a telephone appointment for the screening if the current time was inconvenient.

Following assent, potential participants engaged in a 20-minute telephone call (or in-person interview) during which time the GDS and TICS-m were administered. If the participant did not meet eligibility criteria (memory, depression, or other criteria), then they were provided information about other possible treatments and treatment providers if interested. If the participant met eligibility criteria, an in-person meeting was scheduled for no more than one week after the screening call. If more than a week elapsed after the screening call, a new eligibility GDS was administered. Following the eligibility screening, eligible potential participants were informed that they would receive an informed consent form during the first assessment visit.

**Baseline assessment.** Eligible individuals completed the in-person meeting at the location of their preference (e.g. home, library, office, or medical clinic). At the in-person meeting, the interviewer reviewed the informed consent form with the participant and provided them with a copy of the document. See Appendix D for a copy of the IRB approved consent form. If the participant provided written consent, the baseline assessment was administered. An interviewer read the baseline assessment to the participant and recorded responses on teleforms. Following the baseline assessment, the interviewer opened the aforementioned randomization envelope and informed the participant to which group they had been assigned. The interviewer was also blinded to this information until after completion of the assessment. On subsequent assessments, a different interviewer was procured to ensure that blinding was maintained.
Figure 1. Procedures for treatment development and ACBT program evaluation.
Figure 2. Participant flow chart and attrition. Two delayed treatment participants have completed the intervention but have been unable to complete T3 assessments due to scheduling issues.
**Treatment delivery.** Participants assigned to the immediate treatment group received the 8-hour ACBT program on CDs as well as the accompanying workbook. Interviewers informed participants that they could only keep the audio program for the four-week period. If the participant did not have a CD player, one was provided for the duration of the treatment period. The research interviewer provided a brief training on how to use the ACBT program immediately following the baseline assessment if the randomization indicated that the participant was in the immediate treatment group. The training lasted 5 to 10 minutes and included: selecting an area in which to listen to the ACBT program, ensuring that the CD player was working, teaching the participant how to operate the CD player, and providing the participant with information on how to use the workbook. See Appendix D for the script that was used during the training. Following the training, the interviewer scheduled a telephone contact time for a week later to monitor mood and treatment progress.

For the delayed treatment group, the interviewer discontinued the session after conducting the baseline assessment. Prior to leaving, the interviewer scheduled a contact time for a week later and informed the participant that their treatment would begin after four weeks of weekly contact calls.

For both groups, the interviewer informed the participant that someone from the study would attempt to contact them at the scheduled time the following week.

**Weekly contacts.** During each telephone contact, the assigned interviewer scheduled weekly contact times with the participant. The interviewers received instruction not to provide counseling or advice during weekly contact. For both groups, the GDS-5 was administered over the telephone to monitor mood on a weekly basis. The weekly contact call lasted five minutes or less and was conducted to ensure participant safety. If the GDS-5 score indicated worsening
mood repeatedly for two weeks, the safety protocol indicated that the participant should be referred to other treatment providers and discontinued from the study. This occurred in one instance. In this case, the participant was advised to seek an alternate treatment. Subsequently, this participant chose to begin treatment with a community mental health provider.

Frequently, interviewers had difficulty contacting participants at the scheduled times. If participants were unreachable, interviewers attempted calling at alternate times throughout the week. The immediate treatment and delayed treatment groups received a similar frequency of contacts, about two contact calls per four-week period.

Those in the immediate treatment group were informed that the purpose of the calls was to monitor depression, answer questions about the treatment material, and assess how much they had listened to the audio program. As a measure of treatment enactment, interviewers inquired how many CDs those in the treatment group had listened to in the past week.

Additionally, questions concerning the ACBT program and technical issues were addressed. Usually, participants made inquiries about the technology in the first week contact call. Some older adults requested reminders about using the CD player and how to place a CD into the CD player. Others expressed concern about the number of exercises in the workbook. Participants were reassured that they could complete the program at their pace and could choose to complete the exercises that seemed most relevant to them. During later weeks, participants’ comments shifted to the content of the program (e.g., identifying unhelpful thoughts).

During the treatment delay period, participants in the delayed treatment group were informed that an interviewer would contact them weekly to monitor depression and remind them of how much time they had remaining before treatment began.
**Additional assessments.** Participants were also contacted midway between T1 and T2 (and between T2 and T3 if in the delayed treatment group). At these times, the GDS was administered over the telephone. Similar to the weekly contacts, it was often difficult to contact participants during a one-week period. Thus, only 18 of these assessments were completed.

**Posttest assessments (Time 2 and Time 3).** Upon completion of the treatment (approximately four weeks after beginning the treatment), both groups were scheduled to complete an assessment over the telephone. The assessment usually took place within a week or two after the intervention had been completed to accommodate for participant availability. A research assistant contacted the participant by telephone to schedule this assessment. At this point, the participant was instructed not to reveal their treatment condition to the interviewer. Participants in the immediate treatment group were provided with information on treatment resources if they requested additional assistance. The immediate treatment group was permitted to keep the audio program if they wished. If a CD player was provided, a time was scheduled to retrieve it from the participant.

**Delayed treatment.** After completing the four-week delay and T2 assessment, the delayed treatment group was scheduled for an in-person meeting to complete the treatment training if they had been randomly assigned to the ACBT group. Upon completion of the introductory training, the participant began treatment. Most participants in the delayed treatment used the treatment for six to eight weeks and were slower to begin the treatment. Following the treatment period as described above, the participants received a T3 assessment over the telephone. The same procedures were followed as noted above for the immediate treatment group.

**Attrition.** An attrition rate of 14.7% (n = 5) was observed which is similar to other bibliotherapy studies of older adults (e.g., Scogin et al., 1989). Attrition occurred for a number of
reasons. Two participants in the treatment condition discontinued shortly after beginning due to worsened health. One of the participants in the delayed treatment discontinued after two weeks in the delay period indicating that they were no longer interested. One participant in the delayed treatment was lost to contact after completing the treatment. Another participant chose not to begin treatment after the delay because of lack of time. Two participants only completed partial T2 packets: one due to time constraints and one due to a miscommunication with an interviewer. Time 3 assessments for two participants in the delayed treatment group have not yet been obtained due to scheduling difficulties but will be completed as soon as possible.

**Technological issues.** Through the course of the study, a number of technological issues were reported and addressed. Some participants reported that their personal CD players would not play the CDs. The CDs were created using a commercially available writeable disc that had the capacity for 80 minutes of material. It was discovered that older CD players could not read this type of disc. This concern was remedied by lending the participant a newer CD player. Other participants noted that some of the CDs in the set did not work. It was found that some writeable CDs out of any given package were defective. To ameliorate this issue, a research assistant reviewed each CD set. One participant reported that the CD had become lodged in the car CD player. It was determined that the heat during summer was causing the adhesive from the CD labels to melt. As a number of participants had reported using the CDs in their car, all subsequent participants received an additional unlabeled set of CDs for use in the car.

**Adverse events protocols.** The interviewers were trained to assess for suicidal ideation and follow a protocol if a potential participant or current participant reported suicidal ideation during the eligibility screening, weekly contact calls, or assessments. Three individuals reported suicidal ideation during eligibility screening and received referral to other treatment providers. One
participant in the delayed treatment control group reported suicidal ideation during the T2-pretreatment assessment. The suicide protocol was followed with this participant. As the participant wished to begin the treatment and would be unable to obtain treatment elsewhere, the participant received training on the ACBT program and began the treatment. The suicidal ideation resolved within a week and the patient continued to make progress with the treatment without further adverse events.
CHAPTER 5
RESULTS

Recruitment Sources

Participants were recruited from May 2008 to May 2010. A majority of the sample (82%) was recruited from medical settings: 73.5% from one primary care clinic in Etowah county, 5.8% from other primary care clinics (Tuscaloosa County and Perry County), and 2.9% from a dialysis center. The remaining sample was recruited via other approaches: churches (11.7%), an ongoing depression screening study (2.9%), and an older adult research database (2.9%). Statistical analyses did not reveal significant differences in demographic variables (e.g. age, education, TICS-m, baseline on outcome measures, VES-13) between the immediate treatment and delayed treatment control group. See Table 1 for participant demographics by condition.

Data Analyses

Outcome assessment.

Assessing the outcomes in clinical research can often be challenging. According to Ogles, Lunnen, and Bonesteel (2001), outcomes in clinical research can be examined in three ways: statistical significance, effect size, and clinical significance. Each of these methods provides varying information on the outcome. Effect sizes provide information on the magnitude of a treatment effect and are less dependent on the sample size than is significance testing. Though statistical significance provides information on the difference between groups and effect size provides information on the magnitude of the treatment effect, neither one translates this
information into what clinical impact the treatment had on the depression in each individual. Thus, all three methods were used to determine the efficacy of the ACBT program.

**Missing data.** A variety of approaches were used to handle missing data. At the individual item level, missing data were infrequent. Therefore, in computing scale scores, mean substitution was used. To include those who dropped out of treatment in the analyses, intent-to-treat analyses were conducted. End-point analyses were conducted such that the last data point on the HRSD and Somatization subscale have been carried forward to replace missing end-point values for those who dropped out of treatment. For the GDS, the last available data point (T1 or T1b) has been carried forward to replace missing T2 data. This method was chosen because it is a conservative approach to addressing missing data. In addition, completer analyses have been conducted to include the participants who completed two time points (T1 and T2). An alternative approach, linear mixed modeling, has become more accepted in the literature because it is a more powerful test that can tolerate missing values in repeated measures analyses unlike ANOVAs, which would require listwise deletion. This approach is presented in the exploratory analyses section.

