LONELINESS AND SELF-EFFICACY: AN ONLINE MINDFULNESS-BASED STRESS REDUCTION INTERVENTION FOR OLDER ADULTS WITH CARDIOVASCULAR DISEASE

by

CHRISTI PERRY HARDEMAN

(Under the Direction of Orion Mowbray)

ABSTRACT

Cardiovascular disease (CVD) is the most widespread, costliest, yet preventable chronic health condition in the U.S. Reports show the national statistics of CVD related deaths outnumber deaths from all other chronic health conditions and are disproportionately seen among older adults. Previous research suggests that loneliness is directly linked to inflammation which significantly increases the risk for developing CVD. Previous intervention studies demonstrated that mindfulness-based stress reduction (MBSR) programs decrease loneliness among healthy populations, but few studies employed a MBSR intervention to decrease loneliness and improve self-efficacy among older adults with CVD. This pilot study, utilized a one group pretest posttest pre-experimental design, to assess the feasibility and test whether an online MBSR intervention can impact loneliness and self-efficacy among older adults age 50 and older who are diagnosed with CVD. A sample of older adults (N=25) participated in the online MBSR either exclusively online (*n*=5) or in an assisted living facility (*n*=20). All participants were required to complete questionnaires and view videos for at least 60 minutes with optional meditation and readings. Results indicated the average video viewing times (87 minutes) with little to no

meditation and reading. The univariate analyses, paired sample *t*-tests, and one-way analysis of variance conducted on the pre/post outcomes measures of loneliness and self-efficacy were not statistically significant. Future research should continue to assess the feasibility by exploring the essential treatment components and dosage for an effective MBSR intervention as well as various platforms for implementation in order to enhance acceptability of such programs targeting older adults with CVD.

INDEX WORDS: Cardiovascular, CVD, Mindfulness-based stress reduction, MBSR, Loneliness, Self-efficacy, Older adults, Intervention

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DEDICATION

This dissertation is dedicated in loving memory of my father, *Thomas V. Perry*, who instilled in me the abilities needed throughout this journey. He was my father, friend, coach, and biggest fan in life! He inspired me through his generosity and leadership to always strive for excellence with a spirit that "never quits"!

I also dedicate this dissertation to my husband and daughter.

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CHAPTER 1

INTRODUCTION

Background

Chronic Health Conditions

As a person ages, the risk for one or more chronic health conditions increases (Joseph & Bronshtein, 2016; Kaeberlein, 2015). With the projected expansion of the older adult population, more Americans age 65 and older will be diagnosed with at one or more chronic conditions. By 2020, the population of older Americans will increase by 16 million, totaling 48% of the U.S. population, with the equivalency of approximately 81 million diagnosed with multiple chronic conditions (MCC) (Milani & Lavie, 2015). Unfortunately, this increase in MCC among older adults continues, despite advances in medical health care and research that allow people to live longer. Thus, practitioners and researchers lack success in preventing the accumulation of chronic health conditions during aging, resulting in people who live longer, but often suffer more frequently in later life (Joseph & Bronshtein, 2016; Kaeberlein, 2015).

By 2030, it is projected that 80% of older Americans will be diagnosed with at least one chronic health condition (Vasilopoulos et al., 2014). Data gathered from Wave 2 of National Social Life Health and Aging Project (NSHAP) revealed results consistent with the National Health Interview Survey (NHIS) and Center for Disease Control and Prevention (CDC) reports indicating that the leading causes of mortality in older adults as chronic health conditions that include cardiovascular disease (CVD) (31.8%), cancer (21.6%), stroke (7.9%), chronic respiratory diseases (6.0%), Alzheimer's disease (3.2%), diabetes (3.0%), and kidney disease

(1.9%) (Vasilopoulos et al., 2014). Additional research indicates the most reported chronic health conditions as CVD, hypertension, arthritis, cancer, and diabetes with older adults aged 70-90 possessing a higher prevalence of cardiovascular conditions (17-22%) (NSHAP, 2013; Rillamas-Sun et al., 2016; Vasilopoulos et al., 2014). Furthermore, the CDC reports that the prevalence of CVD disproportionately affects racial groups with significant differences found in CVD among individuals who are Black/African American as compared to all other racial groups (Bauer, Briss, Goodman, & Bowman, 2014; CDC, 2016; CMS, 2012).

Cardiovascular Disease

The chronic health condition focused on in this pilot study was CVD among older adults age 50 and older. CVD refers to a group of heart and blood vessel diseases that create conditions which affect heart function including coronary heart disease (CHD), congestive heart failure (CHF), stroke, atrial fibrillation (AFib), heart attack, heart failure, arrhythmia, heart valve problems, and other cardiovascular and metabolic diseases (AHA, 2017; Mozaffarian et al., 2016; Wedro & Davis, 2016; World Health Organization, 2017). Since 1920, CVD has been the leading cause of death in the U.S. and worldwide (AHA, 2017; Melynk, Zaleski, & Taylor, 2014; Mozaffarian et al., 2016; Robbins, Dietz, Bombard, Gibbs, Ki, & Valderrama, 2011; Villablanca et al., 2009; WHO, 2017a). The National Center for Health Statistics (NCHS) report annual deaths from CVD outnumber deaths from other chronic health conditions including cancer, chronic lower respiratory disease, and diabetes combined (Nes & Sawatzky, 2010). Furthermore, CVD is considered the most widespread, costliest, yet most preventable chronic disease in the U.S., and over the next several decades is expected to increase in costs that surpass other chronic diseases, such as diabetes and Alzheimer's (AHA, 2017; Nes & Sawtzky, 2010).

In 2016, CVD cost the U.S. $555 billion and is projected to cost $1.1 trillion by 2035 (AHA, 2017).

The 2016 American Health Association (AHA) update reported the overall U.S. mortality rates attributable to CVD as 222.9 per 100,000 Americans with 269.8 for males and 184.8 for females. This update reported the CVD mortality rates according to race and gender as follows: White males (270.6); Black males (356.7); Hispanic males (197.4); White females (183.8); Black females (246.6); and Hispanic females (136.4) (AHA, 2016). Additionally, reports state that from 2003 to 2013 CVD mortality rates declined by 28.8%, but CVD remained at 30.8% of all deaths in the U.S., equal to one death every 40 seconds. (Mozaffarian et al., 2016). Based on this data, by 2035, "CVD costs will more than triple among those 80 years and older and more than double among those age 65 to 79" (Mozaffarian et al., 2016, p. 10). Moreover, CVD disparities among older Americans are disproportionately seen among racial groups, and are affected by factors such as income, education, access to health care, and social support (AHA, 2017). Further AHA (2017) projections indicate that "in the next two decades, Black Americans will have the highest rates of CVD" (p. 9).

Similarly, racial disparities among older adults project medical costs of CVD for Black and Hispanic adults to surpass costs of White adults over the next two decades. Gender disparities of CVD among women in the U.S. are on the rise and projected to grow disproportionately surpassing men by 2035 (AHA, 2017). In fact, just as CVD is the number one killer among all Americans, CVD is also the leading cause of death among American women (Melynk et al., 2014; Robbins et al., 2011; Villablanca et al., 2009). The Women's Health division of the United States Department of Health and Human Services (DHHS-OWH) reported the CVD mortality rate for women as 172.3 out of 100,000 (as cited in Villablanca et al., 2010).

Subsequently, women as compared to men have "higher stroke mortality, higher morbidity after a heart attack, lower awareness of CVD, and a higher prevalence of risk factors for CVD"; and 42% who experience a heart attack die within one year as compared to 24% of men (AHRQ, 2012; Villablanca et al., 2010, p. 1313).

Health behavior and risk factors related to chronic health conditions. Given the high prevalence and disparities of CVD in the U.S., the AHA (2017) advocates for prevention efforts which are beneficial in reducing healthcare costs and promoting wellbeing and quality of life among older adults and the nation at large. Therefore, rather than treatment efforts, prevention efforts are examined in relation to healthy versus unhealthy behaviors and risk prevention efforts. The most common health behaviors linked to chronic health conditions include lack of physical activity, poor nutrition, tobacco use and excessive alcohol consumption (CDC, 2107; CDC, 2015; National Center for Chronic Disease Prevention and Health Promotion, 2009). Health behavior factors linked to prevention of chronic health conditions include the following: (1) early detection efforts, screenings, and management; (2) regular checks of blood pressure, glucose, and cholesterol levels; and (3) social determinants including availability and access (e.g., high quality education, nutritious food, decent and safe housing, affordable and reliable public transportation, culturally sensitive health care providers, health insurance, clean water, and non-polluted air) and psychosocial components (e.g., loneliness, social isolation versus social engagement, social support, coping styles, etc.) (AHA, 2017; CDC 2017; CDC, 2015; Healthy People, 2017; National Center for Chronic Disease Prevention and Health Promotion, 2009).

The World Health Organization (WHO) (2005) states the major causes of chronic health conditions and diseases are known. Consequently, the WHO suggests that if these known risks were eliminated, at least 80% of CVD, stroke, and type 2 diabetes would be prevented and over

40% of cancers would be prevented. Research demonstrates that theory guided health promotion or prevention interventions are the most effective way to "explain, predict, and improve the self-regulation of individuals and to optimize treatment" for chronic health conditions (Schwarzer, Lippke, & Luszczynska, 2011). The research further recommends that effective, theory-based interventions for older adults with chronic health conditions should help with the management of barriers (Schwarzer et al., 2011). Barriers such as the psychosocial component of loneliness, significantly found among older adults with chronic health conditions, and the lack of self-efficacy related to goal setting and motivation are addressed in this pilot study (Courtin & Knapp, 2015; Creswell et al., 2012; Hagan, Manktelow, Taylor, & Mallett, 2014; Hawkley, Thisted, Masi, & Cacioppo, 2010; Russell, Peplau, & Cutrona, 1980). Therefore, with the disproportionate older adult population accounting for the wealth of healthcare costs in the U.S., theory-based interventions, such as this pilot study which includes efforts to increase education and awareness, provide equity of resources, and help manage existing chronic conditions to prevent further morbidity would fill the knowledge gap and contribute to existing intervention research.

Loneliness

Previous research identifies both loneliness and social isolation as significant risk factors for increased morbidity and mortality of chronic health conditions among older adults and even more specifically among older adults diagnosed with CVD (Courtin & Knapp, 2015; Creswell et al., 2012; Hagan et al., 2014; Hawkley et al., 2010; Russell, et al., 1980). The prevalence of loneliness among older adults age 55 and older reveal 32% report feeling lonely with 5% to 7% reporting intense or persistent loneliness (Hawkley et al., 2010). Older adults that are socially isolated also report loneliness, but social isolation is not synonymous to loneliness. Loneliness is

defined as “a state of distress that arises when there is a discrepancy between one’s desired and actual social relationships” (Creswell et al., 2012, p. 1095). Even though the amount of relationships are important, the actual quality of each relationship is what research links closely to loneliness (Hawkley et al., 2010). In a systematic review, Courtin and Knapp (2015) found that the literature extends the definition of loneliness as related to “unfulfilled intimate and social needs" (p. 802). Whereas, social isolation is defined as the lack of engagement or “knowing relatively few people who are probable sources of rewarding exchanges” (Hagan et al., 2014, p. 683). Thus, loneliness and social isolation significantly impact older adults who are more likely to experience deaths of spouses and relatives, decreased financial and functional capacity, limited mobility, and one or more chronic health conditions (Creswell et al., 2012; Hagan et al., 2014).

In a systematic review of the literature looking at the effects of loneliness and social isolation on health outcomes for older adults, Courtin and Knapp (2015) found minimal intervention studies (7%) as well as gender differences in loneliness as a risk factor for poor health outcomes more often among men than women. The review found 13% of the studies focused on CVD with results pointing to loneliness as linked to CVD and cardiovascular conditions with similar effects “between loneliness and subjective well-being” in older adults (Courtin & Knapp, 2015, p. 805). According to Courtin and Knapp (2015) the results of whether loneliness or social isolation are independent mortality risk factors among health outcomes are mixed. Some studies found only loneliness as a significant risk factor in increased mortality and morbidity of chronic health conditions, but other studies claim social isolation works independently and even other studies report both loneliness and social isolation as responsible for a range of health outcomes (Courtin & Knapp, 2015). This pilot study examined the impact

of an online MBSR on the risk factor of loneliness, independent of social isolation, among older adults with CVD.

Creswell et al. (2012) conducted a study aimed at testing whether a mindfulness-based stress reduction (MBSR) intervention reduced loneliness among older adults. The study randomized participants into either a MBSR group or a wait-list control group. Prior to receiving the MBSR intervention, the participants completed a questionnaire assessing loneliness and gave a blood sample. Results indicated that the MBSR intervention decreased loneliness while blood tests showed a reduction in inflammation-related genes. This study suggests that MBSR can reduce loneliness and that loneliness is linked to immune cells that show increased expression of genes contributing to inflammation (Creswell et al., 2012). Additionally, Creswell et al. (2012) cites previous research identifies perceptions of isolation and social disconnection as critical components of loneliness suggesting that MBSR reduces the psychological perception associated with loneliness. This study was the first of its kind to significantly link loneliness to inflammation (Creswell et al., 2012). However, further research continues to discover new links pointing to inflammation as a precursor for increased risk to various chronic health conditions including CVD, cancer, diabetes, autoimmune conditions, amyotrophic lateral sclerosis (ALS), Alzheimer's Disease, and even clinical depression (Creswell et al., 2012; Hunter, 2012; Reduce stress and improve, 2012; Wheeler, 2012). The American Heart Association (AHA) states higher inflammation markers place individuals at higher risk for all types of CVD conditions, including stroke, coronary heart disease, peripheral artery disease, and diabetes mellitus (Mozaffarin, 2016). The AHA reports health risk behaviors associated with CVD conditions include smoking, physical inactivity, obesity, and poor nutrition which are also associated with higher activity of inflammation (Reduce stress and improve, 2012; Mozaffarin, 2016).

Systematic reviews examined the literature for studies focused on loneliness and identified gaps within intervention research, especially community-based, related to the effects of loneliness on chronic health conditions (Courtin & Knapp, 2015; Hagan et al., 2014). The reviews found studies most often delivered interventions in residential care facilities and focused more frequently on loneliness related to mental health, well-being, physical function, social support, and suicide risk. One review found that the impact of loneliness commonly focused on the outcome of depression followed by cardiovascular health. This literature review reports 13% of the studies on loneliness focused on cardiovascular health with results pointing to the association of loneliness to cardiovascular health behavior risk factors (Courtin & Knapp, 2015). The review also identified a lack of intervention research on associations between loneliness and chronic health conditions (Courtin & Knapp, 2015).

Hagan et al. (2014) also searched the literature for interventions among older adults specifically related to loneliness in order to identify the most effective interventions for practice. This review found a total of 17 intervention research articles, categorizing interventions as group interventions, one-to-one mentoring interventions, and interventions using new technologies. Nine of the 17 interventions aimed at improving social support and reducing loneliness. However, even though these interventions targeted loneliness they did not examine the possible link of loneliness to chronic health conditions. Also, the search found only four studies reporting significant reductions in loneliness which included one community-based intervention using a MBSR program (Hagan et al., 2014).

Gaps in the literature also point to the need for consistency among defining and measuring loneliness and the need for increased engagement among lonely older adults with social care services and access to health knowledge (Courtin & Knapp, 2015). Courtin and

Knapp (2015) found that racial and socioeconomic differences impact on health outcomes as linked to loneliness and isolation thwarting further research to promote understanding of the scope of this impact. Additionally, the review recommended the need for future intervention research that allow older adults to remain autonomous in health care choices and outcomes (Courtin & Knapp, 2015).

Self-Efficacy

Since older adults face different social and physical environments as well as differences in chronic health conditions, confidence is needed to address the complexities of situations and manage existing chronic health conditions. Self-efficacy is often considered a prerequisite in effective self-management of any chronic health condition and may prove essential to older adults facing CVD challenges. Xiao, Wang, Gu, Cai, and Ma (2018) report cross-section studies demonstrate that self-efficacy is important in managing existing chronic health conditions and in adopting preventative health behavior changes. However, there is a lack of studies surrounding the impact of self-efficacy on older adults with chronic health conditions, especially CVD (Xiao et al., 2018). Previous research shows that one of the most valuable resources a person can possess is the belief in "one's capability to exercise control over one's own functioning and challenging demands such as illness management and rehabilitation (Banik, Schwarzer, Knoll, Czekierda, & Luszczynska, 2018, p. 296). In fact, social-cognitive theory frames self-efficacy as a main influence in determining physical and mental health outcomes (Banik, et al., 2018). According to Banik et al. (2018) an individual with strong self-efficacy feels a sense of "predictability, stability, and recognition of self-worth" and these strengths may even act as protective mechanisms in preventing the engagement of unhealthy behaviors. Therefore,

stronger self-efficacy could be indicative of an individual's increased ability to self-regulate and manage existing CVD conditions.

According to Bandura (as cited in Banik et al., 2018), perceived self-efficacy should be as closely related to the situation as possible, such as self-regulation or self-management of CVD related symptoms. However, higher specificity of self-efficacy oftentimes produces a narrow range of outcomes or behaviors; whereas, a generalized self-efficacy produces not only more predictive value but also provides the individual with an ability to adopt general health strategies for a wider range of healthy practices (Banik et al., 2018). Results from a study on self-efficacy and CVD symptom-specific self-efficacy suggests general self-efficacy may also be a better predictor of coping with stress, engaging in preventative health behaviors, lowing depression, and in dealing with CVD symptoms (Banik et al., 2018).

Among many definitions, perception is an important component found within the research defining self-efficacy. According to Bandura's theory, self-efficacy is the judgement an individual gives their ability to perform a behavior and the confidence in that ability to perform and achieved a desired result (Cui et al., 2019). Bandura further theorizes that based on self-judgment, the perceived performance expectations determine the degree to which an individual can overcome difficulties along the way (Cui et al., 2019). Self-efficacy is also defined as "the perceived confidence in the ability to take successfully action and perform a specific task" and is a prerequisite to self-management and behavior change (Xia et al., 2018). Furthermore, self-efficacy is one of the main motivational components defined within health behavior theories and specifically within the Health Action Process Approach (HAPA) used in this pilot study as a framework for the development of the MBSR intervention.

