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## An Evaluation of the Acceptability and Effects of a Computer-Delivered Values-Based Behavioral Activation Treatment for Depression Among Older Adults

Kellie Reynolds

Western Michigan University, [kellie.edmonds@gmail.com](mailto:kellie.edmonds@gmail.com)

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AN EVALUATION OF THE ACCEPTIBILITY AND EFFECTS OF A COMPUTER-  
DELIVERED VALUES-BASED BEHAVIORAL ACTIVATION TREATMENT  
FOR DEPRESSION AMONG OLDER ADULTS

Kellie R. Reynolds, Ph.D.

Western Michigan University, 2016

Depression is a common psychological disorder among older adults and is associated with serious secondary effects to health and social well-being. Behavioral activation has been found to be an efficacious treatment for depression. However, there is limited research on the treatment effects of behavioral activation with older adults. In general, older adults under-utilize mental health treatments. Computer-delivered treatments have been developed to address access and under-utilization. The purpose of this dissertation was to evaluate the acceptability and effects of a computer-delivered values-based behavioral activation treatment for depression in older adults. This study consisted of two phases. Phase I consisted of a 10-session computer-delivered values-based behavioral activation treatment for two older adults. Repeated measures of depression and activation were assessed, and quality of life was assessed at pre and post treatment. Phase II was exploratory and included 21 older adults from a general population. This phase probed participant reviewers' awareness of depression, their process for seeking mental health services, their attitudes and perceptions of computer-delivered values-based behavioral activation treatment program, and their experienced usability of this computer-delivered treatment.

Participant 003 experienced clinically significant reductions in symptoms of

depression from baseline to follow-up. She reported increases in her activation levels and quality of life. Participant 002 did not complete treatment, and did not have a treatment response. However, she reported in improvements in her symptoms of depression and activation from baseline to her final treatment session.

Phase II reviewers reported an overall positive experience with the computer-delivered program, a high degree of usability, and increased ratings of credibility and expectations for improvement from pre to post review of the program. Further research is warranted to test the effects of this program with older adults using a more rigorous research design. There is a need for improving dissemination and awareness of computer-delivered mental health treatments. More research should explore the comparative effects of integrative and stepped care models. Behavioral activation manuals and computer-delivered programs need to better adapt treatments to meet the needs and the preferences of older adults.

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DELIVERED VALUES-BASED BEHAVIORAL ACTIVATION TREATMENT  
FOR DEPRESSION AMONG OLDER ADULTS

by

Kellie R. Reynolds

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Doctoral Committee:

Galen Alessi, Ph.D., Chair  
Amy Naugle, Ph.D.  
Scott Gaynor, Ph.D.  
Karen Blaisure, Ph.D.

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## TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	ii
LIST OF TABLES.....	xiii
LIST OF FIGURES.....	xiv
INTRODUCTION.....	1
Depression.....	2
What do we mean by depression?.....	2
How common is depression in a general population? .....	2
What are the costs of depression? .....	3
Depression in Late-Life.....	3
A growing population.....	3
How common is depression in an older adult population? .....	4
What are the effects of depression on older adults?.....	4
What does depression in late-life look like? .....	5
How are age-related declines with activation linked to depression? .....	5
How does a behavioral model address age-related declines in activation? .....	6
Behavioral Theory of Depression .....	6
Behavioral Activation .....	7
What does behavioral activation include? .....	7
What are the steps included in behavioral activation? .....	7
Evidence Supporting Behavioral Activation as an Effective Treatment for Depression.....	8
What is the empirical support for behavioral activation? .....	8
What does the research tell us about behavioral activation with older adults?.....	8



## Table of Contents--Continued

What has single subject design shown regarding treatment impacts on depression in older adults? .....	9
How does behavioral activation impact older adults with comorbid psychiatric disorders?.....	9
How does behavioral activation impact comorbid depression and dementia? .....	10
What do systematic reviews say about best treatments for older adults? .....	10
Are the components of behavioral activation suitable for older adults?.....	10
Behavioral activation is ideographic and strategic.....	11
Behavioral activation is straightforward and promotes self-efficacy.....	12
Computer-delivered Treatments for Depression.....	12
Can computer-delivered treatments bridge the gap in mental health services? .....	12
What does the current research tell us about the effectiveness of computer delivered treatments for depression? .....	13
Barriers to Older Adults Utilization of Face-to-Face Depression Treatment .....	14
What are the current barriers to older adults participating in treatment for depression?.....	14
What is the role of primary care in addressing depression?.....	14
What factors impact detection of depression? .....	15
What processes do older adults use when seeking treatment for depression? .....	15
Barriers to the Utilization of Computer-delivered Treatments for Depression.....	15
Do older adults use computer-delivered treatments for depression? .....	15
What are the reported attitudes and perceptions about computer-delivered treatments for a general population? .....	16
Are computer-delivered treatments well adopted? .....	17
What is usability?.....	18

## Table of Contents--Continued

How does usability impact the adoption of computer-delivered treatments? .....	18
What are the recommendations for improving usability? .....	18
Do older adults find computer-delivered treatments acceptable? .....	19
Are computer-delivered treatments designed for older adults? .....	20
Purpose for this Research Study .....	20
What is the purpose of this study? .....	20
PHASE I METHODS.....	20
Phase I Research Questions.....	20
Phase I – Evaluation of Effects of Computer-delivered VBBA with Depressed Older Adults.....	21
Independent variable in phase I.....	21
Computer program layout for phase I.....	22
Dependent variables of phase I.....	23
Other measures from phase I.....	28
Methods of data collection in phase I.....	29
Baseline.....	32
Treatment.....	32
Follow-up.....	33
Design of phase I.....	33
Analyses for phase I.....	34
Recruitment and informed consent for phase I.....	34
Participants in phase I.....	35
Location, settings, and materials of phase I.....	36
PHASE I RESULTS.....	36

## Table of Contents--Continued

Recruitment and Sample .....	36
Research Question 1 .....	38
Participant 002 .....	39
Participant 003 .....	39
Research Question 2 .....	39
Participant 002 .....	39
Participant 003 .....	39
Research Question 3 .....	40
Research Question 4 .....	41
Participant 002 .....	41
Participant 003 .....	42
Research Question 5 .....	42
Research Question 6 .....	43
Participant 002 .....	43
Participant 003 .....	46
Research Question 7 .....	46
Research Question 8 .....	47
Research Question 9 .....	47
Research Question 10 .....	48
Research Question 11 .....	50
Research Question 12 .....	50
PHASE II METHODS .....	51
Phase II – Evaluation of Acceptability of Computer-delivered VBBA with Older Adults .....	51

## Table of Contents--Continued

Phase II research questions .....	52
Instrumentation for phase II .....	52
Methods of data collection for phase II.....	53
Design of phase II .....	55
Analyses for phase II.....	56
Participant recruitment for phase II.....	56
Informed consent process for phase II .....	56
Settings and materials for phase II .....	57
PHASE II RESULTS .....	57
Sample Characteristics for Phase II .....	57
Research Question 1 .....	62
Research Question 2 .....	63
Research Question 3 .....	64
DISCUSSION.....	71
Effects of Computer-delivered VBBA on Depression Symptoms.....	72
Participant 002 .....	72
Participant 003 .....	73
Visual Inspection.....	74
GDS and BDI-II .....	74
Pretreatment gains and sudden gains .....	75
Older Adults' Experience of Computer-delivered VBBA Program .....	75
Perceived credibility and expectancy for improvement.....	75
Variation in credibility and expectancy for improvement between phases and income levels.....	76

## Table of Contents--Continued

Consumer satisfaction phase I.....	76
Factors that may have impacted these satisfaction ratings.....	77
Qualitative survey feedback and preferences.....	77
Older adult participants experience of the program.....	77
Improving usability of BAML for future use.....	78
Phase I .....	78
Phase II .....	79
Older adult participants' preferences and feedback for areas of improvement for the BAML program.....	80
Mini-lessons .....	80
Navigation .....	80
Assistance with the program .....	81
Technical problems with the mouse .....	81
Lack of awareness regarding available treatments for depression .....	81
Older adult participants' awareness of depression.....	82
Older adults process for seeking assistance with medical and psychological problems .....	82
Public Awareness and Dissemination.....	83
Limitations.....	84
Design.....	84
Pretreatment gains and sudden gains .....	85
Response versus remission .....	85
Assistance with computers .....	86
Measures... ..	87

## Table of Contents--Continued

Only reviewed some sessions of program.....	88
Phase II reviewers did not represent a depressed population.....	88
Survey rather than interview .....	89
Think-aloud methods for improved usability.....	89
Future Directions .....	90
A more rigorous design to assess effects of treatment.....	90
Improving the usability of BAML for future users .....	91
Behavioral activation compared to stand-alone computer delivered behavioral activation .....	91
Treatment alternatives.....	91
Adapting behavioral activation for older adults .....	92
Adapting computer-delivered treatments for older adults .....	93
Socioeconomic status.....	93
Knowledge, comfort, and experience with computers.....	93
Developing future computer-delivered treatments.....	94
Cost of treatment.....	95
Computer-delivered treatments as part of stepped care .....	95
Integrated care models .....	96
Dissemination .....	97
Conclusion.....	98
REFERENCES.....	99
APPENDICES	
A. Session Summaries .....	126
B. Phase I Recruitment Flier .....	147

## Table of Contents--Continued

C. Phase I Advertisement.....	149
D. First Phone Contact Script .....	151
E. Phase I Informed Consent Document .....	154
F. Beck Depression Inventory-II .....	159
G. Behavioral Activation for Depression Scale .....	162
H. Geriatric Depression Scale .....	165
I. Quality of Life Scale .....	167
J. Valued Living Questionnaire .....	169
K. Phase I Credibility and Expectancy Form .....	172
L. Consumer Satisfaction Survey.....	175
M. Phase I Qualitative Survey .....	179
N. Phase I Demographic Survey .....	183
O. Mini Mental Status Exam .....	189
P. Additional Services Form .....	191
Q. Universal Data Collection Form .....	193
R. Phase II Recruitment Flier.....	199
S. Phase II Oral Recruitment Script .....	201
T. Daily Waiting Sheet.....	203
U. Phase II Informed Consent Document .....	205
V. Phase II Demographic Survey .....	209
W. Phase II Credibility and Expectancy Form.....	213
X. Phase II Qualitative Survey.....	216
Y. Product Usability Survey .....	222

## Table of Contents--Continued

Z. Instruction Sheet for Participants .....	228
AA. Computer Administrator Job Aid with Scripts .....	230
AB. Referral List.....	235
AC. Duration for Phase I.....	237
AD. Duration for Phase II .....	240
AE. Human Subjects Institutional Review Board Approval Letter for Phase I.....	242
AF. Human Subjects Institutional Review Board Approval Letter for Phase II.....	244



## LIST OF TABLES

1. Demographics for Phase I .....	38
2. Outcome Measures for Participant 002.....	40
3. Outcome Measures for Participant 003.....	41
4. Summary of Themes from Phase I Qualitative Survey for Participant 003 .....	49
5. Mini-Lessons Selected .....	51
6. Demographics for Phase II – General .....	59
7. Demographics for Phase II – Computer Experience .....	60
8. Demographics for Phase II – Physical Ability .....	61
9. Phase II Expectancy and Credibility Pre and Post Scores for Total Sample .....	62
10. Phase II Expectancy and Credibility Pre and Post Scores by Income Level.....	63
11. Phase II Product Usability Survey Average Responses .....	64
12. Summary of Themes from Phase II Qualitative Survey – Question 1 .....	65
13. Summary of Themes from Phase II Qualitative Survey – Questions 2 & 4 & 6 & 7 .....	66
14. Summary of Themes from Phase II Qualitative Survey – Question 12 .....	67
15. Summary of Themes from Phase II Qualitative Survey – Question 15a & 16a.....	68
16. Summary of Themes from Phase II Qualitative Survey – Questions 9 & 15b & 16b .....	69
17. Summary of Themes from Phase II Qualitative Survey – Question 8 & 10 .....	70
18. Summary of Themes from Phase II Qualitative Survey – Questions 11a & 11b.....	71

## LIST OF FIGURES

1. Phase I Procedures .....	31
2. Depressive Symptoms and Activation for Participant 002 .....	44
3. Depressive Symptoms and Activation for Participant 003 .....	45
4. Phase II Procedures .....	55

## INTRODUCTION

Depression is common among older adults, yet a review of the literature reveals that older adults underutilize mental healthcare services. Computer-delivered treatments have been suggested as a way to increase use of mental healthcare services, although published evaluations of the treatment effects and acceptability for computer-delivered treatments for depression in older adults are rare. This dissertation attempted to identify potential barriers to older adults' use of computer-delivered mental health treatments. Behavioral activation had been found to be an effective treatment for depression in a general population. However, there has been minimal research testing the effects of BA with an older adult population. This project also attempted to test the effects of values-based behavioral activation treatment with an older adult population.

This study consisted of two phases. Phase I evaluated the effects of a computer-delivered, values-based behavioral activation (VBBA) treatment for depression in older adults. This phase also assessed the participants' experiences while using the computer-delivered treatment program, as well as their overall perceptions of using a computer-delivered treatment modality. These opinions were assessed at two points: before and after completion of the program. Phase II was designed to explore the potential barriers to using face-to-face and computer-delivered depression treatments as perceived by older adults. Phase II employed qualitative and quantitative methods to explore older adults' current awareness of depression, examine older adults' process for seeking treatment for depression, and investigate their perceptions and experienced usability of a computer-delivered VBBA treatment for depression. The results of this study suggest ways face-to-face and computer-delivered depression treatments can be tailored to better meet the needs of an older adult population.

This literature section is integrated to address the questions posed in both phases of the study, and covers the following topics: depression, depression in late-life, behavior theory of depression, behavioral activation (BA), evidence supporting BA as a treatment for depression, computer-delivered treatments for depression, barriers to use and acceptance of computer based treatments, and barriers to older adults utilization of face-to-face treatment for depression.

## **Depression**

**What do we mean by depression?** Major depressive disorder is characterized primarily by depressed mood most of the day, almost every day, as indicated by subjective mood report, or by the report of others on affect, and/or symptoms of markedly diminished interest or pleasure or sadness, emptiness, or hopelessness in all or almost all activities most of the day nearly every day. Individuals qualify for a diagnosis under the DSM-5 when they report five or more symptoms consistently over a minimum of two weeks. For adults, these symptoms can include: significant weight loss (when not dieting) or weight gain; inability to sleep or oversleeping; psychomotor agitation or retardation (observed by others, not merely subjective feelings or restlessness or being slowed down); fatigue or loss of energy; excessive feelings of worthlessness or guilt (which may be delusional); diminished ability to think or concentrate; as well as recurrent thoughts of death and/or suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide (American Psychiatric Association [APA], 2013).

**How common is depression in a general population?** Major depressive disorder is considered one of the more prevalent psychological disorders, with a lifetime prevalence of 10% to 25% for women and 5% to 12% for men (APA, 2013). Of all psychiatric disorders, major

depressive disorder is the most prevalent among community dwelling older adults within the U.S. (Chou & Cheung, 2013).

**What are the costs of depression?** Depression has serious negative consequences for individuals as well as for society. At the individual level, depression can affect physical, social, academic, sexual, familial, and occupational functioning. At a societal level, depression is considerably costly. Depression has become one of the world's largest mental health care costs, and is now considered a significant national burden on mental health systems around the world (National Institute of Mental Health [NIMH], 2006). Individuals with depression are often out of work for lengths of time that result in significant loss of pay time and productivity for both themselves and their employers (Kessler et al., 2009). Major depressive disorder in the U.S. is estimated to result in 386.6 million work days missed per year (Agency for Healthcare Research and Quality, 2011), with \$36 billion lost from diminished work place productivity and capital loss to employers (NIMH, 2006). For those in high income countries, depression is projected to be the greatest contributor to disease burden by the year 2030 (Mathers & Loncar, 2006). Given these costs to the individual and the employer, there is a clear societal need for depressed individuals to receive effective interventions that are cost-effective.

### **Depression in Late-Life**

**A growing population.** Older adults are the fastest growing U.S. age group (Administration on Aging, 2010). The population percentage of older Americans has more than tripled over the 20<sup>th</sup> Century, from 4.1% in 1900 to 13.1% in 2010. The number of Americans aged 65 and older is projected to more than double from 40.2 million in 2010 to 88.5 million in 2050 (Administration on Aging, 2010).

**How common is depression in an older adult population?** Lifetime prevalence rates of major depression, based upon a national sample of 3,046 adults 55 years and older, indicated the following: Non-Hispanic Whites 13.2%, African American 5.1%, Caribbean Black 10.4%, Latino American 12.7%, and Asian American 6.3% (Woodward et al., 2011). Steffens and colleagues (2000) reported that the point prevalence estimates of depression in adults 65 years or older are 4.4% for women and 2.7% for men. The current rates reported in the literature for depression may be underestimates. Depression often goes undiagnosed in older adults due to comorbidity with medical problems (Fiske, Wetherell, & Gatz, 2009; Polenick & Flora, 2013). Older adults with depression may also have compounding neurological and functional impairments (Wilkins, Mathews, & Sheline, 2009; Polenick & Flora, 2013). Older adults are a growing population, and the rates of depression are high within this population. Depression also poses unique difficulties for older adults.

**What are the effects of depression on older adults?** Depression has been identified as one of the strongest predictors of impaired quality of life in older adults (Chan, Chien, Thompson, Chiu, & Lam, 2006; Lazzari et al., 2011; Stafford, Berk, Reddy, & Jackson, 2007). Depression can reduce quality of life for older persons in the form of an increased sense of hopelessness as well as increased suicidal ideation and/or behavior (Pnina, 2002; Pratt, Schmall, Wilson, & Benthin, 1991). Research has found a significant link between depression and suicidality, particularly in older adults (Pnina, 2002; Cohen, 1990). Depression in older adults is also associated with increased mortality, morbidity, and use of health care facilities (Covinsky et al., 1999; Lazzari et al., 2011; Rovner, 1993; Street, O'Conner, & Robinson, 2007). Older adults in particular have the highest suicide rate among all age groups in most countries of the world (World Health Organization [WHO], 2005). Suicide rates continue to be the highest among older

adults, primarily white males (Cattell, 2000; Malfent, 2009). Methods of suicide in this population tend to be more lethal than their younger counterparts (Gallo & Lebowitz, 1999; Lazzari et al., 2011). Given these findings, there is clear need for accessible and affordable psychological services and treatments for depression in older adults.

**What does depression in late-life look like?** Depression manifests differently in late life, and is typically a result of age-related losses that include bereavement, physical disability, retirement, and/or social isolation (Yon & Scogin, 2009; Pinquart, Duberstein, & Lyness, 2007). Older adults may experience reductions in reinforcement due to decreasing physical and sensory abilities. These limitations may result in abandonment of previously enjoyed activities (Street, O' Connor, & Robinson, 2007).

**How are age-related declines with activation linked to depression?** Poor physical health has been associated with higher scores on depressive symptom scales (Street, O' Connor, & Robinson, 2007). Street and colleagues (2007) also found significant negative associations between physical health and depression, physical health and progress towards goals, and progress towards goals and depression. Benyamini and Lomranz (2002) found that activity restriction mediates the relationship between disease and depression. They also reported that older adults are at higher risk for losing their ability to read, drive, and live independently. Having less independence places older adults at risk for developing depression, having falls, and becoming institutionalized (Rovner et al., 2011).

To learn whether social participation and walking had significant impacts on depressive symptoms, Dominic and colleagues (2013) conducted a cross section analysis. They found that those who reported the least amount of physical and social activity tended to report the most depressive symptoms (Dominic et al., 2013). Chang and colleagues (2013) found a strong

negative relationship between symptoms of geriatric depression and health promoting behaviors of active lifestyle and social participation. Restricted physical and social activity for older adults has been associated with depressive symptoms (Benyamini & Lomranz, 2004; Yon & Scogin, 2009).

**How does a behavioral model address age-related declines in activation?** Polenick and Flora (2013) suggest that a behavioral model for depression may be useful when considering the inherent challenges facing older adults. In particular, losses in late life across various life domains reduce previously available sources of reinforcement: the death of loved ones or spouses; loss of occupation and sense of purpose; changed familial and social roles (e.g., adult dependency); reduced cognitive functioning and physical health; and diminished daily quality of life. Behavior therapy may be better suited for treating older adults, because it conceptualizes the onset of depression as associated with situational factors and changes in a person's environment, which are variables subject to interventions (Quijano et al., 2007). Targeted behavioral activation thus may be a reasonable approach for treating depression in older adults.

### **Behavioral Theory of Depression**

Behavioral theory posits that depression occurs as a result of a lack of, or decrease in, positive reinforcement, and/or an increase in aversive reactions from the environment, as well as a restricted behavioral repertoire inadequate to make effective contact with environmental reinforcement (Lewinsohn, 1974). Conceptually, behavior analytic models work to identify those antecedent and consequent events within the environment that serve to maintain depressive behaviors. This may include overt behaviors (such as social avoidance, changes in sleep and eating patterns), affective responses (tearful episodes), and verbal behaviors (such as rumination, or self-critical statements) (Polenick & Flora, 2013). Research has found that individuals with



depression participate in fewer pleasurable activities, limiting opportunities for positive reinforcement (Polenick & Flora, 2013). Other research has found a significant association between self-reported mood and pleasant events, with depressed individuals engaging in less pleasurable activities than non-depressed individuals (Polenick & Flora, 2013). From this research, a behavioral activation model was developed that focused on the importance of activity scheduling, mood monitoring, value-based behavioral goal setting, and procedures to counter engagement in avoidance behaviors (Martell, Addis, & Jacobson, 2001).

### **Behavioral Activation**

**What does behavioral activation include?** Behavioral activation (BA) includes a combination of (a) activity scheduling, (b) pleasant event scheduling, (c) assertiveness and social skills training, and (d) relaxation strategies (Jacobson, Martell, & Dimidjian, 2001). Additional components may include (a) addressing avoidance behaviors, (b) creating regular routines, (c) and addressed rumination (Jacobson et al., 1996). The primary goal of Values-based Behavioral Activation (VBBA) is to increase contact with positive reinforcement via engagement in values-based planned activities. The activities are carefully selected to key onto the client's individual (personal) values.

**What are the steps included in behavioral activation?** In the initial treatment phase of VBBA, depressed individuals are guided to make self-observations to help them discern potential relationships between their moods and daily activities (Hopko, Armento, Chambers, Cantu, & Lejuez, 2003). Following this stage, individuals develop a plan to increase selected pleasant activities in their daily lives, consistent with their personal values. When individuals struggle to complete their agreed upon planned activities, obstacles for engagement in values-based activities are identified and mitigated. Functional analyses also are performed to identify

potential antecedent stimuli, behaviors, and/or consequent stimuli that may be blocking completion of planned activities. After identifying and countering these barriers, treatment shifts toward countering other avoidance patterns that may contribute to low mood, as well as developing alternative forms of coping that can improve mood (Martell, Dimidjian, & Herman-Dunn, 2010).

### **Evidence Supporting Behavioral Activation as an Effective Treatment for Depression**

**What is the empirical support for behavioral activation?** Chambless and Ollendick (2001) identified CBT, which includes BA components, as a highly efficacious treatment for depression. Several randomized control trials (RCT) investigating BA with different adult populations and length of sessions, found significant improvements in symptoms of depression (Aremanto, McNulty, & Hopko, 2011; Gawrysiak, Nicholas, & Hopko, 2009; Dobson et al., 2008; Dimidjian et al., 2006; Hopko et al., 2003). Multiple meta-analyses have also concluded that BA is an effective treatment for depression (Cuijpers, van Straten, & Warmerdam, 2007; Mazzucchelli, Kane, & Rees, 2009; Sturmey, 2009; Ekers, Richards, & Gilbody, 2008).

#### **What does the research tell us about behavioral activation with older adults?**

Polenick and Flora (2013) completed a review of 17 studies investigating behavioral activation as a treatment for late life depression. They concluded that behavioral activation was effective in reducing depression and increasing healthy behavior in these older adults. A randomized open trial (RCT), using an intent to treat analysis, assessed the effects of behavioral activation for treating grief in older adults and found that, compared to no treatment, behavioral activation was associated with larger reductions in prolonged, complicated, or traumatic grief as well as with depressive symptoms (Papa et al., 2013). BA was found to be effective with severely depressed

older adults (Snarski et al., 2011), and with older adults experiencing comorbid depression and dementia (Teri et al., 1997).

**What has single subject design shown regarding treatment impact on depression in older adults?** Using a multiple baseline design, Yon and Scogin (2009) found that an in-home BA intervention reduced depressive symptoms for all 9 older adult participant completers, where 71% no longer met criteria for depression. The reduction in depressive symptoms met criteria for remission: participants no longer met diagnostic criteria for depression at follow-up. Using an AB single-case experimental design, Lazzari and colleagues (2011) investigated the effects of a video-conferencing five session brief BA intervention with 3 older adults who met criteria for depression. The BA intervention resulted in clinically significant decreases in depressive symptoms, reliable decreases in negative affect, and clinically significant increases in positive affect. These treatment gains maintained 1-month following treatment (Lazzari et al., 2011). Folke and colleagues (2015) employed a multiple baseline design with repeated measures to explore clinical outcomes of a brief behavioral activation intervention for 6 depressed inpatients. Symptom levels during baseline did not improve until the intervention was implemented on each baseline. Of the six participants who participated, four showed marked gradual improvements in increased activation and decreased avoidance as BA was initiated. For the most part, changes in activation and avoidance coincided with or preceded decreased depression.

**How does behavioral activation impact older adults with comorbid psychiatric disorders?** Snarski and colleagues (2011) examined the effects of BA on depression in older adults, compared to a control treatment as usual group. BA was associated with improved symptoms of depression on the Geriatric Depression Scale (GDS) compared to the treatment as usual sample. The authors also found that BA yielded a rapid treatment effect between the pre

and mid treatment sessions. A quarter of the BA group achieved reliable change in depressive symptoms, which was double the rate of the control condition.

**How does behavioral activation impact comorbid depression and dementia?** Teri and colleagues (1997) completed a clinical investigation that assessed the effects of four conditions for the treatment of depression in older adults with dementia, and the treatment of depression in their care-givers. The four conditions compared were: a behavior therapy pleasant event condition, a behavior therapy problem-solving condition, a treatment as usual condition that included advice giving, and a wait-list control condition. Both the patients and caregivers who received the behavioral treatment with either pleasant events or problem-solving experienced significant reductions in depressive symptoms following treatment, and the reductions were maintained 6-months post treatment. Those in the behavioral treatment conditions improved significantly more than those in the treatment as usual and wait-list conditions.

**What do systematic reviews say about best treatments for older adults?** Scogin and colleagues (2005) systematically reviewed 20 studies that investigated evidence-based treatments for depressed older adults. They found the following therapies to be beneficial: behavior therapy (BT), cognitive behavior therapy (CBT), cognitive bibliotherapy, problem solving, brief psychodynamic, and reminiscence treatments. Samad and colleagues (2011) conducted a meta-analysis on current studies investigating the effects of psychotherapy on depression. They found that behavior therapy was comparable in effectiveness with other psychotherapies that included cognitive therapy (CT) and brief psychodynamic therapy.

**Are the components of behavioral activation suitable for older adults?** Saito and colleagues (2012) conducted a RCT among Japanese elderly clients that studied the impact of a social isolation prevention condition that was compared to a 7-month wait-list control condition.

The authors assessed life satisfaction, social isolation, geriatric depression, and frequency of face-to-face contact with friends and neighbors. The intervention group showed significant improvements on ratings of quality of life, social support, and familiarity with social services provided in the community. Those in the intervention group also showed a significant reduction in social isolation. The treatment group, however, did not show significant effects on reducing depressive symptoms.

*Behavioral activation is ideographic and strategic.* It is easy to imagine how lowered activity levels may result from age-related declines, which may then lead to depression. BA addresses depression by targeting activity levels, a variable that may specifically contribute to age-related decline and serve to perpetuate depression.

BA also may be a good match for older adults with depression, given that the methods can be ideographically applied to each individual's needs, preferences, and health status. BA systematically and strategically plans activities in terms of when, where, and how depressed individuals will complete their selected goals (Gollwitzer, 1999; Gollwitzer & Brundstater, 1997), which provides direct and clear guidelines for those engaging in the treatment. This type of structure has also been shown to improve performance focused on reaching specific goals (Locke & Latham, 1990).

BA also is adaptable for older adults with health challenges, as it addresses decreased activities that result from health obstacles. BA does this by providing a variety of potential intervention points that work best for the unique needs of each individual (Yon & Scogin, 2009). This can be done by openly discussing loss of autonomy, limitations on activity, and decreased feelings of accomplishment arising from health problems (Yon & Scogin, 2009). Holland and Diliberto (2012) found that several bereaved depressed older adults benefitted from BA by

increasing their activity levels, and participants reported better quality of lives by the end of treatment. The authors further suggested that BA may be more suitable for those individuals with some cognitive impairment, as the focus is more on behaviorally framed change strategies. Treatment components in BA appear to be well-suited for addressing the common developmental struggles of older adults with depression.

***Behavioral activation is straightforward and promotes self-efficacy.*** Roughly one out of every four adults 65 years and older is likely to experience some level of mild to severe cognitive impairment (Unverzagt et al., 2001). Planned goals may be especially useful for those older adults who have mild cognitive impairment (MCI) (Snarski et al., 2011), and general memory loss that is common with aging (Kidd, 2008). BA's activity scheduling portions can be tailored to the unique needs of an older adult population. Older adults who increase their activity levels show improved psychological well-being and maintenance of productive activities, which helps them build self-efficacy in continued completion of further activities (Blazer, 2002; Gatz & Zarit, 1999).

### **Computer-delivered Treatments for Depression**

**Can computer-delivered treatments bridge the gap in mental health access?** The World Health Organization (WHO) projects that depression will be the world's second leading financial global burden on health by 2020 (Saxena, Thornicroft, Knapp, & Whiteford, 2007). Currently available effective treatments are not always accessible, cost-effective, or easily disseminated (Ustun, 1999). In particular, high costs for evidence-based treatments impose a burden for individuals of low socioeconomic status, a U.S. population without ready access to mental health services (Saxena, et al., 2007). There also has been a shortage of mental health

providers available to deliver these necessary services (Van Den Berg, Shapiro, Bickerstaffe, & Cavanagh, 2004).

There is a clear need for affordable mental health care services (Ustun, 1999) and computer-delivered treatments may help reduce cost and distance treatment barriers for those seeking treatment for depression and other disorders (Wright et al., 2005). Wright and colleagues (2005) suggested that computer assisted therapy could decrease costs, while improving access, to psychological treatments. Research has identified computer-delivered treatments as a viable option for improving dissemination of evidence-based treatments (McCrone et al., 2004). Computer-delivered versions of evidence-based treatments thus may serve as an effective low-cost alternative to face-to-face treatments, which may help bridge the current gap between need and access.

**What does the current research tell us about the effectiveness of computer-delivered treatments for depression?** Studies have investigated the effects of computer-delivered treatments for depression in the general population. In particular, a computer-delivered multimedia cognitive behavioral therapy (CBT) program called “Beating the blues” has been tested in multiple studies. Researchers found the program to be significantly more effective in treating depression and anxiety than treatment as usual (Proudfoot et al., 2003a; Proudfoot et al., 2004) and superior to a wait-list control group (Wright et al., 2005). Whitefield and colleagues (2006) tested a computer-delivered CBT program with a general population, and found that participants experienced clinically significant reductions in symptoms of depression, with a majority of participants reporting that the program was highly useful. Carlbring and colleagues (2013) conducted a randomized controlled trial to investigate the effects of a combined BA and acceptance-based internet-delivered treatment intervention, compared to a control condition. In

the treatment group, 25% of the individuals reached remission while only 5% reached remission in the control group. Results found a significant difference in symptoms of depression between the two groups. Learmonth and Rai (2008) investigated the effects of a computer-delivered CBT program for depression in primary care. Nearly half of those who completed the computer-delivered CBT treatment achieved reliable and clinically significant change.

