AN EXPERIMENTAL STUDY OF MINDFULNESS AND ACCEPTANCE-BASED SKILLS FOR
INTERNALIZED AGEISM IN OLDER ADULTS AND COLLEGE STUDENTS

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This project explored whether mindfulness and acceptance-based practices (MABPs) for older adults would reduce the negative effects of ageism and negative attitudes and beliefs related to aging. In addition, state affect and stress were explored. This study used an experimental design to compare two groups of older adults and two groups of undergraduate students – those who received a MABP and those who did not, after being presented with negative ageist stereotypes. Condition and condition by age sample comparisons revealed several findings. Following the MABP, undergraduates who received a MABP had significantly lower ageism scores than did undergraduates who did not. Older adult findings were opposite of proposed hypotheses, with older adults having higher scores on ageism after receiving the MABP, as compared to the scores of older adults who were in the comparison condition. Differences in state mindfulness were seen between conditions, with the MABP condition exhibiting more state mindfulness than in the comparison condition. However, there was no significant condition by age sample interaction effect. Change scores for state affect after the MABP were non-significant at either level of analysis, and older adults showed no difference in digit span stress scores based on their condition assignment. Exploratory analyses revealed some research consistent, as well as nuanced, findings. These findings suggest that undergraduates may respond to MABPs for recontextualizing aging, discrimination, and stigma. These findings also suggest that older adults may employ different coping strategies when confronted with ageism in an experimental context when asked to reflect, as oppose to participate in MABPs. Overall, a need for aging education, experimental research with older adults, and empirical

understandings of MABPs for age-related issues, is needed. Limitations and future directions are discussed.

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By

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CHAPTER 1

INTRODUCTION

Aging and Older Adults

The need for more attention to the older adult population in the United States has never been more apparent. The term *older adult* is recommended for use when referring to individuals who are at or over the age of 65 (APA, 2010); this term is used in both research and policy. Other formal terms, such as *elderly person*, *senior* or *senior citizen*, as well as terms used to describe certain decades of aging (e.g., *nonagenarian* for those people between 90 and 99 or *centenarian* for those older than 100), are used as well.

The number of older adults (approximately 42.6 million in 2014) represents almost 15% of the total population in this country – meaning that for every seven people, one of these individuals is over the age of 65. The percentage of older adults is expected to grow to 21.7% by 2040, and by 2060, upwards of 98 million people will be over the age of 65 – almost double the figures of 2014 (Administration on Aging, 2017a). Through departmental research, the AoA provides a suitable amount of information on this population of Americans. This information is presented as a profile on their website (AoA, 2017c) and explores demographic variables (e.g., race and ethnic composition, marital status, growth, income, etc.) by year. The most recent year provided, 2016, will be briefly examined in the section below to give an adequate overview of this population's typical demographic makeup. A more thorough account of this information, as well as information on older adults in the U.S. from the past decade, can be found on the AoA website (AoA, 2017b). Sources used for this review include the U.S. Census Bureau, the Bureau of Labor Statistics, and the National Center for Health Statistics. A selection of these sources use samples of older adults which include adults that are 60 years and older.

The Older American in 2016

The growth of older Americans from 2005 to 2016 has increased by approximately 11.1 million (30% increase), which is six times the number of Americans under 65 years old. In 2015, 9% of minorities in the U.S. were over the age of 65, while 19% of whites were over the age of 65. The sex ratio for older adults between the ages of 65 and 84 was 126.5 women for every 100 men, and for individuals older than 85, this ratio became even greater (189.2 women for every 100 men).

Sex differences are noted for marital status – with men 65 and older being much more likely to be married than their female counterparts. Women over 65 were much more likely to be widows than men (34% versus 12%). Divorce rates for older adults were also much higher in 2016 than they were over three decades ago, for both men and women. Older adults were working more and made up a significant part of the labor force in the U.S. Education levels were also rising amongst older adults, with more older adults having completed at least high school and some college. The number of older adults ages 65-74 living in assisted living was approximately 1%, but this number increased for adults 75-84 (3%) and those adults 85+ (9%) (AoA, 2017b).

Physical Health

Non-institutionalized older adults rate their health as being *very good* to *excellent* (approximately 39%), even though most older adults 75 years and old have at least one chronic health concern. These ratings of well-being do not differ greatly from individuals 45-64 years of age (54% rate their health quality in the same range). The most common health ailments older adults (75+) face, as of 2015, include hypertension/high blood pressure (M = 76%), arthritis

(53%), heart disease (35%), cancer (32%), and diabetes (22%). Thirty percent of older adults in America (60+) are considered obese by body mass indexing standards (BMI), and 35% of older adults (65+) have some kind of physical disability. Older adults experience related difficulties with vision (7%), self-care (8%), hearing (15%), independent living (15%), and walking (23%).

Pain often becomes more likely with aging (Gagliese, 2009). Pain can affect other facets of well-being, including sleep, inflammation, and physical activity (Kroenke, Johns, Theobald, Wu, & Tu, 2013). One proposed method of handling pain, specifically, is through *task-switching* ability. This task switching behavior allows individuals to “self-regulate” cognitions and behaviors by permitting shifts between “less adaptive sets (e.g., ruminating about pain) to more adaptive ones” (Boggero, Eisenlohr-Moul, & Segerstrom, 2016, pg. 435). In support of this method of pain management and reduction, Boggero and colleagues (2016), found that objective task-switching in older adults might have protective qualities. They also found that subjective cognitive functioning did not significantly interact with pain and health (Boggero, Eisenlohr-Moul, & Segerstrom, 2016).

There may be multiple means by which older adults’ physical health is changed for the better. Proactive health behaviors (e.g., influenza and pneumococcal vaccinations) are generally high in this population (approximately 70%). Further, almost all older adults (97%) report having a place to go for their healthcare. Some of these proactive health behaviors may be correlated with access to federal healthcare coverage (i.e., Medicare), the number of doctor’s office visits within the past year, and the number of overnight hospitalizations older adults had during the past year (AoA, 2017b).

Psychological Health

Contrary to public perceptions of aging (Nelson, 2009), older adults experience equally high levels of subjective well-being as younger adults. This research finding is deemed the *paradox of well-being* (Homan, 2016). Relatedly, the AoA reports that less than 3% of older adults disclosed having serious levels of psychological distress within the past month. Generally, there is a trend toward decreasing prevalence of psychopathology as individuals enter this age group. However, Byers and colleagues (2010) estimate that the 12-month prevalence rates of mood and anxiety disorders among community dwelling mid-old and older adults is still quite high, especially for women. Previous research has estimated a prevalence rate of 23% for comorbid anxiety and depression in older adults seen in primary care and psychiatric settings (Lenze et al., 2000).

Although mood disorders are noted to be less prevalent than anxiety in older adulthood, depression is still common in older adults. Late-life depression is the occurrence of “significant clinical depression, as defined by the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5; APA, 2013)” for those individuals who are 60+ years of age, and is typically higher amongst those who are hospitalized (10-12%) or living in long-term care facilities (12-20%). Health disparities can contribute to late-life depression (e.g., those who have experienced a heart attack are at higher risk of late-life depression and if they have a marginalized status it can be exacerbated; Alexopoulos, 2005). Diagnostically, late-life depression is under-recognized, undertreated, and underreported (see Bhalla, O’hara, Coman, & Butters, 2014).