Previous studies suggest that self-efficacy predicts self-management of an individual's chronic health condition (Kim & Xu, 2010). These studies also recommend that future research examine self-efficacy related to intervention targeting older adults with a combined approach looking at psychosocial components and empowerment approaches to healthcare (Kim & Xu, 2010). This pilot study builds upon previous research by exploring the feasibility of an intervention to empower older adults with CVD by looking closer at the impact of self-efficacy and the psychosocial component of loneliness.

Study Significance and Rationale

Since 1920, the leading cause of death in the U.S. and worldwide is CVD (AHA, 2017; Melynk et al., 2014; Mozaffarian et al., 2016; Robbins et al., 2011; Villablanca et al., 2009; WHO, 2017a). The National Center for Health Statistics (NCHS) report annual deaths from CVD outnumber deaths from other chronic diseases including cancer, chronic lower respiratory disease, accidents, and diabetes combined (Nes & Sawatzky, 2010). Furthermore, as previously stated, CVD is considered the most widespread, costliest, yet most preventable chronic health condition in the U.S. and over the next several decades expected to increase in costs that surpass other chronic health conditions, such as diabetes and Alzheimer's (AHA, 2017; Nes & Sawtzky, 2010). Along with these considerations is the cost of CVD, which in 2016 was $555 billion in the U.S. and is projected to cost $1.1 trillion by 2035 (AHA, 2017).

Considering the magnitude of CVD on all Americans, it is imperative that prevention strategies be continually explored to address these growing trends. Without effective prevention strategies, upcoming generations may face shorter life expectancies as well as lower quality of life. Hence, effective theory-based interventions are needed to address health behaviors and health behavior risk factors to assist older adults in improving and managing existing chronic

health conditions as well as preventing further morbidity or accumulation of multiple chronic health conditions. Previous research identifies loneliness as a significant risk factor for increased morbidity and mortality of chronic health conditions (Courtin & Knapp, 2015; Creswell et al., 2012; Hagan, et al., 2014; Hawkley et al., 2010; Russell et al., 1980). More specifically, previous studies found that loneliness is directly linked to inflammation which significantly increases the risk for developing CVD (Crewell et al., 2012). Therefore, this study seeks to fill a gap and contribute to existing literature. This pilot study contributes to existing research by focusing on the chronic health condition of CVD among older adults and fills a gap by providing a theory-based intervention focused on the impact of loneliness and self-efficacy on CVD as guided by the theoretical frameworks of the Social Determinants of Health (SDH) and the Health Action Process Approach (HAPA).

Research Aims and Objectives

Studies show that mindfulness-based stress reduction (MBSR) programs decrease loneliness among healthy populations, but there are minimal studies that employ a MBSR intervention to decrease loneliness and improve self-efficacy among older adults with CVD (Hagan et al., 2014). Therefore, to fill a gap and contribute to existing literature, the aim of this pilot study is to assess the feasibility and test whether an online MBSR intervention can impact loneliness and self-efficacy among older adults age 50 and older who are diagnosed with CVD. The findings from this study may provide information on factors related to assisting persons with CVD to improve overall quality of life and wellbeing.

CHAPTER 2

LITERATURE REVIEW

The literature review in this chapter focuses on the following areas: (1) mindfulness-based stress reduction and its relationship to loneliness and self-efficacy; (2) computer skills among older adults; and (3) theoretical frameworks. The information obtained from the literature review in these areas were considered in the decision-making process toward choosing a feasible and effective intervention. Theoretical frameworks were also an integral part of the development and execution of the online MBSR intervention.

Mindfulness-Based Stress Reduction Overview

Mindfulness-based stress reduction (MBSR) approaches are increasingly being used with reports of up to 40% of Americans using nontraditional, holistic, and nonpharmacological therapies to manage chronic health conditions (Williams, Simmons, & Tanabe, 2015). Victorson et al. (2014) reported that MBSR interventions help with improving and managing chronic health conditions related to pain, quality sleep, reducing stress, and reduction in related symptoms of chronic health conditions. Mindfulness approaches are also used to focus on reduction in health risk behaviors and health risk prevention efforts. As such, studies show MBSR interventions result in positive health behavior changes related to physical activity (PA), smoking cessation, addictive behaviors, substance use, and nutrition (Victorson et al., 2014; Williams et al., 2015). Furthermore, MBSR interventions also demonstrate improved self-efficacy resulting in positive health behavior and risk factor changes involving weight loss, improved BP, reduced glucose and cholesterol levels, as well as decreased loneliness, social isolation, and increased social

support (Courtin & Knapp, 2015; Creswell et al., 2012; Hagan et al., 2014; Hawkley et al., 2010; Victorson et al., 2014; Williams et al., 2015). Therefore, as suggested from the literature review and to fill a gap in the research, this pilot study aimed at further exploring the impact MBSR on the associated links of loneliness and self-efficacy to the chronic health condition of CVD.

MBSR and Loneliness

Studies show that MBSR programs successfully decrease loneliness among healthy populations, but there are minimal studies that employ a MBSR intervention to decrease loneliness among older adults with chronic health conditions (Hagan et al., 2014). Studies that examine the impact of MBSR on loneliness suggest that MBSR intervenes by reducing "psychological perceptions of social threat or distress, and reduced distress that can accompany loneliness" (Chodron, 2000). These perceptions change as a result of mindfulness training which, as suggested by the Buddhist Nun Pema Chodron, creates a heightened awareness where the individual can begin to have a non-judgmental, non-threatening relationship with the loneliness, which in turn creates a "relaxing and cooling loneliness that completely turns our usual fearful patterns upside down" (Barash, 2014; Creswell et al., 2012, p. 1099). Similarly, other research suggests the MBSR training creates a skill for individuals to learn how to be more engaged and enhance engagement in various activities to attain an optimal psychological state, which in turn creates more personal meaning (Thompson, 2009). Data from a qualitative MBSR study aimed at promoting the health and well-being of individuals diagnosed with chronic health conditions found themes that included increased empowerment, increased awareness and mental patterns, increased self-acceptance, and increased 'listening to the body' which can change personal perceptions and reduce loneliness (Thompson, 2009, p. 408). Furthermore, Baer (2003) suggested that MBSR can promote strategies that allow an individual to experience pain without

intense emotional reactions as well as cultivate improved cognitive skills to reduce ruminative thoughts.

MBSR and Self-Efficacy

In a systematic review, Mikolasek, Berg, Witt, and Barth (2017) examined the literature for eHealth studies that delivered online mindfulness-based interventions to individuals with chronic health conditions. The review identified the least commonly assessed outcomes as self-efficacy, stress, mindfulness, and satisfaction with the intervention; while the least commonly used intervention strategies included biofeedback, imagination or visualization, and other meditation techniques apart from mindfulness (Mikolasek et al., 2017). Overall, the studies indicated that online mindfulness-based interventions do have positive effects on an individual's health and psychological well-being (Mikolasek et al., 2017). Also, the review found that online eHealth interventions are used with a variety of intervention strategies that can improve an individual's health. The literature revealed that a main component of the eHealth intervention strategy is "changing patients' cognition and behavior" and that the mode of delivery varied from audio, video, text, email, chat, telephone and platforms such as computers, laptops, tablets, and smartphones (Mikolasek et al., 2017, p. 1). With regard to mindfulness-based interventions, the literature showed the mindfulness practice consisted of techniques that developed skillsets which promoted the intentional focus on the present moment with an nonjudgmental attitude and acceptance of personal experiences which proved beneficial to individuals with CVD (Mikolasek et al., 2017). Also, the review found bodily sensations were part of the mindfulness practice, especially the practice of the body scan which is aimed at improving an individual's self-regulation and health behaviors.

As mentioned often in the literature related to mindfulness practice, the body scan is the foundational practice in a MBSR program. The body scan process is where the MBSR facilitator or instructor slowly guides the participant to mindfully pay attention to various regions of the body (Dreeben, Mamberg, & Salmon, 2013). John Kabat-Zinn, the developer of MBSR, describes the body scan as an "affectionate, openhearted [and] interested attention to the body that can be practiced at various speeds and levels of precision" (Dreeben et al., 2013, p. 394). Clinical application of the body scan suggests that participants diagnosed with chronic health conditions benefit by bringing attention to how their body may be working properly as opposed to focusing more on the difficulties (Dreeben et al., 2013). Another clinical application suggests the body scan increases confidence in abilities by discouraging avoidance behaviors. This discouragement comes from the use of the body scan to "encourage awareness and acceptance of inner states, whether positive, negative, or neutral" (Dreeben et al., 2013, p. 399). Since avoidance involves cognitive perceptions, the clinician guides the participant into experiencing the emotions as separate from cognitive evaluations. Hence, as examined in this pilot study, self-efficacy is defined as an increase in confidence in an individual's ability to perform a specific health behavior practice even amidst challenges or barriers (Barrows & Fleury, 2016). If perception and confidence can be increased through the development of skillsets found within a MBSR intervention, it has the potential to improve chronic health conditions, overall wellbeing and decrease risk factors for participants.

Computer Skills

As the healthcare landscape continues to change along with the increasing population of older adults who possess an increased likelihood of facing either a chronic health condition or even a cognitive disability, technology can empower older adults with self-management of their

own healthcare and improve overall wellbeing. Thus, interacting with technology is becoming more a necessity for older adults in order to reap the benefits of enhancing health, wellbeing, safety, security, and quality of life (Czaja, 2015). The Pew Internet and American Life Report found that 59% of adults ages 65 and older access online technology; 47% have internet capabilities at home; and 77% have a mobile phone (Czaja, 2015). The report also discovered that as a person ages this data decreases to 47% with online usage and 34% with internet home access and even lower usage among older adults with lower education and income (Czaja, 2015). Additionally, data indicated that smartphone and tablet usage among older adults age 65 and older at 18% which was even less among those less affluent (Czaja, 2015).

Czaja (2015) proposes that older adults must have "meaningful access" to the potential of technology in order to gain the full benefits technology can offer. Meaningful access, as defined by Czaja (2015), includes not only physical access, but also the knowledge older adults need to engage and interact with the technology platforms. Therefore, barriers to meaningful access need to be examined in order to equip older adults in the area of technology, especially as this access involves empowerment of healthcare and improved quality of life. Since technology holds great potential for assisting with the healthcare need of an rapidly increasing older adult population, barriers to technology need to be addressed, especially in lieu of older adults with technology and health literacy deficits as well as meaningful access concerns. Even though barriers exist related to lack of computer or internet literacy among older adults, the rapid expansion and decreasing costs of technological devices allows for an increase in these skills among older adults that is expected to substantially increase in the future (Choi, An, & Garcia, 2014).

Along with the rapid growth in technological devices is the rapid growth in use of the internet. According to Ploeg et al. (2017), 84% of American adults use the internet with the fastest growing demographic as older adults aged 55 years and older. Furthermore, Ploeg et al. (2017) adds that 80% of internet use among older adults is to seek information about health. Therefore, the internet can provide older adults access to not only health information, but access to support as well, especially in targeting proactive measures aimed at the projected rapid growth in the U.S. of older adults with chronic health conditions. With this in mind, it is crucial that current health interventions explore all potential cost-effective means of engaging and increasing participation among older adults with chronic health conditions.

Since older adults are more likely to be diagnosed with a chronic health condition, they are also potentially the highest consumers for online health information. Providers of various health services, including those offering holistic non-pharmacological resources are now poised to provide a less expensive and expansive reach for older adults to access these services. Additionally, delivery of health resources through online methods offers many perks to the users such as flexibility, up to date information, interactive components, and the ability to customize to each individual's situation (Burns, Jones, Caputi, & Iverson, 2017). Research demonstrates that online interventions result in "significant improvements in health outcomes, health knowledge, self-care, adherence to treatment and self-efficacy" (Burns et al., 2017, p. 73). Additionally, research shows that older adult internet users experience improved mental health and quality of life outcomes including reduced depression and loneliness (Rikard, Berkowsky, & Cotton, 2017). With 46 million adults age 65 and older living in the U.S. and accounting for 15% of the population, research shows they are also becoming more internet savvy. Estimates report 40% of older Americans own smartphones (18% increase since 2013) while 67% use the internet (55%

increase since 2000) (Anderson & Perrin, 2017). Also, older adults report positive views of internet usage with 75% of older adult internet users reporting daily usage. Furthermore, between 2000 and 2016, older adult's online usage increased from 14 to 67% in the U.S. (Anderson & Perrin, 2017).

Research demonstrates that along with the increase in online usage is an increase in computer literacy and usage confidence. A study conducted by Burns et al. (2017) demonstrated that the older adults who are online exhibit confidence and long-term use in seeking health information. Furthermore, this study showed that a chronic health condition diagnosis did not dissuade older adults in searching for health information online. Unfortunately, research also shows disparities among older adults in relation to usage based on socioeconomic background which influences the differences in online activities as well (Burns et al., 2017). The National Telecommunications and Information Administration (2013) report that online usage among older adults from lower socioeconomic backgrounds differ from older adults of higher socioeconomic backgrounds. The report states older adults from less privileged societal positions are not only less likely to go online but engage very differently with financial and health related web activities. In fact, older adults from more privileged societal positions engage in more activities related to increasing capital and improving health than older adults from less privileged societal positions.

Research shows additional barriers and disparities to online usage among older adults with chronic health conditions. Since older adults are more likely to experience decreased mobility and chronic health conditions, they stand to profit the most from online activities, but are often at a disadvantage due to less autonomy and lower web-use skills (Hargittai & Dobransky, 2017). Hargittai and Dobransky (2017) examined the literature to determine if

web-use skills among older adults were linked to socioeconomic status and how this status may contribute to the type of online activities. The literature revealed that as a person ages internet usage consistently declines with a linear relationship even among the oldest of older adults who show the lowest rates of internet usage (Hargittai & Dobransky, 2017). This difference in internet usage is accompanied by not only by age, but lower levels of internet skills which in turn lead to reported feelings of an "overwhelming, untrustworthy, risky place, with too much information, and where navigation is too difficult" (Hargittai & Dobransky, 2017, p. 198).

Theoretical Frameworks for the Online MBSR Intervention

Key components identified from previous intervention research indicate the need for more theory-based interventions that address health disparities (Barrows & Fleury, 2016; Dambha-Miller, Cooper, Kinmonth, & Griffin, 2017; Trieu et al., 2017). Barrows and Fleury (2016) report that the strengths of a theory-based approach guide the design, implementation, and evaluation of health-based interventions. They continue by stating theory provides a foundation for increasing knowledge and understanding of the problem the intervention addresses. Therefore, when an intervention is developed through a theoretical framework, the research more likely yields interpretable results that permit causal inferences (Barrows & Fleury, 2016). With the theoretical frameworks of the Social Determinants of Health (SDH) and the Health Action Process Approach (HAPA), this study fills a gap with the development of an intervention based on theory to address the problems of age and health disparities found in the literature related to CVD among older adults. Specific study aims toward examining the impact of a MBSR intervention on loneliness and self-efficacy are further guided by the theoretical frameworks of SDH and HAPA.

Social Determinants of Health (SDH)

Research demonstrates that within the U.S. there are many dimensions of disparities among age, gender, and race. Through the Healthy People initiative by The U.S. Department of Health and Human Services (HHS), health disparity is defined as "a particular type of health difference that is closely linked with social, economic, and/or environmental disadvantage" (Healthy People, 2017). Therefore, age, gender, and race all contribute to a person's ability to receive health services and health outcomes (Healthy People, 2017). Additionally, the Healthy People initiative goals include attaining health equity, "the attainment of the highest level of health for all people" (Healthy People, 2017). The Social Determinants of Health (SDH) theoretical framework guides this pilot study in the development of an effective intervention to explore health disparities as a means of targeting health equity among older adults diagnosed with CVD.

Major Constructs

The Commission on Social Determinants of Health (CSDH) set up by the WHO, reviewed, summarized, and synthesized SDH research and different frameworks into a single conceptual framework in order to "highlight the difference between levels of causation, distinguishing between the mechanism by which social hierarchies are created, and the conditions of daily life which then result" (Irwin & Scali, 2010, p. 4). As part of this process other theories of social production of health were reviewed including psychosocial approaches, social production of disease/political economy of health, eco-social frameworks, and Diderichsen's model of the mechanisms of health inequality. Consequently, various elements from these sources were brought together to develop a more holistic SDH conceptual framework. Within this framework are the major constructs of SDH theory that operate within three core

components including: (1) the socioeconomic and political context; (2) structural determinants; and (3) intermediary determinants. This study focused primarily on the major construct of intermediary determinants. By examining the psychosocial component of loneliness and through the collection of demographic information including age, gender, race, education, and income, this study was guided by the intermediary determinants of health as defined in the SDH framework. This study utilized the collection of demographic information which included the social factors of age, gender, and race as well as the additional control variables of education and income as it relates to the socioeconomic context within SDH (Irwin & Scali, 2010) (see Appendix E, section D).

The socioeconomic and political context is broadly defined by the CSDH as "all social and political mechanisms that generate, configure and maintain social hierarchies, including: the labor market; the educational system, political institutions, and other cultural and societal values" (Irwin & Scali, 2010, p. 36). Structural determinants are then considered as mechanisms that produce and reinforce social class divisions and define individual socioeconomic position related to power and access to resources. Structural determinants include income, education, occupation, social class, gender, and race. Together, the components of socioeconomic and political context combined with structural determinants are referred to as the social determinants of health inequities (Irwin & Scali, 2010).