### **Barriers to Older Adults Utilization of Face-to-Face Depression Treatment**

**What are the current barriers to older adults participating in treatment for depression?** A meta-synthesis conducted by Corcoran and colleagues (2013) identified the following barriers to older adults seeking treatment for depression: belief that discussion of emotional issues could lead to a referral to a psychiatrist, concerns that antidepressant medications would remove natural feelings of sadness, dissatisfaction with prior treatments they had received for depression, belief that other people caused their depression so why continue to work with others, minimization of symptoms, depression is considered a normal part of life, faith can replace depression treatment, one should be able to solve their own problems, and withdrawal and hopelessness. The authors also reported that there was a general lack of awareness of the psychosocial treatments that are available to treat depression. This study will attempt to determine whether participants have similar comments and feedback on the qualitative survey. Other research has found that older adults reported distance to and cost of services, and concerns with transportation, as barriers to the use of mental health services (Handley et al., 2015).

**What is the role of primary care in addressing depression?** Currently, physicians are the gatekeepers for referring individuals into depression treatment (Robb et al., 2003) and they play an important role in diagnosing and managing depression (Bishop et al., 2016). Current



research, however, has found that 80% of older adults receiving treatment for depression in primary care fail to improve (Callahan, 2001).

**What factors impact detection of depression?** Depression often goes undetected until it has progressed to severe levels, with a current detection rate of 50-68% among the general population (Watzke et al., 2014). Research has identified the following factors as potential causes for under- recognition of depression: insufficient training of health-care providers in detection and management of mental illness, stigma that discourages disclosure, and poor access to specialty mental health care (Chen et al., 2015). Research also indicates that depression presents differently for older adults, with older adults more likely to report increased physical symptoms and less likely to report affective symptoms (Arean, Ayalon, Hunkeler, Lin, Tang & Harpole, 2005).

**What processes do older adults use when seeking treatment for depression?** Research found that older adults have limited personal experience with psychotherapy and other treatment services available for depression, and that they tend to underutilize mental health treatment services (Imai et al., 2008). However, when older adults are exposed to psychological treatment, they tend to express positive and favorable attitudes about mental health care (James & Buttle, 2008). These findings suggest that preconceived notions about psychological treatment may be another barrier to seeking treatment.

### **Barriers to the Utilization of Computer-delivered Treatments for Depression**

**Do older adults use computer-delivered treatments for depression?** Crabb and colleagues (2012) completed a systematic review investigating whether computer-delivered CBT (CCBT) appeared to be a feasible option for treating late-life depression. They found that older adults comprised approximately 3% of the reported studies testing CCBT. Although there is an

increase in development and research of computer-delivered psychological treatments, there is limited research investigating older adults' underutilization of computer-delivered treatment for depression. There is need for further research to assess why so few older adults are participating in computer-delivered treatments for depression.

**What are the reported attitudes and perceptions about computer-delivered treatments for a general population?** Mitchell and Gordon (2007) reported that attitudes towards computer-delivered treatments for depression were often indirectly reported in the form of attrition figures, but was never assessed in a direct manner. Mitchell and Gordon (2007) were the first to develop a brief assessment measure to capture the attitudes and perceptions of a student population towards a computer-delivered CBT treatment (CCBT) for depression. Prior to exposure to the program, participants reported preconceived negative attitudes regarding the credibility, the expectancy for improvement, and the perceived likelihood of selecting the CCBT program. However, after a demonstration, scores for credibility, expectancy-for improvement, and likelihood of using the CCBT program all rose by at least 50%. They also found that the number of participants stating a preference for using CCBT increased to 30%. Despite the small sample size ( $n = 20$ ), these increases were significant, yielding large effect sizes.

Cavanagh and colleagues (2009) also examined the acceptability of the “Beating the blues” computer-delivered CBT program compared with a brief face-to-face support treatment, using a brief treatment feedback questionnaire. The authors found that with limited supervision of a computer-delivered CBT treatment, participants' ratings of the credibility of the program were lower prior to exposure to the program but improved as a result of engaging in the program. Craske and colleagues (2009) investigated a CBT computer-delivered program in a primary care setting for the treatment of anxiety, while also assessing participants' attitudes on the program's

effectiveness. Participants' endorsed significant increases in their expectancies for improvement and self-efficacy from the first to the last session of treatment. Handley and colleagues (2014) found limited support for internet-delivered treatments, with only 20% of older adult respondents reporting that they would consider using an internet delivered mental health treatment. Another study, however, with a college student population, assessed the effects of a computer-delivered CBT self-administered treatment for depression, and found that participants reported it to be user friendly, engaging, and an appropriate source for learning information (Richards & Timulak, 2013).

These studies suggests that attitudes and perceptions of computer-delivered treatments may be initially poor, but can be improved by exposure and opportunity to interact with computer-delivered treatments. To date there has not been a study that has specifically investigated attitudes and perceptions towards a computer-delivered VBBA treatment for depression in older adults. This study was planned to investigate potential changes in older adults' perceptions of a computer-delivered VBBA program at points both pre and post exposure to that program.

**Are computer-delivered treatments well adopted?** There are also some difficulties with the adoption of computer-delivered mental health treatments. Waller and Gilbody (2009) investigated barriers to the adoption of a computer-delivered cognitive behavioral therapy by completing a systematic review of the literature on computer-delivered treatments. They found that the dropout rates for those identified to be in computer-delivered treatments were high, with only 56% of participants completing full courses of therapy, with personal circumstances being the most commonly expressed reason for drop out across studies. They also found that participants commonly reported that using technology was a barrier. Participants reported that

they would prefer assistance with using the computer-delivered program. The study concluded that computer literacy, staff support, education, and social class were barriers to the adoption of computer-delivered treatments. These findings suggest that further inquiry and exploration is needed to better identify issues with the adoption of computer-delivered treatments for depression.

**What is usability?** Proudfoot and colleagues (2003b) studied the development of computer-delivered treatments, particularly a computer-delivered CBT depression program titled “Beating the Blues.” They underscored the importance of usability as a first concern. Usability is how ‘user-friendly’ a program is with regard to the simplicity and accessibility of the interface. The authors also emphasized the importance of making the program “user persuasive”. This means that a program incorporates techniques that accommodate motivational problems commonly found with depression and anxiety.

**How does usability impact the adoption of computer-delivered treatments?** One study investigated the usability of a computer-delivered cognitive-behavioral therapy program for adolescents, and found that implementing a usability process improved the technical interface as well as user experience of the program (Wozney, Baxter, Newton, 2015). The present dissertation also assessed some of these aspects of usability, using quantitative and qualitative means, in order to obtain reactions of the reviewers to different aspects of this program. Several open-ended questions also explored the users’ experiences with the program.

**What are the recommendations for improving usability?** The format in which an intervention is delivered may impact individuals’ ability to properly comprehend what is being presented to them (Wills & Holmes-Rovner, 2003). In an effort to create an effective and usable program, the authors suggested including the following program components: 1) a user-friendly

interface with which users can easily navigate the program; 2) vignettes that demonstrate difficulties and struggles in therapy, in order to enhance motivation; 3) additional drop down menus that share advice and feedback during treatment, to enhance motivation; 4) graphics, animation, and interactive video clips that can hold the attention of users in order to ensure understanding of covered topics; 5) the ability to make choices to ensure the program is personalized for each user, and 6) the ability to navigate forward and backwards through the program. To aid with user problems, researchers have suggested offering a tutorial on the operation of computer-delivered treatments, in order to minimize confusion (Crabb et al., 2012).

**Do older adults find computer-delivered treatments acceptable?** Waller and Gilbody (2009) found that older adults' experience more problems with the user interfaces than younger adults, and that older adults reported computer-delivered treatments were "cold". The authors suggested that if there are added difficulties with visual impairments, limited computer experience, and lower educational levels, users may find computer-delivered treatments to be less acceptable. Research has found that older adults are also more likely to experience technical challenges when completing computer-delivered treatments (Crabb et al., 2012). This suggests a need to determine which unique aspects of a computer-delivered treatment should be modified to better fit the needs of an older adult population.

One study that assessed German older adults' acceptance and use of an internet based cognitive training program identified the following barriers to acceptance and use of the program: negative expectations, doubts about their ability to cope with the technology, technical barriers, privacy issues, and incompatibility of their perceptions of social relationships with their preconceptions and assumptions about social networking sites (Haesner et al., 2015). The researchers also found that older adults refrained from communicating with younger users

because they did not believe they had acquired a minimum level of internet literacy and did not trust their own computer abilities (Haesner et al., 2015). It was further reported that existing online platforms do not consider the needs of older adults, and are not widely accessible for seniors with disabilities (Haesner et al., 2015).

**Are computer-delivered treatments designed for older adults?** Though computer-delivered treatments can be effective with younger adults, Gatz and colleagues (1998) contend that older adults present with ideographic circumstances that are less common in other age groups, such as higher prevalence rates of dementia, medical comorbidities, and behavior related problems. These unique circumstances impact treatment outcomes (Gatz et al., 1998). Computer-delivered treatments need to be designed with these unique considerations in mind.

### **Purpose for this Research Study**

**What is the purpose of this study?** The purposes of this study were two-fold: Phase I: to evaluate the effects of a computer-delivered VBBA treatment program for depressed older adults, and Phase II: to assess the barriers to acceptability of computer-delivered treatments for a sample of general population older adults.

## **PHASE I METHODS**

### **Phase I Research Questions**

Question 1. Will participants report fewer depressive symptoms on the BDI-II as a result of the treatment intervention, as shown by decreases in their BDI-II scores?

Question 2. Will participants report fewer depressive symptoms on the GDS as a result of the treatment intervention, as shown by decreases in their GDS scores?

Question 3. Will participants report improvements in overall quality of life on the QOLS after the introduction of the treatment intervention, as shown by increases in their QOLS scores?

Question 4. Will participants report increasing activity levels on the BADS after the introduction of the treatment intervention, as shown by increases in their BADS scores?

Question 5. Will participants report increases in overall values-consistency behaviors on the VLQ from session 3 to post treatment, as shown by increases in their VLQ ratings?

Question 6. What will be seen in participants BDI-II, GDS, and the BADS from visual inspection?

Question 7. Will the BDI-II and GDS show synchronicity and magnitude of change in depressive symptoms?

Question 8. Will participants' expectancy for improvement and perceived credibility improve across time?

Question 9. What level of consumer satisfaction with the treatment program will participants endorse? Will they find the program interesting, helpful, and encouraging?

Question 10. What will participants report regarding their experience of the patient exemplars, the values-domains available, the tutorial, the advantages and disadvantages of the program, and the mini-lessons in the qualitative survey?

Question 11. What will homework completion look like for participants throughout treatment?

Question 12. What will participants report regarding their perceived usefulness of the different mini-lessons?

### **Phase I - Evaluation of Effects of Computer-delivered VBBA with Depressed Older Adults**

**Independent variable in phase I.** The independent variable for this phase of the study was a computer-delivered behavioral activation program entitled “Building a Meaningful Life Through Behavioral Activation” (BAML). This program provides therapeutic components of a

manual-based treatment of VBBA for depression. Session summaries also are provided (appendix A). BAML components include psycho-education on depression and a treatment rationale for applying VBBA. The program provides four patient exemplars, played by actors who differ in their presentations of depression, so that participants can select the patients of their choice at each session. The program also contained four different therapist exemplars that participants could select as they proceeded through each session of the program. The four therapists were from Western Michigan University and the Kalamazoo Michigan community. Throughout treatment a host narrator guided participants through the program by providing learning objectives at the beginning of each session, and summaries at the end of each session.

**Computer program layout for phase I.** BAML is a 10-session program that contains interactive multimedia components that include: video, music, and voice-over narration. This program was developed by Dr. Richard Spates and Dr. Amy Naugle at Western Michigan University, along with other professional collaborators, relying heavily on recent iterations of manualized, values-based behavioral activation protocols. In the first six sessions of treatment, emphasis is placed upon psychoeducation for the following areas: (a) treatment of depression through use of behavioral activation, (b) tracking behaviors through assignments and experiments, (c) information on the relationship between behaviors and mood, (d) assignments pertaining to integrating values with behaviors, and (e) information on how such behaviors can be implemented in a routine manner. The final five sessions of VBBA consist of mini lessons geared to teach participants how to increase adaptive activities, manage anger, apply for jobs, communicate more effectively with others, engage in relaxation techniques, set and achieve pre-selected values-based goals, break down large tasks, and achieve more routine and restful sleep patterns.



The program includes an embedded mood assessment probe to track weekly session-by-session depression symptoms and also to probe suicidality. If an individual endorses suicidal ideation, the program stops and the client is prompted to contact the computer-delivered treatment administrator. Homework practices are provided for weekly activity scheduling, values work, and a list of potential activities is provided to schedule. The program also contains embedded measures that ask how useful, helpful, and encouraging participants found the program. There is also an embedded valued living questionnaire.

**Dependent variables of phase I.** The BDI-II (Beck, Steer, Ball & Ranieri, 1996: appendix F) was used to assess changes in reported symptoms of depression throughout baseline, treatment, and follow-up sessions. It was also used as a screener for eligibility to enroll in the study. Scores of 20 or higher (moderate level of depression) were required on the BDI-II within the first baseline session in order to qualify for the study. Item 9 of the BDI-II was used to monitor reported suicidal ideation by participants.

The BDI-II is a 21-item multiple-choice self-report inventory that measures the severity of depressive symptoms. Each item is scored on a scale value of 0 to 3. Scores indicate the range of severity as minimal (0-13), mild (14-19), moderate (20-28), or severe (29-63).

The BDI-II has been shown to demonstrate acceptable validity and reliability, and has demonstrated moderately high correlations with the Beck Hopelessness Scale, and the SCL-90-R Depression subscale (Beck et al., 1996), which indicates adequate convergent validity. When tested with a psychiatric population, the internal consistency coefficient was  $\alpha = .92$ , and the test retest reliability was  $r = .93$  (Beck et al., 1996; Nezu, Nezu, Friedman, & Lee, 2009). Observed standard deviations in BDI-II scores obtained from clinical populations ranges from 5.52 – 11.24 (Armento, McNulty, & Hopko, 2012; Jacob, Christopher, & Neuhaus, 2011; Spates et al., 2012;

Ritschel, Ramirez, Jones, & Craighead, 2011; Watson, Berntsen, Kuyken, & Watkins, 2013). The BDI-II took about 5 minutes to complete.

The BADS (Kantor, Rusch, Busch, Sedivy, 2009: appendix G) long form was used to assess participants' overall changes in levels of activation throughout the study. The BADS consists of 25 items grouped into four subscales: (Activation, Avoidance/Rumination, Work/School Impairment, and Social Impairment). The BADS uses a seven-point Likert scale, where 0 represents a response of "not at all," and a 6 represents a response of "completely." Reliability has been measured as high (Cronbach's  $\alpha = .87$ ; Spates et al., 2012). The BADS total scale and subscales demonstrate good internal consistency with an acceptable total score Cronbach  $\alpha$  ( $\alpha = .79$ ), and acceptable: Activation  $\alpha = .87$ , Avoidance/Rumination  $\alpha = .83$ , Work/School Impairment  $\alpha = .78$ , and Social Impairment  $\alpha = .83$  (Kanter et al., 2007). In this study, the BADS was used as an outcome measure throughout the course of treatment. This measure also allowed investigation of whether changes in activation and avoidance corresponded to changes in depression over the course of treatment. The BADS took about 5 minutes to complete.

A GDS (Yesavage, 1988; appendix H) was administered during the first two baseline sessions, throughout all 10 sessions of BA treatment, and during all three follow-up sessions. This was administered to assess depression and compare it with the BDI-II, another measure of depression. The GDS asks participants to complete a 30-item depression scale which specifically assesses depression in late life, using a 'yes' or 'no' response, for how they felt the day of the administration. Scores of 0-9 are considered to fall in the normal range, 10-19 indicate mild depression, and 20-30 indicate severe depression. When evaluated against diagnostic criteria for depression, the GDS was found to have 92% sensitivity and 89% specificity. (Greenberg, 2012).

The validity and reliability of the tool have been supported through both clinical practice and research. The GDS has been found to be successful in differentiating depressed from non-depressed adults ( $r = .84$ ,  $p < .001$ ) (Greenberg, 2012). The GDS can be used with those who are healthy, medically ill, and with those who suffer mild to moderate cognitive impairment. This measure has been used in community and acute and long-term care settings. The GDS took 5 minutes to complete.

The QOLS (Flanagan, 1978; Burckhardt & Anderson, 2003: appendix I) was administered in the second assessment baseline session, and at all three follow-up sessions. The QOLS is a self-report measure that assesses six areas related to quality of life: Material and Physical Well-Being; Relationships with Other People; Social, Community, and Civic Activities; Personal Development and Fulfillment; Recreation; and Independence (Burckhardt & Anderson, 2003). The QOLS contains 16 items that are rated on a seven-point Likert-type scale ranging from one to seven. The items are summed to provide a total score, with higher total scores suggesting higher quality of life. Scores range from 16-112, with healthy populations typically reporting a quality of life score of 90 or greater.

QOLS psychometric studies report that it demonstrates adequate reliability ( $r = .53 - .90$ ) with Cronbach's alpha coefficients averaging .87 (Burckhardt & Anderson, 2003; Burckhardt, Woods, Schultz, & Ziebarth, 1989). The internal consistency of this measure has ranged from .82 to .92 across studies (Burckhardt & Anderson, 2003). An observed standard deviation in QOLS scores obtained from clinical populations was 15.88 (Spates et al., 2012). This measure was used to assess any quality of life changes from pre- to post-treatment, and to observe any gains that were maintained at follow-ups. The QOLS took about 5 minutes to complete.

A VLQ (Wilson, Sandoz, Kitchens, & Roberts, 2010; appendix J) was used to measure overall values consistency of activities from session 3 until session 10 of treatment. Part one of the VLQ assesses the subjective importance of ten valued domains on a scale of 1 - 10. These domains are: Family, Marriage, Parenting, Friends, Work, Education, Recreation, Spirituality, Citizenship, and Physical Self Case. Part two of the VLQ assesses the subjective feelings of consistency with actions within each of the domains. Test-retest reliability was found to be high ( $r = .90$ ) for part one, but marginal ( $r = .58$ ) for part two, and the measure is considered valid (Wilson et al., 2010). This measure is scored by adding the total circled numbers for part two with the higher score, representing an increased chance of experiencing happiness. Part 1 was used to assist participants with progress in therapy. Part 2 was used to assess changes in overall values consistency from session 3 to 10. The VLQ took about 5-10 minutes to complete.

The Phase I Credibility and Expectancy for Improvement form (CEI) (appendix K) assessed participants' thoughts regarding the effectiveness of the computer-delivered program both before and after a tutorial and completion of a session of the program. The CEI was given at three time points: (1) in the second assessment baseline session prior to being introduced to the program, and (2) in the first treatment session after being introduced to the program with a tutorial, and (3) at 1-week follow-up. The CEI was adapted from Mitchell and Gordon (2007) to measure credibility and expectancy for improvement in the context of the computer-delivered treatment program used in this study. Four questions, scored on a 9 point Likert scale, asked the following: "How logical does the BAML treatment seem to you? How confident would you be that the BAML treatment will be successful in eliminating your depressive symptoms? How confident would you be in recommending the BAML treatment to a friend who is also depressed?" The final question asked for a percentage of how much improvement participants

believed they would experience as a result of going through the BAML program. Given that it was adapted for this study there is no information on validity or reliability.

A consumer satisfaction survey (appendix L) was administered at the first one-week follow-up session. Participants were asked to complete a 15-item consumer satisfaction survey. Response options ranged from “1” (Strongly Disagree) to “5” (Strongly Agree). Higher scores represented greater degrees of satisfaction. Satisfaction was calculated by summing all responses and dividing by the total number of questions, to yield an average satisfaction rating. The consumer satisfaction survey took approximately 10-15 minutes to complete. This survey was developed originally by Drs. Alyssa Kalata and Richard Spates for the BAML program.

The computer program had questions embedded throughout the treatment asking how interesting, helpful, and encouraging the participants believed the program to be. This was collected (as another measure of satisfaction with the program) from treatment session 1 until treatment session 10. Response options for the questions how interesting, helpful, and encouraging was the program ranged from not at all = 1, somewhat = 2, and very = 3. Given that this form was adapted to represent consumer satisfaction with the VBBA computer-delivered program, there is no reliability or validity estimates available for use in this study.

The Phase I qualitative survey (appendix M) was completed post treatment at the first one-week follow-up session. This qualitative measure collected information regarding ways that the program could be tailored better meet the needs of an older adult population. This survey asked participants whether patient exemplars matched participants’ experience of depression, whether the values domains provided in the program provided values that matched their own values, whether the tutorial assistance prior to going through the program was helpful, and what the participants viewed as the advantages and disadvantages of using a computer-delivered

program over face-to-face treatment. This measure was conducted in an open ended-question format and was administered once during the 1 week follow-up session. The survey took approximately 10-15 minutes to complete.

**Other measures from phase I.** A demographic information form (appendix N) was completed in the initial assessment appointment, to collect information on participant characteristics, previous and current treatments for depression, experience with computers, and current sensory ability levels. The demographics information form took approximately 10-20 minutes to complete.

A MMSE (Folstein, Folstein, & McHuge, 1975: appendix O) was completed at the second initial assessment session to determine eligibility for the study. The MMSE measures current mental state with 30-items that assess five cognitive functions: orientation, registration, attention and calculation, recall and language. An individual can receive a maximum score of 30, with a score of 23 or lower indicating probable cognitive impairment (Folstein et al, 1975). Individuals obtaining a score of 24-30 fall into the normal range, while 21-23 indicates mild impairment, 10-20 indicates moderate impairment, and scores 9 and below indicate profound impairment (Folstein et al., 1975). The MMSE has been shown to be valid and reliable when used with older adults (Tombaugh & McIntyre, 1992; Foreman, Fletcher, Mion, & Simon, 1996). Potential participants who score below 18, indicating more moderate cognitive impairment, were excluded from this study. The MMSE took approximately 10-15 minutes to administer.

Homework Completion was tracked weekly, at each treatment session, as an embedded component of the BAML program. Homework completion was based on self-report. Participants were asked whether all homework was completed, some homework was completed, or no homework was completed. Whenever the phrase “no homework was completed” was entered by

participants, the computer-delivered administrator was prompted by a program stop, and the administrator assisted the participant by permitting the client to complete assigned tasks during the session, before starting the next session. When participants selected “all” or “some” to homework completed, the program asked when homework was completed (time of day), and how difficult the participants found completing the homework. The homework completion task took under a minute to complete. Homework completion data were considered complete if any homework was successfully accomplished.

An additional services form (appendix P) was administered at all baseline, treatment, and follow-up sessions, to collect information on any mental health services participants might have received during treatment or follow-up. This form took a 1 minute to complete.

**Methods of data collection in phase I.** This study involved computer treatment administrators, who were graduate students trained in Values based behavioral activation (VBBA) and the BAML program. They administered assessments, provided assistance to participants navigating the computer-delivered treatment, and scheduled sessions. Also involved were research assistants, who were undergraduate students trained to score assessments and enter assessment data into a computer database. Participants had contact only with computer treatment administrators. Both computer treatment administrators and research assistants completed required ethical modules on the CITI training program online prior to beginning any study-related responsibilities.

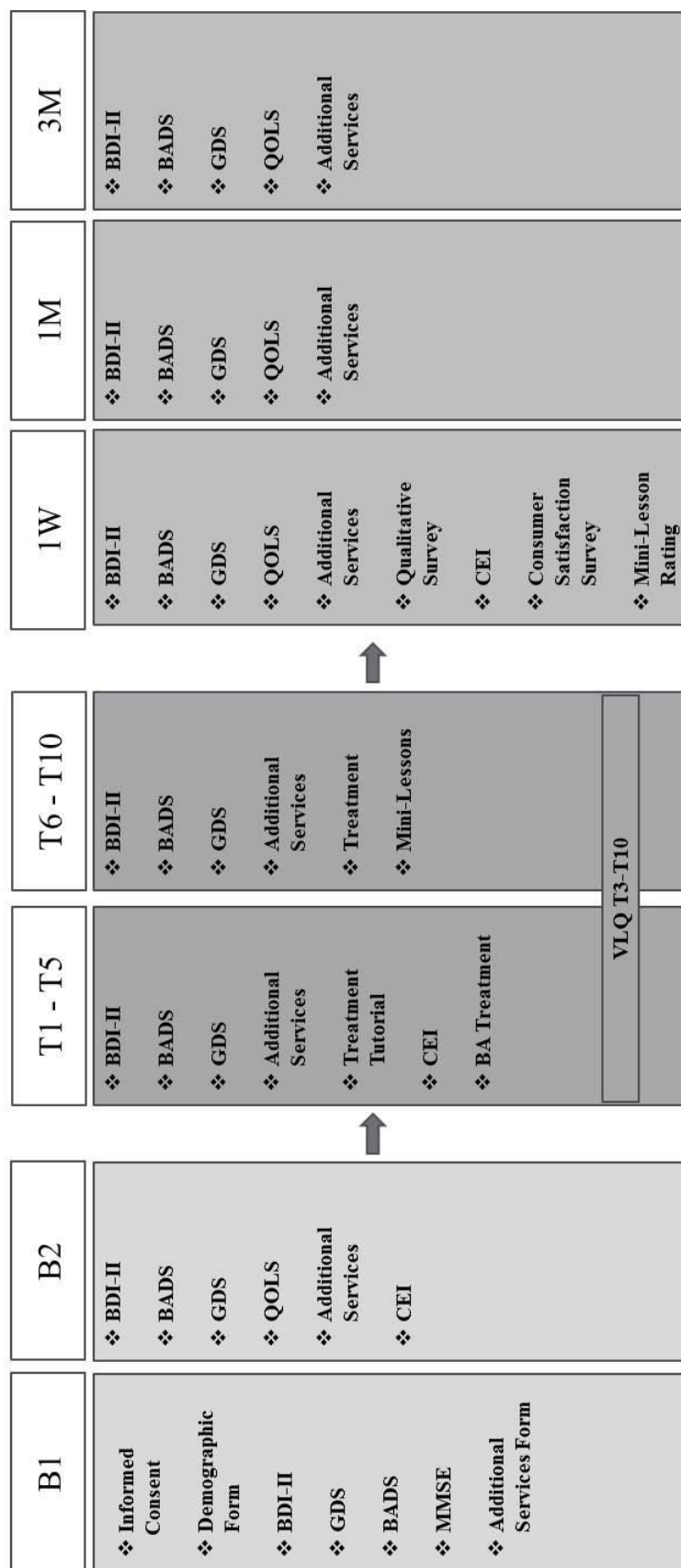
Phase I of this study consisted of three parts: 2 sessions of baseline, 10 sessions of treatment, and 3 follow-up sessions (Figure 1). After scheduled for a first initial session, participants met with a computer treatment administrator who screened them for inclusion criteria. Participants had to be at least 65 years of age and need transportation to get to the

session. Participants were also screened for exclusion criteria: changes or new medication in the past eight weeks, current psychological treatment, active suicidality, moderate cognitive impairment as measured by a score of 18 or lower on the MMSE, a score below 20 on the BDI-II.

All baseline, treatment, and follow-up sessions were run by a treatment administrator. Each participant was assigned to one treatment administrator who also were available to answer participant questions during sessions. During each session, the treatment administrator was stationed in an adjacent room, available for participant questions. At the end of each session, the treatment administrator scheduled the next session with the participant and, once treatment was complete, the administrator reviewed homework assignments. The two baseline sessions had to be completed within a 4 week timeframe, with at least one week between them. The ten treatment sessions had to be completed within a 12 week time frame, with at least one week between treatment sessions. The 3 follow-up sessions were completed at 1-week, 1-month, and 3-months following the completion of treatment.



Figure 1

*Phase I Procedures*

**Baseline.** The first baseline session consisted of completing the informed consent procedure, a demographics information form, a Beck Depression Inventory-II (BDI-II), a Behavioral Activation for Depression Scale (BADs), a Geriatric Depression Scale (GDS), an additional services form, and a Mini-Mental Status Examination (MMSE). The BDI-II and MMSE were used for inclusionary criteria, and the BDI-II additionally for outcome data. Potential participants had to score 20 or above on the BDI-II, which is indicative of the presence of moderate depressive symptoms. Potential participants had to score 18 or higher on the MMSE, which would indicate minimal issues mild cognitive impairment. The second baseline session consisted of a BDI-II, a BADs, a GDS, a Quality of Life Scale (QOLS), an additional services form, and a CEI form.

**Treatment.** The first treatment session consisted of completing a BDI-II, a BADs, a GDS, and a treatment tutorial in which the treatment administrator explained how to navigate the computer-delivered treatment program and answered any questions. This was followed by completion of an additional services form, and a CEI form. The participant then engaged in the first session of computer-delivered treatment. Participants were provided with session summaries at the end of each of the ten sessions, and then assigned treatment homework. The second treatment session consisted of completing the BDI-II, a BADs, a GDS, an additional services form, and a homework completion check, following which they would access the second session of computer-delivered treatment. The third through tenth treatment sessions consisted of completing a BDI-II, a BADs, a GDS, an additional services form, a homework completion check, and a Valued Living Questionnaire (VLQ). At the end of every treatment session, the treatment administrator reviewed the session with the participant, reminded them of the homework to be completed, and asked if there were any questions.

**Follow-up.** The first follow-up session, at 1-week post treatment, consisted of completing a BDI-II, a BADS, a GDS, a QOLS, an additional services form, a qualitative survey, a CEI form, and a consumer satisfaction form. The second follow-up session, 1-month post treatment, consisted of completing a BDI-II, a BADS, a GDS, a QOLS, and an additional services form. The third follow-up session, 3-months post treatment, consisted of completing a BDI-II, a BADS, a GDS, a QOLS, and an additional services form.

At the end of each session, the computer-delivered treatment administrator transferred data from the raw assessments into the universal data collection form for each participant. The raw assessment data and the universal data collection (appendix Q) forms were kept in the Family Studies lab at Western Michigan University. Research assistants verified that the raw assessments matched the universal collection forms, and then recorded the universal data into a secure computer database for storage and analysis. Treatment administrators and research assistants were trained by the principal student investigator in their required roles and responsibilities.

**Design of phase I.** This study was originally planned to employ a single subject, multiple baseline experimental design. Multiple-baseline designs require collection of baseline data points for several participants, all starting at the same time, with treatment being introduced for each participant at different times. When treatment effects are noted only at the various times the treatment is introduced, but not at other baseline (control) times, such comparisons can provide more confidence that the observed effects resulted from the treatment rather than from other extraneous factors, such as time effects (e.g., spontaneous recovery), regression towards the mean, or carry-over effects such as participants conversing about BA to others who have not yet received BA (Johnston & Pennypacker, 1993). Proper multiple baseline experimental designs,

thus, require data collected over several participants, all following the same baseline time course, but with different individual intervention points along this set of baselines. This study proposed to recruit at least six participants, as a minimum, in order to allow firm conclusions to be made from the resulting data.

In this study, however, only two participants were able to be recruited. Participants also were not able to start their baselines at the same time, beginning baseline at the time they were recruited. This rendered the planned multiple baseline design not feasible. Thus, the final design for this study was a pre- post (A-B) quasi-experimental design. Each of the two participants served as their own controls, allowing assessment of the effects of the intervention by analyzing repeated measures on depression and activation scores throughout the course of baseline, intervention, and follow-up sessions. Also assessed was the treatment impact on quality of life ratings from baseline to follow-up.

**Analyses for phase I.** Descriptive statistics were used to display the results of the demographics survey, product usability survey, and CEI form. Scores on the CEI form were compared between pre and post program administrations. Product usability data are displayed as an average rating of usability for each question.

**Recruitment and informed consent for phase I.** Individuals were invited to participate in an initial assessment interview via a recruitment flyer (appendix B) or advertisement (appendix C). This flyer provided information on common depressive symptoms, as well as a telephone number that could be contacted to learn more about the study. Participants were recruited from December of 2013 until July of 2015 via community recruitment flyers placed in retirement communities, primary care physicians' offices, assisted living communities, mental

health service agencies in Kalamazoo, and many other places in the surrounding Kalamazoo geographical area.