**Assumptions.** Assumptions of normality, linearity, homogeneity of variances, and homogeneity of regression slopes were met for the HRSD, GDS, and Somatization subscale measures for performing ANCOVAs. Assumptions for regression analyses were met on all variables (e.g. normality, linearity, and homoscedasticity).

**Carry forward analyses on outcome measures.**

To determine if the ACBT program was effective in reducing symptoms, ANCOVAs on the HRSD, GDS, and Somatization subscale of the BSI were conducted to compare the immediate treatment group to the delayed treatment control using the T1 and T2 scores (as well as T1b
scores if evaluating the GDS). For these analyses, T1 scores were carried forward to replace missing T2 scores. For analyses on the GDS, the last available score (either T1 or T1b) was carried forward to replace missing T2 scores.

**Primary hypothesis.** The T1 score was entered into the model as the covariate. After controlling for the T1 HRSD, a significant difference between the immediate treatment and delayed treatment control group was observed on the T2 HRSD, $F(1, 31) = 4.14, p = .05$. As the overall model was significant at the .05 level of significance, the estimated marginal means for the groups were examined to determine which group made greater progress. The immediate treatment group ($M = 8.35$) had lower T2 scores on the HRSD than the delayed treatment control group ($M = 12.89$), suggesting that the intervention improved depression.

For the GDS, The T1 score was entered into the model as a covariate. After controlling for the T1 GDS, no significant difference between the immediate treatment and delayed treatment group was observed on the T2 GDS, $F(1, 31) = .79, p = .38$. The immediate treatment group did not have significantly lower T2 scores on the GDS ($M = 12$) than the delayed treatment control group ($M = 14.06$), suggesting that the intervention did not improve depression as measured by the GDS.

**Exploratory hypothesis.** An ANCOVA was also conducted to evaluate differences in the Somatization subscale score by group. Adjusting for the T1 Somatization subscale score, no significant differences between the immediate treatment ($M = 60.03$) and delayed treatment group ($M = 61.61$) on the T2 Somatization subscale score were observed, $F(1, 31) = .27, p = .60$. This indicates that after controlling for T1 Somatization subscale scores, there was no difference in somatic symptoms by group at T2.
**Completer analyses.**

As the carry forward approach to missing data is conservative, the same analyses were conducted on completers. Completers are defined as those in the immediate and delayed conditions who completed T1 and T2 assessments. To determine if the ACBT treatment improved outcome in those who completed the T1 and T2 assessments, ANCOVAs on the HRSD, GDS, and Somatization subscale of the BSI were conducted to compare the immediate treatment group to the delayed treatment control using the T1 and T2 scores.

**Primary hypothesis.** After adjusting for the T1 HRSD, a significant difference between the immediate treatment and delayed treatment control group was observed, \( F(1, 28) = 5.35, p = .03 \), (Treatment \( M = 7.05 \); Control \( M = 12.27 \)). Examination of the marginal means indicated that those who completed the treatment had lower T2 depression scores than those who were waiting for treatment when controlling for T1 scores. See Figure 3 and Table 5 for means.

Additionally, an ANCOVA was conducted to evaluate group differences on the GDS. After controlling for the T1 GDS score, no significant difference between the immediate treatment and delayed treatment control group was observed on the GDS T2 score, \( F(1, 23) = .62, p = .44 \), (Treatment \( M = 9.75 \); Control \( M = 11.96 \)). This finding suggests that the intervention did not differentially influence depression scores as measured by the GDS because those who completed the treatment did not have lower T2 depression scores compared to those in the delayed treatment control group.
**Figure 3.** Interaction effect by group and time on the HRSD. This bar graphs demonstrates a significant interaction effect by group and time on the HRSD.

### Table 5

**Means and Standard Deviations by Group and Time**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Immediate Treatment</th>
<th></th>
<th>Delayed Treatment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T1 M (SD)</td>
<td>T2 M (SD)</td>
<td>T1 M (SD)</td>
<td>T2 M (SD)</td>
</tr>
<tr>
<td>HRSD</td>
<td>17.00 (7.79)</td>
<td>7.67 (7.79)</td>
<td>15.53 (8.43)</td>
<td>11.70 (8.35)</td>
</tr>
<tr>
<td>GDS</td>
<td>16.41 (5.40)</td>
<td>8.86 (7.67)</td>
<td>18.53 (5.84)</td>
<td>13.00 (9.45)</td>
</tr>
<tr>
<td>BSI GSI</td>
<td>66.47 (6.41)</td>
<td>55.38 (9.46)</td>
<td>66.59 (8.14)</td>
<td>61.63 (13.54)</td>
</tr>
<tr>
<td>BSI PST</td>
<td>29.71 (9.92)</td>
<td>16.54 (11.12)</td>
<td>31.47 (11.32)</td>
<td>24.13 (14.87)</td>
</tr>
<tr>
<td>BSI PSDI</td>
<td>61.71 (6.73)</td>
<td>53.92 (8.05)</td>
<td>60.53 (6.50)</td>
<td>60.19 (10.01)</td>
</tr>
<tr>
<td>BSI Somatization subscale</td>
<td>65.12 (11.99)</td>
<td>56.46 (10.87)</td>
<td>65.35 (10.85)</td>
<td>60.56 (12.77)</td>
</tr>
<tr>
<td>BSI Depression subscale</td>
<td>64.88 (7.71)</td>
<td>54.38 (9.82)</td>
<td>64.35 (8.38)</td>
<td>60.19 (12.16)</td>
</tr>
<tr>
<td>CBTKT-10 items</td>
<td>6.65 (1.22)</td>
<td>7.62 (1.50)</td>
<td>7.24 (1.52)</td>
<td>7.40 (1.45)</td>
</tr>
<tr>
<td>DAS</td>
<td>122.84 (21.64)</td>
<td>104.50 (17.69)</td>
<td>122.82 (23.85)</td>
<td>112.37 (29.70)</td>
</tr>
<tr>
<td>COPPES Pleasure</td>
<td>1.28 (.22)</td>
<td>1.44 (.23)</td>
<td>1.29 (.23)</td>
<td>1.37 (.28)</td>
</tr>
<tr>
<td>COPPES Frequency</td>
<td>0.97 (.25)</td>
<td>1.16 (.26)</td>
<td>1.02 (.25)</td>
<td>1.11 (.26)</td>
</tr>
</tbody>
</table>

*Note.* At Time 1, \( n = 17 \) for the Immediate Treatment group and the Delayed Treatment Control group. At Time 2, \( n = 15 \) for the Immediate Treatment group and \( n = 16 \) for the Delayed Treatment Control group. At Time 2, \( n = 13 \) for the Immediate Treatment group on the GSI, PST, PSDI, Somatization subscale, CBTKT, DAS, COPPES Pleasure and Frequency. HRSD = Hamilton Rating Scale for Depression, GDS = Geriatric Depression Scale; GSI = Global Severity Index, PST = Positive Symptom Total, PSDI = Positive Symptom Distress Index; CBTKT = Cognitive Behavioral Therapy Knowledge Test; DAS = Dysfunctional Attitudes Scale; COPPES = California Older Person’s Pleasant Event Schedule.

*a*For the GDS at Time 2, \( n = 14 \) for the Immediate Treatment and \( n = 12 \) for the Delayed Treatment Control group.
**Exploratory hypothesis.** Similarly, an ANCOVA was conducted to evaluate differences in the Somatization subscale score by group in completers. Adjusting for the T1 Somatization subscale scores, no significant differences between the immediate treatment and delayed treatment group on the T2 Somatization subscale scores were observed, $F(1, 26) = .94, p = .34$, (Treatment $M = 56.93$; Control $M = 60.18$). This indicates that the ACBT program did not impact somatic symptoms.

**Exploratory Analyses**

**Linear mixed models.** Linear mixed models were examined to assess the amount of variability between group and time on the outcome measures (HRSD, GDS, and Somatization subscale) while accounting for within-subjects dependence. In these models, time (T1 and T2), group (immediate treatment and delayed treatment), and participant were entered as factors. Group, time, and the interaction between condition and time were entered as fixed effects. Participant was entered as the random effect. The dependent variable was one of the outcome measures noted above.

**Primary hypotheses.** A linear mixed model was examined to evaluate the effects of group and time on the HRSD. The interaction between group and time was significant $F(1, 29.57) = 5.7, p = .024$. Means indicate that the immediate treatment group experienced a greater decrease in depressive symptoms from T1 to T2 than the delayed treatment control group on the HRSD. See Figure 3 for a graphic display of the interaction and Table 5 for means. A linear mixed model was also examined to evaluate the effects of group and time on the GDS. No significant group by time interaction was attained on the GDS, $F(1, 27.72) = .61, p = .44$. This indicates that the ACBT treatment did not result in lower depression scores over time by group as measured by the GDS.
**Exploratory hypothesis.** A linear mixed model was examined to evaluate the effects of group and time on the Somatization subscale of the BSI. No significant group by treatment interaction was attained on the Somatization subscale $F(1, 28.4) = .86, p = .36$, indicating that somatic symptoms did not decrease over time by group.