Structural determinants are thought to operate through the factors within the intermediary determinants which include material circumstances, psychosocial circumstances, and behavioral and biological factors. Material circumstances include housing, neighborhood quality, consumption potential (ability to purchase food, clothing, etc.), and the physical work environment. Psychosocial circumstances include "psychosocial stressors, stressful living

circumstances and relationships, and social support and coping styles" (Irwin & Scali, 2010, p. 6). Behavioral and biological factors include "nutrition, physical activity, tobacco consumptions, alcohol consumption, which are distributed differently among different social groups" with biological factors and/or genetic factors (Irwin & Scali, 2010, p. 6). The holistic, revised SDH model also includes the health system itself as a SDH with a focus on issues of access; as well as the concepts of social cohesion and social capital which are linked to both structural and intermediary determinants.

Since SDH views social factors as complex, integrated, and overlapping social structures and economic systems which include social environment, physical environment, health services, and structural and societal factors. These conditions are in turn shaped by political, social and economic forces (CDC, 2013; WHO, 2012). Therefore, SDH calls for a deeper understanding of social factors which was addressed in this study by analyzing loneliness among older adults within different racial groups as well as different economic groups. The major constructs of SDH informed various components of this pilot study including the problem, design, and implementation of the online MBSR and the focus of the target population as older adults diagnosed with CVD.

SDH and the problem. The SDH theory informs the problem of health disparities among age, gender, and race by proposing that to understand the disparities, it is necessary to look beyond the immediate causes of illness or disease and instead look for the "causes of the causes" (WHO, 2017). Further informing the problem of health disparities, SDH frames underlying determinants of health disparities as interconnected, interdependent, and that social position, vulnerability to ill health, and consequences of ill health affect the conditions in which persons "grow, learn, live, work and age" (CDC, 2013; WHO, 2017). SDH views social factors

as complex, integrated, and overlapping social structures and economic systems which can also include social environment, physical environment, health services, and structural and societal factors. These conditions are in turn shaped by political, social and economic forces (CDC, 2013; WHO, 2012).

SDH is utilized within this pilot study as a lens to view the health disparities found in an aging America that is increasing in racial diversity and increasing in the likelihood of living with CVD or other chronic health conditions. As seen in the research, the aging population in the U.S. is on the rise along with the rise in chronic health conditions with additional projections of hypertension (15 million), diabetes (12 million), CVD (4 million), stroke (2 million), and heart failure (2 million) (Milani & Lavie, 2015). By 2030, for the first time in history, the older adult population will be greater than the younger population aged 18 or younger (Agronin, 2013; U.S. Census Bureau, 2016). Similar growths can be seen in the diversity of the U.S. population with projected growth in all race and ethnic groups. Current growth estimates show the following population estimates: Hispanic (2.0% to 57.5 million); Asian (3.0% to 21.4 million); Native Hawaiian and Other Pacific Islander (2.1% to 1.5 million); American Indian and Alaska Native (1.4% to 6.7 million); Black (1.2 % to 46.8 million); White (0.5% to 256.0 million); those who identified being two or more races (3.0% to 8.5 million); and non-Hispanic White remained the same (198.0 million) (U.S. Census Bureau, 2017). With the continued focus on intermediary determinants, SDH informs the problem within this study by looking at health disparitites with increased understanding of differences and how these differences effect pariticipants experience/engagement with the online MBSR among age, gender, race, as well as education and income.

SDH and loneliness. The hypothesis in this pilot study focused on the intermediary determinant of loneliness and the impact an online MBSR intervention may have on pre and posttest loneliness. In this manner, SDH informed the outcome measure of loneliness in this pilot study by exploring for any differences in pre and posttest loneliness among the sociodemographic control variables and the differences in the online and assisted living facility settings. The SDH view of underlying determinants of health disparities and the complex social factors are also conceived in the analysis that explored for potential correlations of a participants' age, gender, race, and socioeconomic status to the impact on loneliness found at pre and posttest stages of the intervention. Additionally, since the MBSR intervention was delivered in two different settings, online to a general older adults population and to older adults living in an assisted living facility, analyses were performed to explore differences between these two groups. This comparative analysis was guided by the SDH framework that identifies the importance in examining different constructs at play within economic systems that include social environment, physical environment, health services, and structural and societal factors.

SDH directed design. Directing the design of the study, SDH requires the impact of the program, especially the positive effects, are experienced by all participants. The one group pretest posttest pre-experimental design aligns with SDH by promoting greater understanding of the impact all participants, regardless of age, race, gender, and social status, experience from the online MBSR intervention. The outcome measures are also directed by SDH in understanding that variables may vary based on setting and social factors, such as age, race, gender, and socioeconomic factors (i.e., income and education). Furthermore, by examining the pre and posttest differences between groups (online versus assisted living facility) the impact of loneliness and self-efficacy on CVD is compared in direct relationship with SDH major

construct, structural determinant. SDH is important in evaluation of the MBSR intervention which was utilized by this study in promoting increased understanding or "how it works and who it works for" (Ompad, Galea, Caiaffa, & Vlahov, 2007, p. 46). Therefore, an evaluation from pre to posttest changes in loneliness and self-efficacy was analyzed to promote knowledge on the micro, mezzo, and macro levels of social work in relation to the online MBSR intervention.

SDH informed implementation. The holistic SDH model includes the health system and how this system may determine access, social cohesion, and social capital; thus linking structural and intermediary determinants. Research indicates that negative stereotypes can lead to increased isolation and dependency for some older adults creating even more barriers to healthcare promotion opportunities (Thornton, 2002). Therefore, the implementation of this study sought to address these issues as directed by SDH theory by delivering the MBSR both online and in the assisted living facility. In this way, the SDH guided delivery of the MBSR intervention addressed barriers for older adults with chronic health conditions, such as CVD, related to the health system and access to health resources. Furthermore, the study's implementation addressed the trickledown effect of stereotyping in that health providers may not recommend changes in behaviors or health promotion services thinking the recommendation will not affect the overall health outcome for the older adults (Aday & Wallace, 2015). This study provided direct access to an innovative non-pharmaceutical health option by providing equal opportunity for older adults regardless of their background to a general population through the online setting and to older adults in the assisted living regardless of their location or socioeconomic status.

Another consideration in the implementation of this study was the individual experience of each participant with the online MBSR program. SDH informs health disparities by taking

into account how an individual's experiences differ based on the specific context or setting, an individual's vulnerabilities, and an individual's oppressions, especially with engaging in the intervention. Consequently, this study took into account that each older adult would encounter and engage with the online MBSR differently based on the setting, vulnerabilities, and barriers. Subsequently, sensitivity to the recruitment strategies as well as the delivery of the intervention addressed fidelity in several ways including exposure, consistency, flexibility, and qualitatively through posttest questions about satisfaction and barriers with the program. These fidelity strategies are discussed further in Chapter 3 of the methods section. Finally, SDH informed the implementation of this study by cultivating a community-based partnership with the assisted living facility in order to reach older adults that may not have otherwise been informed or had access to this intervention opportunity.

Strengths and Weaknesses

Strengths. A strength of the SDH theory is that it attempts to understand health disparities by looking beyond immediate causes in an attempt to uncover the details and causal links that are then considered as connected in relation to potential mediators of social cohesion and social capital. The inclusion of these details presents SDH theory as a prominent framework for examining the social justice element related to health outcomes and health equity. Not to mention the additional strength of the framework to further examine the philosophy that social justice is part of the constructs within the structural and societal factors that are shaped by political, social and economic forces. The SDH framework also promotes increased understanding by specifically addressing barriers that may exist to help explain chronic health condition or CVD disparities among age, gender, and race. As such, SDH provides a more

complete perspective on how chronic health conditions, even MCC, may be affected by access to knowledge, treatment, and other resources.

Other strengths are related to the major constructs of social determinants of health inequities. These constructs help identify, describe, and explain how social position may present a possible pathway to understanding the "causes of the causes" as proposed by SDH theory (WHO, 2017). If social position is an influencing social factor, vulnerable older adults are in a socially lower position as related to their vulnerability status that is often a precursor to chronic health conditions. Therefore, according to SDH theory this would also include other social factors such as health status, health care, in addition to the effects of discrimination often referred to as ageism and negative stereotypes (Robinson & Howatson-Jones, 2014).

Weaknesses. The SDH theory is challenged in its ability to address the extent of health disparities related to the details of the underlying layer of health determinants, especially associated with social factors. Looking at chronic health conditions through the lens of SDH is in essence emphasizing the importance of social justice. Therefore, even though the pursuit of social justice is essential to health equity, it can also be an obstacle in the way of a SDH theory-based intervention in that health equity is controlled by certain human rights frameworks and the responsibility of acting authorities that is not easily changed or modified. Likewise, another challenge is the SDH ability to explain issues of power within societies where individual health outcomes are oppressed or dominated (Irwin & Scali, 2010). Finally, epidemiology and biostatistics are faced with challenges with interpretation of SDH theory related to health equity (Irwin & Scali, 2010).

Health Action Process Approach (HAPA)

The health action process approach (HAPA) is a theoretical framework used to test various health behaviors associated with motivation toward a health behavior intention and volition leading to the actual health behavior (Parschau et al., 2014). This framework includes phase-specific motivational self-efficacy and outcome expectancy which are aimed at understanding an individual's intention for specific health behavior changes (Parschau et al., 2014). HAPA is comprised of two main phases, the motivational phase and the volitional phase (Perrier et al., 2015). HAPA is used in this pilot study to inform the development of the online MBSR intervention as a means of describing, explaining, and predicting health behavior changes. The major constructs of HAPA also informed various components of this pilot study including the problem, design, and implementation of the online MBSR, especially surrounding the constructs of self-efficacy as an outcome measure within this sample of older adults diagnosed with CVD.

Major Constructs

HAPA is comprised of two main phases, the motivational phase and the volitional phase (Perrier, Shirazipour, & Latimer-Cheung, 2015). The distinction between these two phases is the ability to understand the behavioral intention (goal setting) and the actual health behavior (goal pursuit) (Parschau, et al., 2014; Schwarzer et al., 2011). Each phase contains constructs to measure phase specific behaviors. Within the motivational phase exists the constructs of risk perception, outcome expectancy, and task self-efficacy while the volitional phase contains the constructs of planning, action control, and recovery self-efficacy.

The motivational phase centers around an individual's intention to engage in a certain behavior. The measurable constructs of the motivational phase are risk perception, outcome

expectancy, and task self-efficacy (Parschau, et al., 2014; Perrier et al., 2015). Risk perceptions are the beliefs an individual has regarding a certain outcome if the behavior is not executed (Parschau, et al., 2014; Perrier et al., 2015). In other words, an individual's perceived vulnerability to a chronic health condition, such as CVD, is seen as a risk perception. Outcome expectancy is considered the main influence in motivation and the beliefs an individual has of possible outcomes of an executed behavior, either positive or negative (Parschau, et al., 2014; Perrier et al., 2015). The final construct of the motivational phase is task self-efficacy defined as the confidence an individual has in the ability to execute a certain behavior (Parschau, et al., 2014; Perrier et al., 2015).

Once intentions are determined, an individual moves to the volitional phase where intended behaviors are executed (Parschau et al., 2014; Schwarzer et al., 2011). Within the volitional phase, self-regulatory skills and strategies are needed to maintain the behavior (Schwartz et al., 2011). The volitional phase contains the constructs of planning, action control, social support, maintenance self-efficacy, and recovery self-efficacy. Planning is an individual's ability to determine the specifics of a certain behavior including the when, where, how long, and with whom. Planning and self-efficacy are presented as volitional phase mediators which leads to the understanding that there has to be the existence of at least a motivational and a volitional phase (Schwarzer et al., 2011). Social support represents resources and if there is a lack of resources, barriers toward maintaining a health behavior (Schwarzer et al., 2011). Maintenance self-efficacy is an individual's confidence to maintain certain behaviors, even amidst barriers. Recovery self-efficacy is an individual's confidence to return to a certain behavior when there has been a time lapse. Finally, within the HAPA framework is the division of individuals based on the identification of their current behavior phase labeled as pre-intenders and intenders

(motivational phase) and actors (volitional phase) (Schwarzer et al., 2011). This study primarily focused on the contructs related to risk perception found in the motivational phase and self-efficacy found in both the motivational and volitional phases.

HAPA and the problem. Research demonstrates that CVD is multi-layered in that among all chronic health conditions in the U.S., CVD is a leader in annual deaths and healthcare costs; it disproportionately affects older adults and women; and can be preventable. Therefore, HAPA informs the problem of CVD within the study among older adults by utilizing the theoretical constructs of perception and motivation to identify the lack of self-efficacy that may exist within both the motivational and volitional phases. Furthermore, as framed by HAPA, intention formation that occurs as a result of motivation, but as a precursor to volition, informs the problem surrounding the predictability of health behavior and health factor changes that are useful for the development of effective interventions for chronic health conditions. Consequently, through the various behavior tests and specific phases, HAPA informed the research hypotheses in this pilot study that examined for the pre and posttest changes in self-efficacy among older adults in association with achieving positive health behaviors and health factors that are linked to the prevention, improvement, and management of CVD. Furthermore, HAPA informed the problem by utilizing the constructs of maintenance self-efficacy found in the volitional phase. Participants were provided with the opportunity to achieve skillsets through engagement with the online MBSR which promoted self-regulatory strategies needed to maintain health behaviors over time and potentially prevent further morbidity and progression into multiple chronic health conditions resulting in the potential to increase maintenance self-efficacy. Thus, the self-regulatory strategies needed for an older adult to maintain a health behavior when actively engaged in the behavior is framed by HAPA which also contributes to

informing the related gaps in knowledge surrounding the morbidity of CVD and the increasingly common development or progression of MCC (Parschau et al., 2014).

HAPA and self-efficacy. This study focused on self-efficacy found in both phases of HAPA. Self-efficacy is defined within the motivational phase of HAPA as the confidence an individual has in the ability to execute a certain behavior (Parschau, et al., 2014; Perrier et al., 2015). Self-efficacy is defined within the volitional phase of HAPA as the confidence to maintain certain behaviors, even amidst barriers, and the confidence to return to a certain behavior when there has been a time lapse (Parschau, et al., 2014; Perrier et al., 2015). HAPA is used in this pilot study to theoretically frame self-efficacy among older adults diagnosed with CVD as impacted by the online MBSR intervention. The ability to define self-efficacy within the HAPA theoretical framework is also defined in previous studies similarly. Xia et al. (2018) defined self-efficacy within the HAPA measurable construct of perception related to confidence in one's ability to successfully act and perform a specific task. As a result of this ability, this study suggests self-management and behavior change is possible (Kim & Xu, 2010; Xia et al., 2018). Additional studies define self-efficacy within the construct of perception which results in the ability to increase confidence even in the presence of barriers (Barrows & Fleury, 2016). This study is guided by HAPA through the framing of the outcome measure of self-efficacy related to the ability to change perceptions as suggested by previous research is a result of MBSR training and related to the ability to increase confidence among older adults amidst barriers and CVD challenges (Chodron, 2000; Creswell et al., 2012).

HAPA directed design. HAPA is used to inform the design of this intervention which fills the gap in the research suggesting theory-based interventions are more effective. Research suggests interventions are more effective when theoretical constructs related to the behavior the

intervention is aimed at changing are utilized (Parschau et al., 2014). Subsequently, when an intervention is based on theory, the results increase understanding based on the testing of a well-supported theoretical model comprised of the theoretical constructs contained in the intervention (Parschau et al., 2014). The theoretical constructs of risk perception as identified in the motivational phase of HAPA direct the design of this online MBSR intervention. As previous research demonstrates, MBSR significantly effects an individual's perception associated with not only loneliness, but also associated with confidence, self-judgment, performance abilities, and self-management of chronic health conditions (Burns et al., 2017; Cui et al., 2019; Dreeben et al., 2013; Kim & Xu, 2010; Xia et al., 2018). Therefore, with the use of a MBSR curriculum provided through this online intervention, the design of the intervention itself contains essential elements needed to change perceptions of loneliness and other associated attitudes and abilities.

Additionally, task self-efficacy as seen in the motivational phase of HAPA is addressed in the design of this online MBSR intervention regarding the ability of the participant to self-select among the MBSR activites including the video viewing, reading, and meditation in order to successfully complete the intervention. For instance, there are required intervention tasks, such as the viewing of the videos and there are recommended intervention tasks, such as meditation and readings. However, even the viewing of the videos allows the participant to choose the amount of viewing time. The development of the self-selected details and options are guided by HAPA in order to assess motivation and volition found within the measurable constructs of each phase. Consequently, as directed by previous research, this pilot study utilizes HAPA to explore potential barriers to the lack of self-efficacy related to goal setting and goal pursuit as defined in the major constructs. In fact, Parschau et al. (2014), in agreement with HAPA theoretical framework, states that the social-cognitive factors within an intervention are

critical to the planning when it comes to formation of outcome expectancies and motivation. In summary, the constructs of risk perception in the motivation phase of HAPA informs the design of this study related to the outcome measure of loneliness, confidence, self-judgment, self-management of CVD and through the construct of task self-efficacy in the participant's ability to self-select the tasks or videos to watch and the amount of time engaged in the various MBSR activities.

HAPA informed implementation. HAPA informs the implementation of this pilot study through the use of an online medium in accessing a participant's motivation and volition toward impacting self-efficacy with older adults diagnosed with CVD. Previous research found perceptions of older adults regarding online usage can differ tremendously based on age and socioeconomic background (Czaja, 2015). However, since this study facilitates a MBSR intervention online, risk perception may be reduced while confidence increases toward improved self-efficacy. Furthermore, since HAPA defines self-efficacy amidst barriers, the online delivery of the MBSR addresses some of the barriers faced by older adults, such as access and cost. Since research indicates that older adults are increasingly utilizing online methods to managing chronic health conditions, this study provides an additional component to existing healthcare recommendations or routines that does not rely on insurance coverage (Morone, Greco, & Weiner, 2007). Finally, HAPA informs the implementation of this pilot study by empowering older adults with a means of addressing their own health issues " through the active engagement of goal setting and the planning and control of health behaviors with the pursuit of the goal, consistent with HAPA and social work values (NASW, 2017, Preamble section, para. 2). Consequently, with an online implementation, this study as informed by HAPA, potentially reduces the risk perception by allowing the participant to engage in the MBSR within the

comfort of his or her own home and reinforces task self-efficacy by allowing the participant to work at his or her own pace.