If a potential participant indicated interest in learning more about participating in the study after the first phone contact (appendix D), the first baseline assessment session was scheduled. During the first baseline assessment session, the informed consent process took place. When they arrived at IBH, potential participants were greeted by the researcher or a research assistant and led to a private room. In the laboratory room, the potential participant reviewed the informed consent document (appendix E), and was asked whether he or she has understood the information provided in the informed consent document. If the potential participant had any questions or indicated that he or she did not understand a portion of the informed consent document, the researcher or research assistant answered any questions and clarified any relevant portions of the informed consent document. If the potential participant consented to participating in the study, the researcher or research assistant asked the potential participant to sign two copies of the informed consent document, both of which were also signed by the researcher or research assistant. One copy of this document was retained by the researcher in a locked cabinet in a laboratory at Western Michigan University (WMU), and one copy of this document was provided to the participant. If the prospective participant indicated that he or she was not interested in participating in the study during the informed consent process or at any point in the study thereafter, he or she could opt to discontinue any further involvement. The informed consent process took approximately ten minutes to complete.

**Participants in phase I.** Inclusionary criteria were as follows: Participants had to be 65 years or older, endorsing presenting symptoms of depression. Participants had to obtain a score of 20 or higher on the BDI-II at the first assessment session and had to be able to complete the

two baseline assessments within four weeks, or be excluded from the study. Participants had to have the ability to drive to their sessions at IBH.

The MMSE also was used to assess cognitive ability to determine eligibility for participation in the study. Typically, the cutoff score for eligibility in research is 23 or above (Wetherrell, Gatz, & Craske, 2003). However, similar to Snarski and colleagues (2011), this study applied a lower eligibility cutoff of 18, to include individuals with lower cognitive abilities, and include a wider range of individuals in the sample. Potential participants were excluded if they were receiving current psychotherapy services for symptoms of depression, or if they were taking antidepressant medications for less than eight weeks. If potential participants were actively suicidal they were excluded, and referred to the necessary psychological resources. Individuals who did not meet the inclusion criteria, or met exclusionary criteria, were given referrals to appropriate alternative community service providers in the area.

**Location, settings, and materials of phase I.** Phase I of the project took place at a private practice called Integrated Behavioral Health (IBH) Psychological Services in Kalamazoo. The participants completed the intervention program in a closed room, while the computer administrators were in a separate room, available to the participant if questions arose. The intervention was presented on a laptop computer with Windows XP-SP3 installed. A wireless mouse was available for the participant to navigate the program.

## **PHASE I RESULTS**

### **Recruitment and Sample**

Recruitment took place from December 2013 until July of 2015. Researchers recruited from 37 locations. Recruitment took the form of paid bus advertisements, direct consultations with geriatric outpatient doctors and private practice psychologists, presenting an oral

recruitment script to near a dozen assisted living locations, flyers posted within the community at local grocery stores, pharmacies, orthopedic rehabilitation suppliers, private practices, the gerontology department at Western Michigan University, public library, senior community centers, Senior Services, Centra Care, Area on Aging, Pine Rest, Meals on Wheels, Kalamazoo County Mental Health Services, and several churches in the community.

Ten interested individuals inquired about the study. Seven of those individuals did not continue, due to meeting exclusion criteria or deciding to forgo participation upon learning about the treatment length and process over the phone. Three of the ten interested individuals scheduled initial appointments and consented to participate (participants 001, 002, and 003).

Participant 001 no longer was interested in continuing after the first assessment session. Participant 002 completed 8 sessions of treatment before dropping out. Participant 003 completed all 10 sessions of treatment and three follow-up sessions. Neither of these participants reported receiving any additional therapeutic services during treatment and follow-up. Therefore, phase I analyses and results are limited to data for two participants. Participant characteristics and demographics for these two are displayed in table 1.

Table 1  
*Demographics for Phase I*

	Participant 002	Participant 003
Age	72	67
Sex	Female	Female
Race	African American	Caucasian American
Education	Graduated 2-Yr College	Some College
Employment Status	Retired	Retired
Annual Income	\$15,000-\$24,999	\$35,000-\$49,000
Marital Status	Divorced	Married
Prior Treatment for Depression	Therapy	Therapy, Medication
Community Involvement	Yes	No
Current Psychotropic Medications	None	SSRI, Anxiolytics
Hospitalization Over the Past Year	None	None
Knowledge of Computers	5	8
Years of Experience with Computers	30	15-20
Comfort with Computers	9	10
Average Hours of Weekly Computer use	1-2	30
Physical Ability	5	10
Hearing Ability	6	10
Vision Ability	6	10
Touch Ability	6	10
Taste/Smell Ability	9	10

Knowledge ranges from scores 1-10 where 1 = No knowledge, 10 = extensive knowledge.

Comfort scores ranges from 1-10 where 1 = completely uncomfortable, 10 = completely comfortable.

Abilities scores range from 1-10 where 1 = no ability, 10 = full ability.

Both participants had received prior talk therapy treatment for depression, and participant 003 was taking antidepressant medications for symptoms of depression. Neither participant had recent acute hospitalizations. Participants reported differing degrees of knowledge with computers. Both participants reported feeling very comfortable using computers. Participant 002 used computers infrequently, while participant 003 used her computer frequently.

### **Research Question 1**

Will participants report fewer depressive symptoms on the BDI-II as a result of the treatment intervention, as shown by decreases in their BDI-II scores?

Tables 2 and 3 displays participants BDI-II scores for the duration of the study.



**Participant 002.** Overall her BDI-II scores show slight decreases in her symptoms of depression from baseline to her final treatment sessions (Table 2). With the most decreases in symptoms occurring in T4 until T7, which fell from the severe range to the moderate range. Her depressive symptoms returned to the severe range in T8, which were similar to her scores during baseline.

**Participant 003.** Overall, her BDI-II scores show a substantial decrease in her symptoms of depression from baseline to completion of treatment and follow-up (Table 3). She had clinically significant changes in symptoms of depression from baseline to the end of treatment. Her symptoms fell from the severe range in B1 to the minimal range in T5. After the introduction of the mini-lessons, her symptoms of depression slightly increased, placing her scores in the mild range. Her BDI-II scores remained in the mild range during post treatment (1M and 3M).

## **Research Question 2**

Will participants report fewer depressive symptoms on the GDS as a result of the treatment intervention, as shown by decreases in their GDS scores?

Tables 2 and 3 display GDS scores through the duration of the study for both participants.

**Participant 002.** Her symptoms of depression on the GDS were consistently within the severe range (Table 2). Her symptoms decreased and fell into the mild range in T6 and T7. In T8, her final session, her symptoms slightly increased and returned to the severe range.

**Participant 003.** Overall, her symptoms of depression as measured by the GDS decreased from baseline to the completion of treatment. During baseline her scores fell in the mild symptom and decreased to the normal range during treatment and follow-up sessions (Table 3). Her scores first fell within the normal range in T7 and again at the 1-month follow-up session (1MF).

Table 2  
*Outcome Measures for Participant 002*

	B1	B2	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	1W	1M	3M
BDI-II	36	33	31	31	32	27	27	24	23	30	-	-	-	-	-
GDS	22	22	21	21	21	21	20	17	15	20	-	-	-	-	-
QOLS		58											-	-	-
BADS	60	44	45	53	30	78	59	92	89	80	-	-	-	-	-
BADS Subscale AC	9	22	19	29	19	38	33	42	40	32	-	-	-	-	-
BADS Subscale AR	23	35	37	40	40	37	45	42	35	36	-	-	-	-	-
BADS Subscale WS	26	21	22	24	27	20	21	10	15	12	-	-	-	-	-
BADS Subscale SI	9	30	23	20	30	11	16	6	9	12	-	-	-	-	-
VLQ Consistency Total					36	87	70	90	71	73	-	-	-	-	-
Homework Completion				Yes	Yes	Yes	Yes	Yes	Yes	Yes	-	-			
How Logical		5	2										-		
How Successful		4	2										-		
Would You Recommend		9	2										-		
Expectation for Improvement	92%	40%											-		
Consumer Satisfaction													-		
How Interesting			3	3	3	3	2	2	3	3					
How Helpful			2	3	2	3	2	2	2	2					
How Encouraging			2	3	2	3	2	2	3	3					

Subscales AC=Activation AR = Avoidance/Rumination WS = Work/School Impairment SI = Social Impairment

Dashes indicate where data was incomplete because participant did not finish the treatment

How interesting/helpful/encouraging regarding the program on a scale of 1 = not at all 2 = somewhat and 3 = very

How logical does the program seem to you, How successful do you believe the program will be in treating depression, and would you recommend the program to friend or family is on a scale of 1 - 9, where 1=not at all, 9 = completely

How much do you expect to improve as a result of going through the program 0-100%

### Research Question 3

Will participants report improvements in overall quality of life on the QOLS after the introduction of the treatment intervention, as shown by increases in their QOLS scores?

Tables 2 and 3 show quality of life measurements from pre to post.

Participant 002 did not complete the study so her quality of life could not be measured across time from baseline to the end of treatment. However, during baseline her quality of life fell within the clinical range, indicating a lower quality of life. Participant 003 reported an improvement in her overall quality of life from baseline to post treatment (Table 3).

## Research Question 4

Will participants show increasing activity levels on the BADS after the introduction of the treatment intervention, as shown by increases in their BADS scores?

Table 3

*Outcome Measures for Participant 003*

	B1	B2	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	1W	1M	3M
BDI-II	34	36	36	28	24	16	12	21	17	17	17	30	22	17	17
GDS	15	22	22	19	16	11	10	15	9	15	12	16	11	9	14
QOLS		53											88	67	74
BADS	57	44	60	74	94	100	110	97	119	119	109	106	102	98	76
BADS Subscale AC	19	10	17	20	21	23	22	23	23	26	25	33	28	27	24
BADS Subscale AR	27	28	20	19	18	13	9	18	8	14	17	17	18	13	28
BADS Subscale WS	23	18	25	19	9	12	9	9	4	1	6	8	11	10	10
BADS Subscale SI	20	28	20	16	8	6	2	7	0	0	1	10	6	14	14
VLQ Consistency Total					68	76	76	74	81	86	79	71			
Homework Completion				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
How Logical		7	4										8		
How Successful		7	4										5		
Would You Recommend		9	4										5		
Expectation for Improvement	90%	20%											80%		
Consumer Satisfaction													2.5		
How Interesting			2	2	2	1	2	2	2	2	2	2			
How Helpful			2	2	2	1	2	2	2	2	2	1			
How Encouraging			2	2	2	2	2	2	2	2	2	1			

Subscales AC=Activation AR = Avoidance/Rumination WS = Work/School Impairment SI = Social Impairment

Dashes indicate where data was incomplete because participant did not finish the treatment

How interesting/helpful/encouraging regarding the program on a scale of 1 = not at all 2 = somewhat and 3 = very

How logical does the program seem to you, How successful do you believe the program will be in treating depression, and would you recommend the program to friend or family is on a scale of 1 - 9, where 1=not at all, 9 = completely

How much do you expect to improve as a result of going through the program 0-100%

Tables 2 and 3 shows displays the BADS levels of participants for the duration of the study.

**Participant 002.** Her overall values-based activation levels increased from baseline until the time she dropped out of treatment in T8 (Table 2). Her overall activation levels increased from baseline to treatment. Her activation subscale showed some degree of variability throughout treatment with her highest levels of activation occurring in T6 and T7. There is a

steadily increasing level in her avoidance and rumination levels from the beginning of baseline to the end of her treatment, as shown by her avoidance and rumination subscale. She also reported a steadily decreasing level of work and school impairment from baseline to treatment, as shown by her work and school impairment subscale. She reported fluctuating levels of social impairment from baseline to her final treatment session.

***Participant 003.*** Her overall values-based activation level fluctuated throughout treatment (Table 3). There did appear to be a general increase in her overall activation level from T3-T10. At 3-month follow-up (3MF), she reported a reduction in her overall activation level compared to her 1-week follow-up level (1WF). There was some variability in her activation subscale level, but with an overall increase in levels from baseline to treatment, with some of those gains maintained at post treatment. As treatment progressed, she reported a decrease in avoidance and rumination from B1 until T5, as shown in the avoidance and rumination scale. Following T5, her avoidance and rumination fluctuated for the remainder of treatment, but increased at her 3-month post treatment follow-up (3MF). There was a reduction in her work and school impairment scores from baseline to post treatment, as shown in the work and school impairment scale. There also was a reduction in her social impairment scores from baseline to post treatment, as shown in the social impairment scale.

### **Research Question 5**

Will there be a change in values-consistency on the VLQ from session T3 to post treatment, as shown by an increase in their VLQ ratings?

Participant 002 reported an increase in how consistently she was engaging in valued-based activities from T3 to T6, and a steady decrease in values consistency in her final sessions (Table 2). Her final consistency score in session T8 was higher than her consistency score in the

beginning of treatment. Participant 003 reported a gradual increase in values consistency from T3 to T8, with slight decrease in T9 and T10 (Table 3).

### **Research Question 6**

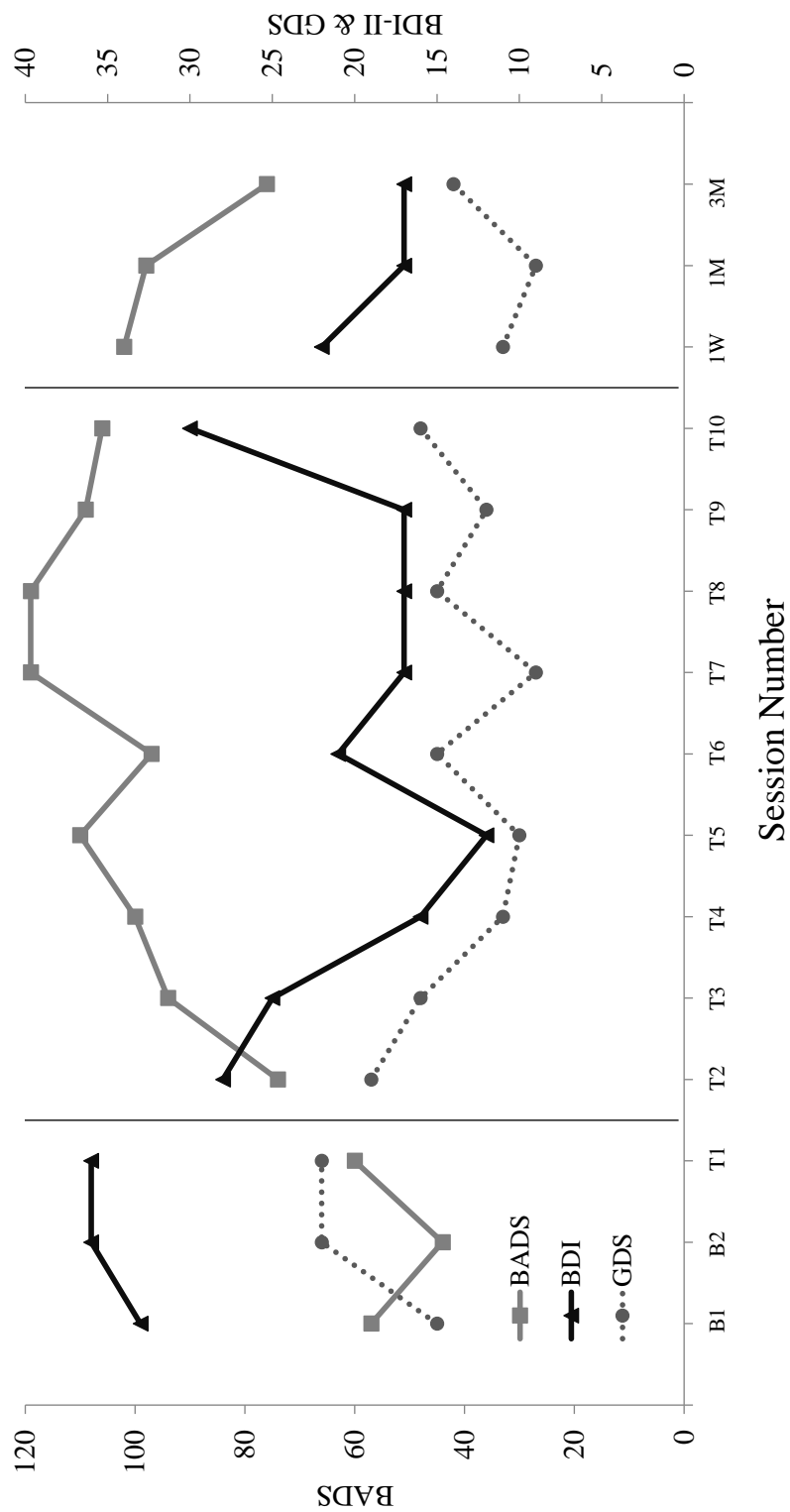
What changes will be seen graphically as measured by the BADS, GDS, and BDI-II measures for each participant?

Figures 2 and 3 display visual representations of changes in BDI-II, GDS, and BADS for the two participants for the duration of their involvement in the study.

***Participant 002.*** Visual inspection of Figures 2 and 3 appears to show an inverse relationship between activation levels on the BADS and symptoms of depression on the BDI-II and the GDS through baseline, treatment, and follow-up. When looking at participant 002's baseline data for B1 through B3, it appears that the BDI-II displays a descending trend, indicating a reduction in symptoms prior to the intervention. GDS scores, however, appear level with more stability than the BDI-II scores in the baseline phase. It appears that activation levels were decreasing prior to treatment, as indicated by the descending trend during the baseline phase. During the course of treatment, the BDI-II reported symptoms of depression appear to be decreasing, as shown by a descending trend until T8. GDS scores during treatment decreased slightly from T4 until T7. Both BDI-II and GDS scores indicate an increase in depressive symptoms from T7 to T8. There was some variability in activation levels throughout treatment, with an overall ascending trend in activation from T1 until T6, followed by a slight descending trend in activation from T6 until T8.



Figure 3  
*Depressive Symptoms and Activation for Participant 003*



**Participant 003.** Similar to participant 002, visual inspection of Figure 3 appears to show an inverse relationship between activation levels on the BADS and symptoms of depression on the BDI-II and GDS through baseline, treatment, and follow-up. As activation levels increase depressive symptoms decrease, and as activation levels decrease depressive symptoms increase. Her baseline data appear to show an ascending trend in BDI-II symptoms, indicating her symptoms were worsening prior to the introduction of treatment. GDS scores display a similar ascending trend during baseline, indicating an increase in depressive symptoms prior to the introduction of treatment. Activation levels are fairly stable prior to the introduction of treatment. From baseline to treatment her BDI-II symptoms show a clear improvement, with a descending trend in her BDI-II scores from T1 until T5. From T5 until T10 there appears to be an ascending trend of depressive symptoms based on the BDI-II, indicating an increase in symptoms of depression. From baseline to treatment there is a descending trend of GDS scores until T5. Despite some variability is seen in her overall activation levels there is gradual ascending trend until T8, indicating that her overall activation levels are increasing. Visual inspection shows a clear level change for BDI-II, GDS, and BADS scores from baseline to post treatment.

### **Research Question 7**

Will the BDI-II and the GDS show synchronicity and magnitude of change in depressive symptoms?

Visual inspection of trends for both participants appear to show depressive symptom changes that were consistently parallel for both the BDI-II and GDS (figures 2 and 3). Both participants' scores of depression on the BDI-II and GDS (Tables 2 and 3) are consistently decreasing and increasing in parallel across sessions for each participant. Regarding changes in



depressive symptoms, there appears to be synchronicity and magnitude of change between the BDI-II and GDS measures.

### **Research Question 8**

Will participants' expectancy for improvement and perceived credibility improve across time from the introduction of the program, to following a tutorial, and then at post treatment?

Tables 2 and 3 (bottom half) display CEI data. Both participants reported less favorable perceptions of how logical they believed the computer-delivered treatment program would be for treating depression from B2 to T1. Both participants reported less favorable perceptions of how successful they believed a computer-delivered treatment program for depression would be from B2 to T1. Both participants reported a reduction in their willingness to recommend the program to other friends and family from B2 to T1. Both participants reported less favorable expectations for improvement from B2 to T1.

Participant 003 reported a more favorable perception of how logical the computer-delivered program would be for treating depression in 1W compared to T1 (Table 3). She reported improved expectations that the program would successfully treat depression in 1W compared to T1. She further reported increased willingness to recommend the treatment to friend and family in 1W compared to T1, as well as more favorable expectations for improvement in 1W compared to T1. Her overall ratings regarding the credibility and expectation for improvement using the program, increased from treatment to follow-up.

### **Research Question 9**

What level of consumer satisfaction with the treatment program will participants endorse? Will they find the program to be interesting, helpful, and encouraging?

Tables 2 and 3 (bottom half) display consumer satisfaction data. Participant 002 did not complete treatment, and for this reason was unable to provide her level of consumer satisfaction with the program at post treatment (Table 2). Participant 003 reported an average consumer satisfaction score of 2.50 (out of 5) with a range from 0 to 5 (Table 3). As displayed in Table 2 (bottom half), participant 002 reported that she found T1-T4 and T7-T8 to be very interesting. She reported T5-T6 were somewhat interesting. She reported that T2 and T4 were very helpful, and that T1, T3, T5-T8 were somewhat helpful. She reported that T2, T4, and T7-T8 were very encouraging, while she reported T1, T3, and T5-T6 as being somewhat encouraging. Participant 003 reported that T1 – T3 and T5-T8 as somewhat interesting, and T4 as not at all interesting (table 3). She reported T1-T7 as somewhat helpful, and T4 and T8 as not at all helpful. She reported T1-T7 as somewhat encouraging, and T8 as not at all encouraging. Participant 002 and participant 003's selected mini-lessons indicate lessons they independently selected (Table 5).

### **Research Question 10**

What will participants report regarding their experience of the patient exemplars, the values-domains available, the tutorial, the advantages and disadvantages of the program, and the mini-lessons in the qualitative survey?

Participant 002 did not complete treatment and was therefore unable to provide feedback in the qualitative survey. Participant 003's responses to the survey are displayed in Table 4. When asked whether the patient exemplars represented her experience of depression, she reported that they did not seem realistic in terms of their inability to portray depressed individuals problem solving capacities. She reported that she believed that the values domains were adequately covered. She reported that she believed the pre-program tutorial was too slow in pacing.

Table 4

*Summary of Themes from Phase I Qualitative Survey for Participant 003*


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"Did the patient exemplars represent your experience of depression? Please explain. If not what types of scenarios symptoms would better represent your experience of depression?"

---

Response Theme

---

No.

Pacing was slow for comfort level.

They were not relatable because they made no attempt to problem solve or find solutions and they seemed uninformed.

A different setting like a gray cloudy day, and a dark bedroom with someone on the bed who is in their pajamas. The phone is ringing but it is ignored, with sighs.

---

"Did you feel the values domains provided in the study covered values that are important to you? Are there other values domains that you find important that were not provided as an option in the program?"

---

Response Theme

---

Yes all basics were covered.

No other values that I can think of.

---

"Was the tutorial in the first session of the treatment program helpful? Please explain."

---

Response Theme

---

It was to slow paced for my comfort.

I believe most people have knowledge of many coping skills and opportunities available.

---

"What were some advantages and disadvantages to doing this program instead of face-to-face therapy for depression?"

---

Response Theme

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Would work well in rural areas with limited transportation and conservative areas. May work less well in university towns.

Would need to be tailored to specific demographic of the area.

Would be challenging to ask follow-up questions with out an available therapist.

May encourage isolation.

---

"Which of the mini-lessons of the program did you find useful? Were there any that you found to be less useful? Are there other mini-lessons you would like to see to help treat your depression?"

---

Response Theme

---

I valued the active versus passive mini-lesson.

I valued the anger management mini-lesson.

Program would be improved if it was more up-to-date.

Pacing was a little slow in mini-lessons.

---

She reported that she believed the program could be beneficial for people who have limited access to treatment, such as those in rural areas or who have limited access to transportation.

She shared that the program could be better tailored to various demographics. She reported concerns that the program may potentially encourage isolation from depressed older adults. She reported the active versus passive as well as the anger management mini-lessons as helpful. She reported she was not satisfied with any of the other mini-lessons that she completed (see Table 5).

### **Research Question 11**

What will homework completion look like for participants throughout treatment?

Per her responses on embedded measures in the program, participant 002 reported she completed half or all of the assigned homework from T2 to T8 (Table 2). She verbally reported to researchers some difficulties with completing some of the values-based activities in T3 and T5. Per her responses on embedded measures in the program, participant 003 reported she completed half or all of the assigned homework from T2 to T10 (Table 3). She verbally reported to researchers that she had other competing responsibilities that interfered with her fully completing her homework in T4 and T7.

### **Research Question 12**

What will participants report regarding their perceived usefulness of the different mini-lessons?

Table 5 displays which mini-lessons each participant completed and during which session the mini-lessons were completed. The program automatically selects mini-lessons for users, based upon their responses on an embedded personality quiz in the program. Mini-lessons usefulness was evaluated using a Likert scale of 0 – 10 where 0 = not at all useful, 5 = somewhat useful, and 10 = very useful. Participant 002 did not complete treatment so she did not complete a measure on the usefulness of the mini-lessons at the 1-week follow-up session (1W).

Participant 003 reported that the following mini-lessons were not at all useful: Act to distract (0), applying for jobs (0), communication (0), getting organized (0), how to say no and mean it (0), learning how to relax (0), practicing for success (0), sleeping from A to Zzzz (0), taking small steps (0), and the power of action (0). She rated the mini-lesson ‘active versus passive behavior’ as somewhat useful to her (5), and the mini-lesson ‘anger management’ as less useful (3).

Table 5  
*Mini-Lessons Selected by Program*

	Participant 002	Participant 003
Session 6	Small Steps	Goals
	Communication	Active vs Passive
	Active vs. Passive	Small Steps
Session 7	Saying no	Relaxation
	PMR	-
	Act to Distract	-
Session 8	Increasing Enjoyable Activities	TRAP vs TRAC
	TRAP vs TRAC	Anger Management
	Sleeping A-Z	Job
Session 9	-	Just say no
	-	Getting organized
	-	Act to Distract
Session 10	-	Sleeping A-Z
	-	Increasing Enjoyable Activities
	-	Communication

## PHASE II METHODS

### Phase II – Evaluation of Acceptability of Computer-delivered VBBA with Older Adults

Due to the inability to recruit more than two participants for Phase I, a second Phase was enacted to identify potential factors that contributed to the lack of enthusiasm among potential recruits in Phase I. Non-depressed participants were asked to evaluate the usability and acceptability of part of the computer-delivered VBBA program, acting as “product reviewers.” Participants rated the following areas: (a) their perceived credibility and expectancy for improvement if they were hypothetically using the program, (b) the ease of use and satisfaction

with the program and (c) a survey of open-ended questions probing their general approach to seeking mental health services as well as their opinions and experiences with reviewing the computer-delivered VBBA program. These areas were explored using both quantitative and qualitative measures, based upon recommendations from Waller and Gilbody (2009).

**Phase II research questions.** Question 1. Will participants' expectancies for improvement and perceived credibility change from pre introduction to post review of the program?

Question 2. What level of usability (user friendliness) will participants' rate the program?

Question 3. What are participants' levels of awareness regarding their medical and psychological problems? What is their process for seeking assistance and who do they typically seek out when they are having mental health issues? How will participants experience the program? What kinds of responses will participants provide when asked how the program can be modified to better meet the needs of an older adult population?

**Instrumentation for phase II.** The demographics survey (appendix V) collected information on basic demographic variables, self-report ratings of experience and comfort with computer use, and current levels of mobility and sensation. This form took approximately 10 minutes to complete.

The phase II Qualitative Survey (appendix X) was administered immediately following the participant's review with the computer program. This is a 16-item open-ended questionnaire created by this researcher and other committee members to learn, in an exploratory manner, any ways that the program might better be tailored to fit the unique needs of an older adult population. This measure uses open ended-questions. The qualitative measure took approximately 10-15 minutes to complete.

The phase II CEI (appendix W) was administered following the demographics survey and repeated after review of the program and completion of the qualitative survey. CEI was adapted from Mitchell and Gordon (2007). It contains four questions three of which are scored on a 9 point Likert scale, while the other is reported as a percentage. The CEI form took about 1 minute to complete each time it was administered.

Product Usability Survey (appendix Y) was adapted from the System Usability scale (Bangor et al., 2008; Brooke, 1996; Dumas, 2003). This survey, adapted by the researchers for this study, measured opinions on the BA program's usability. This is a 21-item, five point Likert scale. The questionnaire asked questions regarding complexity of the computer program, ease of use, and need for training before attempting to use the computer program. Data on the original measure suggests that the system usability scale is robust, reliable, and valid and correlates well with other subjective measures of usability such as learning ability (Bangor et al., 2008; Brooke, 1996). Given that it was adapted for use here, there is no direct information regarding reliability and validity of the measure for this study. Average ratings on the various questions were collected to determine future areas of adaptation to make the program more suitable for an older adult population. The product usability survey took participants approximately 5 minutes to complete.

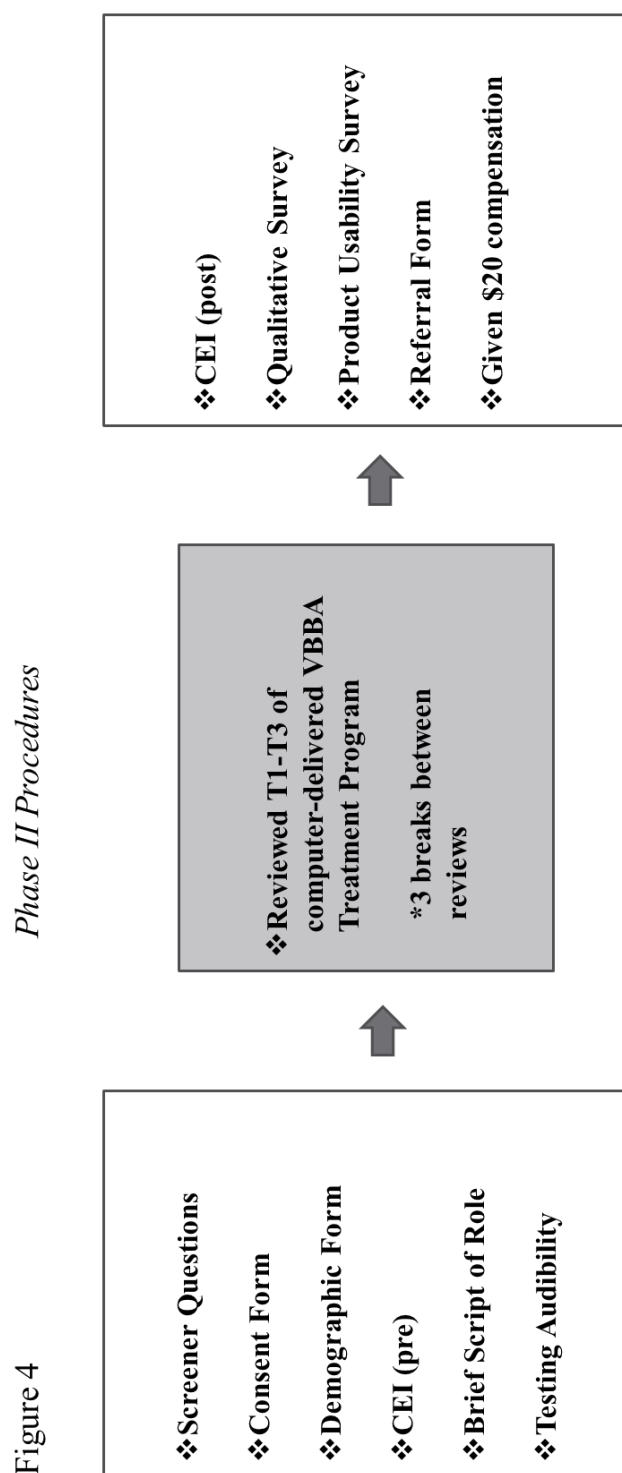
**Methods of data collection for phase II.** Phase II included a single appointment session (Figure 4). A graduate student researcher setup a laptop to allow participants to review sessions 1 through sessions 3 of the VBBA computer-delivered program. Potential participants arriving to their scheduled appointments were greeted and welcomed. The graduate students then asked three screener questions: Were they over the age of 55, were they legally blind, and had they ever been diagnosed with a severe cognitive impairment. Potential participants meeting inclusion

criteria and not meeting exclusion criteria were provided with the informed consent document and requested to read it and ask any questions about it. Graduate researchers then administered the demographic form and a CEI form to the participants.