**Additional exploratory analysis.** As the outcome analyses assessing the time and group interaction on the GDS and HRSD produced incongruent results, an additional analysis was conducted to explore the reason for this discrepancy. One potential reason for this difference is that the HRSD is able to measure the intensity and frequency of symptoms whereas the GDS merely measures the absence and presence of symptoms. If this were the case, then a measure assessing level of distress could shed light on the mixed results. Therefore, the Positive Symptom Distress Index (PSDI) from the BSI, which measures the intensity of symptoms was selected for further analysis. A linear mixed model was examined to evaluate the effects of group and time on the PSDI using the procedures described above. The interaction between group and time on the PSDI was significant, $F(1, 29.45) = 7.95, p = .009$. Examination of the means indicates that the immediate treatment group experienced a greater decrease in the intensity of symptoms than the delayed treatment control group over time. See Table 5 for means.

**Clinical significance.** Clinical significance was determined in a number of ways. Anyone who received treatment (collapsed across both the immediate treatment and delayed treatment conditions $n = 19$) was included in this evaluation. First, the posttreatment HRSD score (defined as the T2 score if in the immediate treatment group or the T3 score if in the delayed treatment group) was examined to ensure that it was lower than the pretreatment HRSD score (defined as the T1 score if in the immediate treatment group or the T2 score if in the delayed treatment group). Out of the 19 participants who received the treatment, 84% had lower posttreatment
scores. Next, the posttreatment score was examined to ensure that it was lower than 11 (a cutoff score for depression). Fourteen participants (73.7%) had a score lower than 11 on the posttreatment. Finally, the difference between the posttreatment and pretreatment was examined to ensure it would be large enough to be considered a reliable change and not due to measurement error (Ogles et al., 2001). A reliable change index score was calculated using a formula provided by Jacobson and Truax (1991). The reliable change index (RCI) ensures that the change in scores is not due to the reliability of the measure alone. The formula is provided in Appendix E. The numerator is the difference between the HRSD score of the participant at pretreatment and posttreatment. The denominator is the standard error of the differences between the two scores. The result of this calculation, the RCI score, must have been greater than 1.96 to be considered a reliable change. Eight participants (42.1%) obtained a RCI score greater than 1.96 with six (31.6%) also scoring below the cutscore for depression. This can be compared to only 2 (12.5%) out of 16 in the delayed treatment control (untreated) obtaining an RCI score greater than 1.96. A 10-point reduction on the HRSD was observed in those meeting criteria for a reliable change.

Using the same method, clinical significance was examined for the GDS for treated participants ($n = 17$). Of these participants, 82.4% experienced a reduction of depressive symptoms compared to the pretreatment score. Next, the posttreatment scores were examined to ensure that they were lower than 10 on the GDS (cutoff for depression). This criteria was met for 64.7% of the treated participants. Then, according to the RCI calculation procedures described above, 52.9% obtained a RCI score greater than 1.96. Nearly half (47.1%) had both a RCI score greater than 1.96 and posttreatment scores lower than 10 on the GDS. Of the delayed treatment control group (untreated) with completed T2 assessments ($n = 12$), four (33%) participants
obtained a RCI score greater than 1.96. A seven-point reduction on the GDS was observed in those meeting criteria for a reliable change.

**Effect sizes.** Effect sizes were calculated to determine how powerful the treatment effect was. First, a residualized change score was created by regressing the T2 score onto the T1 score. The means and the pooled standard deviation from the treatment and the control group (using the residualized change score) were used to calculate an effect size based on Cohen’s $d$ (Cohen, 1988). See Appendix E for the formula. The effect size for the HRSD by treatment group is $d = -.87$ indicating a large effect size. The effect size for GDS by treatment group is $d = -.17$ indicating a small effect size.

**Treatment receipt.** An ANCOVA was conducted to compare the immediate treatment to the delayed treatment on the T2 Cognitive Behavior Therapy Knowledge Test (CBTKT) while controlling for the T1 performance. It would be expected that if the treatment was adequately delivered or received then the treatment group should outperform the control group and should know more information. While controlling for CBTKT T1 score, no significant differences on the T2 score were observed between groups $F(1, 28) = .956, \ p = .34$.

**Treatment enactment.** Using all participants who completed the ACBT treatment (collapsed across immediate and delayed treatment groups), multiple linear regression analyses were conducted to assess how the number of CDs listened to was associated with depression outcome on the GDS and HRSD. In these analyses, the posttreatment score (defined as the T2 score if in the immediate treatment group or the T3 score if in the delayed treatment group) was entered as the dependent variable and the pretreatment score (defined as the T1 score if in the immediate treatment group or the T2 score if in the delayed treatment group) and the number of CDs were entered as the predictor variables. It would be expected that adherence to the treatment
by listening to the CDs would be related to lower posttreatment scores after controlling for pretreatment scores. Of those who received the treatment \((n = 21)\), 66% listened to all of the CDs, 4.8% listened to 7 CDs, 4.8% listened to 6 CDs, 9.5% listened to 3 CDs, and 14.3% listened to 1 CD. The mean number of CDs completed was 6.4 \((SD = 2.7)\). The number of CDs completed accounted for a significant amount of variability in the HRSD posttreatment score, \(t(17) = -2.26, p = .04, \beta_1 = -1.097\). The number of CDs completed independently explained 17% of the variance above the T1 score \((Total R^2 = .46, R^2\text{change} = .29)\). However, the number of CDs completed did not account for a significant amount of variability in the T2 GDS score above and beyond the T1 score, \(t(14) = - .77, p = .46, \beta_1 = -.43\).

**Treatment satisfaction.** Survey responses are provided in the form of descriptives including mean preferences and standard deviations in Table 6. The percentage of participants who responded per anchored item is noted in Table 6. Based on the survey, it appears that most participants found the program easy to use, the techniques in the program easy to learn, enjoyed using the program, found the program useful in improving mood, and would recommend it someone else. A few of the participants also provided comments regarding how to improve the program. Examples of some of the comments to improve the program were: to shorten the program, remove CD 1 Introduction to CBT, provide an abridged CD covering all the skills, and decrease the number of exercises. A few of the participants commented that the examples perfectly matched the issues that they were confronting as older adults while one participant commented that many of the examples did not apply to older adults. Another participant noted that this would be helpful in other formats, such as MP3 or over the computer.
Table 6

**Participant Satisfaction Survey Percentages, Means, and Standard Deviations**

<table>
<thead>
<tr>
<th>Items</th>
<th>Strongly disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
<th>M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>This program was easy for you</td>
<td>5% (1)</td>
<td>15% (3)</td>
<td>15% (3)</td>
<td>65% (13)</td>
<td>4.35 (1.09)</td>
</tr>
<tr>
<td>The techniques in this program were easy to learn</td>
<td>5.3% (1)</td>
<td>5.3% (1)</td>
<td>31.6% (6)</td>
<td>57.9% (11)</td>
<td>4.37 (1.01)</td>
</tr>
<tr>
<td>I enjoyed using this program</td>
<td>5% (1)</td>
<td>5% (1)</td>
<td>15% (3)</td>
<td>75% (15)</td>
<td>4.55 (0.99)</td>
</tr>
<tr>
<td>This program was useful for learning techniques to improve my mood</td>
<td>5% (1)</td>
<td>-</td>
<td>20% (4)</td>
<td>75% (15)</td>
<td>4.60 (.94)</td>
</tr>
<tr>
<td>I would recommend this program to someone experiencing depression</td>
<td>5% (1)</td>
<td>5% (1)</td>
<td>-</td>
<td>90% (18)</td>
<td>4.70 (.98)</td>
</tr>
</tbody>
</table>

**Summary of results.** A number of analyses were conducted to assess the effectiveness of the ACBT treatment. Regardless of the manner in which Hypothesis 1 was assessed (Carry forward, Completer, Linear Mixed Models), it was supported. A clinically significant interaction between group and time on the HRSD was present, suggesting that the ACBT intervention decreased depressive symptoms as measured by the HRSD. Regardless of the analytical method chosen, Hypothesis 2 and the Exploratory hypothesis were not supported. There was no significant interaction by time and group on the GDS, indicating that the ACBT intervention did not result in lower depression scores over time when compared to the delayed treatment control group. Similarly, no significant group by time interaction was present on the Somatization subscale. Interestingly, 47.1% achieved clinically significant change on the GDS but only 31.6% achieved clinically significant change on the HRSD. Treatment enactment results were also mixed. The number of CDs listened to predicted HRSD T2 scores but not GDS T2 scores. In addition, the treatment receipt measure (CBTKT) score was not significantly different between groups after treatment. Participant satisfaction with the treatment was high, with most reporting that it was helpful.
CHAPTER 6

DISCUSSION

The ACBT treatment improves symptoms of depression on a clinician rated scale. Though the immediate treatment group seems to have made small improvements on a self-report scale measuring depression, these changes were not large enough to be considered significant when compared to the delayed treatment control group.