Depression can mimic certain aspects of dementia (e.g., “reduced concentration, slowness of thought, difficulty registering current events, and subjective feeling of the brain not working

as it should;” Burns & Jolley, 2012) – coined as depressive pseudodementia (Lishman, 1998). This can complicate matters of a clear diagnosis of depression or dementia. In some studies, when accounting for depression, the relationship between subjective cognitive complaints and objective impairment is practically non-existent (e.g., Genziani et al., 2013; Zlatar, Moore, Palmer, Thompson, & Jeste, 2014). In other studies, depression is found to be less influential on the relationship between the subjective cognitive complaints and objective performance (Cook & Marsiske, 2006; see Burmester, Leathman, & Merrick, 2015).

Still, rates of cognitive impairment are much higher (between 20-50%; Butters et al., 2004) for older adults with late-life depression than controls without late life depression, and the consequences of this are detrimental to treatment (e.g., relapse, poorer response to antidepressants; Butters et al., 2004). Therapeutic approaches may address cognitive deficits, but still many of the difficulties persist after treatment (Bhalla et al., 2006, Bhalla et al., 2009; See Bhalla et al., 2014 for full review of effects of depression in older adults). For an individual experiencing cognitive difficulty, helping professionals might attempt to intervene past addressing cognitive functioning, and address other pieces of the individual’s experience (e.g., feelings of loss, frustration). Researchers examining symptoms of cognitive issues discovered that there were some treatable, and possibly reversible, symptoms related to cognitive decline (e.g., depression; see Burns & Jolley, 2012). In fact, worries about cognitive decline may be remediated by psychoeducation and therapy, but only if "accurate perceptions" of memory function are in place (Lachman & Andreoletti, 2006; Burmester et al., 2015).

And still, older adults make meaning of their aging process. As they age, cognitive difficulties are more frequently reported and are regularly taken as being a sign of some greater form of cognitive decline (i.e., Alzheimer’s disease or dementia; Jonker, Geerlings, & Schmand.,

2000; Paradise et al., 2012). This hypervigilance to cognitive functioning can cause worry about general cognitive impairment and memory functioning (Lachman, 2004). In fact, research shows older adults have a greater fear of developing dementia than cancer (Burns and Jolley, 2012), and worries about future decline and subjective cognitive complaints may negatively affect quality of life, especially in older persons who have a family history of Alzheimer's or vascular dementia.

Altogether, perception and expectations of health and aging also contributes to older adult well-being. Levy's stereotype embodiment theory (2009) applied to aging suggests that the main vehicle through which health outcomes are affected are by aging perceptions – particularly that age-based stereotypes influence how the older adult reacts to their health experiences. Other theories (e.g., the externalization hypothesis; Rothermund & Brandtstädter, 2003) suggest a bidirectional relationship between health and aging perceptions, where one's declining health may contribute to a person's negative perceptions of aging, or vice versa (see Warmoth, Tarrant, Abraham, & Lang, 2015). Taken together, this research highlights the interconnected, biopsychosocial nature of aging and health.

Social Health

Social health branches into multiple areas of the developmental experience for older adults (e.g., retirement, isolation and loneliness, changes in communal settings). Researchers have established that engaging in and preserving social ties in older adulthood is correlated with reduced mortality rates and healthier outcomes (see Holt-Lunstad, Smith, & Layton, 2010). Subsets of aging research explain the phenomenon through social or personality-based theories. Charles and Piazza (2009) suggest that “older age is related to increases in affective well-being but that continued exposure to unavoidable negative events results in the attenuation or reversal

of these age-associated advantages.” Still, older adults tend to report having fewer stressful situations in their lives than younger adults (Stawski, Sliwinski, Almeida, & Smyth, 2008). This is attributable to change in social roles as well as the fact that older adults construct a more benign environment. These differences in behavior are conceptualized as being related to time already lived and time left (Charles & Piazza, 2009).

Pioneering social psychological research postulates some of the functional aspects of mortality salience include the socio-emotional selectivity hypothesis (SST; Carstensen, 2006) – which states that having a “limited future time perspective” is indicative of switching focus from “knowledge-related goals” to “emotional goals” and those which are socially rewarding (Lang, 2000). Ultimately, this shift in values highlights the importance of social health and connectedness in older adults. Relatedly, Terror Management Theory (TMT, Becker, 1973; Greenberg, Pyszczynski, & Solomon, 1986) provides a premise for understanding how mortality salience influences one’s attitudes and values, and future behaviors (Maxfield et al., 2007). Related to cognitive behavioral therapies which focus therapeutically on exposure and experiential acceptance (i.e., acceptance and commitment therapy; ACT), Maxwell and colleagues (2007) found that older adults responded differently from younger adults to a mortality related stimuli, such that older adults reported less death anxiety overall. The authors proposed that “increased proximity to death,” as well as more exposure to “reminders of mortality” may reduce anxious distress and may even promote attitudes of acceptance of their inevitable mortality (Maxwell et al., 2007).

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age-based stereotypes influence how the older adult reacts to their health experiences. Other theories (e.g., the externalization hypothesis; Rothermund & Brandtstädter, 2003) suggest a bidirectional relationship between health and aging perceptions, where one's declining health may contribute to a person's negative perceptions of aging, or vice versa (see Warmoth, Tarrant, Abraham, & Lang, 2015). Taken together, this research highlights the interconnected, biopsychosocial nature of aging and health and contributing factors, such as ageism, are worth exploring.

Ageism

Ageism is detrimental to individuals and society as a whole. It is historically defined as "...prejudice directed against someone based on his or her age" (Butler, 1969). A more recent and thorough definition of ageism provided by Iversen, Larsen, and Solem (2009) states that "ageism is defined as negative or positive stereotypes, prejudice and/or discrimination against (or to the advantage of) elderly people on the basis of their chronological age or on the basis of a perception of them as being 'old' or 'elderly.' Ageism can be implicit or explicit and can be expressed on a micro-, meso- or macro-level." Other researchers (e.g., Bodner et al, 2011, José & Amado, 2017) claim that this definition, though comprehensive, does not include the issue of self-ageism. This is salient because ageism can also be "self-directed or other directed" (José & Amado, 2017).

Ageism has negative effects on physical and mental well-being (Lamont, Swift, & Abrams, 2015), and a culture or society's perspective on aging might directly contribute to an individual's level of functioning. Most older adults have experienced ageism (84%; both implicit and explicit) and likely contribute to cultural attitudes, which may interfere with older adults

aging well (Palmore, 2004). Researchers have recently acknowledged some of the compounding effects from other *-isms* (e.g., racism and sexism) that have unfortunate interplays with ageism (Stripling, 2016). For instance, beauty standards in a culture may be highlighted for older women and can entail a burden on them to have certain body and appearances that appear youthful (Clarke & Korotchenko, 2011; Calasanti & Slevin, 2001)

Support has been found for ageism being “self-directed or other directed” (José & Amado, 2017). Relatedly, Bennett and Gaines (2010) identify four primary hypotheses about how self-stereotyping affects older adults. These include: stereotype threat, comparison, externalization, and internalization. Although not all hypotheses are equal in their contribution to self-ageism, Bennett and Gaines (2010) concluded that the nature of stereotypes can be positive or negative, that they affect the individual greater if they are self-relevant, that they can either be within or outside of the awareness of the individual, which can affect physical and cognitive outcomes, and that negative stereotypes can be addressed through positive priming.

Believability of the stereotype also affects the impact. Levy (1996) suggests that one of the most damaging effects of negative stereotypes is that the individual/group that is being targeted ultimately begins to “assimilate and believe” the stereotypes as being a representation and description of themselves. As Nelson illuminates, “Negative stereotypes can become self-fulfilling prophecies and adversely affect health care providers’ attitudes and behaviors toward older adult clients” (Nelson, 2016). An example of the insidious nature of self-directed ageism is when an older adult might use the term “senior moment” when referring to momentary memory lapse. This can become a vicious cycle when it is perpetuating the negative image of aging within a society.