Prior to reviewing the three computer-delivered VBBA sessions, participants were read a brief script (appendix Z) that explained their role as reviewers of the program. Graduate researchers tested the sound level to ensure that participants could hear the program at an audible and comfortable volume using the headsets provided by the graduate researchers. Graduate researchers sat next to research participants to provide any required assistance with navigating the computer program. At the end of each review session, participants were encouraged to take a brief break in order to reduce potential fatigue.

After reviewing the three VBBA sessions, participants were provided brief instructions on completing the upcoming measures (appendix AA): another CEI form, a qualitative survey, and the product usability form. Upon completion of all measures, reviewers were provided with a referral form (appendix AB) and read a script (appendix AA) in the event that had further interest in pursuing psychological resources. Participants were then thanked for their participation and assistance with the project and were given \$20 as compensation for their time. Following completion of the study, participant surveys were placed in sealed manila envelopes marked with a non-identifying participant number and placed in a locked file cabinet at the Family Studies research laboratory.





**Design of phase II.** This aspect of the project was exploratory, applying a descriptive design including both qualitative and quantitative measures. Phase II explored older adults' perceptions of the computer-delivered VBBA treatment program.

**Analyses for phase II.** Scores on the CEI form were compared between pre and post administration of the program. Descriptive statistics were used to display the results of the demographics survey, product usability survey, and CEI form. The results of the qualitative survey are displayed in tables for each question. Researchers categorized and synthesized participants' responses into general themes. The frequency of similar responses were tabulated and included in those tables. Participants' responses were not included if they were unclear or unrelated to the question being asked. Some participants chose not to respond to certain questions, and others responded with yes or no, but did not elaborate to open-ended questions on the qualitative survey.

**Participant recruitment for phase II.** Twenty-two older adults participated in phase II. Individuals were invited to participate in this study by recruitment flyers (appendix R) placed in two local senior centers or by an oral recruitment script (appendix S) presented at senior center events. Available hours of daily participation were provided to potential participants. Interested individuals either spoke with researchers directly or used the daily waiting sheet (appendix T) to pull off a tab for a future appointment. Potential participants were recruited from August of 2015 until February 2016. Participants were excluded if they reported being under the age of 55 or having been diagnosed with severe cognitive impairment. Individuals reporting that they were unable to see a computer screen with the assistance of a magnifier also were excluded. Potential participants were also told that the study would take approximately 2.5 hours and that they would be compensated with \$20 for participating. One participant had to withdrawal due to a medical emergency.

**Informed consent process for phase II.** If interested in participating, individuals were handed a copy of the informed consent document (appendix U). They were asked to read through

the document and ask any questions that they may have about what they had read. To ensure confidentiality, participants were not asked to sign a consent form but were asked to circle 'Yes' or 'No' to indicate their consent or refusal. The bottom half of the back page of each consent form was collected as proof of consent and placed in a data envelop. Participants were given the rest the consent document for their own records.

**Settings and materials for phase II.** Phase II took place at a Senior Center in Portage and a Senior Center in downtown Kalamazoo. Review of the computer-delivered sessions occurred in activity rooms reserved for privacy and quiet, during community open hours. Open hours were available for scheduling appointments to go through the research study.

A computer administrator was available to the participant in order to provide assistance with technical issues or navigation of the program as they reviewed sessions on the computer. The computer-delivered VBBA program ran on a laptop computer with Windows XP-SP3 installed. A wireless mouse allowed the participant to navigate the program, and headphones were provided in order to assist with personalized volume settings and to block outside noise. Participants were provided a pen for filling out assessment measures throughout their review of the program. Participants were provided with padded seats in order to maximize comfort. Card-board towers providers were offered to any participants interested in more privacy.

## **PHASE II RESULTS**

### **Sample Characteristics for Phase II**

In phase II, 21 participants inquired and consented to participate. One participant dropped out the study just after the consent procedure due to a medical emergency. Participant characteristics and demographics are displayed in Tables 6, 7, and 8. Approximately 67% of the sample of these older adults ranged between the ages of 60-69, while the remainder were 70

years or older. The sample was mostly female. The sample contained a larger representation of African Americans 38.1% than the current United States Census Bureau (2014) rates 13.4%. A majority of the participants were retired. This sample contained more individuals reporting poverty incomes 28.6% as compared to the United States Census Bureau's (2014) reports of 8.9% of individuals over the age of 65 in poverty. A majority of the sample 57.1% was single or widowed.

Self-reported participant computer experience is listed in Table 7. A majority of the sample felt knowledgeable about using computers, with 61.9% reporting 10 or more years of computer experience. Of the sample, 66.8% reported higher degrees of comfort with using computers and 38% reported using the computer 6 or more hours on average a week. A majority of the sample reported using computers for email. Some participants reported using the computer for social media and writing.

Participant's reports of their physical ability levels are given in table 8. A majority reported some level of physical disability. Although not listed in table 8, participants reported a range of physical disabilities that included: arthritis, stroke induced mobility problems, and lower back, knee, and hip injuries.

Table 6  
*Demographics for Phase II - General*

	n	% of Sample
Age		
60-64	5	23.8
65-69	9	42.9
70-74	2	9.5
75-79	1	4.8
80-84	3	14.3
>90	1	4.8
Sex		
Female	16	76.2
Male	5	23.8
Ethnicity		
African American	8	38.1
Caucasian American	12	57.1
Caucasian and Native American	1	4.8
Education		
< 7th Grade	1	4.8
7-12th grade	1	4.8
Graduated High School	2	9.5
Some College	5	23.8
Graduated 2 Year College	6	28.6
Graduated 4 Yr College	1	4.8
Graduate Degree	5	23.8
Employment Status		
Disabled	4	19.0
Employed	1	4.8
Retired	15	71.4
Other	1	4.8
Annual Income		
<5000	1	4.8
5k-9999	5	23.8
10k-14999	2	9.5
15k-24999	4	19.0
25k-34999	2	9.5
35k-49999	3	14.3
50k-74999	4	19.0
Marital Status		
Divorced	4	19.0
Married	5	23.8
Single	8	38.1
Widowed	4	19.0

Table 7  
*Demographics for Phase II - Computer Experience*

	Answer	n	% of Sample
Knowledge of Computers (1-10)			
No Knowledge	1	2	9.5
	3	1	4.8
	4	1	4.8
	5	5	23.8
	6	4	19.0
	8	6	28.6
Extensive Knowledge	9	2	9.5
Years of Computer Experience			
	< 1	4	19.0
	1-5	4	19.0
	10-15	3	14.3
	20-30	7	33.3
	40+	3	14.3
Comfort with Computers (1-10)			
Uncomfortable	1	2	9.5
	2	1	4.8
	3	1	4.8
	5	3	14.3
	6	1	4.8
	7	1	4.8
	8	2	9.5
	9	1	4.8
Comfortable	10	9	42.9
Hours of Weekly Computer Use			
	0	6	28.6
	1-2	5	23.8
	3-5	2	9.5
	6-10	4	19.0
	20-30	2	9.5
	30-40	2	9.5
Use Computer For			
	Email	12	57.1
	Social Media	9	42.9
	Writing	8	38.1
	Video Chat	3	14.3
	Information	4	19.0
	Multimedia Content	3	14.3
	Games	3	14.3
	Other	5	23.8
	Does not use Computer	3	14.3

Table 8  
*Demographics for Phase II - Physical Ability*

	Answer	n	% of Sample
<b>Physical Ability (1-10)</b>			
No Ability	3	2	9.5
	5	4	19.0
	6	1	4.8
	7	3	14.3
	8	3	14.3
	9	2	9.5
Full Ability	10	5	23.8
No Response		1	4.8
<b>Hearing Ability (1-10)</b>			
No Hearing	4	2	9.5
	5	2	9.5
	6	1	4.8
	7	1	4.8
	8	4	19.0
	9	6	28.6
Full Hearing	10	5	23.8
<b>Vision Ability (1-10)</b>			
No Vision	3	1	4.8
	4	1	4.8
	5	2	9.5
	6	2	9.5
	7	2	9.5
	8	4	19.0
	9	5	23.8
Full Vision	10	4	19.0
<b>Touch/Balance Ability (1-10)</b>			
No Touch/Balance	3	1	4.8
	4	1	4.8
	5	1	4.8
	6	3	14.3
	7	1	4.8
	8	4	19.0
	9	5	23.8
Full Touch/Balance	10	5	23.8
<b>Taste/Smell Ability (1-10)</b>			
No Smell	4	1	4.8
	5	2	9.5
	8	1	4.8
	7	2	9.5
	8	3	14.3
	9	5	23.8
Full Smell	10	7	33.3

Table 9

*Phase II Expectancy and Credibility Pre and Post Scores for Total Sample*

	Pre-Review	Post Review
How Logical	5.57	7.57
How Successful	6.14	7.23
Would You Recommend	6.23	7.61
Expectation for Improvement	60.71%	79.14%

**Research Question 1**

Will participants' expectancy for improvement and perceived credibility for improvement change from pre introduction to a computer-delivered VBBA program to post review of that program?

The overall group reported improvements in their perceived credibility of the computer-delivered VBBA program from pre to post review of the program (Table 9). The group reported improved ratings of how logical they believed the program to be from pre to post review of the program. The group reported an improved rating of how successful they believed the program would be in treating depression. They reported an improved level of comfort recommending the program to others. The overall group reported a 19% increase in their perceived expectation that they would improve as a result of going through the program if they were depressed.

When separating participants into two groups with those who reported annual incomes below \$15,000 and those who reported incomes above \$15,000, there appeared to be differences between the groups regarding their perceived success of, recommendation for, and expectation for improvement by the program (Table 10). Although there were improved ratings for both groups as a result of exposure to the program, the below \$15,000 income group started off with overall higher credibility and expectancy ratings than the above \$15,000 income group. Additionally, the increase in expectancy for improvement was much greater in the below



\$15,000 income group with a 23.75% increase in ratings compared to a 15.15% increase in ratings in the above \$15,000 income group.

Table 10

*Phase II Expectancy and Credibility Pre and Post Scores by Income Level*

	Annual Income < \$15,000 n = 8		Annual Income > \$15,000 n = 13	
	Pre-Review	Post Review	Pre-Review	Post Review
How Logical	6	8.87	5.3	6.76
How Successful	7	8.37	5.61	6.53
Would You Recommend	6.87	8.75	5.84	6.92
Expectation for Improvement	70%	93.75%	55%	70.15%

## Research Question 2

What level of usability (user friendliness) will participants' rate the program?

Table 11 displays participants' average product usability ratings. Participants reported a high degree of agreement with the following aspects of usability for the VBBA: usefulness, ease of use, organization, ability to learn it quickly, could be used with confidence, was clear, easy to understand, and effortless to navigate. Participants reported a strong degree of disagreement with the following aspects of usability for the VBBA: is unnecessarily complex, requires technical support, too much inconsistency, and it requires a lot of learning prior to participating.

Participants reported a neutral stance with respect to the VBBA requiring the support of a health care provider in order to be able to use the program.

Table 11  
*Phase II Product Usability Survey Average Responses*

	Average Rating
Computer program useful for depressed older adults	4.14
Treatment useful for depressed older adults	4.19
Computer's interface unnecessarily complex	2.33
Treatment unnecessarily complex	2.52
Computer's interface easy to use	4.31
Treatment easy to use	4.52
Computer program requires technical support to use	2.71
Treatment requires support of health provider to use	3.28
Computer program features well organized	4.66
Treatment features well organized	4.57
Computer program had too much inconsistency	2.09
Treatment had too much inconsistency	1.9
Computer program user interface could be learned quickly	4.09
Treatment could be learned quickly	4.04
Computer program could be used very confidently	4.85
Treatment could be used very confidently	4.76
Computer program would require learning a lot prior to use	2.28
Treatment would require learning a lot prior using	2.14
Computer program had clear assessment questions	4.57
Treatment content was easy to understand	4.47
Computer program was effortless to navigate	4.23
Questions range from 1-5 where 1=strongly disagree, 3=neither agree/disagree, 5=strongly agree	

### Research Question 3

What are participants' levels of awareness regarding their medical and psychological problems? What is their process for seeking assistance and who do they typically seek out when they are having mental health issues? How will participants experience the program? What kinds of responses will participants provide when asked how the program could be modified to better meet the needs of an older adult population?

The first 7 questions of the qualitative survey inquired into participant's processes for seeking medical and mental health care. Also probed were participants' levels of awareness about depression and when they would typically seek treatment for depression. Tables 12 and 13

display the participants' general themes of responses to these questions. A majority of participants reported a high tendency to rely first upon recommendations from friends and family to determine who to seek for healthcare. They also reported that they tend to complete their own research on making this determination, and that they often consult with their primary care doctor when searching for a healthcare provider.

Table 12

*Summary of Themes from Phase II Qualitative Survey - Question 1*


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"Please describe the steps you would take if you needed to select a healthcare provider?"

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Response Theme	Frequency
I ask family or friends for recommendations by word of mouth.	15
I complete my own research using the internet and other resources.	9
I consult my primary care physician or a medical doctor.	8
I consider convenience factors when determining who to see closeness to home hours.	1

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*Summary of Themes from Phase II Qualitative Survey - Question 3*


---

"What types of providers would you consider to start to address healthcare problems?"

---

Response Theme	Frequency
My medical or primary care doctor.	11
I would see a specialist doctor such as an internist, osteopath, chronic pain doctor, or an endocrinologist.	5

---

*Summary of Themes from Phase II Qualitative Survey - Question 5*


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"Please list in order the types of providers you would seek to help you with your healthcare problems."

---

Response Theme	Frequency
I would seek my primary care doctor.	21
I would seek out a therapist.	11
I would seek a speciality doctor.	6
I would seek out a family member or friend for support.	5
I would seek out a church member for support.	4
I would ask a co-worker.	1

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Table 13

*Summary of Themes from Phase II Qualitative Survey - Questions 2 & 4 & 6 & 7*


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"How would you know if you, a close family member, or a friend needed treatment for depression?" & "How would you know if you, a close family member, or a friend needed treatment for depression?" "How would you know if you needed to seek a healthcare provider?" & "What circumstances would lead you to consulting with a mental healthcare provider?"	
Response Theme	Frequency
If there was significant changes in overall functioning.	23
If I notice changes in my health like feeling sick, increased pain, sleep disturbances, appetite changes, and changes in my body.	17
If there are suicidal thoughts, thoughts of hopelessness, or increased negative thinking.	17
If I notice a change in my mood or increased crying.	9
If others tell me that I should seek assistance or someone asked for help.	8
I am not sure if I would know that I was depressed	6
If there was isolation from family and friends	5
If I have trouble with making decisions or I feel indecisive.	3
If I notice a change in my energy levels.	3
Change in physical appearance and decreased self-care.	3
I would not know if I needed to seek treatment for depression.	3
If I notice a change in my desire or interest to do things.	2
I keep a routine check-up with my doctor for prevention.	1
If I begin thinking or talking about loss.	1

---

When asked how they would know that they needed to seek a healthcare provider, and under which circumstances would they seek a healthcare provider, participants most frequently reported the following important factors: Experiencing a significant change in overall functioning, a change in their health status, thoughts of suicidal ideation or hopelessness, a change in mood, as well as if others told them they should seek assistance. Some participants reported that they were unsure of how to know if they needed to seek assistance for depression. A majority of participants reported that they would first seek assistance for healthcare needs from their primary care doctor followed by a referral to a specialist doctor. In particular, they reported primary care doctors, therapists, and specialty doctors as their top three healthcare choices.

Table 14

*Summary of Themes from Phase II Qualitative Survey - Question 12*

"Can you relate to the people in the program (therapists, patients, and narrator). If so please explain."

Response Theme	Frequency
Yes I could relate to the therapists and patient exemplars in the video.	16
No I could not relate to the people in the program.	2
I could relate to Debra because I am an empty nester.	3
I could relate to Tom because I have chronic pain issues.	3
I could relate to the therapists.	3
I could relate to John because I have few friends.	1

*Summary of Themes from Phase II Qualitative Survey - Question 13*

"What would you say about the quality of the audio, video, and text?"

Response Theme	Frequency
I enjoyed the program. I was easy to read and see. I thought it was good.	14
I think the program was outdated.	1
I think it was somewhat redundant with some of the text screens.	1
I think that some of the text could stay on the screen longer.	1

*Summary of Themes from Phase II Qualitative Survey - Question 14*

"If you had depression, is the program something you would like to use yourself or recommend to a friend. If not, how do you believe it could be better? Please explain."

Response Theme	Frequency
Yes I would use the program if I had depression.	14
Yes I would recommend the program to a friend.	7
I would use and recommend the program if it was accompanied by a therapist.	2
It would improve the quality of my life, improve motivation, and help me develop goals.	1
No I would not use the program or recommend it to a friend.	1

For questions 8 through 16, the qualitative survey asked participants more specific questions about their experience with the VBBA program. Their responses are displayed in Tables 14 through 18. When asked whether participants believed that the VBBA program seemed relevant and practical for treating depression, a majority reported that it seemed practical, relevant, and informative. Some participants reported that the expectations regarding behavioral activity scheduling and homework may not be realistic for someone who is struggling with depression. Some participants did not believe the program to be practical and relevant.

Table 15

*Summary of Themes from Phase II Qualitative Survey - Questions 15a & 16a*

"From your view, please describe the benefits of the computer program's user interface (aspects of the computer technology)?" & "From your view, please describe the benefits of the treatment "Building a Meaningful Life through Behavioral Activation."

Response Theme	Frequency
The treatment was comprehensive, informative, organized, professional, helpful, and easy to understand. Especially exploring values and learning the difference between values and goals.	12
It is easy to use for those who are less computer savvy.	4
I have a very positive and enjoyable experience with reviewing the treatment.	3
It is easier to remain confidential with a computer program.	2

When asked about the drawbacks of the program and how it could be improved, a majority of participants indicated that they did not find major drawbacks or areas of suggested improvement. Other frequent responses included: one-on-one therapist contact would be helpful in supplementing questions and difficulties with treatment; more clarity regarding the values ranking and problem-solving values conflict; that the mouse was challenging to use; that a strong buy-in is needed for this program to work; and that the navigation tools could be improved to allow users to go back in the program in case they had missed information, or to review previous information. Some participants suggested that a touch screen might help alleviate issues with using the mouse.

Table 16

*Summary of Themes from Phase II Qualitative Survey - Questions 9 & 15b & 16b*

<i>"In what ways can the program you just saw be improved?" &amp; "From your view, please describe the drawbacks of the computer program's user interface (aspects of the computer technology)?" &amp; "From your view, please describe the drawbacks of the treatment "Building a Meaningful Life through Behavioral Activation."</i>	
Response Theme	Frequency
I did not find any drawbacks of the treatment program or that it needs improvements.	11
There was no human contact, needs therapist to help answer questions and problem solve.	10
Values are a complex topic that require further depth than the program offers. For example how to deal with a values conflict or prioritizing values. Additionally values ranking was inconsistent with no instructions on how to do it on the page.	10
The mouse was difficult to use and may be difficult for those who are less familiar with using it or have physical issues with their hands.	8
Would require a strong buy-in for homework completion and behavioral commitments. Expectations for completion are high for those who are depressed.	6
The program could use better navigation tools for moving back and forwards in case there was missed information.	4
Older adults may feel less comfortable with using the computer's interface.	3
A touch screen and larger buttons would ease the use of the program.	3
There needs to be better access and dissemination of this program because it is needed.	3
Those with lower reading comprehensions or ability to read a graphing chart may struggle with this program.	2

When asked about the complexity and simplicity of the program, most participants did not find the program to be too simple or complex. Those participants who judged the program as too simple or complex mentioned the following issues: the values section may require further explanation or elaboration that the program does provide, and those who are less computer savvy, or have lower reading comprehension skills, may struggle. A majority of participants indicated that they found the program to be relatable, particularly the patient exemplars that addressed issues with chronic pain, the empty nest, and having fewer friends. Several participants, however, reported that they could not relate easily to the therapists, patients, or narrators. Most participants reported that they found the program easy to follow and enjoyable.

Some participants reported that the program appeared outdated and redundant. A majority of participants reported that they would use the program, with some recommending it to friends.

Table 17

*Summary of Themes from Phase II Qualitative Survey - Questions 8 & 10*

"Did the program seem relevant for treating people with depression? If not, what would make it more relevant?" & "Does this program seem practical? Please explain."	
Response Theme	Frequency
Yes it did seem practical.	18
Yes it was relevant for treating depression.	15
The program was comprehensive and informative. Particularly the values	10
May need more realistic expectations for those with depression, in particular with scheduling activities and homework.	6
It was easy to understand and applicable to all.	3
No it did not seem practical. It may not be suitable for all types of depression.	3
It may be used as a screener for depression.	2
No it was not relevant for treating depression.	2
I'm not sure because I do not really know that much about depression.	1
It would be good for those who have limited access to other treatments like veterans or those living in rural areas.	1

Some participants reported that they would use the program if it were accompanied by a therapist. When asked what they believed the benefits of the program to be, they reported the following: it was comprehensive and informative, and it may be easy to use by those who are less computer savvy.



Table 18

*Summary of Themes from Phase II Qualitative Survey - Questions 11a & 11b*

<i>"Where there parts of the program that seemed too simple?" &amp; "Where there parts of the program that seemed too complex?"</i>	
Response Theme	Frequency
No there were not parts that seemed too simple.	13
No there were not parts of the program that seemed too complex.	10
Yes there were aspects of the program that appeared too complex.	5
Exploration of values may require more one-on-one therapy as it is complicated.	5
Those who are computer illiterate may find it difficult, and those who have lower reading comprehension may also find it difficult.	3
Yes there were aspects of the program that seemed too simple.	3
May be too simplistic for more complex presentations of depression.	2
Repeated text response screens are overly simple.	2

## DISCUSSION

The current research literature indicates that BA is a promising treatment that may be particularly suited for older adults with depression (Ekers et al., 2011b; Pasterfield et al., 2014). Despite the impairing (Chan et al., 2006) and potentially lethal (Pnina, 2002) impact of depression on this ever growing population (Administration on Aging, 2010), older adults tend to underutilize mental health services (Hegel et al., 2002). Computer-delivered treatments may help alleviate the growing demands for depression treatment and improve accessibility to evidence based treatments (Reins et al., 2013). Although research exists on face-to-face BA as a treatment for depression in older adults, there is no research testing the effects of a computer-delivered BA treatment for depression in older adults. The results of this study provide valuable details of these barriers, and provides some data on the treatment effects of two participants who completed a VBBA computer-delivered treatment program for depression.

This discussion has several goals: First, to discuss the effects of a computer-delivered VBBA treatment on symptoms of depression, quality of life, and overall activation in two research participants; Second, to discuss older adults' awareness of depression, the processes

used when they seek mental health care, and who they typically seek for mental health care needs; Third, to describe participants' perceptions of a computer-delivered VBBA treatment assessed before and after having reviewed the program; Fourth, to discuss participants' experiences of the usability of the computer-delivered VBBA program; Fifth, to discuss opinions and feedback of the computer-delivered VBBA program; and Sixth, to discuss the barriers limiting this sample of older adults' use of, and access to, mental health treatments. These findings are discussed in relation to the existing literature. Then the limitations of this study will be explored. Following this section, the future directions section will suggest how this project, and other research, can better connect older adults with best practice treatments and the important role of marketing and dissemination with meeting this goal. Finally, the future directions will consider how treatments may be better adapted for older adults.

### **Effects of Computer-delivered VBBA on Depression Symptoms**

**Participant 002.** From baseline to the final three sessions of treatment, participant 002 showed slight improvements in her level of depression and values-based activation (Table 2). She also showed improvements in her values-consistency from T3-T8. In her final session, decreases in activation corresponded with increased symptoms of depression. Other factors, however, may have impacted her fluctuations in symptoms of depression and activation. During these periods of fluctuation, she reported increases in symptoms of avoidance and rumination, social impairment, and difficulties with completing values-based activities. In particular, during her last two treatment sessions, she reported difficulties with fear of social evaluation by others (during the review of the homework assignments by the administrator). During these portions of treatment, she reported that as she began to participate in more values-based activities, she had more opportunities to interact with family and people in her living community. She reported an

increased fear of judgment, evaluation, and being taken advantage of by other members of her community and her children. She shared that she stopped engaging in gardening (a selected values-based activity) out of fear that her neighbors may have tried to talk with her, or begin gossiping about her. In one particular session, she reported a fear of judgment on her appearance, and concerns of feeling self-conscious as a result. Social anxiety, in particular fusion to thoughts of judgment, may have presented a barrier to her coming into contact with rewarding aspects of her values-based activities. These factors cannot be accounted for by the computer-delivered VBBA treatment and are discussed later in the limitations section.

**Participant 003.** From baseline to follow-up, participant 003 reported improvements in symptoms of depression, values-based activation, and quality of life (see Table 3). She was actively engaged in treatment and consistently completed her homework. She reported improvements in values-consistency from sessions T1-T10. She reported passive suicidal ideation during the first three sessions, but did not report additional passive suicidal ideation for the remainder of treatment or in the follow-ups. She reported an increase in environmental stressors and task demands that restricted her ability to engage in many values-based activities during session T6. In particular, she reported increased care-taking responsibilities for her sick husband, extending from session T6 through her final follow-up sessions. This appeared to have some impact on her activation levels and mood during session T6. Activation levels decreased again during session T10 while depressive symptoms increased. Remaining activated well above her baseline levels during this time of added stress, may have insulated her from a larger increases in depressive symptoms.

During follow-up, participant 003 reported an improvement in managing the stressors of her life, such as care-taking, managing her finances, and coordinating moving out of state.

Interestingly, although activation levels decreased during follow-up, her depressive symptoms also appeared to decrease. It seems that, overall, values-based activation appeared to have a positive impact on her symptoms: moving from the severe into the mild range. She was still reporting mild symptoms of depression, however, upon completion of the study. Full remission, without residual symptoms, was not truly achieved.

**Visual inspection.** Both participants' data appeared to be trending in a manner indicating decreased symptoms of depression and increased levels of activation (see Figures 2 and 3). In reviewing both participants' graphs an inverse relationship appears between activation and symptoms of depression. For participant 002, increased levels of activation preceded her drop in depressive symptoms: as activation increased, mood improved. When her activation level decreased in session T7, her symptoms of depression increased (similar to what would be expected in a reversal ABA design). For participant 003, an immediate drop in depressive symptoms occurred from baseline to treatment, prior to an increase in activation levels. As with participant 002, when 003 became less activated her symptoms of depression increased in session T10. Findings for these two participants show activation levels preceding reductions in depressive symptoms. Symptoms of depression and activation levels may be functionally related.

**GDS and BDI-II.** In phase I both participants reports of depressive symptoms for the BDI-II and GDS appeared to be consistently parallel. For participant 002, her GDS fell in the severe range on B1 and in the mild range for a majority of the sessions from B1, T2-T6, T8-1W, and 3M. She had two sessions where her symptoms fell in the normal range T7 and 3M. While her BDI-II scores from B1-T3 fell in the severe range, then the moderate range from T4-T7, then the mild range from T6-T7, and back up into the severe range in T8. For participant 003, the GDS placed her in the severe range from B1-T5, and T8, and in the mild range for T6-T7. While her

BDI-II score from B1-T3, and T8 was in the severe range, and in the moderate range from T4-T8.

The GDS has a more restricted range, however visually the changes in reported symptoms seemed to move consistently, which provides evidence that the BDI-II may be an equally good detector of symptom change as the GDS for older adults. However, the questions in the GDS have been specifically created and normed with an older adult population. Therefore it may be a better measure of changes in symptoms that are more akin to an older adult depressive symptom presentation, and more stable across time.

**Pretreatment gains and sudden gains.** It appears that both participants showed some degree of benefit from the treatment. It is important, however, to consider the possibility of pretreatment gains and sudden gains. Several studies have shown that pretreatment gains, as well as sudden gains, are expected when treating depression. In particular, individuals' symptoms may naturally improve or improve with a credible treatment rationale and a set of associated therapeutic procedures (Gaynor et al., 2003; Tang & DeRubeis, 1999). The changes seen from both participants in this study may possibly be related to such pretreatment and sudden gains, and cannot be ruled out.

### **Older Adults' Experience of Computer-delivered VBBA Program**

**Perceived credibility and expectancy for improvement.** This study measured a sample of older adult reviewers' current perceptions of the credibility and expectancy for improvement pre and post exposure of the computer-delivered VBBA treatment program. The reports of participants were different between the two phases. The two depressed participants reported a decrease in credibility and expectancy from pre exposure to the program to post exposure of the program in session 1 following a tutorial. However, participant 003 reported increased credibility

and expectancy for improvement from the tutorial in session 1 to the first follow-up session 1 week post treatment (see tables 2 and 3). Participant reviewers in Phase II reported a higher degree of perceived credibility and expectancy overall. Additionally, when they were exposed to the program their perceived credibility and expectancy increased. The Phase II findings were similar to other findings that have found that once individuals have exposure to computer-delivered treatments their perceived credibility and expectancy for improvement increases (Handley et al., 2014; Mitchell & Gordon, 2007).

***Variation in credibility and expectancy for improvement between phases and income levels.*** The differences in perceptions may have been related to three factors. First, participants in Phase I were depressed, while those in Phase II were selected from non-depressed community sample. Alternatively, the credibility ratings in phase I were limited to two depressed individuals, while there was a much larger group of older adults in phase II reporting on the credibility of the program. Depression may contribute to more critical evaluations of the program. Additionally, socioeconomic status may likely play a role on perceptions of treatments for depression. If treatments are more readily available to those who have access to more financial resources, they are in a position to be more critical of the services available as they have more options. While those who have limited means may be less primed to critique the quality of their care. Finally, participant 003 did report an improved credibility rating during follow-up, while participant 002 did not get this far through the protocol. This may have implications regarding whether the tutorial was the reason for perceptions being lowered rather than the program itself.

***Consumer satisfaction phase I.*** For phase I, only Participant 003 was able to complete a consumer satisfaction survey post treatment. She reported a lower rating of consumer satisfaction. Participant 002 completed a review of T1-T8 regarding how interesting,

encouraging, and helpful she found the sessions. She reported that a majority of the sessions as somewhat interesting, encouraging, and helpful. Participant 003 reported a majority of sessions to be somewhat encouraging, interesting, and helpful (Table 3). She reported that session T8 was not at all helpful or encouraging, and that T4 was not at all interesting or helpful. She found sessions T2 and T4 to be very helpful.

***Factors that may have impacted these satisfaction ratings.*** For participant 003, she reported in the qualitative survey that there were (Table 4) that there were aspects that were paced too slow and were too simplistic. Session 4 reviews ways to deal with problems in a productive manner with avoiding. This session may have been experienced as too simple for this particular participant. It could also be that since the chapter discussed avoidance, a common struggle with depression, it may have been experienced more negatively if it was in line with her current difficulties. However, based upon her data it appears she was doing particularly well with decreased avoidance, increased activation, and improved mood. So it seems less likely that the avoidance topic was a factor in her dislike of this particular session. The following mini-lessons were selected for her based upon her responses in a brief assessment at the end of session 5: anger management, job searching, and TRAP vs TRAC. Again given that the discussion may have been focused on problem-solving avoidance patterns with TRAP vs TRAC and the other information was less applicable for her preferences, these variables likely impacted her satisfaction with this particular sessions.

***Qualitative survey feedback and preferences. Older adult participants experience of the program.*** Eysenbach (2002) suggested that when developing computer-delivered treatments, technical aspects of a program should be considered as well as the attitudes and states of mind of the target audience. The participant reviewers reported overall favorable attitudes about the

computer-delivered VBBA program. A majority of participants found the computer-delivered VBBA program to be practical and relevant for treating depression (Table 17). A majority of reviewers reported that they would use the computer-delivered treatment program if they had depression (Table 14), while a third of reported that they would recommend the program to a friend (Table 14). A majority of participant reviewers also reported finding the computer program useful, easy to use, organized, and easy to learn quickly, that it could be used with confidence, and was effortless to navigate. The majority of participants did not report that the program as unnecessarily complex, requiring a great deal of technical support, or containing a great deal of inconsistency. A majority of participant reviewers reported that the program seemed practical, however, a few reported a need for more realistic expectations regarding homework and values work for depressed older adults (see Table 17).