Although one explanation for this discrepancy could be clinician bias in scoring the interviewer rated HRSD, a number of precautions were taken in this study to address this threat to internal validity. Interviewers were blinded to the group and participants were instructed not to reveal their condition to the interviewer. Also, the principal investigator did not administer the Time 2 HRSD and GDS, thereby reducing the potential for experimenter expectancy effects. In addition, a number of randomly selected HRSD ratings were reviewed for accuracy and resulted in excellent interrater reliability, thereby decreasing the likelihood of interviewer bias. Further, interviewers were trained with the GRID approach, a standardized protocol for the HRSD (Williams, 2008). For these reasons, the HRSD scores seem to be a valid reflection of the symptomatology.

Alternately, this discrepancy may be attributed to the type of information assessed by these measures. The open-ended format of the HRSD allows for greater variability in the responses than the forced choice format of the GDS. Therefore, it is possible that the GDS was not as sensitive to some changes in depression. For example, on the HRSD, respondents informing the
interviewer about their interest in activities may elaborate that they have dropped activities but
have recently begun to return to some of these activities. In contrast with the GDS, respondents
answering a question about whether they had dropped activities would have only an option to
respond yes or no. In this example, some information about the improvement on this symptom
dimension is lost with the GDS. Still, another explanation may be that the HRSD was more
attuned to the severity of the symptoms whereas the GDS merely measured the presence and
absence of the symptoms. This explanation is supported by the self-reported BSI Positive
Symptom Distress Index (measuring the intensity of symptoms), which was significantly lower
for the immediate treatment group than for the delayed treatment control group.

However, these explanations do little to increase understanding about the true effect of the
ACBT program on depressive symptoms. In order to appreciate the benefits of the ACBT
program, it is essential to understand the findings in the context of mean reductions and effect
sizes in prior bibliotherapy studies, frequency of clinically significant change in other
bibliotherapy studies, and underlying theoretical constructs.

**Prior depression treatment studies.** The mean reduction in depression outcome measures
after treatment with the ACBT program seems comparable to other depression treatment studies.
When examining mean changes in the NIMH Collaborative Study (Elkin et al., 1989) a landmark
depression treatment study for adults, the mean reduction on the HRSD was 11.6 points for the
individual cognitive-behavioral therapy condition, which is higher than the ACBT program. A
multi-modal, self-administered, cognitive bibliotherapy treatment in adults achieved a six point
reduction on the HRSD, again comparable to the ACBT program (Karpe, 2004). The ACBT
program seemed to fair better than another self-help treatment in the primary care, which had an
effect size of .18 (Mead et al., 2005).
**Prior bibliotherapy studies with older adults.** When compared to other bibliotherapy studies in older adults with depression, the treatment effect of the ACBT program also seems to be comparable. Landreville and Bissonnette (1997) obtained a four-point reduction in GDS scores from pretreatment to posttreatment in a sample of disabled depressed older adults, not unlike the 7.5 point reduction achieved with the ACBT program. The ACBT program also resulted in almost identical reductions on the HRSD and GDS compared to another bibliotherapy study of depressed older adults (Scogin et al., 1987). Further, Floyd et al. (2004) obtained similar outcomes in a study of bibliotherapy for depression in older adults in which the same measures were administered. See Table 7 to compare the ACBT study to prior studies.

Table 7

Comparison of Prior Studies on Treatment Group Mean Reductions from T1 to T2

<table>
<thead>
<tr>
<th>Study</th>
<th>Type of treatment</th>
<th>HRSD</th>
<th>GDS</th>
<th>GSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACBT</td>
<td>Audio-based cognitive behavioral</td>
<td>9</td>
<td>7.5</td>
<td>11</td>
</tr>
<tr>
<td>Elkin et al., 1989</td>
<td>Individual cognitive behavioral</td>
<td>11.6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Floyd et al., 2004</td>
<td>Cognitive bibliotherapy</td>
<td>7</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Karpe et al., 2004</td>
<td>Multi-modal cognitive therapy</td>
<td>6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Landreville et al., 1997</td>
<td>Cognitive bibliotherapy</td>
<td>-</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Scogin et al., 1987</td>
<td>Cognitive bibliotherapy</td>
<td>8.5</td>
<td>5.8</td>
<td>-</td>
</tr>
<tr>
<td>Scogin et al., 1989</td>
<td>Behavioral bibliotherapy</td>
<td>8.1</td>
<td>2.7</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8.8</td>
<td>5.6</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note. HRSD = Hamilton Rating Scale for Depression; GDS = Geriatric Depression Scale; GSI = General Severity Index.

*aThis is a study with an older adult sample.*

Although mean reductions on outcome measures were similar to prior bibliotherapy studies in older adults, the effect sizes were notably smaller for the ACBT program. One possible
explanation for this difference may be obtained by examining the greater improvement in the delayed treatment controls in this study versus the studies noted above. The ACBT treatment was compared to a minimal contact, delayed treatment control group similar to previous studies. However, to improve safety procedures, the minimal contact, delayed treatment control group received the addition of brief weekly depression screenings unlike previous studies. One of the techniques in cognitive behavioral therapy is learning to become aware of one’s mood and in fact, one study has assessed the value of weekly depression screening as a depression intervention (Ross, TenHave, Eakin, Difilippo, & Oslin, 2008). It is unclear whether this led to the greater observed improvements in the minimal contact, delayed treatment control group. If the delayed treatment group had not improved, as had been the case in previous studies, the current sample size would have been sufficient to detect an effect. However, due to the improvement in the delayed treatment group, the sample size was not large enough to detect a statistical difference on the GDS.

Clinical significance. Perhaps a more informative method of assessing the efficacy of an intervention is by examining the clinical meaningfulness of the results. As many depression treatment studies failed to report clinical significance, used varying formulas to calculate clinical significance, or evaluated depression with different measures, it was challenging to compare findings across studies. Therefore, in this section, the ACBT program was compared to a select number of studies that used one of the same instruments and described the formulas used for calculating clinical significance. Using data from the ACBT studies, clinical significance was recalculated using the formulas specified in these studies. The percent of ACBT program completers (collapsed across immediate treatment and delayed treatment conditions) who achieved clinically significant change was lower than some bibliotherapy studies with older adult
samples. Using the same criteria for clinical significance as each of two prior bibliotherapy studies of older adults, a slightly lower number of participants achieved clinically significant change on the HRSD (31.5% ACBT vs. 35% Floyd et al., 2004; 53% ACBT vs. 66% Scogin et al., 1989).

An explanation for the slightly lower rates of clinically significant change could be associated with the differences in the samples. The current sample consisted of almost twice as many patients on antidepressant medications as previous bibliotherapy studies with older adults (e.g. Floyd et al., 2004). This may indicate that more difficult to treat patients were a part of this sample, particularly given that the subjects had residual symptoms at the onset of the study despite pharmacotherapy. Further, physical disability has been shown to decrease the response rate of therapy as seen in the study by Landreville & Bisonnette (1997) in which only 10% of the disabled participants achieved clinically significant improvement on the GDS following treatment with the Feeling Good book (Burns, 1980). The current sample consisted of a significant number of patients with physical disability as evidenced by a mean VES-13 score of 3.53. Despite differences in samples, the ACBT program has comparable rates of clinical significance to prior bibliotherapy studies, suggesting that this intervention may be a beneficial treatment for older adults.

**Theoretical constructs.** Another means of evaluating a psychological treatment is by assessing if symptom reductions are associated with concurrent changes in the theoretical constructs underpinning a treatment. According to the theory underlying CBT (Beck, 1967), changing one’s thoughts and behaviors should lead to improved depression outcome. To evaluate the theoretical constructs, the means by group and time on two measures designed to assess dysfunctional thoughts (DAS) and behaviors (COPPES) were examined. Improvements on these
measures corresponded to the decrease in depressive symptoms, with a trend towards greater improvements on the DAS for the treatment group. A similar trend was not as apparent with the COPPES. Perhaps changes on the COPPES were not as large because behavioral techniques were not presented until much later in the sequence of CDs. The trend for lower DAS scores following therapy in the immediate treatment group suggests that the improvements on the HRSD could be attributed to the ACBT program.

**Treatment effectiveness.** A number of factors point to the preliminary effectiveness of this treatment. First, a statistically significant Time X Group interaction was obtained on the HRSD. Though not assessed statistically, descriptives from other measures showed a steeper trend towards improvements in the immediate treatment group. Second, the rates for clinical significance were fairly comparable to prior bibliotherapy studies, with a substantial percentage of the sample experiencing improvement. Third, the change in one theoretical construct is consistent with the mechanism by which the ACBT program should facilitate improvements. Together, these factors suggest that the ACBT program has the potential to be added to the list of depression treatments available to older adults given further assessment.

**Somatic symptoms.** This study also explored if treatment with the ACBT program would result in fewer somatic complaints. Rost et al (2005) showed that somatic complaints were related to higher outpatient medical costs and less improvement in symptoms following depression treatment. As cognitive behavioral therapy has been useful for patients with somatic complaints (Looper & Kirkmayer, 2002; Raine et al., 2002), it was hypothesized that somatic complaints could be influenced by the ACBT program. In the current study, changes between the immediate treatment and delayed treatment control group on the Somatic subscale of the BSI were not significant, suggesting that somatic symptoms did not respond to the treatment. It is
possible that somatic symptoms need to be directly targeted as in prior studies (Looper & Kirkmayer, 2002; Raine et al., 2002). As little information is available on the impact of depression treatments on somatic complaints, further study of this topic is warranted.