Nelson (2016) reviews popular societal and cultural topics related to aging, such as cognitive decline, physical limitation, and longevity. He concluded “age-related limitations” might be more socioculturally imposed than was previously thought. For example, Nelson challenges the commonly held thought that “memory loss in old age is a natural byproduct of the aging process,” which would naturally entail uniformed decline across cultures. In a comparison between American and Chinese older adults, Americans were outperformed by Chinese participants on a memory test. The Chinese participants had a much more positive view of aging their American counterparts. They also had more cultural and societal support (e.g., more respect for elders in Chinese culture; Levy, 2009; Levy & Langer, 1994). Contemporary cross-cultural research has demonstrated divergent findings (see North & Fiske, 2015 for meta-analysis of cross cultural attitudes towards older adult aging).

Findings similar to the research included in Nelson’s review on negative stereotypes, cognition, and aging are found over time. In a 38-year long longitudinal study conducted by Levy and colleagues (2012), older adults who had more negative age stereotypes had a memory decline of 30.2% when compared to individuals who did not hold such negative stereotypes of aging (Levy, Zonderman, Slade, & Ferrucci, 2012). Stereotypes can perpetuate a phenomenon defined as *stereotype threat* (Steele & Aronson, 1995). In a recent review and meta-analysis of 32 studies (10 of which were unpublished) examining the effects of age-based stereotype threats, the authors found that there existed a small-to-medium effect for age-based stereotype threats for older adults (Lamont et al., 2015). Specifically, vulnerabilities of age-based stereotype threats are more apparent when manipulations in studies are “stereotype-based” (either subtle or explicit; i.e., telling the participant “it is widely assumed that intellectual performance declines with age;” Abrams, Eller, & Bryant, 2006) and not “fact-based” (i.e., “research supports...”), when

performance is measured with cognitive assessments, and when the dependent variable in these studies parallels the active manipulation. Importantly, these stereotype threat effects did not depend on the older adults' age or gender (Lamont et al., 2015).

There are also positive stereotypes included within ageism, such as older adults being wiser and kinder due to their experiences in life (Palmore, 1999). Although this might not seem to be as detrimental to the well-being of older adults as negative stereotypes, expectations of how older adults *ought* to act might set up contingencies where older adults who do not present these qualities are regarded as their conceptual opposites (e.g., dull and callous) – possibly contributing to less meaningful interactions with others. Positive stereotypes may induce social pressure for older adults to embody these attributes at the expense of acknowledging the difficulties of aging (Cherry et al., 2016).

Nelson (2016) proposes the ontological question of “Why are people ageist?” As related to the previously discussed TMT theory (Becker, 1973; Greenberg, Pyszczynski, & Solomon, 1986), he proposes that “older people are a very poignant and salient reminder to younger people that they are mortal, that life is finite.” The resulting anxiety that emerges from this “reminder” that they too are mortal causes the individual to create “defense buffers” to manage these fears. In essence, the younger person is “depersonalizing and objectifying” the older adult, and blaming them for their own “lower-status in society and poor physical condition” (Nelson, 2016, pp. 346). As Nelson (2005) so clearly stated, “ageism is our own prejudice against our feared future self.” Some health professionals may avoid serving older adults because such work evokes discomfort related to their own aging or relationships with parents or other older family members (Nelson, 2005).” New understandings, exposure, and flexibility may benefit health professionals aiming to serve this growing population.

Cherry et al. (2016) found that positive ageist behaviors tend to be more common than negative ageist behaviors and that women tend to endorse positive ageist sentiments more than men. Men and women endorse negative ageist behaviors with equal frequency. Their findings also demonstrated that middle and older adults tend to have more ageist behaviors than do adolescents and young adults, and knowledge of aging was significantly negatively correlated with negative ageist behaviors when controlling for gender and age.

In total, ageism is considered one of the “most socially condoned” forms of prejudice and discrimination (Nelson, 2005), and the universal nature of ageing allows for this effect to reach across different identities that individuals experience (Stripling, 2016). Negative ageing stereotypes can affect personal interactions with older adults and the assumptions people hold about older adults’ abilities, judgements, and behaviors (Bennett & Gaines, 2010; for review, see Nelson, 2016; pp 337-353).

Negative aging stereotypes, poorer physician-rated and self-rated health, and illness correlate with greater negative perceptions of aging and appraisals of health (Jang, Poon, Kim, & Shin, 2004; Moor, Zimprich, Schmitt, & Kliegel, 2006; Palacios, Torres, & Mena, 2009; Stewart, Chipperfield, Perry, & Weiner, 2012; see Warmoth et al., 2015). Conversely, positive aging perceptions in older adults themselves tend to correlate with higher psychological well-being (Polverino, 2010), self-rated health (Janecková, Dragomirecká, Holmerová, & Vanková, 2013), and health status (Kim, 2009). As is evident by these findings, one’s own perception and appraisal of their health directly relates to actual health and illness more broadly.

Researchers deliberately involved older adults in the development and delivery of a program using a module on aging for university undergraduate students. Students were implored to reflect on the needs and considerations for older adults in occupational endeavors. A pivotal

finding of this study was the benefit of older adult integration. Also, the interaction between students and older adults was cornerstone to the success of the module, and the exchange of ideas across the spectrum of aging was seen as highly valuable for all participants involved (Tullo, Greaves, and Wakeling, 2016). Ultimately, this type work requires reductions in ageist prejudices and attitudes.

Successful Aging

The term successful aging (Rowe & Kahn, 1987, 1997, 2015) is a term that has been used in the gerontological research for nearly three decades. Conceptualization of the term successful aging was used to differentiate between pathological and nonpathological (i.e., those not suffering from disease and disabilities) aging processes in older adults. The main ways successful aging is defined in the research includes three central components. These include a reduced probability of both disease and disease-related disability, high cognitive and physical functioning, and active engagement in life. As the theory expanded, subcomponents expanded as well (e.g., absence of the potential *risk* for disease, activity [not merely potential] in relation to functioning, and active engagement in both productive activity and interpersonal relationships; Rowe & Kahn, 1997).

As this model developed, so did additional conceptualization within the model – for instance, spirituality (Tomás, Sancho, Galiana, & Oliver, 2015; Rowe & Kahn, 2015). Specifically, Tomás and colleagues suggest how positive spirituality (i.e., “developing an internalized personal relation with the sacred or transcendent that is not bound by race, ethnicity, economics, or class and promotes wellness and welfare of self and others;” Koenig et al., 2000) is an integral, and apparently elapsed component, of successful aging. Through spirituality, older

adults can experience greater life satisfaction, and make meaning out of their experiences (Cowlshaw et al., 2013), and can even more greatly contribute to successful aging than the first three components (van Dierendonck, 2012). Indeed, the evidence provided from positive spirituality contributing to aging well (in addition to the basic tenets of successful aging; Tomás et al., 2015) demonstrates that there is likely more to SA than was accounting for in the original model.

Successful aging provided an essential paradigm shift within the field of aging research and intervention, where those studying aging could expand their scope and explore alternatives to “linear deterioration in old age” (Cosco, Prina, Perales, Stephan, & Brayne, 2013) and other trajectories of aging. Although several thousand articles have been written on the topic of successful aging (Rowe & Kahn, 2015), there is still a lack of consistency in the research as well as criticism of the model (see Martinson & Berridge, 2015). There is a lack of operationalization of successful aging; ultimately affecting measurement, research progress, and generalization and application. The model itself is considered to be fractured – where individuals are discussing biomedical and psychosocial concepts separately – when a more holistic (i.e., one which incorporates biomedical and psychosocial concepts) view of SA might be a better fit (Cosco et al., 2013).