***Improving usability of BAML for future use. Phase I.*** Participant 003's data regarding the usability of the program can be seen in Table 4. She reported that the pacing of the program was slow for her comfort level. She further shared that she believed the program over-simplified older adults ability to problem solve issues with activation. She shared that it would be challenging to use the program without being able to follow-up with questions about the program. She verbally shared with the researcher that she felt the program occasionally came across as condescending, in particular she reported a dislike for the narrator in the program. She also shared that the cheerfulness of the narrator was incongruent with discussing depression. She further shared to the researcher that she noticed one scene with a patient exemplar displayed many pill bottles on the wall, and the participant reported that this unfairly represented all seniors as taking many medications.



*Phase II.* A majority of participant reviewers reported that they found the program interface to be easy to use and understand (see Table 15). A few participants even reported that they believed it would be easy to use for those who are less computer savvy. A majority of participants rated the program with a high degree of usability. A majority of participants reported that they enjoyed using the program (Table 14). They also reported favorable attitudes regarding the technical aspects of the computer-delivered VBBA program, specifically finding the text easy to read and the audio and videos quality to be good (see Table 14). When asked about perceived benefits of this computer-delivered treatment program, a majority reported that they had learned a lot from the program, and that the program was informative and comprehensive (see Table 15).

A majority reported that they did not find the program to be too complex or too simple (see Table 18). Primary issues reported included: the values work may require assistance of a trained professional; the computer mouse was challenging to use; those who are computer illiterate or have lower reading comprehensions may struggle; and it may not be suitable for all types of depression (see Table 17). Some reported that they may need to be a stronger buy-in to complete homework for those who are depressed, and that better navigation tools allowing the user to go backwards through the program would better allow them to review information they forgot or missed (see Table 16). A few participants suggested that touch screens may help compensate for any physical dexterity issues older adults have with using computer mice, and that this computer program may be helpful as an initial screener and beginning treatment phase for depression (see Tables 16 and 17). Overall, it appeared that the participant reviewers had a positive and favorable view of the computer-delivered VBBA program. This provides more confidence that the overall presentation of the program is less likely to dissuade older adults from using the program.

***Older adult participants' preferences and feedback for areas of improvement for the BAML program.*** Participant reviewers noted some areas where the program may be further improved to make it more suitable for an older adult population. In particular, they shared practical suggestions and feedback on their experiences using the computer-delivered VBBA program's user interface, as well as BA as a treatment approach, including some suggestions for improvement.

*Mini-lessons.* In phase I, participant 003 reported completed a range of mini-lessons (Table 5), as well as participant 002. However only participant 003 completed the full treatment and reported her reported usefulness of the program. Participant 003 reported that the active versus passive behavior mini-lesson was somewhat helpful. She reported that the remaining mini-lessons she selected as not at all useful. This feedback is useful for future use of this program with individuals that have similar characteristics to this participant such as demographics, chronicity of depression, and clinical presentation. However, additional research regarding the experienced usefulness of the mini-lessons from a group of older adults will be required in order to get a better sense of preferred mini-lessons for a general older adult population. However, it may be the case that the mini-lessons need to be better adapted to better represent vignettes of the common struggles of depressed older adults, just as the treatment manual for BA needs to be better adapted to fit unique challenges facing older adults with depression (Polenick & Flora, 2013). Such vignettes may include difficulties with bereavement, loss of physical ability, loss of career based activities, and other relevant areas.

*Navigation.* Some participants reported that being unable to smoothly go backwards in the program resulted in missing some of the information regarding the values explanation. As Proudfoot and colleagues (2003b) suggested, it is important that computer-delivered treatments

provide software that allows more easy navigation, so that clients are fully exposed to the psychoeducation portions of therapy. This is an important consideration for adjustment with this program as well as future computer-delivered programs.

*Assistance with the program.* Participants suggested that it may be more helpful to provide more realistic expectations for those who are struggling with depression, particularly in the values-based activity scheduling and the homework sections. They suggested that therapeutic assistance may help with this issue. These findings are congruent with suggestions by Waller and Gilbody (2009), that time with a trained professional who can assist with the program is likely still needed, and a more in-depth tutorial and practice with navigating the program may also assist with expectations for improvement as a result of using the program (Mitchell & Gordon, 2007).

*Technical problems with the mouse.* Nearly half of the participant reviewers reported that using the mouse was challenging in this study. For some, this related to general lack of familiarity and experience, while others reported physical limitations that affected their fine motor abilities in using the mouse (see Table 16). These findings are congruent with one study that reported that the existing online platforms were not developed to be friendly to older adults, and tend to be widely inaccessible for seniors with various disabilities (Haesner et al., 2015). Some participants suggested that a touch screen would alleviate some of the physical difficulties using a mouse, making the program more accessible for older adults.

*Lack of awareness regarding available treatments for depression.* Participant reviewers reported a lack of awareness that the computer-delivered VBBA program existed (see Table 16), suggesting a need for more awareness of services and programs available. These barriers will be

explored further in the following sections on public awareness and dissemination, and on adapting computer-delivered treatments for older adults.

**Older adult participants' awareness of depression.** Robb and colleagues (2003) found that older adults reported that they wished they had a better understanding of when symptoms are at a level where it is necessary to seek help from a mental health professional. This study had some overlap with this finding, with a few participant reviewers reporting uncertainty with knowing if they hypothetically had depression or knowing whether they were experiencing depression (Table 13). This study also found that participants' reports of feeling sick or being ill may be an indication that depression is occurring (Table 13), which concurs with other research findings that illness is often linked to depression in older adults (Arean et al., 2005). Such findings suggest that public dissemination of psychological concepts and depression awareness, particularly when to seek care and how depression may look, could help improve older adults' awareness of when and how to seek needed psychological services.

**Older adults process for seeking assistance with medical and psychological problems.** A majority of participants reported that the first step they would take when selecting a healthcare provider would be to ask family and or friends for recommendations (see Table 12). The social network of older adults is an area of future inquiry, given the reliance older adults place on their social networks to inform their decision making (Haesner et al., 2014). Considering that this was a computer-delivered treatment, other research has found that older adults' support networks are crucial to determining which online social media they would be willing to use (Haesner et al., 2014). Participants also reported that they would go to their primary care doctors for assistance were they experiencing mental health issues. These findings are congruent with other research that older adults tend to first seek their physician (Handley et

al., 2014; James & Buttle, 2008; Mackenzie et al., 2006). These findings support the notion that physicians are the general gatekeepers to mental health (Robb et al., 2003).

### **Public Awareness and Dissemination**

Handley and colleagues (2014) suggest that perception and public awareness of internet-delivered treatments is crucial to acceptability and utilization of computer-delivered treatments more generally. The authors found that only .5% of their survey sample reported ever using an internet-delivered mental health treatment. They also found that only 13.5% of an older adult sample group had intentions to use internet based treatments. With regard to seeking mental health assistance, participants who reviewed the computer-delivered VBBA program in this study, reported relying heavily on word of mouth recommendations or their own research when attempting to find mental health treatment (see Table 12). Participants also reported that increasing accessibility and dissemination as a suggested improvement for the VBBA program. Participants reported wishing that they had access to this program. Regarding older adults preferences, a desire for improved access to available mental health treatments is a consistent finding with other research (Handley et al., 2015). Some research has found that older adults have limited awareness regarding what computer-delivered treatment programs are actually available. One survey that asked 950 Australian adults about their knowledge and awareness of internet-delivered mental health treatments found that 75% reported that they had never heard of such treatments (Handley et al., 2015). These findings suggest that marketing and dissemination are important future steps needed to improve access to treatment, and continued research in these areas will also be important.

Haesner and colleagues (2014), reported that there is an accelerating rate of older adults using various internet platforms and social media. It will be important to disseminate information

regarding both face-to-face and computer-delivered mental health treatments on websites and social media outlets commonly used by the public. In a search of the most popular website foundations that consumers check regarding depression, the following were identified: <https://www.hopefordepression.org/>, <https://bbrfoundation.org/depression>. These sites may provide brief video clip samples of computer-delivered treatments as well as information on mental health. It will be important to collaborate with popular internet sites to address the lack of awareness among older adults as a barrier to treatment utilization.

These findings lend further support to the call for more efforts to disseminate knowledge and awareness of internet-based, and mental health treatments, by means of improved community outreach by developed programs that now exist, or by specific promotion campaigns targeting different audiences: specifically the infrequent internet users versus highly educated users (Handley et al., 2014). Such methods may include more collaboration with universities and community services providers. It appears that a key to connecting older adults to mental health services will include increasing their awareness of available services.

### **Limitations**

Several limitations in this study are noted, regarding: the research design; pretreatment and sudden gains; sampling; computer-delivered VBBA; the measures used in this study; and the review process of the program. Some reasons for limitations, as well as suggestions of how this study may be improved in future work, will be discussed.

**Design.** Regarding the treatment phase of this study, this was a small single subject design. Only two participants received the treatment, one of whom did not complete the entire treatment intervention. Although there is growing evidence for BA as a treatment for late-life depression (Yon & Scogin, 2009; Lazzari et al., 2011; Snarski et al., 2011) there are few studies

that have used single subject design research to investigate the unique effects of BA for individuals.

This study used an AB single subject design, which provides only weak evidence that the treatment condition actually brought about the observed changes by itself (Van Houten & Hall, 2001). Future research using improved single subject designs, especially with more participants using a multiple baseline experimental designs, could allow more powerful statements regarding effects found. A multiple baseline design can control for time effects, extraneous confounding variables, and inter-participant carry-over effects. From the findings of this study, one cannot make generalizable statements regarding an older adult population in terms of the treatment effects of a computer-delivered VBBA program. However, we can say that individuals who present with similar characteristics to our participants in the form of education level, ethnicity, gender, economic status, independence status, and level of comfort with computers may respond similarly to this computer-delivered VBBA treatment program.

**Pretreatment gains and sudden gains.** Visual inspection of participant 002's data (Figure 2) suggests she may have been experiencing pretreatment gains prior to the intervention, and thus may have improved regardless of whether or not she was in treatment. Visual inspection of participant 003's data suggests sudden gains that may have occurred regardless of the treatment intervention (Figure 3). However, given that we could see a near reversal design with fluctuations of activation levels corresponding to improvements in mood, it is reasonable to argue that VBBA was having some degree of effect on symptoms of depression from session to session within the study.

**Response versus remission.** Van Rhoads and Gelenberg (2005) outline the differences between response, remission, recovery, and relapse. They define a response to depression

treatment as a clinically significant reduction in symptoms of at least 50%, and point out that even a 50% reduction in symptoms on psychometric scales may leave those who were severely depressed with disabling symptoms. Remission is defined as nearly complete or complete resolution of depression symptoms, with a return to baseline functioning. Recovery is defined as a minimum of four months of remission. These authors define a relapse as a return of depression symptoms prior to the achievement of recovery. Residual symptoms increase the chances that patients will experience a relapse. Although achieving remission is considered the optimal standard of care, current treatments have fallen short of achieving this for depression (Van Rhoads & Gelenberg, 2005). Current research indicates that 25% to 50% of those who respond to depression treatment retain residual symptoms. Whereas 60% to 70% of patients respond to treatment, only 20% to 40% achieve remission (Van Rhoads & Gelenberg, 2005). There is a definite need to improve the quality of care outcomes when treating depression.

In this study, both participants appeared to report improvements in depressive symptoms. Although Participant 002 reported improvements in symptoms of depression, she never met criteria for a response to treatment. Participant 003 had a response to treatment but never reached remission criteria. For a treatment to be truly efficacious, it is important to assist depressed individuals with meeting remission and recovery status, which this treatment did not result in for either participant.

**Assistance with computers.** In Phase I of this study, both participants' final depression scores and activation levels indicated that further treatment or a different approach might be required to more fully ameliorate their symptoms. Although the participants appeared to show a response to treatment, it would be ideal for them to experience full remission. One of the primary goals of BA is to target each depressed individuals' behavioral repertoire by means of problem-



solving identified barriers to values-based activation. One drawback in the computer-delivered VBBA treatment program is that it does not allow for thorough ideographic problem-solving when participants encounter barriers. Particularly when those barriers serve to maintain avoidance behaviors. An additional consequence of the computer-delivered treatments is that without a therapist there is no social accountability if activities were not completed over the week. Participants do not have social contingencies in place to help them maintain compliance with homework and values-based activities scheduled.

**Measures.** The BDI-II has been found to be sensitive to changes in outcomes of depression for a two week period. For treatment in Phase I of this study, however, the BDI-II was used as a repeated measure on a weekly basis. Some research suggests that daily use of the BDI-II may result in an over reactivity of the ratings to the extent that change may not be explained by treatment effects on mood changes (Richter et al., 1997). In this study, however, the BDI-II was not used daily, so reactivity may have been far less impactful on the recording of symptoms.

Another limitation relates to some of the selected measures used. Although depression was measure based upon reported symptoms on the BDI-II, there was no structured clinical interview indicating whether participants met full criteria for depressive disorder. This related to limited resources for purchasing required assessments. However, statements regarding depressive symptoms worsening or improving (not necessarily depressive disorder) could be assessed and discussed in terms of clinical significance.

The product usability survey was adapted from an existing survey, with a different population. Therefore, the validity of this measure for the construct of usability with this population is uncertain. However, we can tentatively say that the average rating of these participants indicated that they were satisfied with the specified usability aspects of the program.

Additionally, the CEI form was also adapted from another measure in the literature to more specifically assess expectations for improvement with the computer-delivered VBBA program. We can make general statements that participants believed the program to be reasonable, likely would be successful in treating depression, that they would recommend it to a friend, and that they would expect improvement in depression by using the program.

**Only reviewed some sessions of program.** Participants in phase II did not have the opportunity to review the entire 10 sessions of the VBBA treatment program. Researchers did not have the opportunity to obtain more detailed feedback, opinions, or experiences of usability for the remaining seven sessions. The final five sessions of the program were mini-lessons, and there was limited feedback on this portion of the treatment.

Researchers were limited regarding the length of time required to review each session. Given the difficulties with recruitment, the time commitment of the study was reduced in order to encourage greater participation. Sitting for long durations also would not be in the best interest of older adult participants. Future research studying this VBBA program may assign different participants to complete different sessions in order to minimize fatigue yet still have a review of all sessions, including the mini-lessons.

**Phase II reviewers did not represent a depressed population.** Although there was some feedback from two participants in Phase I, it was limited by the sample. There was no representation of a clinically depressed population in Phase II. Due to the three session program review not serving as a treatment, and the difficulty with recruiting depressed older adults, a general population from community senior centers was selected. Those who participated in reviewing the program were individuals actively involved in their community. Individuals already actively involved in community activities of a senior center are far less representative of

those who are depressed and less activated. Therefore, the feedback received here may not be representative of clinically depressed individuals. Future research should consider having the program reviewed by a clinically depressed older adult population (if such a group of participants can be recruited), in order to ensure more representative feedback from depressed individuals who will actually be using the program.

**Survey rather than interview.** The qualitative measure used in this study was a written survey, containing open-ended questions. Participants were limited in their responses by what they were asked. As mentioned previously, researchers in this study derived qualitative questions on the basis of commonly suggested barriers found for older adults engaging in mental health care, as well as the current research findings on older adults' perceptions of mental health and computer-delivered treatments. However, a one-on-one interview might enable participants to share feedback that may not have been directly probed by the survey, and could provide more insight into preferences, perceived limitations of computer-delivered treatments, difficulties with connecting to mental health services, and suggestions for improvement. In future research, a structured qualitative interview could entail a sequence of open-ended questions that do not interrupt the participants' chain of thinking. This would provide options for the participant to share their full opinion, exclusive of any agreements or disagreements or answers from the interviewer, and exclusive of interpretations from the interviewer (Fontana & Frey, 2008).

**Think-aloud methods for improved usability.** The design of this study did not permit participants to share all of their thoughts in real time as they engaged in the computer-delivered VBBA treatment program. Instead, participants completed a survey at the end of reviewing three sessions of the program. During phase II, participants would often try to discuss their difficulties with the computer administrators as they were engaging in the program. When this occurred,

participants were encouraged to write their thoughts down on a sheet of paper, and save this information for completing the qualitative survey at the end of reviewing the 3 sessions.

It may have been more helpful to incorporate several other usability assessment methods in order to ensure that all of participants' feedback was captured, such as think-aloud methods and instant data analysis (Ericsson & Simon, 1980; Jonathan et al., 2015; Bruun & Stage, 2015). Think-aloud methods allow participants to verbalize their thoughts as they go through the program (Jonathan et al., 2015). With instant data analysis, participants share their thoughts and ideas immediately following reviewing a program, in order to record feedback that is fresh in memory. Some research suggests that applying both of these methods may improve overall usability of findings (Jonathan et al., 2015). In this study, it might have been helpful to record participants' responses and reactions as they engaged in the program, and to have a breakdown of reactions in a brief feedback session immediately following each treatment session.

### **Future Directions**

**A more rigorous design to assess effects of treatment.** Future research should evaluate a time-lagged multiple baseline-treatment control design (Barlow & Hersen, 1983). Such a program could include a time lagged design that contains a watchful waiting period, for ethical purposes of changes in depression status, until a stable baseline has been established. Treatment would then be introduced on the first participant's baseline only, with the remaining participant baselines acting as controls. Once the effect of the treatment has been seen on the first participant, treatment would be introduced for the second participant, with the remaining participant baselines still acting as controls. This design could control for any sudden and pretreatment gains as well as time and carryover effects. Such a design would provide more

confidence that the treatment effects observed would be due to the treatment itself, as it would provide more experimental control.

**Improving the usability of BAML for future users.** It may also be helpful for there to be more explanation within the computer program regarding more complex concepts. In particular, it may be helpful to create a drop-down menu, as suggested by Proudfoot and colleagues (2003b), that provides additional details regarding more complex topics like values clarification and prioritization. This will help for questions that may arise in problem-solving without the direct assistance of a therapist, if the program were to be stand-alone.

**Behavioral activation compared to stand-alone computer delivered behavioral activation.** Many participants expressed concerns that the computer-delivered treatment would be less helpful without the assistance of a therapist. Thus far the treatment effects of a stand-alone BAML program has not been compared to face-to-face BA treatment. Testing the effects of both groups would provide information on whether the stand-alone treatment would have similar effects on depression as a face-to-face BA treatment. Such a study would help better identify whether a stand-alone computer-delivered BA treatment would be equally effective or less effective in treating depression in older adults.

**Treatment alternatives.** By the end of phase I treatment, both participants were still reporting some symptoms of depression (see Tables 2, 3, and Figures 2, 3). This suggests that a different (or supplemental) treatment approach may be warranted for these particular individuals.

Both participants in Phase I had complex clinical case presentations with a long history of chronic depression similar to that seen what by other researchers (Handley, 2014). It is important to determine which approaches work best for older adults rather than clumping them together into a general population, given that older adults tend to have more complex presentations of

depression and are more likely to experience chronic depression, higher rates of bereavement and loss, and co-occurring physical and mental conditions (Handley, 2014; Yon & Scogin, 2009).

These two participants' difficulties with achieving remission could be related to other psychological barriers. Difficulties with activation may have been related to fusion and inflexible rule governance which contributed to avoidance and less adherence to values-based activity scheduling.

Other forms of treatment may have been more helpful for the participants of this study. First, more direct problem-solving with participants by determining barriers to activation which would require the assistance of a therapist in conjunction with the program, or at least some means of communicating with a trained treatment provider of BA for feedback and assistance. Second, participants may need to more directly address inflexible verbal rules that block the effects of positive reinforcement by means of acceptance and commitment therapy.

**Adapting behavioral activation for older adults.** Regarding future development of the VBBA program, it may be helpful to make adjustments to ensure it is adapted to the needs of older adults, as suggested by Pasterfield and colleagues (2014). The authors reported that the following adaptations should be considered and made to current behavioral activation treatments for older adults: age appropriate examples; age appropriate information about depression; larger font and increased writing space for homework; questions regarding any current health issues; selecting activities that are appropriate for functioning level; simplified language for those presenting with cognitive impairment; smaller steps and homework assignments, which is similar to results in this study (see Table 18); and additional questions during assessment regarding social contacts and family. Yon and Scogin (2012) suggested that BA treatment manuals need updating and revising. They suggested addressing issues related to bereavement, physical

limitations, chronic pain, and care-giver stress within the treatment manual. Future BA treatments should consider these unique factors when creating treatments for older adult populations.

**Adapting computer-delivered treatments for older adults. *Socioeconomic status.***

Phase II of this study compared the perceived effectiveness of a computer-delivered VBBA as being helpful with those who made less than \$15,000 to those who made above \$15,000 (see Table 10). Interestingly, those who make less than \$15,000 reported more favorable expectations of the treatment being helpful before exposure to the program. This group also reported higher levels of expectations for improvements, and more favorable attitudes about such a treatment being helpful. This suggests that future research investigate how mental health and computer-delivered treatment programs could be developed to meet the needs of individuals with varying levels of socioeconomic status.

***Knowledge, comfort, and experience with computers.*** In this sample, participants were reporting a fairly strong degree of knowledge of computer usage, with 57% reporting feeling knowledgeable about computers, and 69% reporting 10 or more years of experience using computers (see Table 7). Additionally, 66.8% reported higher degrees of comfort with using computers, and 38% reported using the computer 6 or more hours on average a week. This may not be representative of a general older adult population regarding comfort and use of computers. Additionally, the sample included a range of physical ability levels and sensory levels. A growing body of evidence suggests that comfort using computers and physical ability are important variables to consider when investigating barriers to depression treatment for older adults (Pasterfield et al., 2014). Future research should more specifically investigate the impact of physical and sensory abilities and comfort with computers on depression treatment outcomes, as

it is important to determine environmental contingencies that may enhance or complicate behavioral activation interventions for older adults (Polenick & Flora, 2013).

***Developing future computer-delivered treatments.*** As technological applications continue to evolve, there is an increasing opportunity for new treatment possibilities with computer-delivered treatments (Millan-Calenti et al., 2015). From the reports of participants in this study (see Tables 11, 14, 15, 16), in future research it will be important for developers to consider assessing usability, aesthetic appeal, relatable content, and direct feedback and assistance with the program. Haesner and colleagues (2015) suggested that the aesthetics and quality of a computer program are important to computer users. In the present study, a majority of participants reported that they believed the program displayed a high quality of aesthetics. Future research should focus on developing computer-delivered that can accommodate the varied preferences and needs of older adults, to encourage use and minimize barriers of these treatment modalities.

Results of this study are congruent with recommendations from other computer-delivered treatment research. Haesner and colleagues (2015) suggested that developers consider the following areas: barrier free web design with an attractive look and feel, face-to-face training courses for users who require them, a preliminary test followed by subsequent progress tests for self-evaluation purposes, exercises should incorporate tasks and challenges related to the daily lives of older adults and represent topics of their personal interest, offer the possibility of direct personal feedback, setting realistic performance goals, offer the possibility of audio-video communication between the users, and include additional information features for further self-education (Haesner et al., 2015). Incorporating more measures to allow for feedback via skype or in person for a designated period of time may help to better address issues that arise, such as



encountered barriers to values based activity scheduling. Future research on this computer-delivered VBBA program, as well as other computer-delivered treatment programs, should consider incorporating similar features to assist with homework compliance and improve the impact of treatment on symptoms.

***Cost of treatment.*** Other research has found that older adults report that cost is often a barrier to reaching out for mental health services (Horton & Johnson, 2010), and that behavioral activation has been found to be a cost-effective alternative to other treatments (Ekers et al., 2011a). For this reason, it will be important for future research to consider comparing the cost of computer-delivered VBBA to face-to-face VBBA to determine whether cost barriers can be minimized for older adults.

***Computer-delivered treatments as a part of stepped care.*** Recent research has found evidence in support of a stepped care approach to treating and better managing chronic depression (Veer-Tazelaar et al., 2009; Douleh, 2013; Broten et al., 2011; Hegel et al., 2002; Scogin, Hanson, Welsh, 2003) as commonly exhibited by older adults (Handley, 2014) including the two participants of Phase I. When applying a stepped care approach, the least invasive approach is first used prior to moving on to a more intensive level of treatment care. One study found that a stepped care intervention for late-life depression and anxiety halved the 12-month incidence of depression and anxiety disorders, and that it was superior to a usual primary care model, and also reduced resources and cost of care (Veer-Tazelaar et al., 2009). Computer-delivered treatments may aid in serving as an initial leg of stepped care (Learmonth & Rai, 2008), which was a similar suggestion by participants to initially use the computer-delivered treatment but move into more intensive treatment if necessary (Table 17). This model entails providing the least intensive interventions first, while those needing more treatment continue to a

more intensive level of care. This model allows for consideration of the possibility of pretreatment and immediate gains. As Broten and colleagues suggested (2011), it will be important to continue researching different types of stepped models in order to identify the differences between short-term and longer-term treatment effects, and to better identify which variables may moderate outcomes. This concept may be extended to including computer-delivered treatments as a researched form of the stepped care model.

Future researchers need to consider clinical and demographic characteristics to better predict appropriate sequences of particular steps that would be most helpful for different individuals. As mentioned already, stepped-care may be a more appropriate option to determine what level of care is necessary, at which time, for each individual.

**Integrated care models.** This study found that older adults tend to first seek care from their primary care physicians (Table 12), which is similar to other research on older adults' tendencies to see physicians first (Robb et al., 2003). Research has determined that the current predominant treatment for depression in older adults is pharmacotherapy (Laidlaw, Thompson, & Gallagher-Thompson, 2004). Although this is current practice, it is not congruent with patient preferences for therapy. A survey that investigated the preferred mental health treatments with 20 older adults with depression, found that they preferred behavior treatments over pharmacology (Lundervold & Lewin, 1990).

Despite the current demands and needs for depression treatment, there are significantly less care management processes in place in primary care offices for depression (Bishop et al., 2016). Part of this may be due to depression remaining undetected, with one study reporting a detection rate of 50-68% (Watzke et al., 2014), with depression often dismissed as an older adult patients' expected reaction to late-life circumstances (Mcevoy et al., 2007; Unutzer et al., 1999).

Some researchers found that difficulties with detection and management of mental illness is related to insufficient training of health care providers (Kleinman, 2004; Chen et al., 2015). Very few older adults are actually referred to a specialist in mental health care (Chew-Graham et al., 2004). This suggests that increased resources and development of integrated care models may be crucial for connecting older adults with mental health services. Collaborative care models for older adults can improve accessibility and quality of depression care (Bishop et al., 2016; Unustzer et al., 2008; Lenze et al., 2012; Mcevoy & Barnes, 2007; Chen et al., 2015; Hall & Reynolds-III, 2014), reduce mortality rates (Gallo et al., 2013), and may even mitigate disparities in treatment accessibility and outcomes related to ethnic and economic conditions (Hall & Reynolds-III, 2014; Areal et al., 2013).

Participants in this study noted a tendency to rely heavily upon their primary care doctors, but current medical standards do not uniformly implement integrated or collaborative care models, despite evidence that they are can be most beneficial for chronic late-life depression. Creating more universal standards regarding the care of late-life depression, meeting similar standards to primary care practices for other chronic conditions (Bishop et al., 2016), may help better meet the needs of improving depression treatment and decreasing the costs of depression for older adults (Administration on Aging, 2010 ).

**Dissemination.** Since physicians are considered the gatekeepers of depression, as suggested by the results of this study (see table 12) and other research (Robb et al., 2003), it will be important to educate doctors on available mental health and computer-delivered mental health treatments for depression, by means of marketing. Future research should continue to investigate steps that mental health professionals can take to improve awareness of depression, mental health treatment for depression, and computer-delivered treatments currently available for depression.

Handley and colleagues (2015) also suggested that future research continue to investigate the effects of specific promotion campaigns for internet-delivered treatments targeted to specific populations.

## **Conclusion**

The findings of this study provided information regarding the effects of a computer-delivered VBBA treatment program for treating two depressed older adults in Phase I. It also provided information regarding computer users' experience of reviewing the computer-delivered VBBA program in Phase II. By exploring participants' experiences of the computer-delivered VBBA program and their typical approach to seeking mental health care, this study identified some barriers that contributed to older adults underutilizing mental health services. These findings are congruent with current literature identifying potential steps that can be taken in future research and practice to better connect older adults to mental health treatments. This study also provided recommendations for the future development of computer-delivered treatments for an older adult population.

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Appendix A  
Session Summaries



### Session 1 Summary

Today you completed an orientation to “Building a Meaningful Life Through Behavioral Activation” and met the patients and therapists who you will continue to see throughout the course of this therapy program. You also received a username and password. Remember to keep your username and password in a safe place as you will need it each week to access the therapy program.

This session described the connection between your actions and your mood. Your actions have a profound effect on the way you feel. This therapy program focuses on your actions, or your behaviors, and their affect on your mood. It’s important to remember the distinction between “inside feeling” and “outside action.” For example, John was worried about making his rent payment on time. He could have sat around and worried about paying his rent (inside feeling), but instead he called his landlord to discuss the problem (outside action). Remember – if you do have control over your actions, and your actions affect your mood, then you really do have control over how you feel!

Your homework for the following week is to complete your Activity Log each day and to bring it back to next week’s session. Note the activity that you were doing at each time during the day in the activity column and then rate your mood on a scale of 1 (extremely sad or irritable) to 10 (happy). Remember to keep your activity log with you at all times so that you can record your behaviors and mood ratings throughout the day.

#### Homework:

- Complete your activity log and bring it to next week’s session.

## Session 2 Summary

In this session you reviewed your Activity Log and discussed any difficulties that you may have had when completing the Activity Log during the week. The concept of “values” was also discussed. Values are measurements that tell us what we hold dear, what we prize, and what we think is important. There isn’t a right or wrong set of values. Everyone has their own unique values and expresses them in their own way. It’s important to distinguish a goal from a value. Goals are activities or desires that you can complete, such as graduating from a community college. Values, on the other hand, are like guides for measuring how well we are living our lives. For example, if a person values education, graduating from community college will not mean that that value is complete. Instead, the person may continue to be involved in educational activities and learn different skills through his or her life. Since values are our guides for measuring how well we are living our lives, you can evaluate our goals and activities as being “consistent” or “inconsistent” with your values. If what you say you value and your actions don’t match up, then they are considered to be inconsistent. If your actions support your values, then they are consistent. Your values will guide your actions as you work to overcome depression.

Your homework for this session is to complete the Values Clarification Sheet. For each values domain, write out what each value means to you. Also, circle up to five adjectives for each domain that best describe the kind of person you want to be when thinking of that particular domain. You will also complete your Activity Log during the next week. Remember to bring the Values Clarification Sheet and Activity Log with you next week.

### Homework:

- Complete Values Clarification Sheet and bring it with you to next week’s session.
- Complete Activity Log and bring it with you to next week’s session

### Session 3 Summary

The focus of today's session was on taking specific steps to choose activities that match your values. Remember that your values are like a compass that can guide the way you act. The more consistent your actions are with your values, the more meaningful your life will become. Remember the two C's: compass and consistency. You were asked to review your activity log and complete the Valued Living Questionnaire to determine how consistent your daily activities are with your values. For each domain, you received a consistency score, which tells you if your actions agree with your values. The higher the consistency score, the more in sync your activities are with your values. During each session, you will be able to view your consistency scores in the form of a graph so you can tell if your actions are more or less in tune with your values each week.

Your homework for the following week is to do the five activities that you selected in session today and record them in your Activity Log. You will also select 15 additional activities from the large list of activities that you were given and bring the list of those 15 activities with you next week.

#### Homework:

- Complete the five activities that you selected during today's session and record them in your Activity Log.
- Identify and write down 15 additional values-consistent behaviors during the next week and bring this list with you to the next session.
- Complete Activity Log and bring this with you next week.

### Session 4 Summary

During this session you reviewed your Activity Log from the past week and completed the Valued Living Questionnaire for the second time. Did you notice a change in your consistency scores from the last week? As you continue to build more values-consistent activities into your daily activities, be aware of any changes in your mood and see if you notice any changes in your consistency scores from week to week.