Strengths and Weaknesses

Strengths. An important element found in the HAPA theoretical framework is the ability to separate the motivational phase and the volitional phase in order to fully examine components that actually lead to health behavior change. Furthermore, HAPA isolates specific phases of health behavior change, such as motivation, self-efficacy, and outcome expectations to produce an even greater understanding of health behavior change (Parschau et al., 2014). Due to the existence of the volitional mediators, planning and self-efficacy, HAPA allows for stronger predictions of behavior and highlights the mechanism that caused the behavior (Schwarzer et al., 2011).

In developing a theory-based intervention for older adults, research indicates that high levels of self-efficacy produce intentions into planning of behaviors and health motives, especially since health becomes increasingly more important as a person ages (Shuz et al., 2014). Examples of effective interventions for each division follows that pre-intenders benefit from communication of awareness and confrontation of risks and outcome expectancies; intenders benefit from understanding how to apply their intentions into action; and actors benefit from planning for breaks or lapses in actions with adapting new routines or strategies (Schwarzer et al., 2011). As the participant assumes the pre-intender role, the consent form is introduced before participation which explains the intentions, expectations, and benefits from the study. Upon moving into the intender role, the participant commits to viewing the videos and learning about how to apply mindfulness approaches. Finally, the participant becomes the actor through

active engagement in MBSR strategies, such as the body scan, meditation, and learning how to develop their own mindfulness practice.

Other strengths of HAPA are the abilities of the framework to account for differences in behavior, called the intention-behavior gap (Perrier et al., 2015). As such, HAPA separates intention and specifically identifies different factors that promote intention into increased actions (Sullivan, 2017). Based on a systematic review of theory-based interventions, McLean et al. (as cited in Schwarzer et al., 2011), revealed that the motivational-cognitive-behavioral approaches by HAPA are strengths in assisting with the improvement of motivational and volitional factors, the management of barriers, and resolving issues with health care providers. Perrier et al. (2015) conducted a study utilizing the HAPA theoretical framework. In this study, HAPA was useful in revealing differences in behavior change among individuals with specific disabilities and demographics based on the measurable constructs. Finally, previous research demonstrates HAPA can promote more effective interventions with the use of principles as opposed to assumptions mapped out in the action phases (Hagan et al., 2014; Parschau et al., 2014; Schwarzer et al., 2011).

Weaknesses. Shuz et al., (2014) states that even though health is the potential outcome of the intended behavior goal, HAPA does not account for health as "an underlying motive to engage in behavior such as physical activity" (p. 497). Therefore, HAPA could not assess or understand if health is potentially "a higher-order motive that drives behavior rather than being a potential outcome" (Shuz et al., 2014, p. 497). Unfortunately, research shows that motivation alone is not sufficient to predictability of future behaviors (Perrier et al., 2015; Shuz et al., 2014; Schwarzer et al., 2011). Therefore, planning strategies should be included in order to help improve one's social support and that health status including limitations in mobility and physical

capability should be accounted for in understanding health behavior readiness (Shuz et al., 2014). Another weakness is that HAPA speaks to intentions that are made by someone other than the individual in need of behavior change, possibly a provider or clinician, indicating a lack of autonomy in goal selection. Additionally, HAPA does not outline where the goals originate from or who actually executes the actions for the set goals (Sullivan, 2017).

Conceptual Model of Change

To create a deeper understanding of the influence loneliness and self-efficacy have on CVD outcome, the HAPA and the SDH theoretical frameworks were used to fully examine the process by identifying other factors indicated by previous intervention research that ultimately impact health outcomes. The model of change demonstrates the scope of this process and potential influences (see Figure 1).

HAPA frames health behaviors identified within phases related to motivation and volition as separated in the model. The model proposes that when an individual engages in the online MBSR during the motivation phase it results in increased self-efficacy and decreased loneliness during the volition phase. However, there are intermediary determinants that influence the overall process that end with the CVD outcome. Previous research suggests that the social determinants categorized as psychosocial components, such as loneliness influence health outcomes (Courtin & Knapp, 2015; Creswell et al., 2012; Hagan et al., 2014; Hawkley, Thisted, Masi, & Cacioppo, 2010; Russell, Peplau, & Cutrona, 1980). These components are defined within the SDH construct as intermediary determinants which were analyzed in this study as loneliness, age, gender, race, and income which encompass and influence all other factors impacting CVD. The model also demonstrates the influence loneliness can have on an individual's perceptions of self-efficacy which are defined within the motivational phase of the

HAPA framework and suggested by previous research (Benight et al., 2002; Courtin & Knapp, 2015; Creswell et al., 2012; Hagan et al., 2014; Hawkley et al., 2010; Victorson et al., 2014; Williams et al., 2015). The model also depicts that once a person completes the online MBSR program loneliness decreases and self-efficacy improves which creates the potential for improved management of CVD and overall wellbeing.

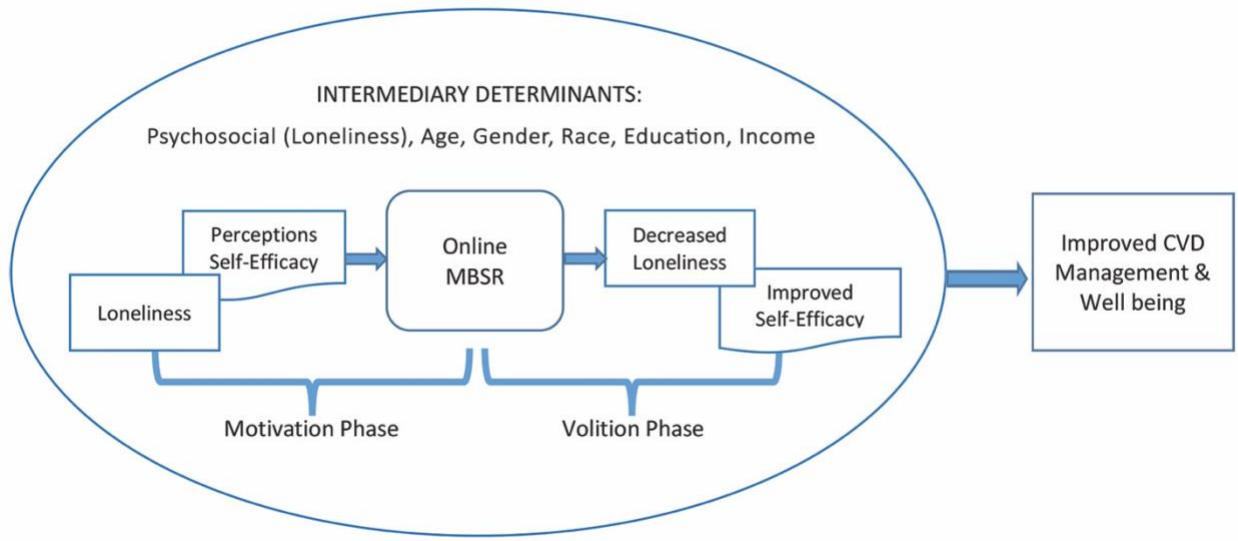

Figure 1. Model of change for the online MBSR impact on CVD outcome. This model demonstrates the influence of the HAPA and SDH theoretical frameworks on the development of the online MBSR intervention that impact CVD.

CHAPTER 3

METHODS

Based on previous research, barriers for older adults with chronic health conditions include lack or limited insurance coverage which impacts an individual's ability to visit providers or obtain needed medical devices and distance or transportation to the health intervention (i.e., primary care, counseling or physician assistant programs, etc.) (Murphy et al., 2017; Tourlouki et al., 2009; USPTF, 2017). Consequently, online mindfulness programs offer many advantages that address these barriers and provide additional benefits to the participants, such as maintaining anonymity while allowing access to those who encounter barriers to an in-person program due to disability, expense, childcare, and location (Krushe et al., 2013). Additionally, benefits include the ability to improve health while allowing a participant to work at a comfortable less stressful pace without sacrificing time for travel (Henriksson, Wasara, & Ronnlund, 2016). With the rapid expansion of the older adult population coupled with the rise in chronic health conditions, an increase in homebound older adults is expected to significantly increase (Choi et al., 2014). Therefore, an online MBSR intervention provides a feasible, cost-effective strategy to providing a non-pharmaceutical treatment approach to more older adults with all of these added benefits.

Reports show the number of online or eHealth interventions are increasing and demonstrating effectiveness in improving chronic health conditions (Mikolasek et al., 2017). The delivery of previous online or eHealth studies utilized various formats such as online chat and live or pre-recorded in-person facilitation (Mikolasek et al., 2017). Baer (2003) found no

significant relationship between online and face-to-face comparison of MBSR interventions. Previous studies also utilized various strategies with online health interventions such as symptom management, psychoeducation, cognitive behavior therapy, and stress management (Mikolasek et al., 2017). Overall, results from these methods indicate online health interventions are effective in improving the general health and well-being of individuals diagnosed with chronic health conditions (Mikolasek et al., 2017). Even though previous research explored online health interventions there are minimal studies for online MBSR interventions with pre-recorded facilitation via an online platform (Mikolasek, et al., 2017). Fish, Brimson, and Lynch (2016) conducted a literature review searching for online MBSR programs without an in-person facilitator through 2014 and found only 10 studies that met these criteria. Among these studies, nine were quantitative targeting a student population that predominately consisted of females while the remaining study targeted a general population that consisted of patients diagnosed with cancer, fibromyalgia, and recurrent depression.

This pilot study utilizes a MBSR intervention that seeks to address the barriers often encountered by older adults with chronic health conditions, specifically CVD and to fill a gap by providing an online MBSR intervention without in-person facilitation. The methods used in this research study are discussed within this section including the following: (1) fidelity, (2) research design, (3) online MBSR program description, (4) research questions and hypotheses, (5) participants and sampling, (6) recruitment, (7) online MBSR logic model and procedures, and (8) outcome measures.

Fidelity

Consistent with the Roadmap initiatives developed by the National Institutes of Health (NIH) this study was conducted with the aim of developing an intervention by following an

incremental process to ensure feasibility, exploration, efficacy, dissemination and implementation (Gitlin, 2013). Thus, this study was conducted as a pilot feasibility study designed to identify and evaluate for the significant component of an online MBSR intervention for future larger scale studies and ultimately for "efficient translation into practice" (Gitlin, 2013, p. 183). Therefore, this study also contributes to the future development of a manual for consistent delivery of an online MBSR intervention to establish future increased implementation fidelity.

Washington et al. (2018) report that social and behavioral intervention studies often lack safeguards to ensuring treatment fidelity and decision-making throughout the delivery of an intervention. This study addressed fidelity in various ways throughout the design and delivery phases. During the design phase, fidelity strategies were built into the pre and posttest questionnaires. Washington et al. (2018) also suggest fidelity needs to be addressed in the monitoring of the treatment components. In this study, pretest questions were included to measure prior exposure to mindfulness and meditation (see Appendix C, section PX). Furthermore, the pretest questionnaire was designed to address fidelity with content related video questions for the participants to answer immediately upon completion of each MBSR video before moving to the next video (see Appendix D). According to Washington et al. (2018) strategies such as this can measure exposure to the intervention and variations that may exist. This strategy was also intended as an attempt to measure a participant's actual completion of the MBSR intervention components (Washington et al., 2018).

During the delivery phase, the study addressed fidelity by utilizing the same means of delivery, either online through the Qualtrics software or in-person through the same therapist. Additionally, as noted by Washington et al. (2018), the researcher remained flexible during

certain research phases as recruitment and delivery challenges surfaced. Subsequently, modifications to the required dosage amount and questionnaire format were implemented. The required dosage of video viewing time was modified from approximately seven hours to a minimum of one hour or more as preferred by the participant. In order to ensure the fidelity of the treatment components, along with these modifications, posttest questions were included to monitor the MBSR activities, which included participants calculating time engaged in video viewing, meditation, and reading. In this way, the modifications continued to take into account each participant's needs and differences (Washington et al., 2018) (see Appendix E, section F). Additionally, to assist in future MBSR delivery fidelity, participant satisfaction and barriers of the online MBSR program were assessed through posttest questions (see Appendix D, section E).

Research Design

This study was designed as a pilot feasibility study using a one group pretest posttest pre-experimental design aimed at examining the pre and posttest changes of loneliness and self-efficacy outcomes among older adults diagnosed with CVD who completed a brief online MBSR intervention (see Figure 2). Mikolasek et al. (2017) synthesized data from 17 studies that met the criteria for online health intervention outcomes on various chronic health conditions using approaches such as mindfulness and relaxation. In this review, previous studies most often used randomized control trials with pre and posttests. Also, among these studies, only one study used a control group and one study used pre and posttests (Mikolasek et al., 2017). Further research suggests that a pre and posttest research design proved effective, acceptable and cost-effective in the delivery of the online health program for the medical condition of fibromyalgia (Ljotsson, et al., 2014).

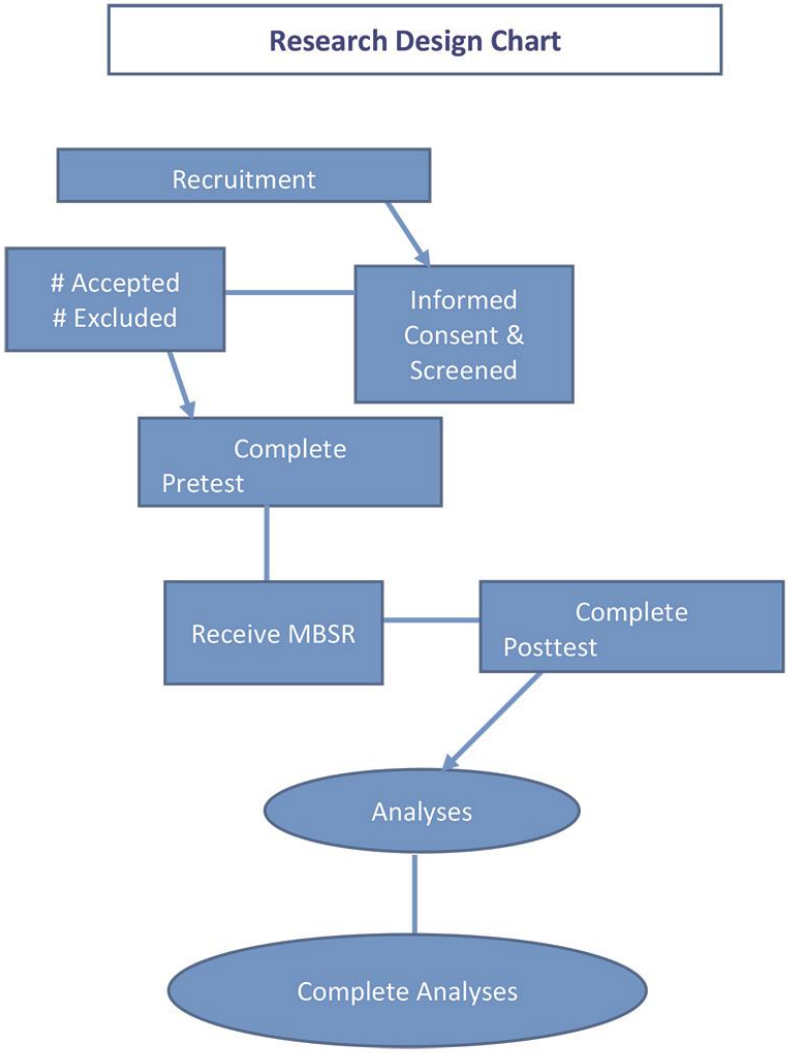

Figure 2. Research design chart. This model demonstrates flow of participants from enrollment to analysis as directed by the pilot study research design.

Online MBSR Intervention

Gluck and Maercker (2011) reported MBSR programs that range in length from two days to four weeks are effective in reducing psychological distress and that there was a lack of evidence to suggest that even shorter programs are less effective. Carmody and Baer (2009)

examined MBSR program lengths to find that programs ranged from four to 10 sessions with one session lasting one hour to two and half hours. Furthermore, Krushe, Cyhlarova, and Williams (2013) reported that longer MBSR programs correlated with weaker outcome measure effects. Likewise, Carmody and Baer (2009) examined effect size of MBSR studies looking at general psychological outcomes by comparing MBSR studies which reduced the time of the program as compared to an earlier standard of eight weeks. Their comparisons showed that reduction in the class hours or number of weeks of the MBSR program does not always lead to compromised outcomes and instead suggest that MBSR programs with lower time demands can lead to similar psychological outcomes and could ultimately lead to greater participation.

Carmody and Baer (2009) suggest that MBSR programs which lower the time demands and can still improve psychological functioning and participation are ideal. Consistent with the implications from previous research surrounding the time demands of MBSR programs and to contribute to existing research, this pilot study focused on the viewing time of the MBSR videos with a minimal viewing time of one hour or more if preferred by the participant. Additionally, as described in the consent form, each participant was informed that in order to obtain optimal benefits from the online MBSR intervention, 30 minutes of meditation was recommended. Finally, optional reading material was also provided to all participants. Also, these MBSR components (video viewing time, meditation, and reading) were measured through a posttest question in order to more fully examine treatment dosage and to ensure fidelity of the intervention instrument.

The online MBSR intervention in this pilot study utilized the curriculum and videos made available by the free online source entitled, *Palouse Mindfulness* provided by Dave Potter, a certified MBSR instructor, which is also based on the original MBSR program developed by Jon

Kabat-Zinn (Potter, 2017a). *Palouse Mindfulness* organizes eight video and reading sets as related to eight themes including the following: (1) simple awareness and body scan; (2) attention, the brain, and sitting meditation; (3) dealing with thoughts and yoga introduction; (4) responding and reacting to stress with breathing techniques; (5) dealing with difficult emotions and sensations and a physical pain supplement; (6) mindfulness and communication; (7) mindfulness and compassion; and (8) conclusion and development of individual MBSR practice (Potter, 2017b).