Although the operationalization of successful aging proves to be heterogenous in research related to the components, many conceptualizations of SA explicitly state that this phenomenon means more than merely surviving. Glass (2003) characterizes successful aging as, “functioning across a number of constructs, such as social, cognitive, and emotional” – noting the imperative in the research to not dichotomize those who “age successfully” from those who do not (Cosco et al., 2013). Considering the detrimental effects on health that older adults experience from labels

and stereotypes (Nelson, 2015), a broader and more encompassing model of successful aging is needed.

Rowe and Kahn propose several goals to geriatric researchers and policy makers, which extend to society at large, beyond the individual level, in hopes to affect successful aging prevalence. These three aspirations include re-engineering core societal institutions, adopting a life course perspective, and focusing on human capital (Rowe & Kahn, 2015). That is, an emphasis on increasing aging support in societal institutions (e.g., schools, hospitals, family systems), reconsidering and redistributing our major life activities (e.g., leisure, work, childrearing) so that they are more conducive to older adult involvement, and revamping the understanding of what older adults have to offer from a “human capital” perspective as a means of giving value to older adults’ societal contributions. In the author’s opinion, these considerations are likely to affect a large number of aging adults and their abilities to age “successfully” (Rowe & Kahn, 2015).

Measurement in Aging

Measures that assess older adults’ attitudes towards aging, subjective well-being, health symptoms, financial information, and quality of life are most commonly assessed by self-report and can be biased in this population – ultimately leading to erroneous findings of differences in assessed behaviors and attitudes in older adults (e.g., scaling, multiple responses, less likely to ask for clarification, Coiner, Schober, Conrad, & Ehlen, 2002; Knäuper et al., 2016; Reed, Mikels, & Löckenhoff, 2013; van der Zouwen et al., 2010). However, evidence exists that older adults have highest accuracy and recall when the information being assessed is self-relevant. A study, which examined older adult and physician agreement from information gathered during a

physician visit, showed more than 85% interrater agreement between self-reports and physician reports (Schmitz et al., 2002; Knauper et al., 2016). Overall, there are distinct considerations necessary when using self-report measures and questionnaires with older adults. Specifically, using measures that match cognitive abilities (e.g., verbal comprehension and measure items, processing speed and time necessary to complete questionnaire) to test questionnaire content and using assessments that are clear and concise, self-relevant, and non-age biased (e.g., questions that do not assume certain age-related experiences) may produce data that is most accurate.

The use of neuropsychological assessment in research can also provide data for an array of psychological phenomenon to be studied (e.g., memory, processing speed, language). Contemporary research is illuminating the tendency for stereotype threat to play an active role in older adults' neuropsychological functioning when being assessed. Some research has shown decreased memory performance when stereotype threats are activated in older adults (Desrichard & Kopetz, 2005; Kang & Chasteen, 2009; Rahhal, Hasher, & Colcombe, 2001); these can be activated explicitly (e.g., Hess, Hinson, & Hodges, 2009) or implicitly (e.g., Stein, Blanchard-Fields, & Hertzog, 2002). Overall, screening for memory issues may pose a threat for older adults' performance, which may affect assessment results (Mazerolle, Régner, Morisset, Rigalleau, & Huguet 2012). This form of measurement may then be effective when being used as a measure of how ageist sentiments affect cognitive performance distress (i.e., subjective psychological distress felt when partaking in cognitive task or testing).

Intervention Considerations for Older Adults

Older adults tend to respond to psychotherapy interventions in a way that is comparable to younger adults (APA, 2012), and a variety of psychotherapeutic approaches have shown

efficacy for older adults (see Guidelines; APA, 2014). The APA outlines guidelines for practice with older adults (APA, 2014). The areas of focus for these guidelines include competence and professional attitudes when working with older adults, clinical issues (i.e., cognitive decline, social and physical environmental changes), psychological assessment, intervention and consultation, and professional issues and education.

Mindful Aging

In 1989, Ellen Langer published *Mindfulness*. As she states in this book, social psychologists typically examine the human behaving in context (i.e., environments). She also states that in cases of *mindlessness* (her provided counterpart to mindfulness), individuals appraise information as though it were free of context (i.e., “true regardless of circumstance”; Langer, 1989, p. 3). This attention to the contextual contributions of behavior is what fascinated Langer and provided her the catalyst to explore these phenomena in a variety of settings.

Chapter 6, titled “Mindful Aging,” discusses the direct implications of mindfulness to a geriatric population. Topics include societal ageism due to “constricting mindsets,” the implications of mindlessness on longevity and quality of life, the benefits of autonomy and self-efficacy, memory enhancement, and the power context has in shaping our relation to our felt and lived age (Langer, 1989, pp. 81-114). In an experimental sense, much of Langer’s mindfulness research functions as a form of intervention for aging adults. From her research, one can see that it is possible to change the context in which aging occurs. How we incorporate this knowledge into our interactions with others’ aging processes (as well as our own) has the potential to change the way we age and understand aging more broadly.

Mindfulness

The origins of mindfulness as understood in Western psychology are derived mostly from the Buddhist conceptualization, which includes attention, consciousness, and maintaining a presence of mind (Bhikkhu, 1993; Semple & Hatt, 2013). Although Buddhist in lineage, Western conceptualizations of mindfulness have heavily emphasized both attention and presence.

The two most common definitions in the research of mindfulness are those offered by Kabat-Zinn (1995) and Bishop and colleagues (2004). Kabat-Zinn (1995), the creator of mindfulness-based stress reduction (MBSR), defines mindfulness as “the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience, moment to moment.” Bishop and colleagues (2004), conceptualize mindfulness as the self-regulation of attention to one’s immediate experiences while adopting an attitude of curiosity, openness, and acceptance. Bishop and colleagues (2004) recognized the inherent difficulties of attempting to study mindfulness without an operational definition of the construct, and therefore set forth to create a functional term that captures the phenomenon accurately in the research. Both definitions serve different functions (e.g., practice versus research), but both are widely used in all pursuits of mindfulness.

From their research, Bishop and colleagues (2004) propose a two-component model of mindfulness – first being the self-regulation of attention to immediate experience, and the second being orientation to those experiences in the *here-and-now*. The two components of this model are thought to be essential to mindfulness practices. These practices may include gaining understanding of automatic thoughts and experiencing them with an awareness of their “transient nature and subjectivity” (Bishop et al., 2004; Safran & Segal, 1990). Simply put, mindfulness

includes responding adeptly with increasing awareness to “mental processes to reduce cognitive vulnerability” (Bishop et al. 2004).

Shapiro and colleagues (2006) extract three “axioms” from the definition of mindfulness established by Kabat- Zinn (1995). These are intention, attention, and attitude, and they are considered essential to the practice of mindfulness (Shapiro, Carlson, Astin, & Freedman, 2006). Intention is identified as the meaning of one’s practice, and it can lead to a substantial change in perspective and is an essential part of mindfulness. Shapiro (1992) examined how intention affects meditators' practices and found that results from meditation were linked to intentions set by the practitioners. Intention is a highly influential component of the mindfulness experience, and it can occasionally be lost in some contemporary uses of mindfulness (Shapiro et al., 2006).

Attention is at the core of mindfulness (Shapiro et al., 2006). Mindfulness encompasses sustained attention and focus (Moore, Gruber, Deroose, & Malinowski, 2012) – elements assumed to be fundamental to the practice of mindfulness (Bishop et al. 2004; Schmertz, Anderson, & Robins, 2009; Shapiro et al., 2006). In practice, the self-regulation of attention will strengthen all three axioms (Shapiro et al., 2006), and the deficits of attention will provide difficulties for this practice as well.