The focus of Session 4 was on dealing with problems in productive ways instead of avoiding them. Everyone experiences problems, however, not everyone deals with problems in the same way. Some people avoid their problems, or sweep them under the rug and pretend they're not there, and some people face their problems and attempt to solve them one at a time. Avoiding problems might seem like a good decision in the moment, but often what happens is that problems continue to pile up and affect our mood. In some ways, depression is a practical illness that occurs as a result of too many problems and difficulties. Symptoms of depression can become intensified, however, when problems are avoided and build up. Even problems that seem overwhelming can be solved and the key is to take each problem and break the solution down into small steps. Remember the three strategies for solving problems:

1. Don't worry about what you can't do – instead focus on what you can do.
2. Think about the differences between saying “I can't” and “I won't.”
3. Take small steps.

Your homework for the next week is to pick five more activities (from the list of 20 that you selected last week) to engage in during the next week. That means you should be doing 10 things from the list of values-consistent activities during the next week. Remember to note these activities in your Activity Log.

#### Homework:

- Pick and do 10 things from your 20 things chart.
- Complete your Activity Log and bring it with you to next week's session.

### Session 5 Summary

In today's session, you reviewed the main ideas that you've learned so far in "Building a Meaningful Life Through Behavioral Activation." The main ideas are:

1. How you ACT affects how you FEEL.
2. The way to overcome depression is not by thinking about your feelings on the inside, but by focusing on your actions on the outside
3. It is important to have a clear picture of how you're spending your time, which is why you have been completing the Activity Log.
4. The more your actions are consistent with your values, the more meaningful your life will be and the less depressed you will be.

After reviewing your Activity Log and completing the Valued Living Questionnaire, you completed a short assessment. You were asked to look at a variety of personal characteristics and rate how much the particular characteristic described you. The results of this assessment will be used to personalize the remaining five sessions to best fit your unique life situation.

Homework:

- Complete Activity Log

### Session 6-10 Summary – Act to Distract

During today's session you completed a series of mini-lessons that were selected to best fit with your unique life situation.

During this mini-lesson, you learned about how worrying can affect your mood and depressive symptoms. When you notice that you're worrying or ruminating, it's a good time to use distraction techniques, or do activities that will take your mind off worrying, such as taking a walk or reading a book.

You also completed the Valued Living Questionnaire. Remember to notice any changes in your consistency scores and look at the association between your consistency score and the activities listed on your Activity Log.

#### Homework:

- Complete Activity Log and bring it with you to next week's session.
- Identify one or more worries that you find yourself having often.
- Identify several activities that are fairly easy to do and will take your mind off worrying.

### Session 6-10 Summary – Active vs. Passive Behavior

During today's session you completed a series of mini-lessons that were selected to best fit with your unique life situation.

During this mini-lesson you learned about active and passive behaviors. Sometimes, when we're feeling really low or depressed, we tend to let things happen to us (passive behavior) and forget that we have the power to make things happen (active behavior). Being active means taking steps to cause you to feel good or make an unpleasant situation more pleasant. You were asked to think about three situations that are bothering you and complete a worksheet where you identified passive and active responses to these situations.

You also completed the Valued Living Questionnaire. Remember to notice any changes in your consistency scores and look at the association between your consistency score and the activities listed on your Activity Log.

#### Homework:

- Complete Activity Log and bring it with you to next week's session.
- When encountering one of these problematic situations during the next week, refer to your worksheet and choose to be active, not passive.

### Session 6-10 Summary – Anger Management

During today's session you completed a series of mini-lessons that were selected to best fit with your unique life situation.

Everyone gets angry sometimes and some people are angry more often than others. It's not being angry that is the problem, however, how you deal with your anger is what counts. During this mini-lesson you learned how to notice when you're becoming angry early on – before an angry outburst happens. Some of the signs you might notice are:

- Your body may tighten up
- Your heart may start beating faster
- You might begin to sweat and become nervous
- Your general mindset may change
- And you begin to feel angry

After noticing that you are becoming angry, stop what you're doing and take several deep breaths. Let time pass and even count to 20 if you have to. You were asked to make a list of warning signs that you notice when you're becoming angry. You were also asked to generate a list of nine things you can do to calm yourself down when you notice you're becoming angry so that you can interrupt the anger outburst.

You also completed the Valued Living Questionnaire. Remember to notice any changes in your consistency scores and look at the association between your consistency score and the activities listed on your Activity Log.

#### Homework:

- Complete Activity Log and bring it with you to next week's session.
- Find a partner that you can role-play an angry situation with and practice using the list of nine techniques to stop your angry outburst.



### Session 6-10 Summary – Applying for a Job

During today's session you completed a series of mini-lessons that were selected to best fit with your unique life situation.

During this mini-lesson, you learned more about the different steps that you need to complete when successfully applying for a job. You learned how the steps needed to write a résumé:

- Make a list of all your former jobs
- List the skills associated with each job
- Type up your resume
  - Use your home computer (if connected to the internet) or a computer at your public library to find examples of resumes
  - You can also visit an employment agency to learn more about putting your resume together

After writing your résumé, you need to figure out what type of jobs to apply for. You can pick up a copy of the newspaper or search for job postings on the internet. If you're having difficulty, you may want to call an employment agency or a temporary agency. Once you have found a job posting that you want to apply for, fill out the application they provide and submit it with your résumé. When invited on an interview, remember to dress and act professionally and always follow up an interview with a letter or phone call thanking the person for the interview.

You also completed the Valued Living Questionnaire. Remember to notice any changes in your consistency scores and look at the association between your consistency score and the activities listed on your Activity Log.

Homework:

- Complete Activity Log and bring it with you to next week's session.

### Session 6-10 Summary - Communication

During today's session you completed a series of mini-lessons that were selected to best fit with your unique life situation.

This mini-lesson offers some suggestions for communicating effectively with others. One of the best ways to improve communication is to use "I-statements." This means that instead of saying "you do this" or "you do that," a more effective way of communicating is to say "I feel" or "I want." I-statements can be tricky at first, so there is a formula you can follow to make sure that they are being used correctly. When you are trying to communicate something to somebody remember the formula:

- "When you..."
- "I feel..."
- "I want or would like..."

The "When you..." part refers to what another person is doing that bothers you. The "I feel..." part indicates how you feel when this bothersome thing occurs. The "I want..." lets the other person know what you would like to happen differently in the situation. If you think about Debra's example, the formula would look like this: "When you watch TV while I'm trying to talk to you, I feel angry and frustrated. I would like you to turn the TV off when I'm trying to talk to you."

During this session, you printed out a worksheet that asked you to identify three situations where you have difficulty talking to someone. The worksheet also asked you to use the formula to write down how you would express your feelings to these people.

You also completed the Valued Living Questionnaire. Remember to notice any changes in your consistency scores and look at the association between your consistency score and the activities listed on your Activity Log.

#### Homework:

- Complete Activity Log and bring it with you to next week's session.
- Take this worksheet home with you and see if you can use the formula during the next week when you're having difficulty communicating with someone.

### Session 6-10 Summary – Getting Organized

During today's session you completed a series of mini-lessons that were selected to best fit with your unique life situation.

Being unorganized can cause people to feel frustrated and upset, which can contribute to feeling depressed. The focus of this mini-lesson is learning more effective ways to manage your time. You learned three key steps to becoming more organized:

- Write things down in one place, for example a weekly planner or a calendar.
- Refer to your calendar or planner on a daily basis.
- Prioritize your tasks.

You need to make that the calendar or planner that you use fits your lifestyle and that it's somewhere where you can refer to it at least once daily. For example, if you are always on the go, you may want a small planner you can carry around with you. If you are at home most of the day, you may want a large calendar on the wall that you can refer to throughout the day. After referring to your planner and writing down everything you want to accomplish in a given day, use the MD (must do), LD (like to do), and CW (can wait) system to prioritize your to-do list. This allows you to get things done without feeling so overwhelmed.

You also completed the Valued Living Questionnaire. Remember to notice any changes in your consistency scores and look at the association between your consistency score and the activities listed on your Activity Log.

#### Homework:

- Complete Activity Log and bring it with you to next week's session.
- Follow the three steps for becoming more organized this week.

### Session 6-10 Summary – How to Say No and Mean It

During today's session you completed a series of mini-lessons that were selected to best fit with your unique life situation.

Many people have a hard time saying "No," and often people have a difficult time saying "No," and meaning it. A simple formula is suggested for saying "No" when you need to:

1. Repeat the question
2. Explain your reason for saying No
3. Suggest an alternative

Repeating the question lets the person who you are talking with know that you were listening to the request. Explaining your reason for saying, "No," lets the person know that you would help if you were able to, but you simply have a reason for saying, "No." Suggesting an alternative lets the person know that you care enough about the request that even though you are saying, "No," you really do want to help.

You also completed the Valued Living Questionnaire. Remember to notice any changes in your consistency scores and look at the association between your consistency score and the activities listed on your Activity Log.

Homework:

- Complete Activity Log and bring it with you to next week's session.

### Session 6-10 Summary – Increasing Enjoyable and Successful Activities in Your Life

During today's session you completed a series of mini-lessons that were selected to best fit with your unique life situation.

This mini-lesson focuses on increasing the number of pleasant events in your day-to-day activities. When choosing activities from your 20 things chart, remember to choose activities that will most likely be enjoyable and activities that you can successfully accomplish. If you are unable to do an activity that you chose or it doesn't seem pleasurable, don't give up! Choose another activity from your 20 things chart.

During this session you listed five activities that you used to enjoy and then added the two of these activities that you are most likely to do to your 20 things chart.

You also completed the Valued Living Questionnaire. Remember to notice any changes in your consistency scores and look at the association between your consistency score and the activities listed on your Activity Log.

#### Homework:

- Complete Activity Log and bring it with you to next week's session.
- Engage in pleasant activities from your 20 things chart and fill out your Activity Log.

### Session 6-10 Summary – Learning How to Relax

During today's session you completed a series of mini-lessons that were selected to best fit with your unique life situation.

During this session you learned a method of relaxation called progressive muscle relaxation. This is a technique you can use when you feel stressed or unable to unwind. Progressive muscle relaxation consists of the following steps:

1. Find a quiet and comfortable place to sit or lie down
2. Tense and relax each of your major muscle groups. Start with your left lower arm and tense for 30 seconds. Then relax for 30 seconds. Then tense your right lower arm for 30 seconds and relax for 30 seconds. Follow this pattern for the following muscle groups:
  - Lower arms
  - Upper arms
  - Lower legs
  - Upper legs
  - Thighs
  - Shoulders
  - Neck
  - Chest
  - Lips
  - Forehead
  - Cheeks
3. After you have finished tensing and relaxing your muscles, focus on your breathing, noticing each you breathe in and out.
4. Each time you exhale mentally repeat the word "relax."
5. When you feel relaxed open your eyes.

Practice your new progressive muscle relaxation skills regularly and when you are feeling stressed.

You also completed the Valued Living Questionnaire. Remember to notice any changes in your consistency scores and look at the association between your consistency score and the activities listed on your Activity Log.

Homework:

- Complete Activity Log and bring it with you to next week's session.

### Session 6-10 Summary – Practicing for Success

During today's session you completed a series of mini-lessons that were selected to best fit with your unique life situation.

This mini-lesson focused on practicing, or rehearsing for, difficult situations. The idea is that if you practice overcoming a difficult situation or interaction, then you will actually experience success when you confront the situation. The two different methods used are role-playing and visualization.

When using role-playing you actually "act out" the situation with another person. Remember Debra's example? She and her therapist role-played the scenario of Debra calling a friend she had a disagreement with. Debra rehearsed the conversation she wanted to have with her friend with the therapist.

Visualization is a technique you can use by yourself. Close your eyes and imagine yourself in the situation that has you worried. Now, see yourself doing or saying the perfect thing in that situation. Then ask yourself, "What would be the consequences of my actions if I did this? Or this?" Walk and talk yourself through the different scenarios.

You also completed the Practicing for Success worksheet. Remember to keep this sheet and refer to it whenever you need to practice for success.

You also completed the Valued Living Questionnaire. Remember to notice any changes in your consistency scores and look at the association between your consistency score and the activities listed on your Activity Log.

Homework:

- Complete Activity Log and bring it with you to next week's session.

### Session 6-10 Summary – Setting and Accomplishing Goals

During today's session you completed a series of mini-lessons that were selected to best fit with your unique life situation.

In this mini-lesson you learned how to identify and accomplish both short-term and long-term goals. The following steps are used when identifying your goals:

1. Make a list of goals
2. Define your goals: which are short-term and which are long-term

Remember your goals should be something that you can control, something that is important to you, and something that is measurable so that you will know when you have achieved the goal.

These are the steps for accomplishing your goals:

1. Clarify the goal
2. Break the goal into small steps
3. Sequence the steps in a logical order
4. Pick a specific day and time to begin the first step
5. Stick to the plan no matter how you feel
6. Give yourself a hand after you complete each step

You also completed the Valued Living Questionnaire. Remember to notice any changes in your consistency scores and look at the association between your consistency score and the activities listed on your Activity Log.

Homework:

- Complete Activity Log and bring it with you to next week's session.



### Session 6-10 Summary – Sleep from A to Zzzz

During today's session you completed a series of mini-lessons that were selected to best fit with your unique life situation.

Most people need 8 hours of sleep each night to feel their best during the day. Without this rest, an individual can become chronically tired and this can contribute to feelings of depression. The following is a list of recommendations to make sure you have the best sleep possible:

- Avoid reading, eating or watching TV in bed
- Avoid consuming foods or drinks with caffeine after lunch
- Cut back on nicotine, especially in the evening
- Avoid drinking alcohol before going to bed
- Avoid napping during the daytime
- Do not take sleeping pills unless prescribed by your physician
- Make your bedroom as comfortable as possible
- Go to bed at a regular time each night
- Stay active during the day
- Certain foods can help you fall asleep (turkey, warm milk, tuna, bananas)
- If you're having difficulty falling asleep after 20-30 min. in bed, get up and do something until you feel tired again and then go back to bed

Follow these recommendations to improve your sleep. Remember that everything about our day is affected by how much and how well we night before. Refer to your action plan on the Things to Avoid and Things to Practice worksheet during the next week.

You also completed the Valued Living Questionnaire. Remember to notice any changes in your consistency scores and look at the association between your consistency score and the activities listed on your Activity Log.

Homework:

- Complete Activity Log and bring it with you to next week's session.

### Session 6-10 Summary – Taking Care of You

During today's session you completed a series of mini-lessons that were selected to best fit with your unique life situation.

The focus of this session was focusing on taking care of your own needs each day. Building “me time” into each day can have a remarkable effect on your mood. It's important that you spend time caring for yourself, especially if you spend a large amount of time caring for others. Take a few minutes each day to do something for yourself. This doesn't have to take a lot of time or cost money. Here is a list of a few activities that you might try:

- Spend a little time daydreaming
- Take a walk
- Set a kitchen timer, close your eyes, and spend 5 minutes taking deep breaths
- Read an enjoyable magazine
- Try a new recipe
- Enjoy a delicious, decadent dessert
- Sit outside for a few minutes and breathe some fresh air
- Lose yourself in a novel
- Check out a yoga video from the public library
- Smile
- Write in a journal
- Go to the park with your kids and sit on a swing...or go without your kids
- Enjoy a sunset
- Go to bed an hour early
- Have cup of tea
- Look through a photo album
- Turn your phone off for an hour
- Take a bubble bath
- Watch a favorite movie
- Listen to music...and sing along!

After reviewing your Activity Log, you chose five “me-time” activities to schedule in your Activity Log for this coming week. Remember to take some time for yourself this week!

You also completed the Valued Living Questionnaire. Remember to notice any changes in your consistency scores and look at the association between your consistency score and the activities listed on your Activity Log.

Homework:

- Complete Activity Log and bring it with you to next week's session.

### Session 6-10 Summary – Taking Small Steps

During today's session you completed a series of mini-lessons that were selected to best fit with your unique life situation.

This mini-lesson is about accomplishing tasks by breaking them down into small steps. Sometimes tasks can seem overwhelming, but often these tasks can be broken down into several small achievable steps. Remember the example of John doing laundry. Even something like doing the laundry can be broken down into steps:

1. Gather up the dirty clothes
2. Carry the laundry to the basement
3. Sort the laundry
4. Wash a load
5. Dry a load
6. Wash another load

After learning how John broke down the task of laundry, you were asked to identify a task of your own and break it down into smaller steps. Hang on to this worksheet and refer to it if you need to break down a task in the future.

You also completed the Valued Living Questionnaire. Remember to notice any changes in your consistency scores and look at the association between your consistency score and the activities listed on your Activity Log.

Homework:

- Complete Activity Log and bring it with you to next week's session.

### Session 6-10 Summary – The Power of A-C-T-I-O-N

During today's session you completed a series of mini-lessons that were selected to best fit with your unique life situation.

You have heard the phrase "Just do it," but when you are feeling down or depressed it sometimes starting a task or solving a problem can seem overwhelming. This mini-lesson focused on how to take ACTION:

- A – Assess your situation
- C – Choose a different way of doing something
- T – Try the new approach
- I – Integrate the change into your life
- O – Observe how things are going
- N – Now evaluate

You also completed the Valued Living Questionnaire. Remember to notice any changes in your consistency scores and look at the association between your consistency score and the activities listed on your Activity Log.

Homework:

- Complete Activity Log and bring it with you to next week's session.
- Review the worksheet on the power of ACTION during the next week.

Appendix B  
Phase I Recruitment Flier

### Are You Feeling Sad or Down?

The Family Studies Laboratory of the Department of Psychology at Western Michigan University is seeking volunteers to participate in a research study investigating how an interactive, computerized treatment for Depression can be tailored to better meet the needs of older adults.

You may be eligible for this study if you:

- Are **65 years of age or older** and
- Are experiencing **symptoms of Depression**
- Are not currently receiving psychotherapy services for your symptoms of Depression
- Are not taking medication for depression for less than 8 weeks, or have any recent changes in medication dosage
- Are able to travel to and from sessions

The treatment involves 5 assessment sessions (2 prior to treatment and 3 after treatment) and 10 treatment sessions. You will be asked to complete questionnaires regarding your symptoms of Depression, quality of life, activity levels, credibility of program, expectancy for improvement in program, and treatment satisfaction as part of your participation in this study. The first assessment session will last approximately one and a quarter hour. The second assessment session will last approximately 45 minutes. All treatment sessions will be approximately forty five minutes to one hour in duration.

If you are interested in knowing more details pertaining to this study, please contact the Family Studies Lab at 269-387-4456 and leave a message for Kellie Reynolds that states your name, number, preferred time for a call-back, and that you are interested in learning more about the depression study.

Investigator: Kellie Reynolds Family Studies Lab Phone: 269-387-4456 Treatment for Depression	Investigator: Kellie Reynolds Family Studies Lab Phone: 269-387-4456 Treatment for Depression	Investigator: Kellie Reynolds Family Studies Lab Phone: 269-387-4456 Treatment for Depression	Investigator: Kellie Reynolds Family Studies Lab Phone: 269-387-4456 Treatment for Depression	Investigator: Kellie Reynolds Family Studies Lab Phone: 269-387-4456 Treatment for Depression
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Appendix C  
Phase I Advertisement

## **Newspaper Advertisement**

### **Research Participants Needed**

Researchers at Western Michigan University are conducting a study to examine a computerized treatment program for Depression. You are invited to participate if you are currently experiencing symptoms of Depression and are not currently receiving psychotherapy for your Depression. Participants must be 65 years or older. Participants will be screened during the initial assessment appointments and may not qualify for participation in certain circumstances. Participants must be willing to travel to treatment sessions. If you are interested in learning more, please contact Kellie Reynolds at 269-387-4456, and leave a message with your name, number, preferred call back time, and say that you are interested in learning more about the depression study.



Appendix D  
First Phone Contact Script

**(Computer Administrator):** Hello. My name is \_\_\_\_\_. May I speak with \_\_\_\_\_?

**YES:** (wait for phone to be given to potential participant and/or begin script below)

**NO:** Do you know a time during which I may be able to reach him/her?

**YES:** (MAKE NOTE OF TIME). Thank you for your assistance.

**NO:** Thank you for your time, I will call back later.

**(Research Coordinator):** Hello. My name is \_\_\_\_\_ and I am a research coordinator at Western Michigan University. I am calling because you left a message on our laboratory phone regarding a depression study we are conducting. Are you interested in learning more about the study?

**NO:** Okay, thank you for your time. Although you are not interested in this study, I would like to provide several referral numbers in the event that you are interested in psychological services later. (Borgess Outpatient Mental Health Services – (269) 226-5600; Borgess Geriatric Assessment Center – (269) 226-7133), if you are feeling suicidal contact If you ever feel that you have thoughts of harming yourself and that you may carry them out the Gryphon Place is a crisis hotline that you can contact anytime to receive assistance (269) 381-4357.

**YES:** If you decide to participate and qualify for the study, you would receive a computerized behavioral activation treatment for depression called “Building a Meaningful Life Through Behavioral Activation”. The treatment involves learning new strategies to alleviate your symptoms of depression and has been previously shown to be effective for many people who are experiencing symptoms of depression. Treatment would take place over the course of approximately two-and-a-half months and would involve ten weekly sessions of behavioral activation therapy, administered by a computer with the aid of a research assistant. These sessions will be approximately forty-five minutes to one-and-one-half hours in length. In addition to attending these weekly sessions, it is also expected that you will practice the strategies learned in therapy over the course of your week. You would also be asked to attend two initial assessment appointments and three follow-up assessment appointments to thoroughly evaluate your symptoms of depression, the last of which would occur three months after the completion of treatment. You must be over the age of 65, have not recently started psychological or pharmaceutical treatments for depression, and not be actively suicidal to participate in this study.

Do you have any questions about participating in this research project?

**YES:** (ANSWER ANY QUESTIONS). If you are still interested in learning more about the study, the next step would be to schedule an initial assessment appointment. This appointment should take approximately one hour to complete. During this assessment appointment, you will be asked to read and sign an informed consent document, demographics form, and complete three self-report measures. Would you be interested in scheduling an initial assessment appointment?

**NO:** If you are still interested in learning more about the study, the next step would be to schedule an initial assessment appointment. This appointment should take approximately one half-hour to complete. During this assessment appointment, you will be asked to read and sign an informed consent document, fill out a demographics form, and complete two self-report measures.

Would you be interested in scheduling an initial assessment appointment?

**NO:** Okay. Thank you for your time. If you are interested in psychological services in the future I have two phone numbers that you may choose to contact (Borgess Outpatient Mental Health Services – (269) 226-5600; Borgess Geriatric Assessment Center – (269) 226-7133) If you ever feel that you have thoughts of harming yourself and that you may carry them out the Gryphon Place is a crisis hotline that you can contact anytime to receive assistance (269) 381-4357. Goodbye.

**YES:** Okay, at this time I would like to set up your initial screening appointment. (SET UP A DATE AND TIME BASED UPON COMPUTER ADMINISTRATOR AVAILABILITY PROVIDED). IBH Psychological Services is located at 5380 Holiday Terrace, Suite 32, Kalamazoo, MI, 49009. The phone number there is 269.459.1512. Turn onto Holiday Terrace off 11<sup>th</sup> street. Past a couple of brown-roofed buildings, take a left into a parking area with several grey-roofed buildings. If you reach Burdick's you have gone too far. Take a left in the parking lot and continue past two buildings on your right, a Holiday Inn on your left, and the next grey-roofed building on your left is home to IBH. Would you like to receive a reminder phone call? (IF YES, MAKE REMINDER PHONE CALL ARRANGEMENT). If you are currently taking any medications please bring a list of these medications with you. Thank you for your time.

Appendix E  
Phase I Informed Consent Document

**Western Michigan University  
Department of Psychology  
Informed Consent to Participate in Research**

**Principal Investigator:** Galen Alessi, Ph.D.  
**Student Investigator:** Kellie Reynolds, M.A.  
**Title of Study:** “A Pilot Investigation of the Effects of a Computerized Behavioral Activation Treatment for Depression in Older Adults”

You have been invited to participate in research project entitled “A Pilot Investigation of the Effectiveness of a Computerized Behavioral Activation Treatment for Depression in Older Adults.” This project will serve as Kellie Reynolds’s dissertation for the requirements of the Clinical Psychology PhD Program at Western Michigan University. This consent document will explain the purpose of this research project and will go over all of the time commitments, the procedures used in the study, and the risks and benefits of participating in this research project. Please read this consent form carefully and completely and please ask any questions if you need more clarification.

**What are we trying to find out in this study?**

This research is intended to learn ways that a computerized psychological treatment can be better suited for an older adult population, and learn about the effects of this treatment on depressive symptoms. This psychological treatment has been shown to be effective with many people when administered by a therapist. We are doing this study because we would like to know how helpful this psychological therapy is when administered by a computer, and ways we can make it more helpful for older adults.

**Who can participate in this study?**

Individuals who are over the age of 65, who report symptoms of depression, and who are able to travel to and from IBH Psychological Services in Kalamazoo are eligible to participate.

Individuals who are currently receiving psychological treatment for depression, have had a recent change in anti-depressant medication, are cognitively impaired, are actively suicidal, or are unable to complete two baseline assessment sessions are **not** eligible to participate in this study.

Regardless of whether you are eligible for participation in the study, you will be provided with a list of local mental health service providers, including some locations that offer reduced-fee services. These providers offer treatment options that may be attractive to individuals interested in but ineligible for this study.

**Where will this study take place?**

This study takes place at IBH Psychological Services; a private psychology practice in Kalamazoo, MI. IBH Psychological Services is located at 5380 Holiday Terrace, Suite 32, Kalamazoo, MI, 49009. The phone number there is 269-459-1512.

### **What is the time commitment for participating in this study?**

This study will take about 26 hours of your time over the next 7 months.

The study consists of three phases; a 2 session baseline phase, a 10 session treatment phase, and a 3 session follow-up phase. The two baseline sessions must be completed within a 4 week timeframe, with at least one week between them. The ten treatment sessions must be completed within a 12 week time frame, with at least one week between treatment sessions. Out-of-session homework will take approximately 1 hour per week during treatment. The 3 follow-up sessions will be completed at 1-week, 1-month, and 3-months following the completion of treatment. Baseline session 1 will take 60 minutes to complete, while baseline session 2 is 20 minutes long. All ten treatments sessions are 75-80 minutes each session. The 1-week follow-up session will take 60 minutes to complete, while the 1-month and 3-month follow-up sessions are 20 minutes long.

### **What will you be asked to do if you choose to participate in this study?**

The first and second baseline sessions will consist of answering survey questions about depressive symptoms, activity level, cognitive ability, quality of life, and your expectations regarding computerized treatments.

Treatment sessions will consist of answering the same survey questions as baseline but including additional questions about values-consistency, homework completion, and additional psychological services you have sought, and then interacting with a computerized treatment program. Interacting with the program will include watching psycho-educational videos about; the treatment of depression through behavioral activation, tracking behaviors through assignments and experiments, exploring the relationship between behaviors and mood, integrating your values into your activity routine, watching patient and therapist exemplars, and as treatment progresses material becomes more focused on applying behavioral activation to your everyday life. The program will also repeatedly ask you questions about your mood and behaviors. The computerized treatment also includes out-of-session homework assignments, applying principles of behavioral activation to your life.

The three follow-up sessions, scheduled at 1-week, 1-month, and 3-months following the end of treatment, will consist of answering survey questions related to depressive symptoms, activity level, quality of life, additional psychological services you have sought, expectations for future computerized treatments, and a completing a questionnaire asking for detailed feedback regarding your interaction with the computerized treatment.

### **What information is being measured during the study?**

Throughout the study we will be measuring your self-report of several different outcomes: Your level of depressive symptoms, level of general activity, valued-activity level, cognitive ability, quality of life, your demographic background, history of depression treatments, contact with family and friends, level of computer skill, expectations regarding computerized treatments, completion of treatment homework, satisfaction with the computerized treatment, your suggestions for improving the computerized treatment, and any additional psychological services

for depression you have sought out after the end of treatment. You are free to refuse to answer any question that you do not wish to answer, without penalty to you.

**What are the risks of participating in this study and how will these risks be minimized?**

The primary potential risk of your participation in this study is that you may experience unpleasant emotions, including anger, frustration, anxiety, depression, and disappointment, as you recall your problems and experiences and actively engage in behaviors in order to reduce your depression. Should emergency care become necessary, the research team is prepared to provide you with appropriate referrals, however you will be responsible for the cost of any emergency care that you may choose to seek. As in all research, there may be unforeseen risks to you as a participant.

**What are the benefits of participating in this study?**

The primary potential benefit of participation in this study is the alleviation or elimination of symptoms of depression. This may occur through the using different techniques and strategies that you will learn during your weekly sessions of behavioral activation therapy. Furthermore, knowledge gained from this study may lead to the development of more effective, accessible, and affordable treatments for depression, and make this computerized treatment better in the future for use with older adults.

**Are there any costs associated with participating in this study?**

You will be responsible for costs associated with traveling to and from IBH Psychological Services, the location of this study. This study will also cost you around 26 hours. There is no fee for participation in this study or receipt of the computerized treatment.

**Is there any compensation for participating in this study?**

You will not receive any compensation for your participation in this study, beyond those benefits mentioned above.

**Who will have access to the information collected during this study?**

All information obtained from you is confidential. All paperwork that you complete for purposes of this study will include your participant number instead of your name and will be stored in a locked cabinet in the laboratory of the researcher. The researcher will maintain a list with your named matched to your corresponding participant number in a different locked cabinet located within the laboratory. This list will be retained for the duration of the study and will be destroyed after all of the data from the study is analyzed. A signed consent document and all paperwork that you complete for purposes of the study will be retained for at least three years in a locked cabinet in the laboratory of the researcher. You will be given a signed copy of this consent form for your records.

The results from this study will likely be published in a psychological journal and presented at psychological conferences. All data will be completely de-identified and pseudonyms used in the presentation or publication of individual information. You will not be able to be identified from any publication or presentation resulting from this study.

**What if you want to stop participating in this study?**

You can choose to stop participating in the study at anytime for any reason, your participation is completely voluntary. You will not suffer any prejudice or penalty by your decision to stop your participation. You will experience NO consequences if you choose to withdraw from this study.

**What if I have problems or questions?**

If you have any questions or concerns prior to or during your participation in this study, you may contact either Dr. Galen Alessi at (269) 387- 4470 or Kellie Reynolds at (269) 387-4456. You may also contact the Chair of the Human Subjects Institutional Review Board at (269) 387-8293 or the Vice President of Research at (269) 387-8298 if questions arise during the course of the study.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB) as indicated by the stamped date and signature of the board chair in the upper right corner. Do not participate in this study if the stamped date is more than one year old.

-----  
I have read this informed consent document. The risks and benefits have been explained to me. I agree to take part in this study.

---

Please Print Your Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Consent obtained by: \_\_\_\_\_

Signature of researcher

\_\_\_\_\_  
Date



Appendix F  
Beck Depression Inventory-II



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

Name: \_\_\_\_\_ Marital Status: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_

Occupation: \_\_\_\_\_ Education: \_\_\_\_\_

**Instructions:** This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the **one statement** in each group that best describes the way you have been feeling during the **past two weeks, including today**. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

**1. Sadness**

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

**2. Pessimism**

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

**3. Past Failure**

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

**4. Loss of Pleasure**

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

**5. Guilty Feelings**

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

**6. Punishment Feelings**

- 0 I don't feel I am being punished.
- 1 I feel I may be punished.
- 2 I expect to be punished.
- 3 I feel I am being punished.

**7. Self-Dislike**

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

**8. Self-Criticalness**

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

**9. Suicidal Thoughts or Wishes**

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

**10. Crying**

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

Subtotal Page 1

Continued on Back

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**11. Agitation**

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

**12. Loss of Interest**

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

**13. Indecisiveness**

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

**14. Worthlessness**

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

**15. Loss of Energy**

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

**16. Changes in Sleeping Pattern**

- 0 I have not experienced any change in my sleeping pattern.
- 1a I sleep somewhat more than usual.
- 1b I sleep somewhat less than usual.
- 2a I sleep a lot more than usual.
- 2b I sleep a lot less than usual.
- 3a I sleep most of the day.
- 3b I wake up 1–2 hours early and can't get back to sleep.