Limitations

Though the ACBT program has preliminary data to support its effectiveness, the results should be interpreted cautiously due to a number of limitations. Because of the scarcity of resources, the sample size was small, which increases the likelihood of not detecting an effect when one could be present. In addition, because of the small sample size, any findings should be interpreted with caution. Though a number of recruitment strategies were attempted, the sample was not representative, preventing the generalizability of this study to different samples. Another limitation was that a significant number of participants were recruited from one primary care site in a rural area. Also, males and minorities were not adequately represented in the sample.

One particular limitation of the study related to the measure of treatment receipt. The CBTKT, which was adapted for use in this study, was not a valid means of assessing the content of the ACBT program. The test originally assessed treatment receipt for the *Feeling Good* book (Burns, 1980) and seven items were changed to incorporate the behavioral components of the ACBT program. As the treatment manual (Dick et al., 1996) that the ACBT program is based upon had been adapted for use with older adults, it did not cover the same material or present the information in the same manner or wording. For example, automatic negative thoughts were most frequently termed unhelpful thoughts in the ACBT program. These slight changes may have resulted in participants being less familiar with material on the test items. Floyd et al. (2004) also experienced difficulty evaluating treatment receipt with this measure when assessing individual psychotherapy.
Additionally, the ACBT intervention was administered in conjunction with minimal contact. This design was chosen in order to ensure the safety of participants. Thus, the independent effect of the treatment and the minimal contact on depressive symptoms cannot be determined. If this treatment were provided without minimal contact, it is unclear if it would be as effective.

**Summary**

This study offers initial evidence for the potential viability of the ACBT program in older adults with depressive symptoms. Development of this audio-treatment creates a novel modality by which cognitive behavioral therapy can be administered. This treatment fills a need, as there are currently no publicly available cognitive behavioral audio-treatments specific to depression. Another advantage of this study is that the intervention was tested with a different sample than prior bibliotherapy studies. The sample was primarily recruited from rural areas, which adds to the literature. Unlike most prior bibliotherapy studies of older adults, which relied heavily on participants recruited through media announcements, this study was tested with predominately primary care older adults. As the primary care setting is where most older adults obtain mental health care (Harmon et al., 2003), this improves the ecological validity of these findings.

The ACBT program has the potential to be offered in a primary care setting with minimal cost and inconvenience to the health care provider. The United Kingdom based programs Improving Access to Psychological Therapies and Book Prescription Scheme serve as models of how self-administered treatment can be prescribed to primary care patients by health professionals (McKenna, Hevey, & Martin, 2010). Most of the providers and patients who were interviewed about the Book Prescription Scheme believed that the bibliotherapy materials were helpful.
Acceptability and feasibility. Most of the participants responded favorably to the ACBT program in the current study. Mental health providers wishing to offer the ACBT program to their patients could do so with minimal cost and manpower. Most older adults found the ACBT program easy to use and required very little training on operating a CD player. However, there would be a cost to lending out devices capable of playing the audio material. Almost half of the participants did not possess an operating CD player and were supplied one for the duration of the one month treatment period. Despite the short treatment interval, a number of CD players became damaged and required replacement. Lending devices would also require providers to track who is in possession of a device, which is an additional burden. For simplicity, this treatment was evaluated using CDs. However, it has the potential to be offered in MP3 format, which may be uploaded to an MP3 player or a computer. Provision of the treatment in other formats may decrease provider burden.

Further study of the treatment is warranted in a larger, more diverse, and representative sample of community dwelling and primary care older adults. Based on the comments provided by participants, it may be valuable to evaluate a shorter version of this audio program with three CDs: a CD about unhelpful thinking, a CD about changing behaviors, and a CD on relaxation. Also, as a number of participants continued to complain about sleep difficulties following treatment, the addition of material on sleep hygiene may be beneficial. Though this treatment was tested independently, it has the potential to be a useful adjunct to psychotherapy. Additional research on this topic would elucidate the value of the ACBT program as an adjunct to psychotherapy.

Conclusion. With additional evaluation, the ACBT program has the potential to be a promising treatment for older adults with depression. Findings indicate that this intervention was
well-received by participants. Additionally, it achieved comparable rates of clinical significance to prior bibliotherapy studies of older adults with depression.


Derogatis, L. R., & Spencer, P. M. (1982). *BSI manual I: Administration and procedures*. Baltimore: Johns Hopkins University School of Medicine, Clinical Psychometrics Unit.


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Johnson, K. (Feb 13, 2006). Depressive symptoms often overlooked in elderly patients. *Internal Medicine News, 23*.


APPENDIX A

Sample letter for research database

Sample letter medical setting

Brochure
Sample Letter for Research Database

Sunday, November 14, 2010

Dear ____________,

As you have previously expressed your interest in being informed about new research opportunities from the Center of Mental Health and Aging, I am writing to inform you of some opportunities to participate in depression related research conducted at the University of Alabama. In this envelope, you will find a brochure about a treatment study for depression. By participating in this study, you could receive up to $35 to compensate you for your time. To get more information, you can call the telephone number 348-1921. Let me reinforce that participation in this study is completely your choice. Additionally, a postage paid slip on the brochure can be completed and returned if you would like to learn more about this treatment study. If you would like to receive information about research opportunities less frequently or would like to change how you receive these opportunities, then please let us know.

Thank you for your time,

Avani Shah, MA
Doctoral Student
Psychology Department
University of Alabama
Sunday, November 14, 2010

Dear patient,

I am writing to inform you of some opportunities to participate in depression related research conducted at the University Medical Center and the University of Alabama. In this packet, you will find a brochure about our study. The brochure includes information on the required time commitments for participating, the benefits of participation, and ways for you to get more information if you wish to take part in any of the studies. To get more information, you can call the telephone number provided, or, if you prefer to have a member of the research team contact you, simply send your contact information on the slip provided in the enclosed pre-addressed, pre-stamped brochure. Let me reinforce that participation in this study is completely voluntary.

Additionally, you may contact us about your feelings about being sent this information.

Thank you for your time,

Avani Shah, MA
Doctoral Student
Psychology Department
University of Alabama
Sample Brochure

The Good Life Program

- Do you feel down-hearted?
- Is life a challenge?
- We can teach you ways to cope with these challenges!

Amrit Shah, M.A.

and

Martha Marshall, M.A.
Principal Investigators

Forrest Sagar, Ph.D.

Supervisor

The University of Alabama
Department of Psychology

PLEASE CALL (205) 348-1921 FOR MORE INFORMATION

WANT TO LEARN WAYS TO FEEL BETTER AND COPE WITH PROBLEMS?

1. HAVE YOU BEEN FEELING DOWN, BLUE, OR ANGRY LATELY?

2. HAVE YOU STOPPED BEING INVOLVED IN YOUR INTERESTS OR DROPPED ACTIVITIES?

- WE WANT TO HELP!
This is a new self-help study for people who would like to feel better with their emotions.

1. What does it cost? It is FREE. There is no cost to participate.

2. Treatment Types: You will receive the treatment on audio-tape/CD or on a computer.

3. How long does it last? You will receive 1 month of treatment and you may have to wait 1 month before starting the program treatment.

4. Do I have to take any medications? No. In this treatment, you just need to be open to new ways of thinking and doing things to help you feel better.

- Are 55 years of age or older
- Are not currently receiving psychological help

AND YOU WOULD LIKE TO LEARN WAYS TO...

- Improve your quality of life
- Be a happier person

...Then you may be eligible for our free program. Simply fill out and mail the attached information request form, or give us a call.

Please call me with further information regarding this project:

Name ______________________

Address ____________________

City _______________________

State ______________________

Zip Code _________________

Telephone _________________

Best Time To Call Me _________
APPENDIX B

*Measures*

Background Form (Sociodemographic)

Cognitive Therapy Knowledge Test (TX Receipt)

Measure of Intervention Benefit
1. Date of Birth

2. Sex
   ○ Male  ○ Female

3. Primary Racial or Ethnic Group
   ○ Black, African-American
   ○ White, Caucasian
   ○ Hispanic, Latino
   ○ Native American
   ○ Asian
   ○ Native Hawaiian or Other Pacific Islander
   ○ Native Alaskan
   ○ Other

4. Marital Status
   ○ Never Married
   ○ Married or Living as Married
   ○ Widowed, not currently married
   ○ Divorced, not currently married
   ○ Separated

5. HEALTH  In general, would you say that your health is:
   ○ Poor  ○ Fair  ○ Good  ○ Very Good  ○ Excellent

6. In the last month has there been a period of time where
   you lost interest or pleasure in things you usually
   enjoyed?
   ○ No  ○ Yes
   If yes, how many days of weeks did it last?

7. Do you have any medical conditions or medical problems?
   ○ No  ○ Yes
   If yes, please list.

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8. Are you currently taking any medications?
   ○ No  ○ Yes  If yes, please list and give the amount.