Attitude is the way an individual engages in their practice (Kabat-Zinn, 1990). Certain attitudes might make frustration or disappointment about mindfulness more apparent; whereas other attitudes, such as curiosity, openness, self-compassion, and non-striving may enhance a person’s practice. Bishop and colleagues (2004) explicitly incorporate attitude into their operational definition, as a means of the individual practicing having an orientation to experience.

Changing perspectives (i.e., *mindful aging*), or re-perceiving, is one way in which mindfulness might allow a person to “step outside” an initial experience in an attempt to attend to emotions or experiences differently from one’s instinctive behavioral patterns (Safran & Segal, 1990; Shapiro et al., 2006). This ability to step outside one’s own immediate experience, may allow for more flexible responding with regards to different psychological changes (e.g., aging and possible changes in cognitive abilities).

Different Forms of Mindfulness

Mindfulness is a versatile quality, which has been incorporated into many behaviors. For instance, mindfulness meditation is one form of mindfulness – typically considered a “formal” means of practice. These more formal practices are often done sitting in silence with cultivated awareness and acceptance of feelings and experiences (Eberth & Sedlmeier, 2012). Some mindfulness practice is psychotherapy-based. Decades of research now exist for mindfulness based interventions (MBIs), with one of the first interventions being Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 1990) and others (e.g., Mindfulness-Based Cognitive Therapy; MBCT; Segal, Williams, & Teasdale, 2002) following shortly after. Generally, interventions implementing a mindfulness protocol have positive global outcomes, with gains in attention (e.g., Morrison & Jha, 2015), psychological distress and chronic pain (e.g., Hilton et al., 2017), well-being (e.g., Khoury, Sharma, Rush, & Fournier, 2015). These interventions aim to alleviate suffering and stress for both psychological and somatic disorders (Gotink et al., 2015; Visted et al., 2014).

Mindfulness has also been introduced into daily activities (e.g., eating, walking, stretching, conversations, and relationships). Mindful movement, for example, can consist of tai

chi, yoga, or Pilates. Mindfulness training using movement (e.g., tai chi, Pilates) has demonstrated improvements in mood and sleep quality and reductions in stress in university students (Caldwell, Harrison, Adams, Quin, & Greeson, 2010). For older adults, incorporating mindfulness into daily activities may prove to be beneficial for increasing functioning and improving one's subjective quality of life.

Issues to Consider in Mindfulness Measurement

Assessment of mindfulness outside the context of therapy or an idiosyncratic experience is difficult to measure, and thus, exploration of mindfulness and its efficacy has begun to emphasize the need for an understanding of mechanisms of change (Baer, 2011; Baer, Walsh, & Lykins, 2009). Implementing mindfulness research is difficult due to the covert nature of this behavior, as well as certain facets of mindfulness (e.g., attention, heart rate) not being necessary, nor sufficient, to demonstrate mindfulness in itself. To explore these effects of mindfulness, well validated measurements of mindfulness are crucial (Baer, 2011).

Measuring mindfulness can occur in the form of technology (e.g., MRI, EEG), which assesses brain structure and activity. Still, these technologies do not greatly generalize, and they do not individually provide clear markers of mindfulness, mindful behavior, or one's ability to be mindful in daily life (Baer, 2011). Cognitive and other ability tests have also been used to measure mindfulness. Numerous studies have investigated theoretical constructs that map onto mindfulness (e.g., attention, working memory, and processing speed), but they have also resulted in mixed findings – likely due to approximation of mindfulness qualities without measuring mindfulness itself (e.g., Baer, 2011; Black, Sempke, Polhrel, & Grenard, 2011; van Leeuwen, Singer, and Melloni, 2012). The most popular measurement tools used to assess mindfulness are

self-report measures (Sauer et al., 2013). Many self-report mindfulness measures attempt to assess daily living mindfulness, as well as dispositional qualities of this construct (Baer, Walsh, & Lykins, 2009). One difficulty seen in the research is that mindfulness can be viewed as dispositional or state-like, and that these features can either be processes or outcomes (Baer, 2011). Along with self-report difficulties, noticing thoughts and feelings nonjudgmentally might cause individuals to respond without knowledge or understanding of what is being asked in the question (Baer, 2011). Semantics (i.e., the meaning of the question being asked) also pose problems for mindfulness measurements (Grossman, 2008).

In a systematic review and meta-analysis, Visted and colleagues (2014) reviewed frequency of measures used as well as efficacy results of 72 MBIs. They found the Mindful Attention Awareness Scale (Brown & Ryan, 2003) is the most popular assessment instrument for self-reported mindfulness in MBIs. There were no significant differences in measurement sensitivity for self-reported mindfulness. MBSR was the most frequently used MBI, and mindfulness was found to have a mediating effect on clinical outcomes (in the desired direction) for anxiety, depression, and general distress. Additional mediation was noted in MBIs with several measures (e.g., self-compassion). The authors further suggested that MBIs might also effectively change an individual's experiential avoidance (EA) – ultimately enabling the individual to engage in a wider range of coping and growth (Visted et al., 2014).

Pre-post measurements from MBI studies indicate increases in self-reported mindfulness; these gains are maintained over time – ultimately suggesting that mindfulness can be increased by practice and intervention. Still, the authors listed limitations to this meta-analysis in that many of the studies were uncontrolled pilot studies and were underpowered. One finding, which has proven to be problematic in other research investigating mindfulness (e.g., Lester & Murrell,

under review), is that self-reported mindfulness in some groups void of any explicit mindfulness content increased as much as those partaking in MBIs. This finding possibly calls into question the construct validity for self-reported mindfulness measures and the gains seen in MBIs. Lastly, the authors found that mindfulness retreats, when included in MBIs, increased participants' self-reported mindfulness (Visted et al., 2013).

Mindfulness-Based Interventions for Older Adults

Mindfulness is used in a multitude of settings; however, the use of mindfulness-based interventions with older adults is limited (Geiger et al., 2016). Still, contemporary research on mindfulness and aging suggests positive cognitive and emotional well-being are correlated with self-reported mindfulness in older adults (Fiocca & Mallya, 2015). Literature also indicates that age-related negative affect is mediated by the effects of mindfulness (Raes et al., 2015). Some studies, which have explicitly used interventions for older adults, have yielded positive results. For example, a feasibility study examining the effects of an 8-week mindfulness-based intervention for older adults with chronic lower back pain demonstrated significant differences from the waitlist control group on measures of chronic pain acceptance, physical functioning, and overall engagement in activities (Morone, Greco, & Weiner, 2007). Follow up qualitative research suggests that older adults saw improvements in attentional skills, better sleep, mood elevation, and overall improvements in their qualities of life (Morone et al., 2008).

More recently, research on mindfulness in older adults to address loneliness, and the subsequent expression of pro-inflammatory genes have been explored. This research demonstrated that, compared to a waitlist control group, MBSR was effective in reducing loneliness in older adults, as well as the related pro-inflammatory gene expression (Creswell et

al., 2012). The results from this research suggest that alternative behavioral forms of treatment are effective in the down-regulation of biological responses to emotional experiences that older adults experience. As such, clinical implications for the use of mindfulness-based interventions for older adults may hold some promise for the biopsychosocial aspects of aging.

Other forms of mindfulness-based interventions also show efficacy for older adults experiencing health related ailments. Related to some forms of mindful movement, Crane-Okana and colleagues (2012) explicitly utilized dance/movement therapy (DMT) for older adult breast cancer survivors (BCS). This intervention was conceptualized as a means for the older adult BCS to regain “a sense of trust in their bodies,” to “be the expert in their own movement,” and to deliberately incorporate mindfulness and DMT to enhance the quality of life (QOL) in older adult BCS. Female participants (M age = 65.6) were either randomly assigned to a 12-week mindful movement program (MMP) or a control group (involving no sessions). Their findings demonstrated that older adult BCS showed significant improvements in QOL, a reduction in fear of recurrence of breast cancer, and an increased mindful attitude when compared to the control group, and these effects were retained up to six weeks post-intervention (Crane-Okana et al., 2012). With this intervention being effective with older adult BCS, there is reason to believe that similar effects might be seen with other populations of older adults.