Research Questions and Hypotheses

Two research questions and related hypotheses were examined during the course of this pilot study:

1. Will an online MBSR influence the psychosocial component of loneliness among older adults with CVD? It is hypothesized that an online MBSR will decrease feelings of loneliness among older adults with CVD.
2. Will an online MBSR influence self-efficacy among older adults with CVD? It is hypothesized that an online MBSR will positively influence changes in self-efficacy while any decrease in loneliness will mediate improvements in self-efficacy.

Participants

Inclusion criteria. Previous research indicates gaps in studies that examine stress or mindfulness, the effect of mindfulness on populations with chronic health conditions, and the lack of targeting an older adult population (Mikolasek et al., 2017). Based on a systematic review that summarized eHealth studies utilizing mindfulness and relaxation interventions for chronic health conditions, most studies targeted student populations without any focus on chronic health conditions, especially CVD (Mikolasek et al., 2017). This pilot study addressed

both gaps by targeting an older adult population age 50 years and older with a current diagnosis of CVD.

Sampling Procedure

This study used a nonprobability, purposive sampling technique. The sample was identified through the use of two pre-screening questions prompted after the voluntary consent of each participant. The pre-screening questions determined eligibility by asking the participant whether he or she possessed a CVD diagnosis followed by whether he or she was 50 years of age or older. Participants who did not meet both inclusion criteria were not included in the sample for this pilot study.

Sample size. Based on an a priori analysis, this pilot study aimed to recruit a minimum sample size of 34 in order to achieve a 70% power to obtain an effect sizes of 0.15. However, even though numerous strategies were developed and implemented early in the recruitment process, there was little to no buy-in from participants. Therefore, the researcher expanded the recruitment reach to include emailed proposals to senior activity centers and four assisted living facilities. The expansion of recruitment efforts resulted in one facility which allowed the researcher permission to meet with the Resident Council. Consequently, with the approval of the council and the corporate office, the researcher facilitated the viewing of the online MBSR videos to 20 residents. The 20 participants followed the protocol of the exclusively online participants with the exception of the researcher starting the viewing of the online videos and delivering a printed version of the online pre and posttest questionnaires.

A total of 15 participants enrolled through the online link resulting in five participants who successfully completed the entire program ending with the posttest questionnaire. After the initial screen, five participants were ineligible with two lacking a CVD diagnosis and three being

under 50 years of age. The remaining five participants consisted of one who dropped out after completing the pretest questionnaire while the other four participants completed the pretest questionnaire, partially completed the webinar series and did not complete the posttest questionnaire. Figure 3 contains details on the participant retention and attrition rate for this pilot study.

Even with the participants at the assisted living facility, recruitment efforts fell short of the original aim for 34 participants. As a result, the sample size for this pilot study was 25 older adults aged 50 or older with a CVD diagnosis. Five of the 25 participants engaged with the MBSR exclusively online without any in-person facilitation while 20 participants engaged with the MBSR through the online platform made available through in-person facilitation at the assisted living facility.

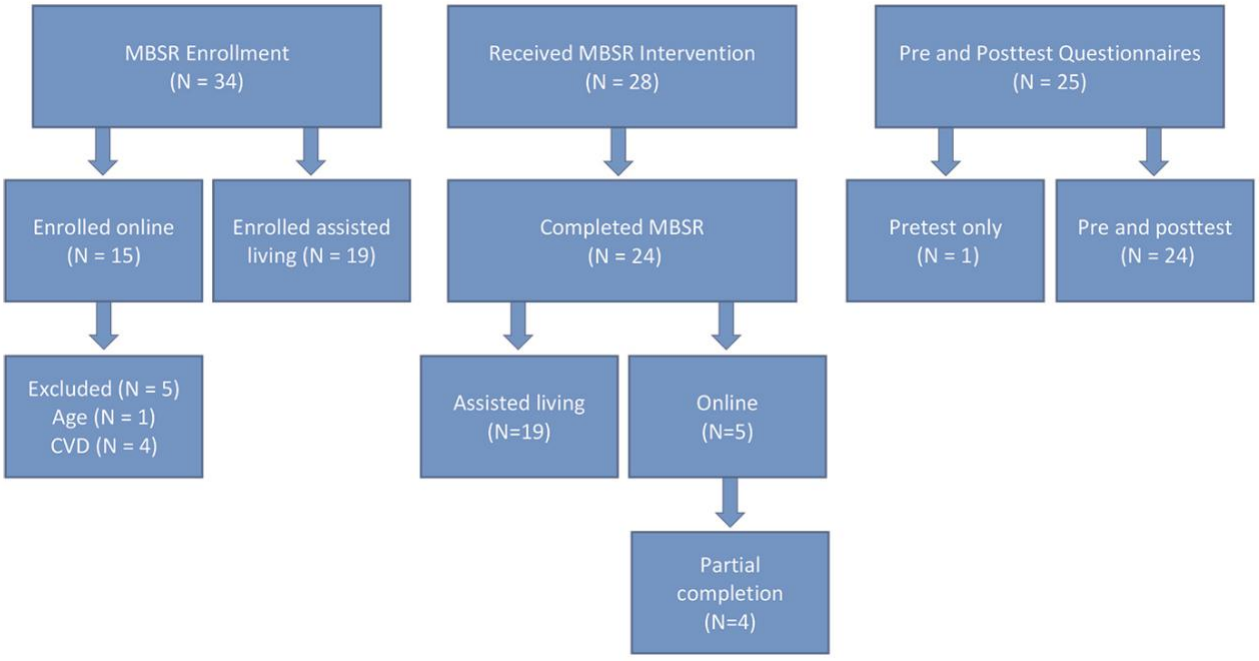

Figure 3. Participant retention and attrition details for the online MBSR program

Recruitment

Prior to initiating recruitment, approval for the study was obtained from the university's Institutional Review Board (IRB). Once approved by the IRB, recruitment was initiated through various mediums, both online and offline. Online recruitment methods included local advertisements, such as Psychology Today, Facebook, Reddit, and counseling websites. Additional online recruitment involved a Homeowner Association email server sending a mass email to all homeowners and emailed proposals to four assisted living facilities. Online recruitment also included postings to community mindfulness and meditation groups. Offline recruitment strategies involved the distribution of over 100 flyers throughout the community to senior community centers, rehabilitation centers, hospitals, physician offices, physical therapy offices, home healthcare businesses, Silver Sneaker gyms, yoga studios, and churches. Further recruitment involved the researcher actively handing out flyers and personally speaking to potential participants at a local stroke free prevention health fair, local senior activity centers, and assisted living facilities (see Appendix A).

Online MBSR Intervention

Logic Model

A logic model was developed to illustrate the impact of the online MBSR on the loneliness and self-efficacy of older adults with CVD (see Figure 4). Within the logic model, the MBSR program resources were the materials used during the course of the study which included the recruitment strategies, the online link for participation, the online MBSR platform, the MBSR curriculum, the Qualtrics host software, and the assisted living facility. The resources shown in the model assisted participants in completion of the online MBSR activities which included viewing the videos, meditation and optional reading material as well as completing the

consent form and the pre and posttest questionnaires. Consequently, the resources extended to the participant to complete the online MBSR activities lead to the MBSR outputs related to video viewing times, meditation, and optional completion of readings in addition to successful completion of the pre and posttest questionnaires. Finally, as shown in Figure 3, the totality of the resources, MBSR program activities, and the MBSR program outputs are hypothesized as both program outcomes and impact shown as short-term impacts (increased perceived social support and confidence), intermediate impacts (reduced loneliness and improved self-efficacy), and long-term impacts (empowerment, non-pharmaceutical approach promotion, and over well-being improvements) of the overall online MBSR intervention.

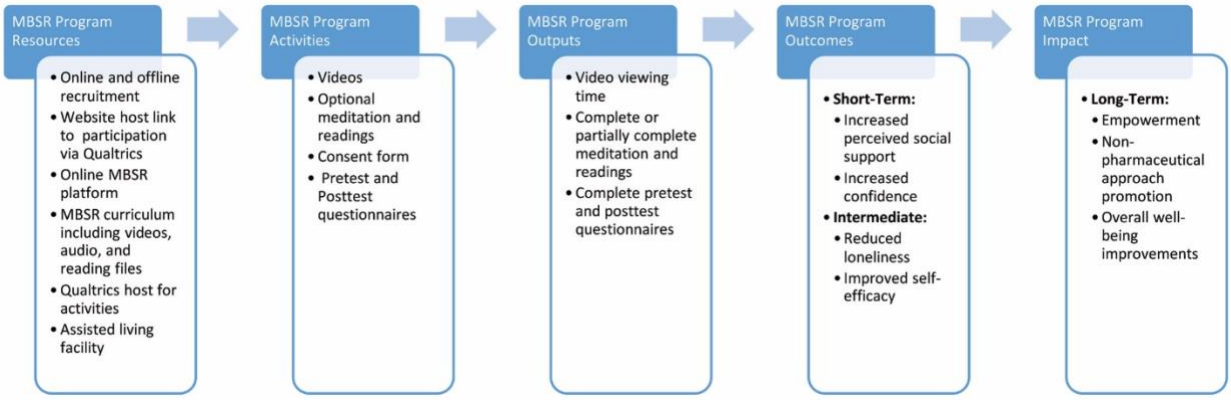

Figure 4. Logic model of the MBSR program implementation, strategies, and goals.

Procedures

After approval from IRB and initiation of recruitment, the MBSR program was launched online on the professional website of the researcher. Based on the preliminary aim of this pilot study to investigate the feasibility and crucial components of a MBSR intervention, the researcher in maintaining flexibility actively recruited participants within the assisted living

facility. Consistent with past research recommendations toward ensuring fidelity within a behavioral intervention, the researcher also made minor modifications to the delivery of the online MBSR program at the assisted living facility. However, the study simultaneously continued online recruitment throughout the course of the research. The following subsections describe in more details the procedure each group of participants followed in completing the online MBSR intervention.

Online participants. Online participants were self-referred by accessing the online MBSR through a domain or URL created exclusively for this pilot study on the researcher's professional website. Once the participant clicked the link, the server automatically triggered a redirection to Qualtrics, an online research platform used by the university. When in Qualtrics, the consent form was immediately available prior to participation in the online MBSR intervention. The consent form explained to the participant the purpose of the study, anticipated time commitment for the intervention, as well as the voluntary nature of his or her participation (see Appendix B). At the end of the consent form, the participant voluntarily choose yes or no to participate. If the individual chose not to participate, Qualtrics immediately redirected a response to thank them for their time and interest in the study and ended their participation. If the individual voluntarily chose yes, Qualtrics followed will two pre-screening questions to establish that the individual possessed a current diagnosis of CVD and met the age of 50 years or older. If the individual responded no to either pre-screening question, Qualtrics immediately redirected a response to thank them for their time and interest in the study and ended their participation. If the individual responded yes to both eligibility questions, Qualtrics only then opened up the pretest questionnaire.

Once the pretest questionnaire was completed, Qualtrics guided the participant through all online MBSR videos consecutively. Additionally, the optional reading material which related to each video could be selected by the participant once the entire video set was completed. The reading material was optional allowing the participant to voluntarily choose whether or not to access or move to the next video set. When the final video set was completed, Qualtrics opened the posttest questionnaire and upon completion prompted a message thanking them for their participation in the study.

Assisted living participants. While delivering the online MBSR intervention to the assisted living residents, it became clear to the researcher that individual differences existed which required additional modifications. Washington et al. (2018) indicated that "when working in challenging environments and with diverse populations" delivering a behavioral intervention can be affected by limited staff assistance, differences in space and resources, and individual differences (p. 155). The researcher experienced all these issues while delivering the online MBSR intervention at the assisted living facility. Therefore, in order to adapt to these differences, the researcher made minor modifications to the intervention procedures. The differences among participants at the assisted living facility most commonly observed by the researcher related to the completion of the questionnaires. Among the 20 participants at the assisted living facility, there were consistent challenges with reading and recording responses to the questionnaires. The reading challenge did not appear cognitive in nature, but rather related to eyesight difficulties associated with aging. The challenge with recording responses on the questionnaires were mostly unknown to the researcher. However, according to previous research, the writing process involves the delicate blending of cognitive, kinesthetic, and perceptual-motor component that are often age or disease related (Werner, Rosenblum, Bar-On,

Heinik, & Korczyn, 2006). Therefore, the researcher with the help of two employees assisted residents, as needed, in recording responses to the pre and posttest questionnaires.

The researcher delivered the online MBSR on four separate occasions at the same assisted living facility. The participants were initially identified as potentially eligible for the online MBSR intervention by the activities director. Once the participants were selected, each resident was directed or brought via wheelchair to the designated facility space for the intervention. The assisted living participants followed the same consecutive steps in completing the intervention as the online participants with the exception of the printed form for questionnaires, the assistance in recording responses on the questionnaires, and the in-person facilitation of only the online MBSR video activity.

Pretest questionnaire. As found in Appendix C, the pretest questionnaire was divided into four sections and contained a total of 34 items: (1) two eligibility questions in Section E; (2) 20 loneliness questions in Section L; (3) ten self-efficacy questions in Section SE; and (4) two questions about prior exposure to MBSR and meditation in Section PX.

Posttest questionnaire. As found in Appendix E, the posttest questionnaire was divided into five sections and contained a total of 45 items: (1) 20 loneliness questions in section L; (2) ten self-efficacy questions in section SE, (3) six MBSR activity questions to measure dosage of video viewing time, meditation, and reading material in section F; (4) four questions regarding satisfaction with MBSR program in section S, and (5) five demographic questions in section D (see Appendix E).

Sites. This study aimed to include 34 participants solely through the online platform in order to research the feasibility and effectiveness of an online MBSR intervention targeting older adults diagnosed with CVD. However, despite persistent recruitment efforts through both

passive and active means along with an extension of the recruitment period, this number proved infeasible for an entirely online sample. Therefore, to recruit an adequate number of participants with enough statistical power to study an online MBSR intervention, recruitment was successful in obtaining 20 participants within the target population at a local assisted living facility and five exclusively online participants.

Measures

Due to the preliminary nature of this pilot study, a number of measures were explored for potential relationships or links to CVD. All participants completed measures at two points via online or printed questionnaires immediately prior to and immediately upon completion of the MBSR intervention. For analysis purposes, the independent control variables for this study were the sociodemographic variables of age, gender, race, marital status, education, and income (see Appendix E, section D). Additional independent control variables included prior exposure to MBSR and meditation (see Appendix C, section PX) as well as responses from each participant related to MBSR activities including videos, meditation, and reading (see Appendix E, section F).

Independent variables

Pre-screening criteria. Each participant was pre-screened prior to engaging in the online MBSR intervention (see Appendix C, section E). After the participant read the informed consent and immediately following the participant's voluntary agreement for participation, the first question screened for eligibility based on whether or not a participant responded yes to a diagnosis of CVD. If the participant responded positively to this question, the second eligibility question screened for whether the participant met the age requirement of 50 years or older. Once

the participant responded positively to this final pre-screening criteria, the pretest questionnaire was made available.

Demographics. The posttest questionnaire concluded with demographic questions. The demographics collected in this pilot study included gender, race/ethnicity, marital status, education, and income (see Appendix E, section D). Although participants were presented with the demographic options in the posttest questionnaire, due to a small sample size, participant responses to race/ethnicity, marital status, education, and income were recoded for analyses purposes, as explained in each following subsection. Age was also collected, but optional for each participant to provide once he or she responded positively for the age pre-screener eligibility question.

Gender. The posttest question related to gender included a participant's identification as either male or female.

Race/ethnicity. Another demographic posttest question requested a response to how the individual would describe his or her racial/ethnic identity which included the following options: American Indian/Alaskan Native; Asian/Pacific Islander; African American/Black; Caucasian/White; Hispanic or Latino/Latina; and Other. Race/ethnicity response options were recoded and dichotomized to either White or non-White.

Marital Status. The demographic question regarding current marital status included the following choices: single/never married; married; widowed; and divorced. Marital status options were recoded and dichotomized to either married or never married, widowed, divorced, or single.

Education. The participant was presented the following response options for the posttest question asking for the individual's highest level of education: PhD or Doctorate; Master's;

Bachelor's; High School; GED; and Other. Education response options were recoded and dichotomized to either high school/GED or more than high school/GED equivalent.

Income. The final demographic posttest question requested the participant's 2017 individual gross income included the following response options: 1) Less than $15,000; 2) $15,001; 3) $25,001 to $35,000; 4) $35,001 to $45,000; 5) $45,001 to $55,000; 6) $55,001 to $65,000; 7) $65,001 to $75,000; 8) $75,001 to $85,000; 9) $85,001 to $95,000; and 10) $95,001 or more. Income response options were recoded to the following options: 1) Less than $15,000; 2) $15,001 to $25,000; 3) $25,001 to $35,000 and; 4) $35,001 and more.

Other Independent Variables

Method of participation. Another independent control variable was collected in order to analyze any differences in the impact of the online MBSR program among participants based on whether the participant engaged in the MBSR either online or in the assisted living facility.

Prior exposure. To address the fidelity of the MBSR treatment components, monitoring these components among participants was attained through a pretest question related to prior exposure. Each participant was screened for any prior experience with either MBSR or meditation. Upon completion of the pretest outcome measure of loneliness and self-efficacy, each participant was asked whether or not he or she had participated in MBSR of any type prior to this MBSR program and also whether or not he or she had engaged in meditation practice prior to this MBSR program (see Appendix C, section PX).

MBSR activities. Additional fidelity measures were taken by specifically measuring MBSR treatment component dosage with posttest questions. Upon completion of the MBSR intervention, each participant was asked to calculate the total amount of time spent in each

MBSR activity including viewing the videos, meditation, and optional reading (see Appendix E, section F).