9. Do you drink alcohol or take recreational drugs?
   ○ No  ○ Yes  If yes, please list and give the amount.

10. Do you visit your doctor every year?
    ○ No  ○ Yes  If yes, how many times?

11. Do you currently take any medications for mood problems?
    ○ No  ○ Yes  If yes, please list and give the amount.

12. In the last month, have you felt "down" or depressed for at least 2 weeks?
    ○ No  ○ Yes

13. Do you currently have any thoughts of harming yourself, or harming someone else?
    IF YES, PLEASE STOP AND TELL THE STUDENT
    ○ No  ○ Yes

14. Have you ever used self-help materials (books, tapes, videos, etc.) to improve your mood?
    ○ No  ○ Yes
15. Education:
- No Formal Education
- Grade 1
- Grade 2
- Grade 3
- Grade 4
- Grade 5
- Grade 6
- Grade 7
- Grade 8
- Grade 9
- Grade 10
- Grade 11
- Grade 12/High School Diploma/GED
- Vocational/Training After High School
- Some College/Associate's Degree
- College Graduate (4 or 5 year program)
- Master's Degree (or other post-graduate training)
- Doctoral degree (PhD, MD, EdD, DVM, DDS, JD, etc.)

16. INCOME: Is your monthly income enough for your needs?
- No
- Somewhat
- Mostly
- Yes
<p>| | | |</p>
<table>
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<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>T F</td>
<td>1.</td>
<td>According to cognitive behavior therapy, all your moods are created by your thoughts and behaviors.</td>
</tr>
<tr>
<td>T F</td>
<td>2.</td>
<td>Learning to overgeneralize is helpful in overcoming depression.</td>
</tr>
<tr>
<td>T F</td>
<td>3.</td>
<td>Name-calling helps to provide a stable, mature life.</td>
</tr>
<tr>
<td>T F</td>
<td>4.</td>
<td>Writing down your automatic negative thoughts will cause you to become more depressed.</td>
</tr>
<tr>
<td>T F</td>
<td>5.</td>
<td>If a person criticizes you or verbally attacks you, it is best to ask for more specific details.</td>
</tr>
<tr>
<td>T F</td>
<td>6.</td>
<td>Name-calling is a good way to deal with anger.</td>
</tr>
<tr>
<td>T F</td>
<td>7.</td>
<td>There is no universal or absolute fairness or justice.</td>
</tr>
<tr>
<td>T F</td>
<td>8.</td>
<td>Viewing yourself as a bad person will help you correct bad behavior.</td>
</tr>
<tr>
<td>T F</td>
<td>9.</td>
<td>To understand your depression, becoming aware of your feelings and behaviors is important.</td>
</tr>
<tr>
<td>T F</td>
<td>10.</td>
<td>It is terrible if someone disapproves of you.</td>
</tr>
<tr>
<td>T F</td>
<td>11.</td>
<td>Human worth is a made-up concept and does not actually exist.</td>
</tr>
<tr>
<td>T F</td>
<td>12.</td>
<td>The only way you can lose self-esteem is by thinking unhelpful thoughts about yourself.</td>
</tr>
<tr>
<td>T F</td>
<td>13.</td>
<td>Busy people cannot be depressed.</td>
</tr>
<tr>
<td>T F</td>
<td>14.</td>
<td>Doing less can make you more depressed, and being more depressed can make you do less.</td>
</tr>
<tr>
<td>T F</td>
<td>15.</td>
<td>Tracking your activities may make you more depressed.</td>
</tr>
<tr>
<td>T F</td>
<td>16.</td>
<td>Doing pleasant activities can balance your everyday living activities.</td>
</tr>
<tr>
<td>T F</td>
<td>17.</td>
<td>An example of passive relaxation is listening to music.</td>
</tr>
<tr>
<td>T F</td>
<td>18.</td>
<td>When you problem-solve you should pick the first solution that comes to mind.</td>
</tr>
<tr>
<td>T F</td>
<td>19.</td>
<td>The Broken-record technique is when you skip from topic to topic.</td>
</tr>
<tr>
<td>T F</td>
<td>20.</td>
<td>Forming a picture in your mind about a stressful event can help you prepare for it.</td>
</tr>
</tbody>
</table>

*Note:* "Items in the current 10 item scale-Cognitive Behavioral Therapy Knowledge Test-10.  "Items that were added to the Cognitive Learning Test.  "Items that were modified on the Cognitive Learning Test."
1. This program was easy to use.
   - Definitely Disagree
   - Disagree Somewhat
   - Neither Disagree nor Agree
   - Somewhat Agree
   - Definitely Agree

2. The techniques in this program were easy to learn.
   - Definitely Disagree
   - Disagree Somewhat
   - Neither Disagree nor Agree
   - Somewhat Agree
   - Definitely Agree

3. I enjoyed using this program.
   - Definitely Disagree
   - Disagree Somewhat
   - Neither Disagree nor Agree
   - Somewhat Agree
   - Definitely Agree

4. This program was useful for learning techniques to improve my mood.
   - Definitely Disagree
   - Disagree Somewhat
   - Neither Disagree nor Agree
   - Somewhat Agree
   - Definitely Agree

5. I would recommend this program to someone experiencing depression.
   - Definitely Disagree
   - Disagree Somewhat
   - Neither Disagree nor Agree
   - Somewhat Agree
   - Definitely Agree
6. Please mark the CD/tapes that you found MOST HELPFUL.
   ◯ An Introduction to CBT and Depression
   ◯ Dysfunctional Thoughts
   ◯ Engaging in Pleasant Events
   ◯ Goal Setting
   ◯ Passive Relaxation
   ◯ Problem-Solving
   ◯ Problem-Solving/Assertiveness
   ◯ Over Thinking
   ◯ Overview

7. Please mark the CD/tapes that you found LEAST HELPFUL.
   ◯ An Introduction to CBT and Depression
   ◯ Dysfunctional Thoughts
   ◯ Engaging in Pleasant Events
   ◯ Goal Setting
   ◯ Passive Relaxation
   ◯ Problem-Solving
   ◯ Problem-Solving/Assertiveness
   ◯ Over Thinking
   ◯ Overview

8. What are some things you might change to improve the program?

Use this space for any additional comments.
APPENDIX C

1) Reviewer forms

2) Eligibility script
Cognitive Behavioral Therapy Adherence Rating Form

**Audiotape #1 Introduction to CBT and Depression**

*Instructions*: Please rate the following on a scale from 1 to 10 (1 indicating very little to 10 indicating quite a bit) for audiotape #1. Then, in the space provided, please provide feedback on how this aspect may be improved, or other comments that you would like to share about that aspect of the tape. If you find the space insufficient, please write on the back of this sheet.

<table>
<thead>
<tr>
<th></th>
<th>How well does the content match the content of CBT? Suggestions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>How well is the information presented so it can be easily understood? Suggestions:</td>
</tr>
<tr>
<td>3</td>
<td>How appropriate are the practice exercises? Suggestions:</td>
</tr>
<tr>
<td>4</td>
<td>How relevant/appropriate are the examples? Suggestions:</td>
</tr>
<tr>
<td>5</td>
<td>How entertaining or mentally stimulating is the material? Suggestions:</td>
</tr>
<tr>
<td>6</td>
<td>How comfortable is the pace of the information? Suggestions:</td>
</tr>
<tr>
<td>7</td>
<td>How useful was the information in the manual? Suggestions:</td>
</tr>
<tr>
<td>8</td>
<td>How likely would you be to provide this to a therapy client? Suggestions:</td>
</tr>
<tr>
<td>9</td>
<td>How adequate is the amount of detail provided? Suggestions:</td>
</tr>
<tr>
<td>10</td>
<td>How applicable is this part of the audio program to older adults? Suggestions:</td>
</tr>
</tbody>
</table>

Additional Comments:
Cognitive Behavioral Therapy Adherence Rating Form

**Overall program**

**Instructions:** Please rate the overall audio program on a scale from 1 to 10 (1 indicating very little to 10 indicating quite a bit). Then, in the space provided, please provide feedback on how this aspect may be improved, or other comments that you would like to share about that aspect of the tape. If you find the space insufficient, please write on the back of this sheet.

<table>
<thead>
<tr>
<th></th>
<th>How well does the content match the content of CBT?</th>
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<tbody>
<tr>
<td></td>
<td>Suggestions:</td>
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<tr>
<td></td>
<td>How well is the information presented so it can be easily understood?</td>
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<td></td>
<td>Suggestions:</td>
</tr>
<tr>
<td></td>
<td>How appropriate are the practice exercises?</td>
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<td></td>
<td>Suggestions:</td>
</tr>
<tr>
<td></td>
<td>How relevant/appropriate are the examples?</td>
</tr>
<tr>
<td></td>
<td>Suggestions:</td>
</tr>
<tr>
<td></td>
<td>How entertaining or mentally stimulating is the material?</td>
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<tr>
<td></td>
<td>Suggestions:</td>
</tr>
<tr>
<td></td>
<td>How comfortable is the pace of the information?</td>
</tr>
<tr>
<td></td>
<td>Suggestions:</td>
</tr>
<tr>
<td></td>
<td>How useful was the information in the treatment manual?</td>
</tr>
<tr>
<td></td>
<td>Suggestions:</td>
</tr>
<tr>
<td></td>
<td>How likely would you be to provide this audio program to a therapy client?</td>
</tr>
<tr>
<td></td>
<td>Suggestions:</td>
</tr>
<tr>
<td></td>
<td>How adequate is the amount of detail provided?</td>
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<tr>
<td></td>
<td>Suggestions:</td>
</tr>
<tr>
<td></td>
<td>How applicable is this audio program to older adults?</td>
</tr>
<tr>
<td></td>
<td>Suggestions:</td>
</tr>
</tbody>
</table>

**Additional Comments:**
Cognitive Behavioral Therapy Adherence Rating Form

Instructions: Please answer the following questions about the overall program.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>What things did you like about the audio program?</td>
</tr>
<tr>
<td>2</td>
<td>What things did you dislike about the audio program?</td>
</tr>
<tr>
<td>3</td>
<td>What changes would you make to the program?</td>
</tr>
<tr>
<td>4</td>
<td>What things about the program would you leave the same?</td>
</tr>
<tr>
<td>5</td>
<td>What parts of the program bored, irritated, or annoyed you?</td>
</tr>
<tr>
<td>6</td>
<td>What parts of the program were most interesting to you?</td>
</tr>
<tr>
<td>7</td>
<td>Was the length of the audio program too long or too short?</td>
</tr>
<tr>
<td>8</td>
<td>Do you believe the audio program could serve as a treatment for clinical depression? Why or why not?</td>
</tr>
<tr>
<td>9</td>
<td>Was the sound quality appropriate for the audio program?</td>
</tr>
<tr>
<td>10</td>
<td>How easy was it to listen to the speakers on the audio program? Please explain.</td>
</tr>
</tbody>
</table>

Additional Comments:
Cognitive Behavioral Therapy Adherence Rating Form

**Instructions:** Please rank order the tapes in order of what you thought were the most helpful to the least helpful 1-9.