Some research has examined the effects that gardening has for older adults and aging (e.g., Cases, Thorne, Lackraj, Denmark-Wahnfried, & Hendricks, 2015, see systematic review by Wang & MacMillan, 2013). Social and emotional well-being is associated with gardening in older adults (Lee, Lan, & Lee, 2012); however, the current limited research on gardening and improvements in physical functioning does not support its utility for older adults (Nicklett, Anderson, & Yen, 2016). Still, gardening might be considered an activity that encompasses

features of mindfulness (e.g., present moment awareness, attention to external stimuli, body presence in the garden context), and the socioemotional gains from gardening are supported for such activities for older adults.

Although there is preliminary evidence for mindfulness based practices being effective for older adults, there is a need for research that explicitly examines the effects of these practices for decreasing psychological distress related to older adult developmental concerns (e.g., subjective cognitive decline, biopsychosocial developmental adjustments). Moreover, no research has specifically examined the use of MBIs for the reduction of internalized ageism or attitude changes for age-based discrimination. Further examination of these practices and interventions may hold promise for how to intervene with this population.

Acceptance

Directly related to mindfulness, Kabat-Zinn (1990) states that acceptance is an essential part of practicing mindfulness. As is noted in the definitions of mindfulness (Kabat-Zinn, 1995; Bishop et al., 2004), acceptance is central to mindfulness, particularly the emphasis on nonjudgment or striving as well as openness and curiosity to new thoughts and feelings. Acceptance contains an individual's ability to "experience events fully and without defense, as they are" (Hayes et al., 1999), which holds similarity to Kabat-Zinn's (1995) definition of mindfulness. Given the relationship that mindfulness and acceptance have to one another and the way they are conceptualized and utilized in treatments, an exploration of acceptance as an intentional means of intervention in older adults is warranted. In all, older adults tend to be more willing to *accept* negative affect when compared to their younger counterparts (Shallcross et al., 2013; Geiger et al., 2016), which in many ways makes them well-suited for MABPs.

Acceptance and Commitment Therapy

Acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999) is considered a third-wave behavioral therapy and falls under the larger umbrella of empirically-supported cognitive behavior therapies. Specifically, ACT is based on relational frame theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001) which is a behavior analytic account of language and cognition. ACT distinctly uses experiential exercises, metaphoric language, and paradox to help clients “gain the skills to recontextualize” their psychological experience (Hayes, 2006a).

ACT is also a trans-diagnostic treatment that attempts to increase an individual’s psychological flexibility (i.e., “contacting the present moment fully as a conscious human being, and based on what the situation affords, changing or persisting in behaviors in the service of chosen values”; Hayes, 2006) by activating six core processes (often called the “hexaflex”): acceptance, defusion, contact with the present moment, self-as-context, committed action, and values. Accordingly, experiential avoidance (EA; i.e., the unwillingness to come into contact with private events; e.g., bodily sensations, memories, thoughts, and feelings) is directly targeted in this therapeutic intervention as a means of increasing psychological flexibility (Hayes, 2006a).

Rationale for ACT with Older Adults

In their article synthesizing mindfulness-based interventions for older adults, Geiger and colleagues (2016) state that “interventions emphasizing the willingness to accept and experience the present moment (e.g., mindfulness) may be consistent with older adults’ natural emotion regulation strategies.” As a natural pairing to the older adult experience, ACT may hold promise as another means of intervening on older adult difficulties.

Other rationales have been presented as to why ACT would be a suitable intervention for older adults. Roberts and Sedley (2016) offer several reasons, in their published case study, for why ACT is well suited for older adults. First, given that older adults have less time, they may be “more motivated” to consider their values – which is an integral part of ACT. Also, the transdiagnostic nature of ACT, which targets EA, may be well-suited for the diverse sets of issues with which older adults in this age range present (e.g., disability adjustment, grief/loss, depression).

Relatedly, ACT serves to undermine cognitive fusion and experiential avoidance with verbal behavior (Petkus & Wetherell, 2013) and has shown positive effects for reducing self-stigma and internalized shame (see Luoma & Platt, 2015). ACT also does not dispute the validity of the individual’s experience, and it instead approaches the presenting concern and whether it is *workable* for the individual and serving their values. As older adults age, they may begin to experience declines in health and functioning as they are also experiencing more loneliness and loss (Dykstra, Tilburg, & de Jong Gierveld, 2005). The intention of ACT, in regard to these presenting issues, would be to re-center the client on behaviors that have attainable goals and are consistent with their stated values (Petkus & Wetherell, 2013; Roberts & Sedley, 2016).

Uncertainty can also arise with aging and biopsychosocial changes – producing worry in the older adult. ACT interventions use acceptance of uncertainty while empowering the individual to use remaining resources to change those situations that can be changed in the service of values. Last, the collaborative, non-authoritative nature of the therapeutic relationship in ACT provides the older adults with an appreciation of their life experiences and knowledge/wisdom – a crucial variable when working with older adults (Laidlaw, 2006; Roberts & Sedley, 2016). ACT may also naturally address some tendencies for mental health

professionals to infantilize their clients, which may occur for many of these professionals (Nelson, 2016). For a full review of the rationale and implications of using ACT with older adults, please see Petkus & Wetherell, 2013.

Present Study

Approximately 15% of Americans are over the age of 65, and this number is expected to grow to 21.7% by 2040 (AoA, 2017). As individuals age, they experience physical, psychological, cognitive, and social changes. While a considerable amount of research has been conducted on these changes in biopsychosocial functioning (e.g., AOA, 2017a), little work has been done on how these changes are affected by societal prejudice and discrimination related to aging (Nelson, 2016). Even though there are legitimate difficulties that accompany aging, many of these outcomes are exacerbated by social perception, internalized self-stigma/ageism, and the accompanying general distress (Nelson, 2016). Despite this being a significant problem, survey data populates most of the literature. There are noted issues with cross-sectional survey-based data for studying longitudinal phenomena like aging and ageism, as well as basic issues with psychometrics that become problematic when assessing older adults (Knäuper et al., 2016). As such, a need for a different method of studying these phenomena is apparent.

Prior to the current study, the literature was lacking in *experimental* research investigating effects of ageism in older adults. Further, no previous work examined the existence of a cause and effect relationship between the introduction of age-based stereotypes and negative consequential behavior (i.e., higher ageist beliefs and internalized ageism, negative state affect, distress related to cognitive tasks). It was believed that a controlled experimental environment

might be beneficial for understanding how sociocultural beliefs and attitudes affect the older adult experience of ageism.

The primary author of the current study theorized that psychosocial features of aging might be effectively addressed through acceptance and mindfulness techniques, given that it had been previously demonstrated that age-related negative affect is mediated by the effects of mindfulness (Raes et al., 2015). The research using mindfulness and acceptance-based practices for older adults and psychological distress is limited, but promising (Geiger et al., 2016; see Petkus and Wetherell, 2013). It was important to replicate and extend existing work, paying attention to appropriate measurement. Prior research indicates scientists must go beyond simple survey data, questionnaires, and cross-sectional designs (Creswell et al., 2012; Crane-Okana et al., 2012; Wang & MacMillan, 2013). The current study specifically answered this question: can older adults who have experienced internalized ageism benefit psychologically (e.g., cognitively, affectively, interpersonally, socially, etc.) from mindfulness and acceptance-based practices and skills?