Dependent Variables

Loneliness. The dependent variable of loneliness was measured through the revised UCLA loneliness scale (Russell et al., 1980). The revised UCLA loneliness scale included 20-items prefaced with the directions to "indicate how often you feel the way described in each of the following statements" with responses on a four-point Likert scale ranging from "never" to "often" and reverse scored (see Appendices C and E, section L). Randomly intermixed, half of the items are positively worded to reflect satisfaction with social relationships (e.g., I feel in tune with the people around me) and the other half are negatively worded to reflect dissatisfaction (e.g., I lack companionship) (Russell et al., 1980) (see Appendices C and E, section L). As examined by previous studies, the UCLA loneliness scale among older adults delivered construct validity and was highly correlated with other loneliness instruments including the NYU loneliness scale and the differential loneliness scale (Russell, 1996). In previous studies, this scale resulted in high internal consistency with a Cronbach's alpha of .94 (Russell et al., 1980). The Cronbach's alpha score found in this pilot study was .745 showing the use of the UCLA loneliness scale as reliable in measuring loneliness among this sample.

Self-efficacy. Consistent with HAPA, the 10-item version of the generalized self-efficacy scale (GSE) by Schwarzer and Jerusalem (1995) was used in this study to assess participants' self-efficacy related to the HAPA phases involving decision, management, and control of health conditions. Each item was rated on 4-point Likert scale with four response options including: 1) not at all true; 2) barely true; 3) moderately true; and 4) exactly true (see Appendices C and E, section SE). The summation for the GSE items range from 10-40 with

higher scores indicative of increased confidence in generalized self-efficacy (Schwarzer & Jerusalem, 1995). Additionally, previous research found the GSE both reliable and valid in measuring general self-efficacy among diverse populations and report the GSE range for Cronbach alpha scores as .76 to .91 (Ojedokun & Idemudia, 2014; Schwarzer & Jerusalem, 1995) (see Appendices C and E, section SE). This pilot study resulted in a Cronbach's alpha score of .919 demonstrating the reliability of the GSE instrument in measuring general self-efficacy in this sample.

Satisfaction with MBSR program. Mikolasek et al. (2017) suggested future online mindfulness-based interventions more fully examine participant's satisfaction with the intervention. Therefore, to fill a gap and contribute to existing intervention research, participants were asked to assess satisfaction with the MBSR intervention based on the following response options: very unsatisfied; unsatisfied; neutral; satisfied; and very satisfied (see Appendix E, section S).

Intervention fidelity. The fidelity strategy used to monitor completion included content related video questions that immediately followed the viewing of each MBSR video. These questions were designed to measure a participant's actual completion of the MBSR video intervention component and attempt to explain any variations in the intervention results. Each question immediately followed the video and consisted of three multiple choice response options (see Appendix D).

Barriers to access. A final fidelity strategy was addressed with a yes or no question asking if the participant encountered any problems or barriers to completing the MBSR intervention with space to also describe the barrier (see Appendix E, section G).

Analytic Approach

The approach to data analysis consisted of an initial examination for univariate descriptive and frequency information among all demographic variables including age, gender, race, marital status, education level, and income. Descriptive analyses of the sample was also completed for the other independent control variables regarding prior exposure to MBSR and meditation as well as dosage for each MBSR activity including video viewing time, meditation, and reading. Finally, univariate descriptive analyses were completed for the outcomes measures of loneliness, self-efficacy, and barriers to access.

The analytic approach used to answer the research questions involved various analyses including bivariate and correlations among the outcome measures of loneliness, self-efficacy, and satisfaction with online MBSR intervention. Bivariate analyses also examined pre and posttest changes in loneliness and self-efficacy among the entire sample and separately among the online and the assisted living facility samples.

CHAPTER 4

RESULTS

This pilot study examined whether an online MBSR intervention impacts loneliness and self-efficacy among older adults with a current CVD diagnosis. To conduct this research, a one group pretest posttest pre-experimental design was used, and results calculated with the statistical software, IBM SPSS, Version 22. Univariate and bivariate analyses were performed on the data to answer the two proposed research questions and test the two research hypotheses. A one-way analysis of variance (ANOVA), Pearson's correlation, and *t* tests were performed to examine the relationship between the outcome measures of loneliness, self-efficacy, satisfaction, barriers and each independent variable.

Independent Variables

Sample Demographics

The sample demographics for this pilot study are described in Table 1. The sample obtained in the study totaled 25 participants who successfully completed the online MBSR intervention. Accounting for the 25 participants were those who completed the MBSR exclusively online (*n*=5) and those who completed the MBSR at the assisted living facility (*n*=20). The sample consisted of 28% male (*n*=7) and 72% female (*n*=18). The data for the option of reporting age (*n*=16) indicated a range from 50 to 91 years with an average age of 74.44 (SD = 10.752). The racial distribution of the sample included 84% White (*n*=21) and 16% Non-White (*n*=4). The marital status of the sample consisted of 70% married (*n*=18) and 30% who were either never married, widowed, divorced, or single (*n*=7). The highest education level

among the sample comprised of 60% who completed high school or a GED equivalent (*n*=15) and 40% who completed more than high school or a GED equivalent (*n*=10). The gross income among the sample revealed the following distributions: 32% reported $15,000 to $25,000 (*n*=8); 28% reported less than $15,000 (*n*=7); 24% reported $25,001 to $35,000 (*n*=6); and 16% reported $35,001 or more (*n*=4).

Table 1

Sample Demographics

N = 25	% (M)	N
Age	(74.44)	16
Gender		
Male	28%	7
Female	72%	18
Race/Ethnicity		
Non-White	16%	4
White	84%	21
Marital status		
Married	30%	7
Never married/widowed/divorced/single	70%	18
Education		
High School/GED equivalent	60%	15
More than HS/GED equivalent	40%	10
Income		
Less than $15,000	28%	7
$15,001 to $25,000	32%	8
$25,001 to $35,000	24%	6
$35,001 or more	16%	4
Participation method		
Online	20%	5
Assisted living facility	80%	20

Prior Exposure

Prior Exposure to MBSR and to meditation was examined among the sample which is presented in Table 2. Results revealed that all of the sample (N=25) responded negatively reporting no prior exposure to MBSR of any type prior to completing this study. However, 20% (*n*=5) reported prior exposure to meditation prior to completing this study.

Table 2

Prior Exposure

N = 25	%	N
MBSR		
Yes	0%	0
No	100%	25
Meditation		
Yes	20%	5
No	80%	20

MBSR Activities

Table 3 exhibits the dosage amount of the intervention treatment components measured in total minutes participants engaged in each MBSR activity. In order to successfully complete the intervention, each participant was required to view the online MBSR videos for a minimum of 60 minutes. The additional MBSR activities including the meditation was recommended, but the reading materials were optional. The total time engaged in each activity included the following: 1) video viewing time ranged from 60 minutes to 320 minutes (M= 87.32, SD=70.03); 2) meditation ranged from zero to 30 minutes (M=8.13, SD=13.61) and; 3) reading ranged from zero to 30 minutes (M=15.00, SD=13.78).

Table 3

MBSR Activities

N = 25	Range	M	SD	N
Video viewing	60-320	87.32	70.03	25
Meditation	0-30	8.13	13.61	25
Reading	0-30	15.00	13.78	25

Outcome Measures

Loneliness

Table 4 shows the univariate analyses and the paired sample *t*-test conducted on the pretest and posttest loneliness outcome measures. The 20-item revised UCLA loneliness scale was scored on a four-point Likert scale ranging from "never" to "often" with 10 items reverse scored for a possible range of 20-80 with higher scores indicating greater loneliness. The univariate analyses revealed results for loneliness prior to the online MBSR (M=53.60, SD=8.87) as compared to the results for loneliness after completion of the online MBSR (M=53.88, SD=5.76) indicating a large amount of loneliness among this sample. The results of the paired sample *t*-test were not statistically significant, $t(24) = -.22$, $p > .05$.

Table 4

Loneliness

N = 25	M	SD	t	p
Pretest loneliness	53.60	8.87	-.22	.83
Posttest loneliness	53.88	5.76		

Table 5 presents the bivariate analyses between the outcome measures of pretest and posttest loneliness and each independent variable. To assess pre/post change, a difference score was computed to measure changes in loneliness from pre to posttest. Then, a one-way ANOVA was conducted to test the hypothesis that there would be a statistically significant difference in loneliness posttest scores. Results of the one-way ANOVA were not statistically significant in posttest loneliness scores among any of the independent variables (all p's >.05).

Table 5

Bivariate Associations with Loneliness

N = 25	Pretest M	Pretest SD	Posttest M	Posttest SD
Age	54.37	7.40	53.25	5.43
Gender				
Male	51.28	8.73	51.57	6.16
Female	54.50	9.01	54.77	5.52
Race/Ethnicity				
Non-White	55.50	3.11	52.75	.95
White	53.24	9.61	54.09	6.28
Marital status				
Married	53.57	10.63	54.42	7.89
Never married/widow/divorced/single	54.37	8.63	54.00	4.87
Education				
High School/GED	51.40	10.12	52.73	6.31
More than HS/GED	56.90	5.52	55.60	4.60
Income				
Less than $15,000	50.71	10.78	51.85	6.14
$15,001 - $25,0000	56.87	7.21	54.37	5.23
$25,001 to $35,000	51.16	9.53	53.67	7.11
$35,001 or more	55.75	7.67	56.75	4.57
Manner of intervention				
Online	59.60	4.39	56.80	3.56
Assisted living	52.10	9.14	53.15	6.04

Note: All bivariate associations are not significant

Self-Efficacy

Table 6 shows the univariate analyses and the paired sample *t*-test conducted on the pretest and posttest self-efficacy outcome measures. The univariate analyses revealed results for self-efficacy prior to the online MBSR (M=30.80, SD=6.79) as compared to the results for self-efficacy after completion of the online MBSR (M=30.88, SD=5.22). The results of the paired sample *t*-test were not statistically significant, $t(24) = -.09$, $p>.05$.

Table 6

Self-Efficacy

N = 25	M	SD	t	p
Pretest self-efficacy	30.80	6.79	-.09	.92
Posttest self-efficacy	30.88	5.22		

Table 7 presents the bivariate analyses between the outcome measures of pretest and posttest self-efficacy and each independent variable. A difference outcome variable was computed to measure changes in self-efficacy from pre to posttest. Then, a one-way ANOVA was conducted to test the hypothesis that there would be a statistically significant difference in self-efficacy posttest scores. No statistical significance was found at the bivariate level with the outcome measures of pretest and posttest self-efficacy and the independent variables of age, gender, race, marital status, education, income, and participation method (all p's >.05).

Satisfaction

Table 8 shows the results of the descriptive analysis of the outcome measure of satisfaction with the online MBSR intervention. Upon completion of the intervention, each participant rated their level of satisfaction from a one (unsatisfied) to four (very satisfied).

Table 7

Bivariate Associations with Self-Efficacy

N = 25	Pretest M	Pretest SD	Posttest M	Posttest SD
Age	33.33	4.13	31.93	4.80
Gender				
Male	30.85	7.44	30.42	6.50
Female	30.77	6.75	31.05	4.84
Race/Ethnicity				
Non-White	31.00	5.59	30.50	2.51
White	30.76	7.11	30.95	5.63
Marital status				
Married	32.85	2.85	33.71	3.03
Never married/widow/divorced/single	30.93	6.68	30.12	5.79
Education				
High School/GED	31.33	6.40	31.06	4.39
More than HS/GED	30.00	7.61	30.60	6.51
Income				
Less than $15,000	29.71	7.73	28.42	5.15
$15,001 to $25,000	28.12	8.55	29.12	5.86
$25,001 to $35,000	33.66	3.50	34.16	3.76
$35,001 or more	33.75	2.87	33.75	2.50
Manner of intervention				
Online	31.90	4.86	30.60	6.94
Assisted living	30.65	7.14	30.95	4.92

Note: All bivariate associations are not significant

Table 8

Satisfaction

N = 25	*%*	N
Unsatisfied	12	3
Neutral	20	5
Satisfied	52	13
Very satisfied	16	4

Participants (N=25) reported satisfaction with the online MBSR intervention as very satisfied (16%, *n*=4), satisfied (52%, *n*=13), neutral (20%, *n*=5), and unsatisfied (12%, *n*=3). Other univariate analyses indicated results of satisfaction with the online MBSR intervention (M=3.72, SD=.89). A bivariate analysis between the satisfaction outcome measure and each independent variable was conducted and found no statistical significance with the independent variables of age, gender, race, marital status, education, income, and participation method (all p's >.05).

Barriers to Access

Table 9 shows the results of the descriptive analysis of the outcome measure assessing barriers encountered to completing the online MBSR intervention. Upon completion of the intervention, each participant was asked whether or not he or she encountered any problems or barriers to completing this MBSR program. Response options included yes (1), no (2), and some (3). Results demonstrated 64% (*n*=16) did not encounter any problems or barriers while 36% (*n*=9) encountered some barriers to completing the online MBSR intervention. Other univariate analyses indicated results of barriers to completing the online MBSR intervention (M=1.64, SD=.49). A bivariate analysis between the barriers to access outcome measure and each independent variable was conducted and found no statistical significance with the barriers to access and the independent variables of age, gender, race, marital status, education, income, and participation method (all p's >.05).

Table 9

Barriers

N = 25	%	N	Exclusively Online (*n*)	Assisted Living (*n*)
Yes	36	9	3	6
No	64	16	0	16
Some	0	0	0	0

Nine participants responded positively to encountering barriers during their participation in the online MBSR intervention. Among these nine participants who encountered barriers, three participated exclusively online with the remaining six at the assisted living facility as seen in Table 9. The three online participants gave the following explanations: "not very good using computers"; "not sufficient in computer technology needed help with technology" and; "many of the videos were not accessible to me so I tried to find them on other sites which I did, but not all of them". Four out of the six assisted living participants gave the following explanations: "cannot see question well without glasses"; "couldn't see very well the questions"; "small print" and; "writing".

CHAPTER 5

CONCLUSION

This pilot study, using a one group pretest posttest pre-experimental design, examined the changes of loneliness and self-efficacy outcomes among older adults diagnosed with CVD who completed a brief online MBSR intervention. The focus of this study was the chronic health condition of CVD among older adults. CVD is the leading cause of death in the U.S. and among women (AHA, 2017; Melynk et al., 2014; Mozaffarian et al., 2016; Robbins et al., 2011; Villablanca et al., 2009; WHO, 2017a). Reports show the national statistics of CVD related deaths outnumber deaths from all other chronic health conditions and are disproportionately seen among age, gender, and racial groups (AHA, 2017; Mozaffarian et al., 2016; Nes & Sawtzky, 2010).

Other areas of focus for this study were in examining the outcomes measures of loneliness and self-efficacy. Research suggests loneliness among older adults is a significant health risk factor for increased morbidity and mortality of CVD (Courtin & Knapp, 2015; Creswell et al., 2012; Hagan et al., 2014; Hawkley et al., 2010; Russell, et al., 1980). Loneliness is especially problematic as a person ages due to limited or decreasing economic and social resources, mobility limitations, and in the death of family and spouses (Courtin & Knapp, 2015). Research in the area of loneliness among older adults is increasing, but gaps still exist related to decreasing loneliness among older adults with CVD. The other area of focus was on the outcome measure of self-efficacy. Since self-efficacy often predicts self-management of a person's chronic health condition, this study sought to improve self-efficacy among older adults

with CVD. Previous research suggests self-efficacy is vital in managing existing chronic health conditions and in assisting with preventative health behavior changes (Xiao et al., 2018). Therefore, self-efficacy is a strength and a personal resource older adults need to potentially improve and prevent further morbidity of CVD as well as progression into multiple chronic health conditions (Banik et al., 2018; Parschau et al., 2014). Older adults often lack the confidence or tools for empowerment to self-regulate or manage existing chronic health conditions. This study sought to empower older adults with one of many tools available to improve self-efficacy through an online MBSR intervention. Previous research suggests the training and knowledge attained from a MBSR program can result in changes to personal perceptions and reduce loneliness while improving an individual's ability to feel more confident and empowered leading to improved self-regulation and self-management of CVD. (Thompson, 2009; Xia et al., 2018).

This pilot study sought to contribute to previous research by targeting CVD among older adults while exploring the impact of an online MBSR intervention on loneliness, a significant health risk factor, and self-efficacy, a health behavior factor linked to prevention (Courtin & Knapp, 2015; Creswell et al., 2012; Hagan et al., 2014; Hawkley et al., 2010; Kim & Xu, 2010; Russell, et al., 1980). By focusing on CVD, as opposed to chronic health conditions in general, this study filled a gap in intervention research by exclusively examining the most widespread, costliest, and preventable chronic health condition in the U.S., cardiovascular disease (AHA, 2017; Nes & Sawtzky, 2010). Even more so, this study contributed to existing intervention research by examining a non-pharmaceutical mindfulness-based approach toward self-management and prevention of CVD while targeting an understudied, underserved population of older adults.

Creswell et al. (2012) concluded that future MBSR interventions should aim at clarifying what aspects of the MBSR program decrease loneliness. The traditional MBSR program includes a systematic developmental sequenced curriculum with activities that most often include an instructional component, mindfulness meditation, and gentle yoga or relaxation exercises (Victorson et al., 2014). These activities are designed to assist participants in developing the skill and autonomy of a self-regulated mindfulness practice (Victorson et al., 2014). Within the traditional MBSR program, the curriculum is composed of classes that instruct participants as a nonreligious practice in the "cultivation of nonjudgmental, moment-to-moment awareness through a process of attentional mindfulness" (Victorson et al., 2014, p. 186). Previous intervention studies have implemented adaptations of the traditional MBSR program targeting the various needs of the participants groups with variations in program activities, time requirements, study design differences, and delivery methods (Carmody & Baer, 2009; Fish et al., 2016; Gluck & Maercker, 2011; Mikolasek et al., 2017; Victorson et al., 2014). Systematic reviews on mindfulness-based interventions found that MBSR adaptations also show promising results for future research in the reduction of emotional distress, pain, sleep quality, and health-related quality of life (Victorson et al., 2014). In an attempt to more specifically identify the essential component of an MBSR program, this pilot study focused solely on the instructional component. Thus, another contribution to intervention research was the ability of this pilot study to build upon previous studies informing the MBSR treatment type by isolating the instructional component of the MBSR program, video viewing.