**17. Irritability**

- 0 I am no more irritable than usual.
- 1 I am more irritable than usual.
- 2 I am much more irritable than usual.
- 3 I am irritable all the time.

**18. Changes in Appetite**

- 0 I have not experienced any change in my appetite.
- 1a My appetite is somewhat less than usual.
- 1b My appetite is somewhat greater than usual.
- 2a My appetite is much less than before.
- 2b My appetite is much greater than usual.
- 3a I have no appetite at all.
- 3b I crave food all the time.

**19. Concentration Difficulty**

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

**20. Tiredness or Fatigue**

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

**21. Loss of Interest in Sex**

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

NOTICE: This form is printed with blue and black ink. If your copy does not appear this way, it has been photocopied in violation of copyright laws.

Subtotal Page 2

Subtotal Page 1

Total Score

Appendix G  
Behavioral Activation for Depression Scale



**Behavioral Activation for Depression Scale Participant**  
 Number \_\_\_\_\_/Date \_\_\_\_\_

**Behavioral Activation for Depression Scale**

Please read each statement carefully and then circle the number which best describes how much the statement was true for you DURING THE PAST WEEK, INCLUDING TODAY.

	0 = Not at all 1 2 = A little 3 4 = A lot 5 6 = Completely							For Scoring Purposes only				
	0	1	2	3	4	5	6	A C	A R	W S	S I	T
1. I stayed in bed for too long even though I had things to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			-		<u>R</u>
2. There were certain things I needed to do that I didn't do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			-		<u>R</u>
3. I am content with the amount and types of things I did.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-				-
4. I engaged in a wide and diverse array of activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-				-
5. I made good decisions about what type of activities and/or situations I put myself in.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-				-
6. I was active, but did not accomplish any of my goals for the day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			-		<u>R</u>
7. I was an active person and accomplished the goals I set out to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-				-
8. Most of what I did was to escape from or avoid something unpleasant.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		-			<u>R</u>
9. I did things to avoid feeling sadness or other painful emotions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		-			<u>R</u>
10. I tried not to think about certain things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		-			<u>R</u>
11. I did things even though they were hard because they fit in with my long-term goals for myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-				-
12. I did something that was hard to do but it was worth it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-				-
13. I spent a long time thinking over and over about my problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		-			<u>R</u>

	0 = Not at all 1 = 2 = little 3 = 4 = A lot 5 = 6 = Completely	0	1	2	3	4	5	6	For Scoring Purposes only				
									A C	A R	W S	SI	T
14. I kept trying to think of ways to solve a problem but never tried any of the solutions.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		-			<u>R</u>
15. I frequently spent time thinking about my past, people who have hurt me, mistakes I've made, and other bad things in my history.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		-			<u>R</u>
16. I did not see any of my friends.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				-	<u>R</u>
17. I was withdrawn and quiet, even around people I know well.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				-	<u>R</u>
18. I was not social, even though I had opportunities to be.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				-	<u>R</u>
19. I pushed people away with my negativity.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				-	<u>R</u>
20. I did things to cut myself off from other people.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				-	<u>R</u>
21. I took time off of work/school/chores/responsibilities simply because I was too tired or didn't feel like going in.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			-		<u>R</u>
22. My work/schoolwork/chores/responsibilities suffered because I was not as active as I needed to be.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			-		<u>R</u>
23. I structured my day's activities.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-				-
24. I only engaged in activities that would distract me from feeling bad.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		-			<u>R</u>
25. I began to feel badly when others around me expressed negative feelings or experiences.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		-			<u>R</u>

Subscale Totals: \_ \_ \_ \_

BAS Total: \_

Appendix H  
Geriatric Depression Scale

## Geriatric Depression Scale

1. Are you basically satisfied with your life?	NO	yes
2. Have you dropped many of your activities and interests?	YES	no
3. Do you feel that your life is empty?	YES	no
4. Do you often get bored?	YES	no
5. Are you hopeful about the future?	NO	yes
6. Are you bothered by thoughts that you just cannot get out of your head?	YES	no
7. Are you in good spirits most of the time?	NO	yes
8. Are you afraid that something bad is going to happen to you?	YES	no
9. Do you feel happy most of the time?	NO	yes
10. Do you often feel helpless?	YES	no
11. Do you often get restless and fidgety?	YES	no
12. Do you prefer to stay home at night, rather than go out and do new things?	YES	no
13. Do you frequently worry about the future?	YES	no
14. Do you feel that you have more problems with memory than most?	YES	no
15. Do you think it is wonderful to be alive now?	NO	yes
16. Do you often feel downhearted and blue?	YES	no
17. Do you feel pretty worthless the way you are now?	YES	no
18. Do you worry a lot about the past?	YES	no
19. Do you find life very exciting?	NO	yes
20. Is it hard for you to get started on new projects?	YES	no
21. Do you feel full of energy?	NO	yes
22. Do you feel that your situation is hopeless	YES	no
23. Do you think that most people are better off than you are?	YES	no
24. Do you frequently get upset over little things?	YES	no
25. Do you frequently feel like crying?	YES	no
26. Do you have trouble concentrating?	YES	no
27. Do you enjoy getting up in the morning?	NO	yes
28. Do you prefer to avoid social gatherings?	YES	no
29. Is it easy for you to make decisions?	NO	yes
30. Is your mind as clear as it used to be?	NO	yes

Normal	0-9
Mild Depression	10-19
Severe Depression	20-30

---

 30



Appendix I  
Quality of Life Scale

### QUALITY OF LIFE SCALE (QOL)

Please read each item and circle the number that best describes how satisfied you are at this time. Please answer each item even if you do not currently participate in an activity or have a relationship. You can be satisfied or dissatisfied with not doing the activity or having the relationship.

	Delighted	Pleased	Mostly Satisfied	Mixed	Mostly Dissatisfied	Unhappy	Terrible
1. Material comforts home, food, conveniences, financial security . . . . .	7	6	5	4	3	2	1
2. Health - being physically fit and vigorous . . .	7	6	5	4	3	2	1
3. Relationships with parents, siblings & other relatives- communicating, visiting, helping . . .	7	6	5	4	3	2	1
4. Having and rearing children . . . . .	7	6	5	4	3	2	1
5. Close relationships with spouse or significant other . . . . .	7	6	5	4	3	2	1
6. Close friends . . . . .	7	6	5	4	3	2	1
7. Helping and encouraging others, volunteering, giving advice . . . . .	7	6	5	4	3	2	1
8. Participating in organizations and public affairs . . . . .	7	6	5	4	3	2	1
9. Learning- attending school, improving understanding, getting additional knowledge . .	7	6	5	4	3	2	1
10. Understanding yourself - knowing your assets and limitations - knowing what life is about . .	7	6	5	4	3	2	1
11. Work - job or in home . . . . .	7	6	5	4	3	2	1
12. Expressing yourself creatively . . . . .	7	6	5	4	3	2	1
13. Socializing - meeting other people, doing things, parties, etc . . . . .	7	6	5	4	3	2	1
14. Reading, listening to music, or observing entertainment . . . . .	7	6	5	4	3	2	1
15. Participating in active recreation . . . . .	7	6	5	4	3	2	1
16. Independence, doing for yourself . . . . .	7	6	5	4	3	2	1

Appendix J  
Valued Living Questionnaire

### Valued Living Questionnaire Self-Care Assessment Part 1

Participant\_\_\_\_\_ Date\_\_\_\_\_

Below are areas of life that are valued by some people. This questionnaire will help clarify your own quality-of-life in each of these areas. One aspect of quality-of-life involves the importance you put on different areas of living. Rate the importance of each area (by circling a number) on a scale of 1-10. A “1” means that area is *not at all important*. A “10” means that area is *very important*. Not everyone will value all of these areas, or value all areas the same. Rate each area according to **your own personal sense of importance**.

<u>Area:</u> important	not at all important									extremely
1) Family (other than marriage or parenting)	1	2	3	4	5	6	7	8	9	10
2) Marriage/couples/ intimate relationships	1	2	3	4	5	6	7	8	9	10
3) Parenting	1	2	3	4	5	6	7	8	9	10
4) Friends/social life	1	2	3	4	5	6	7	8	9	10
5) Work	1	2	3	4	5	6	7	8	9	10
6) Education/training	1	2	3	4	5	6	7	8	9	10
7) Recreation/fun	1	2	3	4	5	6	7	8	9	10
8) Spirituality/meaning & purpose in life	1	2	3	4	5	6	7	8	9	10
9) Citizenship/ Community Life	1	2	3	4	5	6	7	8	9	10
10) Physical self-care (nutrition, exercise/ movement, rest/sleep)	1	2	3	4	5	6	7	8	9	10

Reflection:

*How do you feel about this? Are there any areas that surprised you?*

## Valued Living Questionnaire Self-Care Assessment Part 2

Participant \_\_\_\_\_ Date \_\_\_\_\_

In this section, please give a rating of how **consistent** your actions have been with each of your values. Please note that this is **not** asking about your ideal in each area, **nor** what others think of you. Everyone does better in some areas than in others. People also do better at some times than at others. **Please just indicate how you think you have been doing during the past week.** Rate each area (by circling a number) on a scale of 1-10. A “1” means that your actions have been *completely inconsistent with your value*. A “10” means that your actions have been *completely consistent with your value*.

		<i>During the past week...</i>									
<u>Area:</u>		<u>not at all</u> consistent					<u>completely</u>				
		with my value					with my value				
1) Family (other than marriage or parenting)	1	2	3	4	5	6	7	8	9	10	
2) Marriage/couples/ intimate relationships	1	2	3	4	5	6	7	8	9	10	
3) Parenting	1	2	3	4	5	6	7	8	9	10	
4) Friends/social life	1	2	3	4	5	6	7	8	9	10	
5) Work	1	2	3	4	5	6	7	8	9	10	
6) Education/training	1	2	3	4	5	6	7	8	9	10	
7) Recreation/fun	1	2	3	4	5	6	7	8	9	10	
8) Spirituality/meaning & purpose in life	1	2	3	4	5	6	7	8	9	10	
9) Citizenship/ Community Life	1	2	3	4	5	6	7	8	9	10	
10) Physical self-care (nutrition, exercise/ movement, rest/sleep)	1	2	3	4	5	6	7	8	9	10	

Total: \_\_\_\_\_

*Add up the total circled numbers for Part 2, where 10 is the minimum and 100 is the maximum. The higher the number the more likely you are to experience happiness in your life.*

Appendix K  
Phase I Credibility and Expectancy Form

### **Expectancy for Improvement and Credibility**

Participant Number\_\_\_\_\_ Date\_\_\_\_\_

#### **Baseline**

**Please rate questions 1-3 below on a scale of 1 through 9. Where 1 would be not at all, A 4 would be somewhat, and a 9 would be completely.**

1. How logical does a computerized treatment for depression seem to you?

1      2      3      4      5      6      7      8      9

2. How confident would you be that the BAML computer treatment will be successful in eliminating your depressive symptoms?

1      2      3      4      5      6      7      8      9

3. How confident would you be in recommending the BAML computer treatment to a friend who was also depressed?

1      2      3      4      5      6      7      8      9

4. Please provide a percentage from 0-100% of how much improvement you will experience as a result of going through the BAML program. \_\_\_\_\_

**Expectancy for Improvement and Credibility Participant Number\_\_\_\_\_****Post Treatment**

**Please rate questions 1-3 below on a scale of 1 through 9. Where 1 would be not at all, A 4 would be somewhat, and a 9 would be completely.**

1. How logical does the BAML treatment seem to you?

1      2      3      4      5      6      7      8      9

2. How confident would you be that the BAML treatment would be successful in eliminating depressive symptoms of other people?

1      2      3      4      5      6      7      8      9

3. How confident would you be in recommending the BAML treatment to a friend who was also depressed?

1      2      3      4      5      6      7      8      9

4. Please provide a percentage from 0-100% of how much improvement you experienced as a result of going through the BAML program. \_\_\_\_\_



Appendix L  
Consumer Satisfaction Survey

## Consumer Satisfaction Survey for

Participant Number \_\_\_\_\_ Date \_\_\_\_\_

**INSTRUCTIONS:** This survey asks for your opinions about the computerized treatment for depression you have completed. Your feedback will be used to help improve this program for future use by other individuals experiencing symptoms of depression. There are no right or wrong answers to questions on this survey. Please answer each question by circling the number of the choice that matches your opinion at the present time.

1. As a result of completing the computerized treatment for depression, I deal more effectively with daily problems.

5	4	3	2	1	0
Strongly Agree	Agree	In Between	Disagree	Strongly Disagree	Does Not Apply

2. The techniques I have learned from completing the computerized treatment for depression are likely to help me in the future.

5	4	3	2	1	0
Strongly Agree	Agree	In Between	Disagree	Strongly Disagree	Does Not Apply

3. As a result of completing the computerized treatment for depression, I am better able to deal with a crisis.

5	4	3	2	1	0
Strongly Agree	Agree	In Between	Disagree	Strongly Disagree	Does Not Apply

4. If necessary in the future, I would use a computerized treatment program for a psychological problem.

5	4	3	2	1	0
Strongly Agree	Agree	In Between	Disagree	Strongly Disagree	Does Not Apply

5. I would recommend the computerized treatment for depression I completed to a friend or family member.

5	4	3	2	1	0
Strongly Agree	Agree	In Between	Disagree	Strongly Disagree	Does Not Apply

6. As a result of completing the computerized treatment for depression, my day-to-day functioning has improved.

5	4	3	2	1	0
Strongly	Agree	In Between	Disagree	Strongly	Does Not
Agree				Disagree	Apply

7. As a result of completing the computerized treatment for depression, my leisure time is better spent.

5	4	3	2	1	0
Strongly	Agree	In Between	Disagree	Strongly	Does Not
Agree				Disagree	Apply

8. As a result of completing the computerized treatment for depression, I do better in social situations.

5	4	3	2	1	0
Strongly	Agree	In Between	Disagree	Strongly	Does Not
Agree				Disagree	Apply

9. The computerized treatment for depression provided me with services that were as good or better than the therapy services I would expect from a human therapist.

5	4	3	2	1	0
Strongly	Agree	In Between	Disagree	Strongly	Does Not
Agree				Disagree	Apply

10. The computerized treatment for depression was easy to use.

5	4	3	2	1	0
Strongly	Agree	In Between	Disagree	Strongly	Does Not
Agree				Disagree	Apply

11. The computerized treatment for depression was easy to understand.

5	4	3	2	1	0
Strongly	Agree	In Between	Disagree	Strongly	Does Not
Agree				Disagree	Apply

12. The patients whose stories were presented in the computerized treatment for depression had similar problems to my own.

5	4	3	2	1	0
Strongly	Agree	In Between	Disagree	Strongly	Does Not

Agree Disagree Apply  
 13. The computerized treatment for depression fit my individual needs.

5	4	3	2	1	0
Strongly	Agree	In Between	Disagree	Strongly	Does Not
Agree				Disagree	Apply

14. I liked the therapist(s) I selected in the computerized treatment for depression.

5	4	3	2	1	0
Strongly	Agree	In Between	Disagree	Strongly	Does Not
Agree				Disagree	Apply

15. Overall, I am satisfied with the computerized treatment for depression.

5	4	3	2	1	0
Strongly	Agree	In Between	Disagree	Strongly	Does Not
Agree				Disagree	Apply

**In the space below, please give us any comments you would like to make about what you like and dislike about the services you receive, and suggestions for how to make things better.** (You may use the back of this sheet if necessary)

Appendix M  
Phase I Qualitative Survey

**Qualitative Survey**

Participant Number \_\_\_\_\_ Date \_\_\_\_\_

1.
  - a) Did the patient exemplars (people in the program) represent your experience of depression?
  - b) If so which ones did you best relate to, and why?
  - c) If not, what type of scenarios and symptoms would better portray your experience of depression that you could better relate to?
2.
  - a) Did you feel that the values domains provided in the study covered values that are important to you?

- b) Are there other domains that you find important that were not addressed in the program?
3. a) Was the tutorial in the first session of treatment program helpful, if so why?
- b) Did the tutorial make you feel more comfortable with going through the program without a therapist?
- c) Do you think we should continue to complete this tutorial for others, as a way to familiarize with the program ahead of time, if so why?

4. a) What were some advantages to doing this program instead of face-to-face therapy for depression?

b) What were some disadvantages to doing computerized therapy independent of a therapist?

5. a) Which of the final mini-lessons of the program did you find useful?

b) Were there any mini-lessons that were not useful?

c) What kind of mini-lessons would you like to see to help treat your depression, that were not in the program already?



Appendix N  
Phase I Demographic Survey

## Demographics Information Form for Participant Number \_\_\_\_\_

**Date of Birth:** \_\_\_\_\_ **Age:** \_\_\_\_\_

**Race/Ethnicity:**

1 = Caucasian/White      2 = African-American      3 = Hispanic/Latino

4 = Asian-American                      5 = Native American                      6 = Arab-American

7 = Alaskan American 8 = Multiracial \_\_\_\_\_

9 = International / Non-US Resident \_\_\_\_\_

10 = Other \_\_\_\_\_

**Sex:**

1 = Male                      2 = Female

**Marital Status:**

1 = Single                      2 = Married                      3 = Domestic Partnership

4 = Engaged                      5 = Separated                      6 = Divorced or Annulled

7 = Widowed                      8 = Other \_\_\_\_\_

**Occupational Status:**

1 = Currently Employed      2 = Unemployed      3 = On Disability

4 = Stay at Home Parent      5 = Retired      6 = Other \_\_\_\_\_

**Household Income:**

1 = Under \$5,000                      2 = \$5,000 - \$9,999                      3 = \$10,000 - \$14,999

4 = \$15,000 - \$24,999      5 = \$25,000 - \$34,999      6 = \$35,000 - \$49,999

7 = \$50,000 - \$74,999      8 = \$75,000 - \$99,999      9 = \$100,000 and over

**Education Level:**

- 1 = Less than 7<sup>th</sup> Grade      2 = 7<sup>th</sup> – 12<sup>th</sup> Grade (Did Not Graduate)      3 = Graduated High School
- 4 = GED      5 = Some College      6 = Graduated 2-Year College or Technical School
- 7 = Graduated 4-Year College      8 = Some Graduate School      9 = Graduate Degree (e.g. Ph.D., M.A., M.D.)

**Physical Status:**

How would you rate your degree of physical ability (circle below)?

0(no ability)   1   2   3   4   5(moderate ability)   6   7   8   9   10(very mobile)

Do you have any physical impairment, if so please list(s): \_\_\_\_\_

How would you rate your degree of sensory ability (circle below)?

**Hearing**

0(no hearing)   1   2   3   4   5(moderate hearing)   6   7   8   9   10(full hearing)

**Vision**

0(no vision)   1   2   3   4   5(moderate vision)   6   7   8   9   10(full vision)

**Touch/Balance**

0(no sensation)   1   2   3   4   5(moderate sensation)   6   7   8   9   10(full sensation)

**Smell/Taste**

0(no smell/taste)   1   2   3   4   5(moderate smell/taste)   6   7   8   9   10(full smell/taste)

**Family & Social Status:**

How many current siblings do you have? \_\_\_\_\_

Are they living close to you where you can spend time with them often? Yes   No

How many current children do you have? \_\_\_\_\_

Are they living close to you where you can spend time with them often? Yes   No

How many friends or acquaintances do you have? \_\_\_\_\_

Are they living close to you where you can spend time with them often? Yes No

Do you belong to a church or other organization? Yes No

**Hospitalization:**

Have been hospitalized for any reasons in the past year? Yes No

If yes what was it for? \_\_\_\_\_

**PREVIOUS Treatment(s) for Depression (Circle All That Apply):**

1 = None                      2 = Medications                      3 = Individual Therapy

4 = Group Therapy                      5 = Support Group                      6 = Case Management

7 = Pastoral Care                      8 = Hospital (Inpatient or Partial Hospitalization)

9 = Other \_\_\_\_\_

Where you satisfied with these treatments? Yes No

**CURRENT Treatment(s) for Depression (Circle All That Apply):**

1 = None                      2 = Medications                      3 = Individual Therapy

4 = Group Therapy                      5 = Support Group                      6 = Case Management

7 = Pastoral Care                      8 = Hospital (Inpatient or Partial Hospitalization)

9 = Other \_\_\_\_\_

**Current Psychotropic Medications:**

*Selective Serotonin Reuptake Inhibitors (SSRIs)*

_____ Citalopram (Celexa)	_____ Escitalopram (Lexapro)
_____ Fluoxetine (Prozac, Sarafem)	_____ Fluvoxamine (Luvox, Faverin, Dumyrox)
_____ Paroxetine (Paxil, Pexeva)	_____ Sertraline (Zoloft)

*Tricyclic Antidepressants (TCAs)*

_____ Amitriptyline	_____ Amoxapine
_____ Clomipramine (Anafranil)	_____ Desipramine (Norpramin)
_____ Doxepin	_____ Imipramine (Tofranil)

☐ Nortriptyline (Pamelor)      ☐ Protriptyline (Vivactil)  
☐ Trimipramine (Surmontil)

*Monoamine Oxidase Inhibitors (MAOIs)*

☐ Isocarboxazid (Marplan)      ☐ Phenelzine (Nardil)  
☐ Rasagiline (Azilect)      ☐ Selegiline (Eldepryl, Zelapar)  
☐ Tranlycypromine (Parnate)

*SSNRIs (Selective Serotonin and Norepinephrine Reuptake Inhibitors)*

☐ Duloxetine (Cymbalta)      ☐ Venlafaxine (Effexor)

*Atypical Antidepressants*

☐ Bupropion (Wellbutrin, Zyban)

*Antipsychotics*

☐ Aripiprazole (Abilify)      ☐ Chlorpromazine (Thorazine)  
☐ Clozapine (Clozarilm FazaClo)      ☐ Fluphenazine (Prolixin)  
☐ Haloperidol (Haldol)      ☐ Loxapine (Loxitane)  
☐ Olanzapine (Zydis, Zyprexa)      ☐ Quetiapine (Seroquel)  
☐ Risperidone (Risperdal)      ☐ Thioridazine (Mellaril)  
☐ Thiothixene (Navane)      ☐ Trifluoperazine (Stelazine)  
☐ Ziprasidone (Geodon)

*Mood Stabilizers/Anticonvulsants*

☐ Gabapentin (Neurontin)      ☐ Lamotrigine (Lamictal)  
☐ Lithium (Eskalith, Lithobid)      ☐ Oxcarbazepine (Trileptal)  
☐ Tiagabine (Gabitril)      ☐ Topiramate (Topamax)  
☐ Valproic Acid (Depakote)

*Anxiolytics/Benzodiazepines*

☐ Alprazolam (Xanax)      ☐ Buspirone (BuSpar)  
☐ Chlordiazepoxide (Librium)      ☐ Clonazepam (Klonopin)  
☐ Lorazepam (Ativan)      ☐ Oxazepam (Serax)

**Number of Weeks You Have Been Taking Antidepressant Medications:** \_\_\_\_\_ weeks  
*(If any changes occur in antidepressant medications throughout the time you are in this study, please let us know)*

**How Many Years of Experience Do You Have With Computers?** \_\_\_\_\_ year(s)

**How Comfortable Are You With a Computer?**

1      2      3      4      5      6      7      8      9      10

Completely Uncomfortable

Completely Comfortable

**How Much Knowledge Do You Have About Computers?**

1      2      3      4      5      6      7      8      9      10

No Knowledge

Extensive Knowledge

**On Average, How Many Hours Do You Use a Computer Each Week?** \_\_\_\_\_ hour(s)

Appendix O  
Mini Mental Status Exam

## Mini-Mental Status Exam

Participant Number \_\_\_\_\_ Date \_\_\_\_\_

### The Mini-Mental State Exam

Patient \_\_\_\_\_ Examiner \_\_\_\_\_ Date \_\_\_\_\_

Maximum      Score

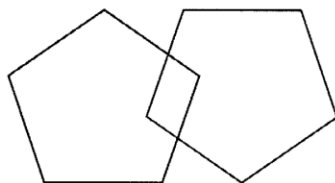
- |   |     |   |
|---|-----|---|
| 5 | ( ) | <b>Orientation</b>  |
| 5 | ( ) | What is the (year) (season) (date) (day) (month)?         |
|   |     | Where are we (state) (country) (town) (hospital) (floor)? |

- |   |     |   |
|---|-----|---|
| 3 | ( ) | <b>Registration</b>   |
|   |     | Name 3 objects: 1 second to say each. Then ask the patient            |
|   |     | all 3 after you have said them. Give 1 point for each correct answer. |
|   |     | Then repeat them until he/she learns all 3. Count trials and record.  |
|   |     | Trials _____  |

- |   |     |  |
|---|-----|--|
| 5 | ( ) | <b>Attention and Calculation</b>                                   |
|   |     | Serial 7's. 1 point for each correct answer. Stop after 5 answers. |
|   |     | Alternatively spell "world" backward.                              |

- |   |     |   |
|---|-----|---|
| 3 | ( ) | <b>Recall</b>   |
|   |     | Ask for the 3 objects repeated above. Give 1 point for each correct answer. |

- |   |     |  |
|---|-----|--|
| 2 | ( ) | <b>Language</b>  |
| 1 | ( ) | Name a pencil and watch.   |
| 3 | ( ) | Repeat the following "No ifs, ands, or buts"                           |
|   |     | Follow a 3-stage command:  |
|   |     | "Take a paper in your hand, fold it in half, and put it on the floor." |
| 1 | ( ) | Read and obey the following: CLOSE YOUR EYES                           |
| 1 | ( ) | Write a sentence.  |
| 1 | ( ) | Copy the design shown.   |



\_\_\_\_\_ Total Score  
 ASSESS level of consciousness along a continuum \_\_\_\_\_  
 Alert   Drowsy   Stupor   Coma

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"MINI-MENTAL STATE." A PRACTICAL METHOD FOR GRADING THE COGNITIVE STATE OF PATIENTS FOR THE CLINICIAN.  
*Journal of Psychiatric Research*, 12(3): 189-198, 1975. Used by permission.

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Appendix P  
Additional Services Form

**Additional Services Form for Participant Number \_\_\_\_\_**

Have you sought additional psychological services for depression. If yes, please circle all that apply.

1 = None

2 = Therapy in the Community

3 = Medication/Psychiatric Services in the Community (**when did this start?**)

4 = Combined Therapy and Medication Services in the Community

5 = Investigating Treatment Options

6 = Self-Care

7 = Group Meetings

8 = Continuing to Use Skills From the Computerized Treatment for Depression

9 = Other (Please Describe) \_\_\_\_\_

Appendix Q  
Universal Data Collection Form

## Data Collection Form for Participant Number \_\_\_\_\_

### *Demographic Information*

Date of Birth: \_\_\_\_\_ Age: \_\_\_\_\_  
 Race/Ethnicity: \_\_\_\_\_ Sex: \_\_\_\_\_  
 Marital Status: \_\_\_\_\_ Occupational Status: \_\_\_\_\_  
 Household Income: \_\_\_\_\_ Education Level: \_\_\_\_\_  
 Previous Treatment(s) for Depression: \_\_\_\_\_ Current Treatment(s) for Depression: \_\_\_\_\_  
 # of siblings: \_\_\_\_\_ live close Y N # of friends: \_\_\_\_\_ live close Y N  
 # of children: \_\_\_\_\_ live close Y N  
 Involved in church/community organization Y N Hospitalization over past year Y N

Current Psychotropic Medications (Enter Number in Each Category):

\_\_\_\_\_ SSRIs    \_\_\_\_\_ TCAs    \_\_\_\_\_ MAOIs    \_\_\_\_\_ SNRIs    \_\_\_\_\_ Atypical  
 \_\_\_\_\_ Antipsychotics    \_\_\_\_\_ Mood Stabilizers    \_\_\_\_\_ Anxiolytics

Number of Weeks on Antidepressant Medications: \_\_\_\_\_

Experience with Computers (Years): \_\_\_\_\_ Degree of Comfort with a Computer: \_\_\_\_\_  
 Knowledge About Computers: \_\_\_\_\_ Average Hours of Computer Use: \_\_\_\_\_

### *Beck Depression Inventory – II*

First Initial Assessment: \_\_\_\_\_

Second Assessment: \_\_\_\_\_

Session #1: \_\_\_\_\_

Session #2: \_\_\_\_\_

Session #3: \_\_\_\_\_

Session #4: \_\_\_\_\_

Session #5: \_\_\_\_\_

Session #6: \_\_\_\_\_

Session #7: \_\_\_\_\_

Session #8: \_\_\_\_\_

Session #9: \_\_\_\_\_

Session #10: \_\_\_\_\_

One-Week Follow-Up: \_\_\_\_\_

One-Month Follow-Up: \_\_\_\_\_

Three-Month Follow-Up: \_\_\_\_\_

### *Behavioral Activation for Depression Scale Subscales*

First Assessment: \_\_\_\_\_ Avoidance/Rumination    \_\_\_\_\_ Activation    \_\_\_\_\_ Social  
 Impairment

Second Assessment: \_\_\_\_\_ Avoidance/Rumination \_\_\_\_\_ Activation \_\_\_\_\_ Social Impairment

Session #1: \_\_\_\_\_ Avoidance/Rumination \_\_\_\_\_ Activation \_\_\_\_\_ Social Impairment

Session #2: \_\_\_\_\_ Avoidance/Rumination \_\_\_\_\_ Activation \_\_\_\_\_ Social Impairment

Session #3: \_\_\_\_\_ Avoidance/Rumination \_\_\_\_\_ Activation \_\_\_\_\_ Social Impairment

Session #4: \_\_\_\_\_ Avoidance/Rumination \_\_\_\_\_ Activation \_\_\_\_\_ Social Impairment

Session #5: \_\_\_\_\_ Avoidance/Rumination \_\_\_\_\_ Activation \_\_\_\_\_ Social Impairment

Session #6: \_\_\_\_\_ Avoidance/Rumination \_\_\_\_\_ Activation \_\_\_\_\_ Social Impairment

Session #7: \_\_\_\_\_ Avoidance/Rumination \_\_\_\_\_ Activation \_\_\_\_\_ Social Impairment

Session #8: \_\_\_\_\_ Avoidance/Rumination \_\_\_\_\_ Activation \_\_\_\_\_ Social Impairment

Session #9: \_\_\_\_\_ Avoidance/Rumination \_\_\_\_\_ Activation \_\_\_\_\_ Social Impairment

Session #10: \_\_\_\_\_ Avoidance/Rumination \_\_\_\_\_ Activation \_\_\_\_\_ Social Impairment

One-Week Follow-Up: \_\_\_\_\_ Avoidance/Rumination \_\_\_\_\_ Activation \_\_\_\_\_ Social Impairment

One-Month Follow-Up: \_\_\_\_\_ Avoidance/Rumination \_\_\_\_\_ Activation \_\_\_\_\_ Social Impairment

Three-Month Follow-Up: \_\_\_\_\_ Avoidance/Rumination \_\_\_\_\_ Activation \_\_\_\_\_ Social Impairment

### ***Geriatric Depression Scale***

First Initial Assessment: \_\_\_\_\_

Second Assessment: \_\_\_\_\_

Session #1: \_\_\_\_\_

Session #2: \_\_\_\_\_

Session #3: \_\_\_\_\_

Session #4: \_\_\_\_\_

Session #5: \_\_\_\_\_

Session #6: \_\_\_\_\_

Session #7: \_\_\_\_\_

Session #8: \_\_\_\_\_

Session #9: \_\_\_\_\_

Session #10: \_\_\_\_\_

One-Week Follow-Up: \_\_\_\_\_

One-Month Follow-Up: \_\_\_\_\_

Three-Month Follow-Up: \_\_\_\_\_

### ***Session Record Form***

Session #1: \_\_\_\_\_ Session Length \_\_\_\_\_ Time Spent

Session #2: \_\_\_\_\_ Session Length \_\_\_\_\_ Time Spent

Session #3: \_\_\_\_\_ Session Length \_\_\_\_\_ Time Spent

Session #4: \_\_\_\_\_ Session Length \_\_\_\_\_ Time Spent

Session #5: \_\_\_\_\_ Session Length \_\_\_\_\_ Time Spent

Session #6: \_\_\_\_\_ Session Length \_\_\_\_\_ Time Spent

Session #7: \_\_\_\_\_ Session Length \_\_\_\_\_ Time Spent

Session #8: \_\_\_\_\_ Session Length \_\_\_\_\_ Time Spent  
 Session #9: \_\_\_\_\_ Session Length \_\_\_\_\_ Time Spent  
 Session #10: \_\_\_\_\_ Session Length \_\_\_\_\_ Time Spent

***Session Evaluation Questions (Recorded on Computer)***

Session #1: _____	Interesting _____	Helpful _____	Encouraging _____
Session #2: _____	Interesting _____	Helpful _____	Encouraging _____
Session #3: _____	Interesting _____	Helpful _____	Encouraging _____
Session #4: _____	Interesting _____	Helpful _____	Encouraging _____
Session #5: _____	Interesting _____	Helpful _____	Encouraging _____
Session #6: _____	Interesting _____	Helpful _____	Encouraging _____
Session #7: _____	Interesting _____	Helpful _____	Encouraging _____
Session #8: _____	Interesting _____	Helpful _____	Encouraging _____
Session #9: _____	Interesting _____	Helpful _____	Encouraging _____
Session #10: _____	Interesting _____	Helpful _____	Encouraging _____

***Homework Completion Question (Recorded on Computer)***

Session #2: \_\_\_\_\_  
 Session #3: \_\_\_\_\_  
 Session #4: \_\_\_\_\_  
 Session #5: \_\_\_\_\_  
 Session #6: \_\_\_\_\_  
 Session #7: \_\_\_\_\_  
 Session #8: \_\_\_\_\_  
 Session #9: \_\_\_\_\_  
 Session #10: \_\_\_\_\_

***Average Consistency Score Across Ten Items of Valued Living Questionnaire (Recorded on Computer)***

Session #3: \_\_\_\_\_  
 Session #4: \_\_\_\_\_  
 Session #5: \_\_\_\_\_  
 Session #6: \_\_\_\_\_  
 Session #7: \_\_\_\_\_  
 Session #8: \_\_\_\_\_  
 Session #9: \_\_\_\_\_  
 Session #10: \_\_\_\_\_

***Mini Mental Status Examination***

First Assessment Score \_\_\_\_\_

***Quality of Life Scale***

Second Assessment: \_\_\_\_\_ Total \_\_\_\_\_ RMWB \_\_\_\_\_ HF \_\_\_\_\_ PSCC  
 One-Week Follow-Up: \_\_\_\_\_ Total \_\_\_\_\_ RMWB \_\_\_\_\_ HF \_\_\_\_\_ PSCC  
 One-Month Follow-Up: \_\_\_\_\_ Total \_\_\_\_\_ RMWB \_\_\_\_\_ HF \_\_\_\_\_ PSCC  
 Three-Month Follow-Up: \_\_\_\_\_ Total \_\_\_\_\_ RMWB \_\_\_\_\_ HF \_\_\_\_\_ PSCC

### ***Consumer Satisfaction Survey***

\_\_\_\_\_ Average of #1 - #15

### ***Additional Services Form***

One-Week Follow-Up: \_\_\_\_\_  
 One-Month Follow-Up: \_\_\_\_\_  
 Three-Month Follow-Up: \_\_\_\_\_

### ***Expectation for Improvement (%)***

Second Assessment \_\_\_\_\_  
 Treatment Session 1 \_\_\_\_\_  
 One-Week Follow-Up \_\_\_\_\_

### ***Credibility of Computerized Program***

Second Assessment  
     Question 1 How logical \_\_\_\_\_  
     Question 2 How successful \_\_\_\_\_  
     Question 3 Recommendation \_\_\_\_\_  
 Treatment Session 1  
     Question 1 How logical \_\_\_\_\_  
     Question 2 How successful \_\_\_\_\_  
     Question 3 Recommendation \_\_\_\_\_  
 One-Week Follow-Up  
     Question 1 How logical \_\_\_\_\_  
     Question 2 How successful \_\_\_\_\_  
     Question 3 Recommendation \_\_\_\_\_

### ***Qualitative Questions***

Question 1 Exemplars match \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Question 2 Values Domain match \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Question 3 Initial Tutorial helpfulness\_\_\_\_\_

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Question 4 Advantages/Disadvantages\_\_\_\_\_

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Question 5 Mini-lessons\_\_\_\_\_

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Appendix R  
Phase II Recruitment Flier

**Adults at least 55 years old Needed**

**Earn \$20 for 2.5 Hours**

**Give Back and Help Improve a Computer Treatment for Depression**

The Family and Pediatric Studies Laboratory of the Department of Psychology at Western Michigan University is seeking volunteers to participate in a research study investigating how a computerized treatment for depression can be tailored to better meet the needs of adults over 55 years of age.