Hypotheses

The hypotheses below were proposed as by condition (e.g., Hypothesis 1), and then Condition X Age group (e.g., Hypotheses 1a).

Hypothesis 1: Participants in the experimental condition would report having lower levels of internalized ageism than those in the comparison condition.

Hypothesis 1a. Older adults in the experimental condition would have lower levels of ageism compared to older adults in the comparison condition.

Hypothesis 1b. Undergraduates in the experimental condition would have lower levels of ageism when compared to undergraduates in the comparison condition.

Hypothesis 2: Participants in the experimental condition would have higher levels of state mindfulness when compared to those in the comparison condition.

Hypothesis 2a. Older adults in the experimental condition would have higher levels of state mindfulness compared to older adults in the comparison condition.

Hypothesis 2b. Undergraduates in the experimental condition would have higher levels of state mindfulness when compared to undergraduates in the comparison condition.

Hypothesis 3: Participants in the experimental condition would have greater decreases in negative state affect compared to those in the comparison condition after the experimental manipulation.

Hypothesis 3a. Older adults in the experimental condition would have a greater pre to post decrease in negative state affect compared to older adults in the comparison condition.

Hypothesis 3b. Undergraduates in the experimental condition would have a greater pre to post decrease in negative state affect compared to undergraduates in the comparison condition.

Hypothesis 3c. Older adults in the experimental condition would have a greater pre to post decrease in negative state affect compared to undergraduates in the experimental condition, given that age-based stereotypes are not self-relevant to undergraduates.

Hypothesis 4: Older adults in the experimental condition would report less cognitive performance distress than those older adults in the comparison condition.

Hypothesis 4a. Older adults' cognitive performance distress in the experimental condition would moderate the relationship between negative state affect and levels of ageism.

CHAPTER 2

METHODS

Participants

This study included participants from two separate samples: undergraduate students and older adults. The total number of participants desired for this study were 120 - with 60 in the undergraduate sample and 60 in the older adult sample. The undergraduate sample (UG) was recruited from the University of North Texas (UNT) psychology department through Sona Systems, an online human research resource, as well as from the 2018 summer psychology sessions. Approximately half ($n = 29$) of the undergraduate participants in the sample were recruited from Sona Systems. During the spring semester, undergraduate participants signed up for a study time online. The other half of this sample ($n = 31$) was recruited from the 2018 summer session undergraduate psychology courses at UNT (i.e., special topics, experimental methods, and developmental psychology). Summer session undergraduates were recruited from classrooms in person by a research team member and were later asked to contact the researcher with their preferred study time. Inclusion criteria for this sample included: participants between the ages of 18 and 25 who had the ability to fluently speak, comprehend, and read English. All undergraduate participants in this study were offered extra credit in their psychology courses, which was granted by their respective instructor. Students who chose not to participate were given other opportunities to gain extra credit, and any student who started the study but withdrew before completion was given credit comparable to the time they spent participating.

The undergraduates in this sample were mostly representative of the greater student body at the university, apart from gender (85% female, $n = 51$). The sample had an average age of 20.7 ($SD = 2.07$), and ethnic makeup was mostly diverse, with most of the participants identifying as

White/Caucasian/European American ($n = 23$, 38%) and Hispanic/Latino ($n = 18$, 30%; $n = 11$, 18.3% Black/African American; $n = 5$, 8.3% Biracial; $n = 2$, 3.3% Asian/Pacific Islander; $n = 1$, 1.7% Native American). The primary language of the undergraduate sample was English ($n = 59$, 98.3%), and the majority of the participants identified as Christian ($n = 33$, 55%; $n = 15$, 25% Agnostic, $n = 4$, 7% Other; $n = 1$, 1% Jewish; $n = 1$, 1% Muslim; $n = 1$, 1% Buddhist; $n = 1$, 1% Hindu; $n = 1$, 1% Atheist). Approximately 23% ($n = 14$) of the undergraduate sample reported having a college degree, while 77% ($n = 46$) reported their highest earned education as a high school diploma. Approximately 87% ($n = 52$) reported being single (6.7% married, 6.7% living with another) with no children ($n = 58$, 96.7%; $n = 2$, 3.3% with children). Undergraduates generally rated their health as good ($n = 30$, 50%; $n = 3$, 5% Excellent, $n = 16$, 26.7 % Very Good, $n = 9$, 15% Fair, and $n = 2$, 3.3% Poor), and 30% ($n = 18$) reported at least one chronic health or mental health condition. Lastly, 55% ($n = 33$) of this sample reported familiarity with mindfulness, with 46.7% ($n = 28$) reporting having practiced mindfulness previously. Please see Table 1 for all demographic information regarding this sample.

The older adult (OA) sample for this study was recruited from several geographic locations. Initial recruitment was intended to be made through Dallas/Fort Worth (DFW) senior centers and resource centers for OAs via flyers, in person advertisement, and word of mouth. However, after several points of contact with two dozen sites in the DFW area with very little contact and one consented participant, connections were made with residential facilities (e.g., assisted living centers, retirement communities) in the DFW metroplex in an attempt to speed up recruitment and gain more participants in a timely fashion. OA participants completed their data in several locations, including: their own residences ($n = 7$), public libraries ($n = 10$), local community centers ($n = 12$), assisted living ($n = 4$), and senior living communities ($n = 27$).

Also, 13 of the 60 older adult participants were collected in Massachusetts, while the other 47 participants were collected in Texas – specifically in the Dallas and Houston areas.

Participants in the community either called the primary researcher to schedule a study time or were recruited and signed up in person. Inclusion criteria for this sample included being 65 or older, English fluency, and an absence of a severe neurocognitive impairment assessed by the older adults' orientation. Reading and computer abilities of the older adult sample were accommodated on a case by case basis. The majority of accommodations included reading the questions to older adult participants as they followed along on the computer while the research assistant selected answers on their behalf ($n = 29$). The older adult was asked for their preference of how they would like to take the survey, but no specific reason for accommodation was noted for each participant. Anecdotally, the majority of the older adults requesting this participation style were near-sighted and unfamiliar with the computer survey apparatus.

At the end of the study, OA participants were directed to a second survey, which was not linked to their data, for a chance to enter their name and phone number. This information was used at the end of the study for several drawings for \$50 gift cards offered by the researcher. OA participants could withdraw from the study at any time without any issue or repercussion. Approximately 84% ($n = 50$) of this sample entered the drawing.

As expected, the sample recruited from independent living communities was reflective of the older adult population dwelling in these communities (i.e., white, middle/upper class, and a majority female). Older adults recruited from other sites in the community, however, were still less representative of the older adult population in general. The older adults in this sample mostly identified as White/Caucasian/European American ($n = 56$, 93.3%; 1.7% Black/African American, 1.7% Biracial, 3.4% Other ["Albanian" and "Black – West Indies"]), female ($n = 38$,

63%), and had a mean age of 76.5 ($SD = 8.60$). The primary language of all older adults in this sample was English ($n = 60$, 100%), and the majority of the participants identified as Christian ($n = 43$, 71.7%; $n = 9$, 15% Other; $n = 4$, 6.7% Agnostic; $n = 2$, 3.3% Jewish; $n = 1$, 1.7% Buddhist; $n = 1$, 1.7% Atheist). Approximately 30% ($n = 18$) of the older adult sample reported having a college degree, and 30% ($n = 18$) reported their highest earned education as a high school diploma ($n = 14$, 23.3% Master's Degree; $n = 6$, 10% Doctorate or Professional Degree; $n = 3$, 5% Some High School; $n = 1$, 1.7% Other [not answered]). Approximately 55% ($n = 33$) reported being Married ($n = 14$, 23.3% Widowed; $n = 7$, 11.6% Divorced; $n = 4$, 6.6% Single; $n = 2$, 3.3% living with another) and 48 older adults reported having children (80%; $n = 12$, 20% without children). Older adults generally rated their health as Very Good ($n = 22$, 36.7%; $n = 19$, 31.7% Good; $n = 11$, 18.3% Excellent; $n = 6$, 10% Fair; $n = 2$, 3.3% Poor), and 65% ($n = 39$) reported at least one chronic health or mental health condition. Lastly, 55% ($n = 33$) of this sample reported familiarity with mindfulness, with 58.3% ($n = 35$) reporting having practiced mindfulness previously. Please see Table 2 for all demographic information regarding this sample.