Systematic reviews on mindfulness-based interventions related to dosage were inconclusive on whether modifications to the amount of time required in the MBSR program significantly impacted the results. Consequently, this pilot study sought to fill this gap by

measuring the dosage of the MBSR activities in the intervention. The traditional MBSR program consists of eight classes accumulating 26 hours of participation time (Carmody & Baer, 2009). Previous intervention research reported that MBSR programs ranged in length from two days to eight weeks and from four to 10 sessions (lasting one to two and a half hours) (Carmody & Baer, 2009; Gluck & Maercker, 2011; Krushe et al., 2013). Additionally, previous MBSR intervention research reported programs with lower time demands do not necessarily lead to compromised outcomes and are needed to promote increased participation (Gluck & Maercker, 2011; Mak, Chan, Cheung, Lin, & Ngai, 2015). In utilizing a free online curriculum and videos based on the traditional MBSR program developed by Jon Kabat-Zinn, this pilot study contributed to previous studies by isolating MBSR activities and time engaged in each MBSR activity traditionally taught in this process. However, in providing a unique contribution, this pilot study specifically targeted the treatment type and dosage of a particular curriculum activity, video viewing (Potter, 2017a).

Major Findings

Loneliness

The first research question hypothesized that the online MBSR would decrease the psychosocial component of loneliness among older adults with CVD. Although previous studies indicated that MBSR programs decrease loneliness among healthy populations, minimal studies exist that examined the impact of a MBSR intervention among older adults with CVD (Hagan et al., 2014). Previous research suggests that the MBSR intervenes by reducing perceptions of distress that accompany loneliness which can change through mindfulness training (Chodron, 2000). However, the sample obtained in this study showed no statistically significant changes in loneliness from pre to posttest upon completing the online MBSR intervention.

Self-efficacy

The second research question in this study hypothesized that the online MBSR would positively influence changes in self-efficacy while any decrease in loneliness would mediate improvements in self-efficacy of older adults with CVD. Previous studies suggest that self-efficacy predicts self-management of a person's chronic health condition and identified an intervention research gap in self-efficacy targeting older adults with CVD. This study sought to explore the feasibility of an online MBSR intervention with older adults toward increased self-efficacy creating increased empowerment toward self-management of CVD. The sample obtained in this study showed no statistically significant changes in self-efficacy from pre to posttest upon completing the online MBSR intervention.

Limitations

This pilot study produced limited statistical power due to the small sample size. A larger sample size would not only give more statistical power, but also provide the opportunity to gather data on age subgroups in order to identify any significant differences in the impact of an online MBSR intervention. Furthermore, exclusively online participants demonstrated high dropout rates. According to previous online intervention studies, web-based interventions are prone to higher attrition rates (Mak et al., 2015). Future studies should explore how to enhance the acceptability of online MBSR programs through different processes such as participatory or codesign efforts among intended users or consumers. By involving the target population in the development of an online MBSR program, it provides the opportunity for feedback and suggestions in customizing the program to become more user-friendly and adaptable.

Another limitation of this study was the lack of a control group. Without a control group, other factors that possibly contributed to the results are unknown. Future research may utilize

control groups to more fully examine the effectiveness of an online MBSR intervention. Also, to eliminate any experimenter effect with the intervention, a control group with a different facilitator could be implemented (Kimport & Hartzell, 2015). In this study, the researcher was the sole facilitator at the assisted living facility. Even though results indicated there were no significant differences in the pre and posttest scores of loneliness or self-efficacy between the exclusively online and assisted living groups, a controlled randomized pilot study would minimize the effect of all other variables except the independent variable. Also, a control group would provide a baseline for comparing groups even within different treatment settings for the intervention.

Perhaps the main limitation to this pilot study was the threat of testing effects that often occur in experimental research designs. In this study, the time between completing the pre and posttest were not measured. Therefore, a learning effect or carry-over effect was increased in the posttest performance, especially toward influencing the dependent outcome measures of loneliness and self-efficacy. The participants' memory of the pretest loneliness and self-efficacy scales may have caused a practice effect of habituation or sensitization toward the format of the research design since the same scales of loneliness and self-efficacy were used in the posttest.

Limitations surrounding computer literacy also existed in this study. Research revealed that even though older adults demonstrated increased usage of computer literacy and confidence, chronic health conditions did not dissuade them from using the internet for health information (Telecommunications and Information Administration, 2013). Research also indicated there are disparities among older adults in relation to usage, demonstrating those with from lower socioeconomic backgrounds engage less and differently (Telecommunications and Information Administration, 2013). Furthermore, reports stated not only was internet usage determined by

age with a consistent decline in usage among the oldest of older adults, but lower level of internet skills often lead to barriers involving overwhelmed feelings and navigation difficulty (Hargittai & Dobransky, 2017). This study found that internet usage among the oldest of older adults (M=74, N=25) are challenged with encountering such barriers. When participants in this study self-reported barriers, the barriers for web-site navigation and aging deterioration existed in using online platforms. Barrier themes included those related to aging eyesight, hearing, and even fine motor skills involved with writing. In examining more closely internet skills among older adults, Hargittai and Dobransky (2017) found that not only was age a factor, but also education and income. This research suggests those with a high school or less education are significantly less skilled than those who attain a college education or with an income of $65,000 or more. Within this study, the majority of the sample (N=25) completed high school or GED equivalent (60%, *n*=15) and only 16% (*n*=4) reported an income over $35,000 possibly contributing to the less effectiveness of an online intervention due to lower computer literacy.

Previous MBSR intervention studies identified a need to clarify which component or activity is essential in producing desired changes (Creswell et al., 2012). Additionally, previous studies utilized the combination of various MBSR components, such as instruction, meditation, and yoga or relaxation exercises through different delivery methods including in-person and online facilitation (Fish et al., 2016; Mikolasek et al., 2017; Victorson et al, 2014). However, research is limited on whether one or more MBSR activities work in conjunction with one another or function independently of one another to produce change. Furthermore, previous research suggests that future studies explore a reduction in the time demands of a MBSR program and that lower time demands do not necessarily lead to compromised outcomes (Carmody & Baer, 2009). Even though this pilot study gathered data on the dosages of

meditation and reading, the only requirement for successful completion of the online MBSR intervention was 60 minutes of video viewing. Therefore, other limitations in this study included the focus on one treatment component and its dosage within the online MBSR program. It is possible that the instructional component requiring a minimum of 60 minutes to view the online MBSR videos was not enough and an increased dosage would produce a significant change. It is also possible that by isolating the instructional component of online MBSR videos was insufficient on its own or not the essential activity to produce a significant change. Future online MBSR studies should continue to explore the uncertainty of treatment type and dosage among the instructional component and the other related MBSR activities, especially in the older adult population. Since previous MBSR studies demonstrated effectiveness in reducing the psychosocial component of loneliness and improving self-efficacy, future studies should determine what components are feasible and likely to impact these changes in an online MBSR intervention with older adults diagnosed with CVD.

Other limitations of this pilot study involved participation challenges for this target population experienced during the recruitment phases. Recruitment efforts could be greatly assisted in the future if more support is gained from senior activity centers, more assisted living facilities, medical personnel and providers, and other authority figures throughout the community. This study lacked the position of influence and time required to build these community partnerships that should be anticipated in future studies of this nature.

Implications

Feasibility

The aim of this pilot study was to assess the feasibility of the online MBSR intervention and to test its' impact on loneliness and self-efficacy among older adults diagnosed with CVD.

Even though the results of this pilot study did not show any statistically significant effects on loneliness or self-efficacy, it does point to further feasibility implications for MBSR related intervention research. The field of health promotion and disease prevention is striving toward increased evidence-based interventions and indicates feasibility studies are needed to "determine whether an intervention is appropriate for further testing" (Bowen et al., 2009, p. 2). Consequently, to assess the feasibility in this pilot study the recommended target variables of implementation, acceptability, adaptation, integration, and limited-efficacy testing will be explored for future implications (Bowen et al., 2009).

Implementation. The implementation variable is defined as the "extent, likelihood, and manner in which an intervention can be fully implemented as planned and proposed" (Bowen et al., p. 3). Initially, this online MBSR intervention was planned and proposed as an exclusively online program. However, due to recruitment challenges, the implementation of this intervention was expanded to include residents at the assisted living facility. With this additional setting, the implementation of the online MBSR faced challenges. Therefore, future research should not only consider potential modifications to the online delivery method, but other means of delivery such as in person facilitation either individually within group settings.

Previous research suggests online delivery of health interventions offer flexibility, convenience, and decreased costs while providing improvements in health outcomes, health knowledge, and self-care (Burns et al., 2017). However, this study experienced numerous challenges with the online method of delivery including high attrition and dropout rates among participants. The literature reveals that MBSR programs are effective in various methods of delivery including individual and group settings with either in-person facilitation or using instructional videos (Baer, 2003; Dreeben et al., 2013; Mikolasek et al., 2017). Future feasibility

studies should continue to explore the benefits to implementing the MBSR in various settings in order to assess how to effectively reach the older adult population either as a whole or within age subgroups.

Acceptability. The acceptability variable examines how the intended target population engaged and experienced the intervention (Bowen et al., 2009). Research shows internet usage among older adults are increasing, but the oldest of older adults show the lowest amounts of usage along with socioeconomic disparities and different engagement of online activities (Hargitta & Dobransky, 2017). Due to the disparities experienced by older adults, especially with CVD, future studies related to the feasibility of online MBSR intervention should continue to target older adults through further exploration of older adult age subgroups. Online MBSR interventions that reach the younger of older adults (aged 50 to 64) may find them more open and computer literate to accurately address whether an online MBSR intervention can impact loneliness and self-efficacy. However, since older adults are at increased risk for chronic health conditions and loneliness, which in turn increases the morbidity and mortality of chronic health conditions, online interventions should also target the oldest older adults (aged 65 and older) as well, but in such a manner that allows more acceptability (Hargittai & Dobransky, 2017).

More acceptability for the oldest older adults could take on various forms for future MBSR related interventions. As indicated by previous research, online interventions need to take into account meaningful access which includes physical access and knowledge of technology platforms as well as an understanding that "digital inequality by age is more complex than is often described and, in fact, has generational and life-cycle components to it" (Czaja, 2015; Hargittai & Dobransky, 2017, p. 2017). Without the ability to incorporate online usage into their daily lives, older adults who are past retirement and even living in assisted living

facilities, lack the motivation, incentive, and even the necessary resources to benefit from its capabilities to improve overall health and wellbeing. It is important to understand the differences in age subgroup among older adults, especially related to online health interventions. Research suggests that online capabilities and usage may even be affected by increased morbidity of multiple chronic health conditions which lead to increased barriers for use (Hargittai & Dobransky, 2017). Furthermore, since previous research points to the existence of socioeconomic disparities among older adults related to online usage, future online MBSR studies need to address the lower computer literacy skills among older adults with lower education and lower income backgrounds (Hargittai & Dobransky, 2017). This study experienced similar challenges as previous studies related to meaningful access surrounding low computer literacy and digital inequality among older adult participants (Choi et al., 2014; Czaja, 2015; Hargittai & Dobransky, 2017).

Adaptation. The adaptation variable focuses on the specific modifications to be made in the intervention and/or procedures as appropriate for future research (Bowen et al., 2009). In this study, the majority of participants were obtained from an assisted living facility (n=20). Residents in an assisted living facility are a unique subgroup of older adults with a higher likelihood of health or physical related impairments than older adults in an independent living setting (Rickard, Berkowsky, & Cotton, 2017). In a study that examined reasons for discontinued use of technology, results indicated that age and increases in daily living impairments were related to less use of technology (Rickard et al., 2017). Additionally, previous studies found that barriers such as physical declines associated with aging and higher daily living impairments made it challenging for older adults to use and manipulate many devices. Subsequently, future online interventions should strive to design and implement an online MBSR

program that takes into account these barriers and requires less cognitive and physical demands from older adults that encounter such barriers.

Since writing was reported as a barrier to this study, future studies could explore the use of assistive technology for the implementation of an online MBSR intervention, especially toward recording pre and posttest questionnaire responses. Previous research found that writing among healthy older adults differ from writing among unhealthy older adults (Werner et al., 2006). Additionally, Werner et al. (2006) discovered cognition and writing are related especially among different tasks. Writing involves the functions of cognition, visual and kinesthetic perception, motor planning, eye-hand coordination, visual-motor integration, dexterity, and manual skills (Werner et al., 2006). Due to aging and oftentimes chronic health conditions, older adults incur disabilities associated with handwriting. Taking into account this barrier or difficulty and in an effort to increase computer literacy, future studies could implement the use of smart tablets for each participant that easily incorporates a stylus digital pen or finger to mark questionnaire responses. Additionally, a smart tablet has the ability to read and even allow dictation of responses for the questionnaires which lowers the demands on older adults.

Integration. The integration variable looks at the level of change that may be needed to integrate an intervention into an existing infrastructure or program (Bowen et al., 2009). As informed by SDH theory, this pilot study demonstrated that socioeconomic factors are relevant in designing and implementing an online MBSR intervention. Due to disparities among older adult subgroups, future interventions should expand recruitment to include subgroups of not only age, but also education and income. SDH also explained the isolation and dependency that older adults experience, especially as confirmed in this study related to navigating an online intervention. Previous research in the area of digital inequality found a gap in understanding

more fully the reasons for these inequalities in internet use among older adults (Hargittai & Dobransky, 2017). Future studies could address this gap by exploring online MBSR interventions for older adults to gradually incorporate online usage in their everyday lives, especially surrounding improving or managing CVD. Furthermore, incorporating technology usage within the infrastructure of the assisted living facilities and throughout the community-based agencies serving older adults, could increase computer literacy and meaningful access barriers.

Limited-efficacy testing. The limited-efficacy testing variable refers to the limited manner in which pilot studies test an intervention which may include convenience samples, limited statistical power, and intermediate rather than long-term outcomes (Bowen et al., 2009). This pilot study tested the the impact of the online MBSR intervention using a one group nonprobability, purposive sampling technique. Additionally, this study explored for the essential treatment component(s) and dosage for an effective online MBSR intervention. Results from previous studies report that the amount of mindfulness practice reported by participants mediated increases in wellbeing (Carmody & Baer, 2009). The results from this study pointed in this direction by suggesting the isolation of the treatment type and dosage of the related MBSR activity, video viewing time, was not enough to impact a change in the older adult sample and that the potential of adding a practice component may be essential for future online MBSR studies to examine more completely.

Reflection and Social Work Practice

As a social work practitioner experienced in various fields of practice including working with older adults either living independently or living in an assisted living facility, fulfilling the charge to "enhance the capacity of people to address their own needs" can be a daunting mission

(NASW, 2017, Preamble section, para. 2). However, striving to enhance the computer literacy among older adults to empower them toward managing CVD or other chronic health conditions should become a vision for social work practitioners in meeting this mission. In doing so, social workers can ultimately help in promoting increased health equity and improved health outcomes among older adults. Rooted in the social worker's mission, this pilot study targeted older adults with an eHealth intervention meant to empower and enhance a participant's ability to self-manage their own chronic health condition, CVD. Even though no statistical significance was found, replication of this study could prove more effective with some modifications. After much reflection, this pilot study has the potential to guide social work practitioners and researchers closer to these goals. Thus, in addition to addressing the limitations, other modifications could be made to improve the effectiveness of this intervention.

The online format was designed to allow participants the ability to complete at their own pace. However, as described by previous studies, low computer literacy, digital inequality, and meaningful access was a challenge that ultimately lead to decreased participation among older adults (Choi et al., 2014; Czaja, 2015; Hargittai & Dobransky, 2017). As previously described in the methods chapter, recruitment was expanded resulting in the facilitation of the online MBSR at a local assisted living facility. During the implementation at the assisted living facility, the researcher made several observations. One observation was that many participants experienced difficulty sitting for long periods of time along with feelings of frustration and weariness in completing the questionnaires. Therefore, modifications for future online MBSR interventions should explore alternative time options for completing questionnaires and engaging in activities, such as shorter sitting increments and shorter questionnaires with perhaps only one outcome measure. Another modification would be the development of an online MBSR intervention

manual for the implementation phase. The manual would be an ever-evolving instrument toward consistent implementation in various settings to include a note section for researcher observations and recommendations.

Social work practitioners working in the field of aging could apply the principles found in this study to working with older adults in the community. Understanding the literature and previous research related to the lack of meaningful access that exist, especially among the oldest older adults, strives toward digital equality could essentially equal strives toward health equality. Therefore, outreach efforts to increase awareness and education could greatly impact the older adult communities. Social workers in assisted living facilities could promote activities related to increasing computer literacy and pursue grants to make assistive technology devices, such as smart tablets available to the resident for such activities. Furthermore, within the community, social workers could host events in senior activity and community centers related the improving online skills and the benefits of online usage, especially in improving overall health and wellbeing. Finally, other platforms for implementation of a MBSR related intervention should also be explored by social workers in the field of aging. Since loneliness is a significant risk factor in developing CVD, in-person facilitation with either individual participants or groups may provide the needed and desired personal contact lacking among lonely older adults. These efforts and goals are essential as social workers and researchers answer the call to pay "particular attention to the needs and empowerment of people who are vulnerable, oppressed, and living in poverty" (NASW, 2017, Preamble section, para. 1).