**Location, time.**

Adults at least 55 years old Needed Earn \$20 for 2.5 hours Give Back and Help Improve a Computer Treatment for Depression Location, Time	Adults at least 55 years old Needed Earn \$20 for 2.5 hours Give Back and Help Improve a Computer Treatment for Depression Location, Time	Adults at least 55 years old Needed Earn \$20 for 2.5 hours Give Back and Help Improve a Computer Treatment for Depression Location, Time	Adults at least 55 years old Needed Earn \$20 for 2.5 hours Give Back and Help Improve a Computer Treatment for Depression Location, Time	Adults at least 55 years old Needed Earn \$20 for 2.5 hours Give Back and Help Improve a Computer Treatment for Depression Location, Time
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Appendix S  
Phase II Oral Recruitment Script

## **Recruitment Script**

We are looking for Adults who are at least 55 years old and are be interested in assisting us by giving us feedback on a computer treatment program.

We would like feedback on how we can make this treatment program better. This information you share will help us to better develop the program, so that when we use it in the future with those who are depressed it will be more useful. This will not be a treatment for depression only a set of questions about your experiences with going through the program.

It will take approximately 2.5 hours to go through the three non therapeutic sessions of the program, and fill out several measures that ask about your experience of the program.

This information will be used to better develop the program so that it may be used to help individuals struggling with depression in the future. You will also be compensated with \$20 for completion of this study.

Going through this program will not serve as treatment. We are not using this information to assess any symptoms you may be experiencing. The goal for this research is to understand how the program can be better tailored and developed.

Prior to going through the computer program you will be provided with a consent form for your own records.

You will not be able to be identified by the data you share with us.

You are free to withdraw from going through the program at any time for any reason.

You are welcome to contact the researchers with any questions or concerns you have, or you may contact their supervisors or the institutional review board.

Do you have any questions about the study, what you are expected to do, what we will be doing, or anything at all?

Appendix T  
Daily Waiting Sheet

Daily Session Schedule for \_\_\_\_/\_\_\_\_/\_\_\_\_ **Remove Tab**

Morning Sessions  
\_\_\_\_\_:\_\_\_\_\_

Research Study ____/____/____			Research Study ____/____/____
Time: _____:			Time: _____:
_____			_____

Midday Sessions  
\_\_\_\_\_:\_\_\_\_\_

Research Study ____/____/____			Research Study ____/____/____
Time: _____:			Time: _____:
_____			_____

Afternoon Sessions  
\_\_\_\_\_:\_\_\_\_\_

Research Study ____/____/____			Research Study ____/____/____
Time: _____:			Time: _____:
_____			_____

Appendix U  
Phase II Informed Consent Document

**Informed Consent Document  
Western Michigan University  
Department of Psychology**

**Principal Investigator:** Galen Alessi, PhD  
**Student Investigator:** Kellie Reynolds, MA  
**Title of Study:** Investigating barriers to recruiting older adults for computerized treatment research

You have been invited to participate in a research project titled "*Investigating barriers to recruiting older adults for computerized treatment research*." This project will serve as part of Kellie Reynolds's dissertation project for the requirements of the doctoral program in clinical psychology at Western Michigan University. This consent document will explain the purpose of this research project and will go over all of the time commitments, the procedures used in the study, and the risks and benefits of participating in this research project. Please read this consent form carefully and completely and please ask any questions if you need more clarification.

**What are we trying to find out in this study?**

We are trying to understand the barriers to acceptance of computerized psychological treatments. We would like to understand your experience with three non-therapeutic sessions of a computer program designed to treat depression.

**Who can participate in this study?**

This study is open to all adults 55 years of age or older.

You are not being invited to participate because of your personal experience or lack of experience with depression.

You can only participate once. Individuals who are blind, or who have been diagnosed with cognitive impairment, are not eligible to participate.

**Where will this study take place?**

This study will take place at the communal area of a retirement community or senior center. Specifically, you will sit at this table, with paper surveys and a laptop computer, for the two and half hour duration of this study.

**What is the time commitment for participating in this study?**

This study will take around two and a half hours of your time. We will meet once for this study.

1. 10 minutes of surveys.
2. Three 35-minute sessions of a computerized depression treatment. This will not serve as a treatment for depression. Instead, you will be asked to focus on the experience of using the program.
3. Another 25 minutes of surveys.
4. After completion of the study, you will be given \$20 compensation.

**What will you be asked to do if you choose to participate in this study?**

First, you will be asked to read this consent document. Then, you will complete a demographics survey, and a survey asking about your opinions of computerized psychological treatments. Next,



you will complete three 35-minute sessions of a computerized depression treatment. You will be asked to respond to the computer program as if you are not yourself. Headphones will be provided. Then, you will be asked for your detailed opinion about the sample sessions. Next, you will be asked to repeat the earlier survey about your general opinions about computerized psychological treatments. Then, you will be asked to complete a survey about how easy it seemed from the video to use the sample program. Lastly, you will be given \$20 compensation.

**What information is being measured during the study?**

You will be asked about your demographics, such as age and level of education. You will also be asked about your opinion regarding the sessions of the program you will have completed. You will also be asked about the process you use to seek medical and psychological treatments. Finally you will be asked how easy it seemed to use the program.

**What are the risks of participating in this study and how will these risks be minimized?**

There are a few potential risks to you as a participant.

Some of the questions you will be asked could be personal and you are free to refuse to answer any question.

The program you will be asked to interact with will be talking about treating depression. This may or may not be potentially upsetting to you. All participants will be given a list of local mental healthcare providers if you wish to follow up with someone.

You are free to withdraw from this study at any time if you become uncomfortable.

You will be asked to complete 35 minutes of surveys, and that may be experienced as frustrating. There are surveys before and after you interact with the computer program, so as to provide you with a break from writing.

You may be sitting for several hours, so you have been provided with a padded chair and will be given three opportunities to stand up and walk around.

**What are the benefits of participating in this study?**

There is no direct benefit to you as a participant in this study.

This research is aimed at figuring out how to make it easier for people to get access to treatments that work, and making those treatments more appealing to people.

You would be helping us work towards this goal, which may benefit others in the future.

**Are there any costs associated with participating in this study?**

The only cost to you for participating in this study is your time.

**Is there any compensation for participating in this study?**

For completion of the study, you will be given \$20.

**Who will have access to the information collected during this study?**

The only individuals who will have access to this study's data are the principle and student investigators. You will not be identifiable by the data collected by this study, and all data collected will be treated as confidential.

The results of this study may be published in academic journals or presented at academic conferences. It will not be possible to identify any single individual from these presentations, reports, or the data.

**What if you want to stop participating in this study?**

You can choose to stop participating in the study at anytime for any reason, by letting the researcher know you wish to stop participating. There are no negative consequences if you choose to withdraw from this study.

The investigator may also decide to stop your participation in the study without your consent.

**What if I have problems or questions?**

Should you have any questions prior to or during the study, you can contact the primary investigator, Galen Alessi at 269-387-4470 or Galen.Alessi@WMich.edu, or the student researcher, Kellie Reynolds at 269-387-4456. You may also contact the Chair of the Human Subjects Institutional Review Board at 269-387-8293 or the Vice President for Research at 269-387-8298 if questions arise during the course of the study.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB) as indicated by the stamped date and signature of the board chair in the upper right corner. Do not participate in this study if the stamped date is older than one year.

PARTICIPATING in this study indicates **your** consent for the use of the answers you supply.

-----

I have read this informed consent document. The risks and benefits have been explained to me. I agree to take part in this study.

I agree to participate in this study.

Yes

No

Appendix V  
Phase II Demographic Survey

## Demographics Information Form for Participant Number \_\_\_\_\_

**Age:** \_\_\_\_\_

**Race/Ethnicity:**

1 = Caucasian/White      2 = African-American      3 = Hispanic/Latino

4 = Asian-American                      5 = Native American                      6 = Arab-American

7 = Alaskan American 8 = Multiracial \_\_\_\_\_

9 = International / Non-US Resident \_\_\_\_\_

10 = Other \_\_\_\_\_

**Sex:**

1 = Male                      2 = Female

**Marital Status:**

1 = Single                      2 = Married                      3 = Domestic Partnership

4 = Engaged                      5 = Separated                      6 = Divorced or Annulled

7 = Widowed                      8 = Other \_\_\_\_\_

**Occupational Status:**

1 = Currently Employed      2 = Unemployed      3 = On Disability

4 = Stay at Home Parent      5 = Retired      6 = Other \_\_\_\_\_

**Household Income:**

1 = Under \$5,000                      2 = \$5,000 - \$9,999                      3 = \$10,000 - \$14,999

4 = \$15,000 - \$24,999      5 = \$25,000 - \$34,999      6 = \$35,000 - \$49,999

7 = \$50,000 - \$74,999      8 = \$75,000 - \$99,999      9 = \$100,000 and over

**Education Level:**

- 1 = Less than 7<sup>th</sup> Grade      2 = 7<sup>th</sup> – 12<sup>th</sup> Grade (Did Not Graduate)      3 = Graduated High School
- 4 = GED      5 = Some College      6 = Graduated 2-Year College or Technical School
- 7 = Graduated 4-Year College      8 = Some Graduate School      9 = Graduate Degree (e.g. Ph.D., M.A., M.D.)

**Physical Status:**

How would you rate your degree of physical ability (circle below)?

0(no ability)   1   2   3   4   5(moderate ability)   6   7   8   9   10(very mobile)

Do you have any physical impairment, if so please list(s): \_\_\_\_\_

How would you rate your degree of sensory ability (circle below)?

**Hearing**

0(no hearing)   1   2   3   4   5(moderate hearing)   6   7   8   9   10(full hearing)

**Vision**

0(no vision)   1   2   3   4   5(moderate vision)   6   7   8   9   10(full vision)

**Touch/Balance**

0(no sensation)   1   2   3   4   5(moderate sensation)   6   7   8   9   10(full sensation)

**Smell/Taste**

0(no smell/taste)   1   2   3   4   5(moderate smell/taste)   6   7   8   9   10(full smell/taste)

**How Many Years of Experience Do You Have With Computers?** \_\_\_\_\_ year(s)

**How Comfortable Are You With a Computer?**

1   2   3   4   5   6   7   8   9   10

Completely Uncomfortable

Completely Comfortable

**How Much Knowledge Do You Have About Computers?**

1      2      3      4      5      6      7      8      9      10

No Knowledge

Extensive Knowledge

**On Average, How Many Hours Do You Use a Computer Each Week?** \_\_\_\_\_ hour(s)

**Do you use the computer for (Check all that apply):**

1 = Email

2 = Facebook

3 = Writing

4 = Skype / Video Chat

5 = Other \_\_\_\_\_

Appendix W  
Phase II Credibility and Expectancy Form

**Expectancy for Improvement and Credibility  
Before Program Introduction Part A**

Participant Number \_\_\_\_\_ Date \_\_\_\_\_

**Please rate questions 1-3 below on the scale provided.**

1. How logical does a computerized treatment for depression seem to you?

1	2	3	4	5	6	7	8	9
Not at All				Somewhat			Completely	

2. How confident would you be that a computer treatment will be in improving mood?

1	2	3	4	5	6	7	8	9
Not at All				Somewhat			Completely	

3. How confident would you be in recommending a computer treatment to a friend who is dissatisfied with their mood?

1	2	3	4	5	6	7	8	9
Not at All				Somewhat			Completely	

4. Please provide a percentage from 0-100% of how effective you think a computer treatment would be in improving mood \_\_\_\_\_.



**Expectancy for Improvement and Credibility  
After Program Introduction Part B**

Participant Number \_\_\_\_\_ Date \_\_\_\_\_

**Please rate questions 1-3 below on the scale provided.**

1. How logical does the program you just saw seem to you?

1	2	3	4	5	6	7	8	9
Not at All				Somewhat			Completely	

2. How confident would you be that the program you just saw would be successful in improving the mood of others?

1	2	3	4	5	6	7	8	9
Not at All				Somewhat			Completely	

3. How confident would you be in recommending the program you just saw to a friend who was struggling with their mood?

1	2	3	4	5	6	7	8	9
Not at All				Somewhat			Completely	

4. Please provide a percentage from 0-100% of how much improvement in mood you believe you may experience as a result of going through the program. \_\_\_\_\_

Appendix X  
Phase II Qualitative Survey

## Qualitative Survey

Participant Number \_\_\_\_\_ Date \_\_\_\_\_

1. Please describe the steps you would take if you needed to select a healthcare provider?
2. How would you know if you needed to seek a healthcare provider?
3. What types of providers would you consider to start to address healthcare problems?





11. What parts of the program seem too simple or too complex? Please explain.

Too Simple

Too Complex

12. Can you relate to the people in the video program (therapists, patients, and narrator)? Please explain.

13. What would you say about the quality of the audio, video, and text?

14. If you had depression, is the program something you would like to use yourself or recommend to a friend. If not, how do you believe it would be better? Please Explain.

15. From your view, please describe both the benefits and the drawbacks of the computer program's user interface (aspects of computer technology)?

Benefits

Drawbacks

16. From your view, please describe both the benefits and the drawbacks of the treatment "Building a Meaningful Life through Behavioral Activation"?

Strengths

Limitations

Appendix Y  
Product Usability Survey



### Product Usability Survey

Participant Number: \_\_\_\_\_

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

Please read the statements and circle the response that best reflects your opinion. You will be asked about your opinion of the computer program and your opinion of behavioral activation as a treatment.

**User Interface** is defined as the means by which the user and a computer system interact, such as the mouse, the keyboard, the images on the monitor, and the sounds from the speakers.

1. I think that the computer program's user interface would be *useful* for older adults who are depressed.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

2. I think that the treatment "Building a Meaningful Life through Behavioral Activation" would be *useful* for older adults who are depressed.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

3. I found the computer program's user interface *unnecessarily complex*.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

4. I found the treatment "Building a Meaningful Life through Behavioral Activation" *unnecessarily complex*.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

5. I thought the computer program's user interface was *easy to use*.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

6. I thought the treatment "Building a Meaningful Life through Behavioral Activation" *was easy to use*.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

7. I think that I would *need the support of a technical person* to be able to use the computer program's user interface.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

8. I think that I would *need the support of a healthcare provider* to be able to use the treatment "Building a Meaningful Life through Behavioral Activation".

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

9. I found the various features in the computer program's user interface were *well organized*.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

10. I found the various features in this treatment “Building a Meaningful Life through Behavioral Activation” were *well organized*.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

11. I thought there was *too much inconsistency* in the computer program’s user interface.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

12. I thought there was *too much inconsistency* in this treatment “Building a Meaningful Life through Behavioral Activation”.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

13. I would imagine that most people would *learn to use* the computer program’s user interface *very quickly*.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

14. I would imagine that most people would *learn to use* this treatment “Building a Meaningful Life through Behavioral Activation” *very quickly*.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

15. I felt *very confident using* the computer program's user interface.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

16. I felt *very confident about my understanding* of the treatment "Building a Meaningful Life through Behavioral Activation".

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

17. I would need to *learn a lot* of things *before I could start to use* this computer program's user interface.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

18. I would need to *learn a lot* of things *before I could start to use* this treatment "Building a Meaningful Life through Behavioral Activation".

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

19. *It was clear how to answer the assessment questions* using the computer program's user interface.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

20. *I found the content of the treatment* “Building a Meaningful Life through Behavioral Activation” to be *easy to understand*.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

21. I found it *effortless to navigate through the computer program*’s user interface.

1	2	3	4	5
Strongly Disagree		Neither Agree/Disagree		Strongly Agree

Appendix Z  
Instruction Sheet for Participants

**Instructions**

“Going through the program today your goal is to thoughtfully evaluate this computer program and treatment, and you will be asked to answer surveys regarding your experience using the program.”

“You are NOT being treated by the program and should answer the questions it poses as if you are someone else. Please do NOT answer truthfully.”

“The computer program asks you several times if you are suicidal, say no.”

“If you are unclear about anything related to the computer program, what you are supposed to do, or the study in general, please ask the computer administrator.”

Appendix AA  
Computer Administrator Job Aid with Scripts



## Computerized Treatment Administrator Job Aid

\_\_1. Gather participant packet, ensure that all measures are included in packet: Qualitative Survey, Program Usability Survey, Recruitment Daily Waiting sheet, Credibility and Expectancy part A & B, Card-board divider, table, 4 padded chairs the demographics form, and data envelop.

\_\_2. Bring screen magnifier for individuals who report vision impairment on the demographics survey.

\_\_3. Bring and set up the Recruitment Daily Waiting Sheet from Appendix O. so that interested individuals can sign up for time slots later in the day. You will be ripping off the tabs.

\_\_4. Setup the laptop so that the participant can begin at session 1 of the BAML program. Do this by placing their participant number in as Username and Password. We do not want their identifying information in this portion only their participant number.

\_\_5. **Greet** the potential participant and ask potential participants inclusion questions regarding their age, blindness, and cognitive impairment.

*“Are you over the age of 55?”*

*Are you legally blind, where you couldn’t read the computer screen?*

*Has a doctor diagnosed you with dementia or severe cognitive impairment?”*

\_\_6. and ask them to read **the consent form** and respond to the question on the last page.

If the potential participant does not appear to be reading the consent form, prompt them to read or ask if they need clarification.

If the potential participant refuses to participate in the consent process or refuses consent following participation in the consent process say:

*“You have refused to consent to participate in this study. Thank you very much for your time, have a great day.”*

\_\_7. Fold then tear or use scissors to collect the circled proof of consent. Provide them with the rest of the consent document for their records. Place the circled and filled out consent sheet into the data envelop.

\_\_8. Remind the participant that they are not to put their name on any forms that they complete. And that they do not have to answer any questions they do not want to. Say:

*“Please do not put your name on any of the forms. You do not have to answer questions that you do not want to answer.”*

\_\_9. Politely remind the participant that you are available for any questions they have about the surveys, computer program, and study in general. Encourage them to ask.

Say:

*"I will be available for any questions you have about the survey, computer program, and the study in general. Please let me know if any questions come up and I will assist you."*

\_\_10. Administer the **demographics survey**. Double check to make sure that it is completely filled out. If they skipped any ask if this was intentional if not have them fill it out.

\_\_11. Administer the first (pre) portion of the **expectancy for improvement** and credibility form.

\_\_12. Provide the participant with **the instructions** in Appendix L. Read through the instructions for them once.

*Say: "Your goal is to thoughtfully evaluate this computer program and treatment, and you will be asked to answer surveys regarding your experience using the program."*

*"You are NOT being treated by the program and should answer the questions it poses as if you are someone else. Please do NOT answer truthfully."*

*"The computer program asks you several times if you are suicidal, say no."*

*"If you are unclear about anything related to the computer program, what you are supposed to do, or the study in general, please ask the computer administrator."*

*It will ask you questions about your mood, answer however you would like.*

*It will ask you questions about homework, and if you were going through this as treatment, you would have done the homework, but just pretend you had when responding to those questions.*

\_\_13. Orient the participant to the BAML program, and remind them that if they have any questions while going through the program you are available to help them. Tell them to begin going through the program. Say:

*In fact it will ask you to hit a print button, click the button nothing will happen, and then you can click continue".*

Once programs starts... Say

*"How is the volume?"*

\_\_14. Sit in the chair next to the participant.

\_\_15. At the end of each session of the computer program, prompt the participant to walk around if they would like to stretch their legs. The participant should be prompted three times total.

*Say: "We need to reset the computer program, and it will take about 5-10 minutes. Please stretch your legs, walk around, get a drink, and I'll see you in a few minute ."*

\_\_16. When they have completed the three non therapeutic sessions of the program, administer the second portion of the **expectancy for improvement and credibility form**.

Say: *“The next two assessments are the most important to us, and we need your feedback.*

*Please respond honestly and critically about the program.*

*If there are things you like please mention them.*

*If there are things you did not like please mention them.*

*If you have an idea for improvement, please mention it.*

*Please take your time filling this out and elaborate.”*

\_\_17. Administer the **Qualitative Survey**.

\_\_18. Administer the **Program Usability Scale**.

\_\_19. Thank the participant for coming in, and provide them with **\$20**.

\_\_20. Give all participants **the referral list**.

*Say: “Some of the material you have encountered today could be disconcerting or troubling. All participants are given this list of medical and mental health providers in the Kalamazoo area in case you would like to follow-up with a professional.”*

\_\_21. Ensure that all forms have **the participant number** at the top of them. The participant number is the next available slot on the participant number list in Appendix K

\_\_22. Place all the participant’s data into sealed envelope.

\_\_23. Return to WMU for data storage.

\_\_24. Create four new participant accounts at session 1 for the next data collection session.

\*The next page contains instructions for trouble shooting issues that may arise as participants go through the program.

## **Troubleshooting**

1. There is a chance that a participant may come up to you because they have a computer screen that reads the following:

“One of your responses indicated that a supervisor needs to speak to you briefly. Please contact someone from the staff to continue.

Administrator Username:

Administrator Password:”

If the participant gets this screen enter the Username “admin” and Password “password”.

2. If the participant forgets his or her password, go to the following website “baserver/admin/default.aspx”. Then enter the username “admin” and the password “password”. When the first screen comes up, enter the participant’s first and last name to get the password.

Appendix AB  
Referral List

## **MEDICAL AND MENTAL HEALTH SERVICE PROVIDERS REFERRAL SOURCES FOR PARTICIPANTS**

### **Medical Services**

Borgess Medical Center – (269)-226-7000

Bronson Methodist Hospital – (269) 341-7654

### **Psychological Services**

Borgess Outpatient Mental Health Services – (269) 226-5600

Borgess Geriatric Assessment Center – (269) 226-7133

Bronson Health Neuroscience Care – (269) 341-7723

Neuropsychology Associates – (269) 375-2222

Sandra Bowker and Associates – (269) 343-3010

The Psychology Clinic at Western Michigan University (sliding fee scale) – (269) 387-8302

Douglass Community Association – (269) 343-6185

Catholic Family Services – (269) 381-9800

Appendix AC  
Duration for Phase I

### **Duration of phase I**

Below is the listed time lengths of sessions for participants.

Baseline Session 1 – 60 Minutes  
 Informed Consent – 20 Minutes  
 Demographics Information Form – 20 Minutes  
     BDI-II – 5 Minutes  
     BADs – 5 Minutes  
     GDS – 5 Minutes  
     MMSE – 15 Minutes  
 Additional Services Form – 1 Minute  
 Baseline Session 2 – 21 Minutes  
     BDI-II – 5 Minutes  
     BADs – 5 Minutes  
     GDS – 5 Minutes  
     QOLS – 5 Minutes  
 Additional Services Form – 1 Minute  
 Credibility and Expectancy Form – 1 Minute  
 Treatment Session 1 – 82 Minutes in-session + 60 Minutes out of session  
     BDI-II – 5 Minutes  
     BADs – 5 Minutes  
     GDS – 5 Minutes  
 Additional Services Form – 1 Minute  
 Treatment Tutorial – 5 Minutes  
 Credibility and Expectancy Form – 1 Minute  
 Treatment – 45-60 Minutes  
 Out of Session Homework – 60 Minutes  
 Treatment Session 2 – 77 Minutes in-session + 60 Minutes out of session  
     BDI-II – 5 Minutes  
     BADs – 5 Minutes  
     GDS – 5 Minutes  
 Homework Completion – 1 Minute  
 Additional Services Form – 1 Minute  
 Treatment – 45-60 Minutes  
 Out of Session Homework – 60 Minutes  
 Treatment Session 3 – 10 – 8 Sessions = 616 Minutes in-session + 480 Minutes out of session  
     BDI-II – 5 Minutes  
     BADs – 5 Minutes  
     GDS – 5 Minutes  
 Homework Completion – 1 Minute  
 VLQ – 10 Minutes  
 Additional Services Form – 1 Minute  
 Treatment – 35-50 Minutes  
 Out of Session Homework – 60 Minutes  
 Follow-up 1 Week – 52 Minutes  
     BDI-II – 5 Minutes  
     BADs – 5 Minutes



GDS – 5 Minutes  
 QOLS – 5 Minutes  
 Additional Services Form – 1 Minute  
 Qualitative Survey – 15 Minutes  
 Credibility and Expectations Form – 1 Minute  
 Consumer Satisfaction Survey - 15 Minutes  
 Follow-up 1 Month – 21 Minutes  
     BDI-II – 5 Minutes  
     BADS – 5 Minutes  
     GDS – 5 Minutes  
     QOLS – 5 Minutes  
     Additional Services Form – 1 Minute  
 Follow-up 3 Months – 21 Minutes  
     BDI-II – 5 Minutes  
     BADS – 5 Minutes  
     GDS – 5 Minutes  
     QOLS – 5 Minutes  
     Additional Services Form – 1 Minute  
 Overall Duration engaged in Study Sessions: 941 Minutes Total = 15.68 Hours  
 Overall Duration engaged in Out of Session Homework: 600 Minutes Total = 10 Hours  
 Overall Duration engaged in Study Activities: 1541 Minutes = 25.68 hours  
 Overall Duration enrolled as Participant: 4 Weeks max in Baseline, 12 Weeks max in Treatment,  
 12 Weeks in the Follow up phase: 7 Months total.

Appendix AD  
Duration for Phase II

**Duration of phase II.**

1. Consent Procedure – 5 to 10 minutes.
2. Demographics Survey – 10 minutes.
3. Expectancy and Credibility Survey – 1 minute.
4. Three non-therapeutic sessions of computer program – 105 minutes.
5. Three prompts for breaks following each 35-minute session – 12-15 minutes
6. Qualitative Survey – 10 to 15 minutes.
7. Expectancy and Credibility Survey – 1 minute.
8. Product Usability Survey – 5 minutes.

Appendix AE  
Human Subjects Institutional Review Board Approval Letter for Phase I

## WESTERN MICHIGAN UNIVERSITY



Human Subjects Institutional Review Board

Date: January 29, 2014

To: Galen Alessi, Principal Investigator  
Kellie Reynolds, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number 13-12-13

This letter will serve as confirmation that your research project titled "A Pilot Investigation of the Effects of a Computerized Behavioral Activation Treatment for Depression in Older Adults" has been **approved** under the **full** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may **only** be conducted exactly in the form it was approved. You must seek specific board approval for any changes in this project (e.g., ***you must request a post approval change to enroll subjects beyond the number stated in your application under "Number of subjects you want to complete the study."*** Failure to obtain approval for changes will result in a protocol deviation. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

**Reapproval of the project is required if it extends beyond the termination date stated below.**

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

**Approval Termination: December 18, 2014**

Appendix AF  
Human Subjects Institutional Review Board Approval Letter for Phase II

## WESTERN MICHIGAN UNIVERSITY



Human Subjects Institutional Review Board

Date: August 24, 2015

To: Galen Alessi, Principal Investigator  
Kellie Reynolds, Student Investigator for dissertation  
Michael Reynolds, Student Investigator

From: Daryle Gardner-Bonneau, Ph.D., Vice Chair

Re: HSIRB Project Number 15-05-36

This letter will serve as confirmation that your research project titled "Investigating Barriers to Recruiting Older Adults for Computerized Treatment Research" has been **approved** under the **expedited** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may **only** be conducted exactly in the form it was approved. You must seek specific board approval for any changes in this project (e.g., *you must request a post approval change to enroll subjects beyond the number stated in your application under "Number of subjects you want to complete the study."*) Failure to obtain approval for changes will result in a protocol deviation. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

**Reapproval of the project is required if it extends beyond the termination date stated below.**

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

**Approval Termination: August 23, 2016**

1903 W. Michigan Ave., Kalamazoo, MI 49008-5456  
PHONE: (269) 387-8293 FAX: (269) 387-8276  
CAMPUS SITE: 251 W. Walwood Hall