- Tape #1 An introduction to CBT and depression
- Tape #2 Identifying unhelpful thoughts
- Tape #3 Challenging unhelpful thoughts
- Tape #4 Controlling anxiety and frustration
- Tape #5 Passive relaxation
- Tape #6 Engaging in pleasant activities
- Tape #7 Assertiveness & Problem-solving
- Tape #8 Overview

**Instructions:** Do you believe that the order that the topics were presented was the appropriate order? If not, please order the topics in the way you feel would have been most useful.

- Tape #1 An introduction to CBT and depression
- Tape #2 Identifying unhelpful thoughts
- Tape #3 Challenging unhelpful thoughts
- Tape #4 Controlling anxiety and frustration
- Tape #5 Passive relaxation
- Tape #6 Engaging in pleasant activities
- Tape #7 Assertiveness & Problem-solving
- Tape #8 Overview
Telephone Eligibility Screening Assent Script

Hello, _________________, my name is (name of investigator). I’m a graduate student who is in charge of this study. I understand that you are interested in participating in a self-help study to improve your mood. Before we begin I need to tell you of a few things that you should be aware of, ok?

Everything we discuss is kept confidential. That means whatever you tell me, no one else who is not affiliated with this study will know. We consider your privacy in this study to be very important. The only time we would be required to share your information with someone else is if you told us you would harm yourself or someone else in any way, or if someone else was harming you. Does that make sense? O.k., again thank you for calling and if now is a good time for you I’d like to give you some more information about what this study is about.

This study is being conducted by (name of researchers). We are graduate students in the clinical psychology program at the University of Alabama. Our study is looking at ways to help improve your mood, or how you feel. We have developed a program on audio-tapes and on a computer that teaches you ways to help yourself feel better emotionally. We give you this program at no charge and you would take yourself through it at your own pace. The program lasts about one month and has been shown to work in a book format with others who have needed help feeling better emotionally. At this point, do you have any questions about the study?

(Once their questions have been answered). If you are still interested in seeing if this study can help you, I will need to ask you some questions to make sure that this study is right for you. I will need to ask you a few questions about your mood and additional questions about symptoms you are having. I am doing this to make sure this study might help you. If after you answer these questions and we feel that this study will not be helpful to you, we will provide information about other places that can help you. These questions can take anywhere from 5 to 30 minutes to answer over the telephone. Do you have time right now or would you like for me to call you back at another time? (Record phone number and time to call if this option is selected.)

(If they continue) Now, I want you to understand that you are not being forced in anyway to answer these questions and that at any time if you feel uncomfortable you can stop or refuse to answer any questions. Keep in mind that your answers are kept
confidential. Would you like to answer some questions now to see if this study can help you? (If yes then continue. If no, provide information about alternative places that they can receive treatment)

First, I am going to ask you some questions about you and your mood.

1) How old are you? (If they are younger than 55, inform them about alternative places that they can receive treatment, e.g., Indian Rivers Mental Health in Tuscaloosa or their local Department of Public Health. Otherwise, go to 2).

2) Do you currently have any thoughts of hurting yourself? (If yes then the following protocol will be followed. Otherwise, go to 3).
   • Stop screening
   • Show composure and thereby communicate a sense of control in the situation
   • Take the client’s mention of suicide seriously. Three quarters of the people who attempt suicide discuss their intentions beforehand.
   • Listen to the person. Try to understand why the individual has been driven to such drastic action. Do not minimize the importance of the person’s difficulties or provide false reassurance.
   • Find out about possible support sources available to the person – family, friend, neighbors.
   • Let the person know that effective help is available.
   • It may be necessary to discuss the issue of putting confidentiality aside in cases where serious, active threats are made, e.g., notifying members of the client’s support system, etc.
   • Assess immediacy and means to carry-out attempt.
   • If the suicide risk is immediate, ask the person for their address and phone number. Let them know that you are sending help and keep them on the phone while you make a cellular call to their local police department. If in Tuscaloosa, call the police department and then Indian Rivers Mental Health Center.

3) Do you currently have any thoughts of hurting someone else? (If yes then the following protocol will be followed. Otherwise, go to 4).
   • Stop screening
   • Assess immediacy and means to carry-out threat.
   • If the threat is serious and immediate, ask the person for their address and phone number. Keep them on the phone while you make a cellular call to their local police department. If in Tuscaloosa, call the police department and then Indian Rivers Mental Health Center.
4) Is someone currently harming you either physically or emotionally? (If yes then the following protocol will be followed. Otherwise, go to 5).
   - Stop screening
   - Assess immediacy of threat.
   - Ask the person for their address and phone number.
   - Call either their local DHR (Adult Protective Services) or police department if threat is immediate.

5) In this program you’ll need to be able to hear audio-recorded sound. Are you able to hear sound from something like a tape-player? (If not, inform them about alternative places that they can receive treatment. Otherwise, go to 6).

6) In this program you’ll need to be able to read some simple paragraphs. Are you able to read? (If not, inform them about alternative places that they can receive treatment. Otherwise, go to 7).

7) Now, I am going to ask you about your mood (see Geriatric Depression Scale-30 in attachments; If they are not depressed at the level to receive treatment for the study, inform them about alternative places that they can receive treatment. Otherwise go to 8).

8) In this program you’ll also need to remember some information that will help you learn what we’ll be trying to teach. If it’s o.k. I’d like to ask you some questions to see how well you do with remembering information (see TICS-M in attachments; If memory is poor, inform them about alternative places that they can receive treatment. Otherwise go to 9).

9) Are you currently hearing voices or seeing things that other people do not hear or see? (If so, inform them about alternative places that they can receive treatment. Otherwise, go to 10).

10) Now, I want to ask you about what drugs you may be using. This information is confidential that means that I will not be telling anyone this information. Are you currently having trouble with illegal drugs or drinking too much alcohol? (If so, inform them about alternative places that they can receive treatment. Otherwise, go to 11).

11) Are you currently taking any medication to help you with your mood, memory, or sleep? When did you start taking this medication? Has the dosage changed? (If they have been taking the antidepressant for less than 3 months, inform them about alternative places that they can receive treatment. Otherwise, go to 12).
12) This is the last question. Do you have any medical condition or disability that might prevent you from being able to participate in this study?
13) Have you ever been diagnosed with bipolar disorder?

Thank you for answering these questions. Someone will be calling you shortly with information on how to begin your participation in this study. Or if we find that, you are not likely to benefit from participation in this study, we will call again to inform you about other alternatives. Have a nice day...I enjoyed our conversation.

-END

Note: During the course of this script we recognize the potential for individuals who are not eligible for this study to be discouraged. Both investigators have dealt with this issue in past projects. When individuals are deemed ineligible for this study during this screening, the individual will be treated with respect and empathy. The contact information for additional resources will be given to the individual in order for them to receive suitable care. A contact sheet with these resources is maintained at the location the individual will be calling (e.g., Indian Rivers Mental Health Center, DCH, UA Psychological Clinic). If the individual is not local, there is an internet connection that may be used to find area resources.
APPENDIX D

Informed consent form

Audio program training script
UNIVERSITY OF ALABAMA
Informed Consent for a Research Study

You are being asked to take part in a study. This study is called "The Good Life Program." The study is being done by doctoral students, Martin Morthland and Avani Shah, at the University of Alabama. These students are being supervised by Dr. Forrest Scogin who is a licensed psychologist.

What is this study about?

This study is being done to find out if:

1) Participating with a series of new self-help tapes or CDs for the treatment for depression will improve your mood.
2) Participating with a computer program for the treatment for depression will improve your mood.
3) We also want to know what you think about these new treatments so we can make them better for other people.

Why is this study important—What good will the results do?

The results may show that older adults who are depressed can help themselves through either a series of tapes or, by a computer program. This can be useful for older adults who:
   a. are home-bound
   b. live in rural areas
   c. cannot afford medication for depression

Why have I been asked to take part in this study?

You have been asked to be in this study because:
   a. You are 55 years-old or older.
   b. You seem to have symptoms of depression
   c. You are interested in learning ways to improve your mood.