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APPENDICES

APPENDIX A

Study Flyer

Online MINDFULNESS-BASED STRESS REDUCTION

Perhaps you are coping with health conditions that affect the functioning of your heart and want to learn how to potentially improve or manage without medication or visiting a doctor. Listed below are just some of the conditions which qualify you for this program:

Cardiovascular Disease (CVD) Other Cardiovascular and Metabolic Diseases Coronary Heart Disease Congestive Heart Failure Stroke Heart Attack Heart Failure Heart Valve Problems Atrial Fibrillation Arrhythmia Heart Valve Problems Other Heart/Cardiovascular Conditions

Sign up today at: http://www.alphaomegaholistic.com/online-mindfulness-based-stress-reduction-mbsr/

- Participation will involve completion of two short questionnaires and watching a minimum of **ONLY 1 hour** of videos on **Mindfulness-Based Stress Reduction** to total a minimum participation time = **ONLY 1 hour 15 minutes.**

If you are interested in this study, please visit the website or contact: *Principal investigator: Christi Hardeman, LCSW, PhD Candidate UGA School of Social Work* either by email at cphardeman@uga.edu or by phone at 678.596.9477

You CAN make a difference in Healthy Aging Research!

UNIVERSITY OF GEORGIA
School of Social Work

APPENDIX B

Consent Letter

Online Mindfulness Based Stress Reduction (MBSR) for Cardiovascular Disease (CVD)

Dear Sir or Madam:

I am a graduate student under the direction of Professor Dr. Orion Mowbray in the School of Social Work at the University of Georgia. I invite you to participate in a research study entitled Online Mindfulness Based Stress Reduction (MBSR) for Cardiovascular Disease (CVD) that is being conducted under the auspices of the faculty sponsor, Dr. Orion Mowbray. The purpose of the study is to promote increased understanding of how non-pharmaceutical approaches can help individuals manage and potentially improve CVD. To be eligible for participation in this study, participants must be 50 years of age or older and must have been medically diagnosed with CVD or other related cardiovascular or metabolic conditions.

Your participation in this study will involve viewing online pre-recorded webinar episodes within a series of eight webinars for a minimum of 1 to 5 hours by choosing at least one to two episodes from each of the eight webinar series along with completion of a questionnaire before and after the study in order to measure progress that may result from the MBSR program. Each online webinar series contains a primary focus and will include 3 to 6 episodes ranging in length from 3 minutes to 27 minutes.

The online format is designed for you to work comfortably at your own pace allowing you to start and stop at your convenience while saving your progress. Upon your return, please access the place you found the original link to start where you left off on your prior visit until you have completed the study. Please note that your progress will be saved for up to four weeks after your last visit or activity in the online MBSR study. To gain optimal MBSR benefits, it is recommended you watch all the webinar episodes in their entirety (approximately 5 hours). Also optional supplementary reading will be provided and it is recommended that each participant engage in 30 minutes of daily mediation practice to gain optimal benefits from the MBSR program.

Your involvement in the study is voluntary, and you may choose not to participate or to stop at any time without penalty or loss of benefits to which you are otherwise entitled. If you decide to withdraw from the study, the information that can be identified as yours will be kept as part of the study and may continue to be analyzed, unless you make a written request to remove, return, or destroy the information. Only the researcher will have access to the data. The results of the research study may be published, but any identifying information will not be used. The findings from this study may provide information on factors related to assisting persons with CVD to improve overall quality of life and well being. There are no known risks associated with this study. The main researcher conducting this study is Christi Hardeman, a Graduate Student at the University of Georgia. If you have questions, you may contact Christi Hardeman at cphardeman@uga.edu or at (678) 596-9477. If you have any question or concerns regarding your

rights as a research participant in this study, you may contact the Institutional Review Board (IRB) Chairperson at (706) 542-3199 or irb@uga.edu. Questions or concerns about your rights as a research participant should be directed to The Chairperson, University of Georgia Institutional Review Board, 609 Boyd GSRC, Athens, Georgia 30602; telephone (706) 542-3199; email address irb@uga.edu. Thank you for your consideration and assistance!

Sincerely, Christi Hardeman

I agree to participate in this survey:
- ❍ Yes (1)
- ❍ No (2)

APPENDIX C

Pretest Questionnaire

Online Mindfulness Based Stress Reduction (MBSR) for CVD

Section E (Eligibility)

E1 Are you currently diagnosed by a physician with cardiovascular disease (CVD)?

❍ Yes (1)
❍ No (2)

E2 Are you 50 years of age or older? If yes, please state your current age in years in the box provided.

❍ Yes (1) _____
❍ No (2)

E3 Thank you for your time and interest in our MBSR online program. You have indicated that either you do not currently possess a diagnosis of cardiovascular disease (CVD) or that you are not 50 years of age or older. To qualify for the Online MBSR program you must have a current cardiovascular disease (CVD) diagnosis and be 50 years of age or older. Again, we greatly appreciate your time and interest in this important endeavor.

Section L (Loneliness)

Indicate how often you feel the way described in each of the following statements.

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)
I feel in tune with people around me (1)	❍	❍	❍	❍
I lack companionship (2)	❍	❍	❍	❍
There is no one I can turn to (3)	❍	❍	❍	❍
I do not feel alone (4)	❍	❍	❍	❍
I feel part of a group of friends (5)	❍	❍	❍	❍
I have a lot in common with the people around me (6)	❍	❍	❍	❍

I am no longer close to anyone (7)	❍	❍	❍	❍
My interests and ideas are not shared by those around me (8)	❍	❍	❍	❍
I am an outgoing person (9)	❍	❍	❍	❍
There are people I feel close to (10)	❍	❍	❍	❍
I feel left out (11)	❍	❍	❍	❍
My social relationships are superficial (12)	❍	❍	❍	❍
No one really knows me well (13)	❍	❍	❍	❍
I feel isolated from others (14)	❍	❍	❍	❍
I can find companionship when I want it (15)	❍	❍	❍	❍
There are people who really understand me (16)	❍	❍	❍	❍
I am unhappy being so withdrawn (17)	❍	❍	❍	❍
People are around me but not with me (18)	❍	❍	❍	❍

There are people I can talk to (19)	❍	❍	❍	❍
There are people I can turn to (20)	❍	❍	❍	❍

Section SE (Self-efficacy)
Choose one option for each questionnaire item.

	Not at all true (1)	Hardly true (2)	Moderately true (3)	Exactly true (4)
I can always manage to solve difficult problems if I try hard enough. (1)	❍	❍	❍	❍
If someone opposes me, I can find the means and ways to get what I want. (2)	❍	❍	❍	❍
It is easy for me to stick to my aims and accomplish my goals. (3)	❍	❍	❍	❍
I am confident that I could deal efficiently with unexpected events. (4)	❍	❍	❍	❍
Thanks to my resourcefulness, I know how to handle unforeseen situations. (5)	❍	❍	❍	❍

I can solve most problems if I invest the necessary effort. (6)	❍	❍	❍	❍
I can remain calm when facing difficulties because I can rely on my coping abilities. (7)	❍	❍	❍	❍
When I am confronted with a problem, I can usually find several solutions. (8)	❍	❍	❍	❍
	❍	❍	❍	❍
If I am in trouble, I can usually think of a solution. (9)	❍	❍	❍	❍
I can usually handle whatever comes my way. (10)	❍	❍	❍	❍

Section PX (Prior Exposure)

PX1 Have you ever participated in an MBSR program of any type prior to this MBSR program?

❍ 1-YES _____ program name

❍ 2-NO

PX2 Have you ever engaged in meditation practice prior to this MBSR program?

- ❍ 1-YES
- ❍ 2-NO

Thank you for your participation in our Online MBSR program. We truly value the information you have provided. Your responses are vital in helping us better understand non-pharmaceutical approaches to managing and potentially improving CVD. Again, we greatly appreciate your assistance in this important endeavor.

APPPENDIX D

Video Questions

Online Mindfulness Based Stress Reduction (MBSR) for CVD

Video Set 1, Episode 1

What did the speaker state "is possible"?

1) Achievement
2) Growth
3)Transformation-Answer

Episode 2

According to the speaker, "anytime you habitually check out becomes an opportunity for what?

1) Checking in-Answer
2) Daydreaming
3) Understanding

Episode 3

Befriending the body is all about fixing what we see is wrong.

1) True
2) Neither true nor false
3) False-Answer

Episode 4

As seen in this episode, all of our senses are used in the raisin meditation.

1) True-Answer
2) Neither true nor false
3) False

Vide Set 2, Episode 1

What was the animal spotted in this episode?

1) Monkey
2) Gorilla -Answer
3) Lion

Episode 2

Q) What shapes our brain?

1) Parenting techniques
2) Our repeated experiences-Answer
3) Biology only

Episode 3

Which of the following is one of the factors in the Underperformance Continuum.

1) Daydreaming
2) Stress
3) All of the above-Answer

Episode 4

It is possible to practice paying attention and change the structure of the brain. In doing this what are some ways it can potentially benefit us?

1) Enhance wellbeing
2) Gives us clarity
3) All of the above-Answer

Episode 5

What does our brain spend most of its' time doing?

1) Learning new things
2) Worrying about the future-Answer
3) Growing and developing

Episode 6

On average our minds are lost in thought almost 64% of the time and this causes unhappiness.

1) True
2) Neither true nor false
3) False-Answer

Video Set 3, Episode 1

How would you define non-striving as related to the information you received in this episode?

1) Trying really hard
2) Figuring it out on my own
3) Non-doing-Answer

Episode 2

What is part of the practice of mindfulness as mentioned in this episode? In other words, what type of characteristics are we cultivating when we practice mindfulness?

1) Being non judgmental
2) Kindness
3) All of the above-Answer

Episode 3

In the video what analogy were thoughts described as?

1) Turbulent stormy weather-Answer
2) Circular motion
3) Tennis match

Episode 4

What is the key to unlocking our habituated patterns?

1) Stop the patterns before they begin
2) Begin to bring mindful attention to the patterns-Answer
3) None of the above

Video Set 4,Episode 1

Research on stress found that it causes ulcers and immune system issues.

1) True
2) Neither true nor false
3) False-Answer

Episode 2

How do we build stress resilience?

1) Seek support and human connection-Answer
2) Not worry about it
3) Take control of it

Episode 3

What does T stand for?

1) Take control of my thoughts
2) Take a deep breath mindfully-Answer
3) All of the above

Video Set 5, Episode 1

In mindfulness we are interested in self awareness, but also other awareness and how we are also alike.

1) True-Answer
2) Neither true nor false
3) False

Episode 2

The past is a _____ while the future is a _____.

1) Mistake; Answer
2) Memory; Dream
3) All of the above

Episode 3

What is the leading cause of disability globally?

1) Cancer
2) Drug abuse
3) Depression-Answer

Episode 4

Dr. Hayes states there is a lot of wisdom in our emotions and in our thoughts, this is why we don't need to get rid of the bad and only keep the good thoughts.

1) True-Answer
2) Neither true nor false
3) False

Episode 5

What phrase should we say that creates the space for what is there?

1) This belongs-Answer
2) I need space
3) None of the above

Episode 6

In this episode, common humanity is important because we realize we are not alone and this is normal or natural.

1) True-Answer
2) Neither true nor false
3) False

Video Set 6, Episode 1

What do we have to do to be genuine listeners?

1) Ignore details
2) Drop our agenda-Answer
3) Repeat what we hear

Episode 2

What are we being influenced by when we are listening?

1) Wants
2) Fears
3) All of the above-Answer

Episode 3

In this video, vengeance is described as a lazy form of what?

1) Anger-Answer
2) Grief-Answer
3) Justice

Episode 4

Blame is one of the reasons we miss our opportunity for empathy.

1) True-Answer
2) Neither True nor False
3) False

Episode 5

In the video, empathy is described as very different from what other emotion?

1) Anger
2) Loneliness
3) Sympathy-Answer

Video Set 7, Episode 1

Studies on charity showed that higher economic class or wealthier persons give more.

1) True
2) Neither true nor false
3) False-Answer

Episode 2

Name one thing that high social support is linked to?

1) Improved longevity
2) Decreased heart disease and decreased dementia
3) All of the above-Answer

Episode 3

Within the definition of mindfulness, what does awareness arise out of?

1) Talking with others
2) Intentionally paying attention-Answer
3) Taking personal assessments

Episode 4

Self-compassion focuses on what?

1) Self-acceptance-Answer
2) Self-improvement
3) Self-acknowledgment

Video Set 8, Episode 1

How does the man from Project Happiness Revealed describe a day to him?

1) A gift-Answer
2) An answer

Episode 2

What is the secret to a happy life?

1) Support and Socialization
2) Success and Gratitude
3) Reflection and Gratitude-Answer

Episode 3

What was a common struggle for the woman in this episode?

1) Complaining
2) Worrying
3) All of the above-Answer

Episode 4

Listening is a practice of compassion and love.

1) True-Answer
2) Neither true nor false
3) False

Episode 5

Even if you are in rush hour, what is one thing you can do?

1) Stress out like everyone else
2) Slow down and stop-Answer
3) All of the above

Episode 6

In the parable what did the monks do that compelled more visitors to the monastery?

1) Became more generous with one another
2) Began to listen more attentively
3) Began treating one another with respect-Answer

APPPENDIX E

Posttest Questionnaire

Online Mindfulness Based Stress Reduction (MBSR) for CVD

Section L (Loneliness)

Indicate how often you feel the way described in each of the following statements.

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)
I feel in tune with people around me (1)	❍	❍	❍	❍
I lack companionship (2)	❍	❍	❍	❍
There is no one I can turn to (3)	❍	❍	❍	❍
I do not feel alone (4)	❍	❍	❍	❍
I feel part of a group of friends (5)	❍	❍	❍	❍
I have a lot in common with the people around me (6)	❍	❍	❍	❍
I am no longer close to anyone (7)	❍	❍	❍	❍
My interests and ideas are not shared by those around me (8)	❍	❍	❍	❍
I am an outgoing person (9)	❍	❍	❍	❍
There are people I feel close to (10)	❍	❍	❍	❍

I feel left out (11)	❍	❍	❍	❍
My social relationships are superficial (12)	❍	❍	❍	❍
No one really knows me well (13)	❍	❍	❍	❍
I feel isolated from others (14)	❍	❍	❍	❍
I can find companionship when I want it (15)	❍	❍	❍	❍
There are people who really understand me (16)	❍	❍	❍	❍
I am unhappy being so withdrawn (17)	❍	❍	❍	❍
People are around me but not with me (18)	❍	❍	❍	❍
There are people I can talk to (19)	❍	❍	❍	❍
There are people I can turn to (20)	❍	❍	❍	❍

Section SE (Self-efficacy)

Choose one option for each questionnaire item.

	Not at all true (1)	Hardly true (2)	Moderately true (3)	Exactly true (4)
I can always manage to solve difficult problems if I try hard enough. (1)	❍	❍	❍	❍
If someone opposes me, I can find the means and ways to get what I want. (2)	❍	❍	❍	❍
It is easy for me to stick to my aims and accomplish my goals. (3)	❍	❍	❍	❍
I am confident that I could deal efficiently with unexpected events. (4)	❍	❍	❍	❍
Thanks to my resourcefulness, I know how to handle unforeseen situations. (5)	❍	❍	❍	❍
I can solve most problems if I invest the necessary effort. (6)	❍	❍	❍	❍

I can remain calm when facing difficulties because I can rely on my coping abilities. (7)	❍	❍	❍	❍
When I am confronted with a problem, I can usually find several solutions. (8)	❍	❍	❍	❍
If I am in trouble, I can usually think of a solution. (9)	❍	❍	❍	❍
I can usually handle whatever comes my way. (10)	❍	❍	❍	❍

Section F (Fidelity)

F1 Did you complete all eight webinar sessions?
❍ 1-YES
❍ 2-NO
❍ 3-SOME ____ # Webinars completed

F2 Did you engage in meditation practice during the MBSR program?
❍ 1-YES
❍ 2-NO

F3 During your completion of the MBSR program, did you complete the reading materials?
❍ 1-YES
❍ 2-NO
❍ 3-SOME ____ # Readings completed

Please estimate the total amount of time spent in each of the following MBSR activities:
F4 Online Webinars _____ Hours _____ Minutes
F5 Meditation _____ Hours _____ Minutes
F6 Reading _____ Hours _____ Minutes

Section B (Barriers)

B1 Did you encounter any problems or barriers to completing this MBSR program?
- ❍ 1-YES Please explain: _____
- ❍ 2-NO

Section S (Satisfaction)

S1 How would you rate your overall satisfaction with the MBSR program?
- ❍ 1-VERY UNSATISFIED
- ❍ 2-UNSATISFIED
- ❍ 3 NEUTRAL
- ❍ 4 SATISFIED
- ❍ 5-VERY SATISFIED

S2 Would you recommend MBSR to a friend?
- ❍ 1-YES
- ❍ 2-NO

S3Please feel free to share any additional comments or suggestions about your experience with this MBSR program in the space below.

Section D (Demographics)

Please answer each question as accurately as possible by clicking the option or filling in the space provided that best represents you.

D1 What is your gender?
- ❍ Male (1)
- ❍ Female (2)

D2 How would you describe your racial/ethnic identity (check all that apply)?
- ❍ American Indian/Alaskan Native (1)
- ❍ Asian/Pacific Islander (2)
- ❍ African American/Black (3)
- ❍ Caucasian/White (4)
- ❍ Hispanic or Latino/Latina (5)
- ❍ Other (please specify) (6) _____

D3 What is your current marital status?
- ❍ Single/Never married (1)
- ❍ Married (2)
- ❍ Widowed (3)
- ❍ Divorced (4)

D4 What is your highest level of education?
- ❍ PhD or Doctorate (1)
- ❍ Master's (2)
- ❍ Bachelor's (3)
- ❍ High School (4)
- ❍ GED (5)
- ❍ Other (6)

D5 What was your individual gross income for 2017?
- ❍ Less than $15,000 (1)
- ❍ $15,001 to $25,000 (2)
- ❍ $25,001 to $35,000 (3)
- ❍ $35,001 to $45,000 (4)
- ❍ $45,001 to $55,000 (5)
- ❍ $55,001 to $65,000 (6)
- ❍ $65,001 to $75,000 (7)
- ❍ $75,001 to $85,000 (8)
- ❍ $85,001 to $95,000 (9)
- ❍ $95,001 or more (10)

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