How many people besides me will be in this study?

About 70 other people will be in this study.

What will I be asked to do in this study?

If you decide to be in this study, the following things will happen in the following order:

1) You will be visited in your home to complete some forms. Some of these forms will ask you to tell us about your mood, other forms will ask you about the thoughts and the kinds of activities you do.
2) If the scores on these forms show that you are not eligible for this study, we will provide you with contact information for other services. If the scores on these forms show that you are eligible for this study, you will be randomly assigned to one of three groups. You will be randomly assigned to either: a. audiotape treatment, b. computer treatment, or c. a 1-month waiting list before starting treatment. Explanations of what happens in these three conditions are as follows:

Audiotape Treatment OR Computer Treatment:

a. Training: After completing the forms at the home visit, you will be given 15 to 30 minutes of training on how to make the most of your audio or computer treatment. You will be using a tape player or a touch-screen computer depending on which group you are in.

b. Weekly Phone Contacts: You will receive 5-minute phone calls weekly to make sure your mood has not changed much. If your mood begins getting much worse, you will be provided information about places in the community that you can receive treatment from. You will also be discontinued from the study for your own best interest. If there is not much change in your mood, then you will continue in treatment as planned. You will also have the opportunity to ask questions about the program and be asked how much time you have spent on the program during these contact calls.

c. Treatment time: The treatment will last about 10 hours. You will decide the amount of time you need to spend on the treatment during the month you have it. You will have a maximum of 1 month to finish either listening to the tapes or completing the computer sessions. After this, the audio-treatment or computer will be returned to us so that we may provide the treatment to others.

Waiting list:

If you are chosen to be on the waiting list, you will be asked to wait 1 month before you receive treatment. While on the waiting list, you will receive 5-minute phone calls each week to make sure your mood has not changed much. If your mood begins getting much worse, you will be provided information about places in the community that you can receive treatment from. You will also be discontinued from the study for your own best interest.

At the end of the 1 month waiting period, you will be visited by a research assistant to answer the same set of forms you first completed. Following this you will begin either the audiotape or computer treatment immediately.

3) During your time in treatment you will be called during the second week by a research assistant who will ask you to answer some brief questions regarding your mood. This call will last around 15 minutes.

4) Once you have completed the treatment (at the end of the 1 month) you will be visited in your home by a research assistant who will ask you to
complete the same set of forms you filled-out when you were first visited in your home.

How much time will I spend being in this study? Total = 14 hours

1) Assessments: These will take about 5 hours over a one to two month period depending on whether you are assigned to the waitlist group or treatment group.
2) Home visits: Plan for each home visit to last about 90 minutes. The treatment group will have 3 home visits.
3) Weekly Phone Calls: The weekly phone calls will take about 5 minutes each time.
4) 2-week Phone Call: This call will take about 15 minutes.
5) Treatment time: To complete the treatment, it will take a total of 10 hours over the 1 month period.
6) Follow-up: If you are willing to have phone-contact with the researchers at 1-month and at 1-year for follow-up questions, this will take an additional 30 minutes each time.

Will I be paid for being in this study?

You will be paid $5 for each interview completed in person and $10 each for the phone calls at 1-month follow-up and the 1-yr follow-up. This means that you could receive as little as $5 or as much as $40. There will be no charge for use of the audiotapes/CDs or the computer.

Will being in this study cost me anything?

There will be no cost to you except for your time in completing the interviews and treatment.

Can the researcher take me out of this study?

The researcher may take you out of this study if s/he feels that the treatment is not helping you or something happens to you where you no longer meet the study requirements.

What are the benefits (good things) that may happen to me if I am in this study?

It is possible that you will learn new ways to manage your mood and could make progress in improving your mood.

What are the benefits to scientists or society?

If successful, this study will help psychologists, nurses, and physicians provide other treatments for depression that are less costly and easier to use. Society will
benefit from lower cost treatments and having another treatment for depression that can help people without them even leaving their home.

What are the risks (dangers or harm) to me if I am in this study?

1) You will be asked to think about your mood and this may make you feel uncomfortable. But, most people get used to this.

2) Your mood may not improve or may even worsen while you are in treatment. In past studies like this, 3 out of 4 participants no longer meet criteria for depression after treatment. The remaining 1 out of 4 often make improvements but may still meet criteria for depression. Worsening with treatment is rare. If you are worsening during treatment, then we will discontinue your treatment and provide you with information on other places in the community that you can receive treatment. We make weekly phone calls to assess your mood and to make sure that we can catch it early if you are worsening. If we think you are still depressed/upset after treatment, we will refer you to a psychologist, social worker, or your physician for further treatment.

How will my confidentiality (privacy) be protected? What will happen to the information the study keeps on me?

Keeping your information private is very important to the researchers in this study. You will have to give us your name, address, and phone number when you first let us know that you are interested in entering the study. This information will be stored in a locked filing cabinet within a locked office at The University. After you are contacted your information will be identified by a code. Your name and information will not be used in any of the study materials. If you are entered into the computer treatment group all of your data will be identified with this code and will be fully erased from the computer once it is returned to us. No one will be able to access your information from the computer. The only time we would not keep your information private is if:

   a. You gave us reason to believe you would either harm yourself or someone else.
   b. We had reason to believe that you were being abused.

What are the alternatives to being in this study? Do I have other choices?

The alternative/other choice is not to participate. You can be treated with antidepressant medication by speaking with your physician or obtain counseling from a local psychologist, social worker, or local mental health agency.
What are my rights as a participant?

Taking part in this study is voluntary—it is your free choice. You may choose not to take part at all. If you start the study, you can stop at any time. Leaving the study will not result in any penalty or loss of any benefits you would otherwise receive.

The University of Alabama Institutional Review Board (IRB) is the committee that protects the rights of people in research studies. The IRB may review study records from time to time to be sure that people in research studies are being treated fairly and that the study is being carried out as planned.

Who do I call if I have questions or problems?

If you have questions about the study right now, please ask them. If you have questions about the study later on, please call the investigator Avani Shah or Martin Northland at (205)-348-1921. If you have any questions about your rights as a research participant you may contact Ms. Tanta Myles, The University of Alabama Research Compliance Officer, at (205)-348-5152.

I have read this consent form. The study has been explained to me. I understand what I will be asked to do. I freely agree to take part in it. I will receive a copy of this consent form to keep.

Signature of Research Participant

Date

Investigator

Date
Audio program Training Script

Do you have a CD player? Okay, let’s take a short break before I teach you how to use the program. (Obtain CD player, if needed and Audio program from car). Now, I am going to show you how to use this program so that it can help you the most. Is there a spot that you can keep the CD player and materials? This needs to be a spot you can plug the CD player in and sit nearby so you can listen to the program. Can we take a few seconds to get it set up? I want to try it out to make sure the program is working before I leave. (Plug in the CD player...if their CD player is not working obtain the one from car and plug in) Now, have you ever used a CD player before? (If they have not used a CD player: ok this is the play button, here is the pause button, and here is the rewind button. If they have used one, place the first CD in the CD player.) Ok would you mind playing the CD for me? Ok, please pause the CD now. Ok now can you rewind it? It seems that the CD is working just fine. (If the CD does not work, make sure that the power is on to the CD player and the volume is on.) Now, how is the volume on this? Can you hear this ok? (If they are having trouble hearing it, try increasing the volume slowly until it is loudest. If they still can’t hear it, then provide them with the sound amplifier and show them how to use it. Indicate that they just need to press the button in the middle to hear it and wear the earphones.) Now, let’s show you the program. It comes with 8 CDs and a handbook. Keep the handbook nearby and try reading it before starting each CD to help you follow along. Also, I recommend pausing the CD whenever the music comes on. This will give you as long as you need to do the practice. Then press play to start the CD at the same spot when you are finished. It is best to pause the CD because the music only plays for a short time and you will not be able to rewind the CD like a regular tape. When you press rewind, it goes back ten minutes. As you listen, keep your handbook nearby so you can look back over something you didn’t catch if you need to. Ok, this
audio program is yours to keep only for the next four weeks after that time we may need to remove it so others can participate in this study. Do you have any other questions for me? Someone will be calling you every week for the next four weeks to make sure your mood is ok, answer any questions you have about the program, and see how much you have listened to so far. Is there a specific time that would be convenient to you for the next week? I will pass along this information if this is not convenient for the other interviewer, they will call to schedule another time. It was very nice to meet you. Here is a phone number you can contact if you need to speak to someone or begin to feel worse. Thanks so much for your help. Have a nice day.
APPENDIX E

Reliable Change Index formula

Cohen’s $d$
Reliable Change Index

Formula for Reliable Change Index (Jacobson & Truax, 1991)

\[ RC = \frac{x_2 - x_1}{s_{diff}} \]

\[ s_{diff} = \sqrt{2(S_E)^2} \]

\[ S_E = s_t \sqrt{1 - r_{xx}} \]

- \( x_1 \) = pretreatment score of participant
- \( x_1 \) = posttreatment score of participant
- \( s_t \) = standard deviation of the pretreatment score for the sample
- \( r_{xx} \) = reliability of measure
Cohen’s $d$ Formula

\[
d = \frac{\text{mean}_1 - \text{mean}_2}{\sqrt{SD_1^2 + SD_2^2 / 2}}
\]