As mentioned, one inclusion criteria for this study was the ability to demonstrate an absence of a severe neurocognitive impairment. Given that this project was deliberately examining how internalized ageism and stereotypes of aging affect older adults, a screening measure (e.g., MMSE) was not administered to participants. These measures take more time to administer and may have undesired pre-experimental effects on the participants related to stereotype threats. As such, the brief screener (see below) presented at the beginning of the experiment was used to identify any gross severe neurocognitive impairment which would make

them ineligible for this study. No older adults in this sample screened positively for severe neurological impairment.

Measures

Although, in many cases, measurement adjustment considerations are necessary for older adults (Knäuper et al., 2016), standardization of validated measures in research was also a necessary consideration for this project. Therefore, instrumentation was left the same for all validated measures with regards to scaling; however, adjustments were made when possible (e.g., font size, spacing) for both standardized and non-standardized measures as per the recommendations of APA sources (e.g., McGuire, 2009).

Initial Inclusion Screener

In the initial inclusion screener (Appendix A; created by author), participants were asked to write: their name (awareness of person), where they currently resided (knowledge of place), the time and date (including day of week; knowledge of time and date), and if they understood what they were being asked to participate in (knowledge of event). If a participant provided answers that were inconsistent with the expected answers, they would be dismissed from the study. However, no participants were unoriented.

The Acceptance and Action Questionnaire (AAQ-II)

The AAQ-II (Bond et al., 2011) measures psychological flexibility and its inverse, experiential avoidance. There are 7 items on this Likert-type scale, ranging from 1 (*never true*) to 7 (*always true*). Example items on this questionnaire include “I am afraid of my feelings” and

“Emotions can cause problems in my life.” Low scores are indicative of higher levels of experiential avoidance, and high scores indicate higher levels of psychological flexibility.

Test-retest reliability for the AAQ-II was .81 and .79 among two samples over a period of three and 12 months. In 6 validation samples (including financial services workers, college students, and individuals pursuing treatment for substance abuse) the AAQ-II demonstrated a Cronbach’s alpha of .84. The AAQ-II shows correlations with mood and symptom questionnaires, demonstrating strong convergent validity (Derogatis & Spencer, 1993). This questionnaire does not significantly correlate with gender, age, or social desirability (Bond et al., 2011). The AAQ-II has been used with older adults (e.g., Mahoney, Segal, & Coolidge, 2015). The internal consistency for the undergraduate sample was .90. It was .91 for the older adult sample.

The Mindfulness Attention Awareness Scale (MAAS)

The MAAS (Brown & Ryan, 2003) is a self-report measure that consists of 15-items assessing the inclination to be mindful of present experiences. The measure uses a 6-point Likert-type scale, ranging from 1 (*almost always*) to 6 (*almost never*), with questions such as “I find it difficult to stay focused on what’s happening in the present” and “I tend not to notice feelings of physical tension or discomfort until they really grab my attention.” Higher total scores on the MAAS indicate greater levels of mindfulness. The MAAS also exhibits concurrent validity with other scales of mindfulness, openness to new experiences, and self-esteem, and it has divergent validity with scales of depression and anxiety (Brown & Ryan, 2003). The MAAS demonstrates adequate internal consistency in a college student sample as well as in a general adult sample ($\alpha = .82$ to $.87$, respectively). The MAAS has been used with older adults in many

capacities (e.g., de Frias & Whyne, 2015; Mahoney, Segal, & Coolidge, 2015; Mallya & Fiocco, 2016). The internal consistency reliabilities in this study were .91 for the undergraduate sample and .88 for the older adult sample.

Facts on Aging (FAQ)

The FAQ (Palmore, 1977) is a 25-item true or false quiz which assesses the respondents fact-based knowledge of aging. Although this measure has not been revised in a couple decades, it is still the most widely used measure of aging facts (Palmore, 2005), and has been reformatted (e.g., Harris & Chngas, 1994) and cross-validated (e.g., Van der Elst, Deschodt, Welsch, Milisen, & de Casterlé, 2014) in more recent years. A second edition has been introduced by Palmore (1998); however, very little content has changed from the original measure. This measure is being used to gauge aging misconception prior to the introduction of age-based stereotypes – particularly in the undergraduate sample. The internal consistency for the undergraduate sample was .66. The internal consistency in the older adult sample was .46.

Subjective Aging Perception Scale (SAPS)

The SAPS (de Gracia, Garre, & Marcó, 1999) is a 12-item measure of self-concept and well-being related to aging. The SAPS has four factors – physical self-concept, subjective self-concept, cognitive self-concept, and social relationships – each containing three items. Items on this self-report measure are answered on a 7-point Likert-type scale ranging from 1 (*totally disagree*) to 7 (*totally agree*). Scores range from 12 to 84. Higher scores indicate more positive perceptions of aging. Internal consistency for the SAPS four factors is high ($\alpha = .90$), and the SAPS demonstrates convergent and discriminant validity for self-esteem and depression,

respectively (de Gracia, Garre, & Marcó, 1999). The internal consistency reliabilities in this study were .70 for the undergraduate sample and .63 for the older adult sample.

Expectations Regarding Aging-12 (ERA-12)

The ERA-12 (Sarkisian, Steers, Hays, & Mangione, 2005) is a revised version of the 38-item ERA (Sarkisian, Hays, Berry, & Mangione, 2001) used to measure older adults' expectations related to their own aging. Specifically, the three factors (4 items each) are *expectations regarding physical health*, *expectations regarding mental health*, and *expectations regarding cognitive function*. Researchers have used this measure as a means of gauging the relationship between this perception and other health behaviors, as well as outcomes. Higher scores on the ERA demonstrate expectation of achievement and maintenance with mental and physical functioning, and lower scores are indicative of expectation of age-related decline. The ERA-12 was developed as a means of delivering a concise measure that reduced response burden inherent in the 38-item measure, as well as practicality for researchers using multiple measures. The ERA-12 demonstrates strong internal consistency ($\alpha = .88$) and shows high concordance with the original 38-item measure, positive correlations with measures of mental and physical health-related quality of life, and an inverse relationship with depressive symptoms (Sarkisian et al., 2005). The internal consistency for the undergraduate sample was .76, and it was .83 for the older adult sample.

Toronto Mindfulness Scale (TMS)

The Toronto Mindfulness Scale (TMS; Lau et al., 2006) is a 13-item measure assessing two factors of state mindfulness: curiosity (reflecting on present moment experience openly) and

decentering (not being carried away by feelings or thoughts). Items on the TMS are rated on a scale ranging from 0 (*not at all*) to 5 (*very much*), with a possible total score of 52. Higher scores indicate more mindfulness. Example questions from the measure include, “I experienced myself as separate from my changing thoughts” (decentering) and “I was curious to see what my mind was up to from moment to moment” (curiosity). The measure was given immediately following meditation sessions in order to assess the experience. The curiosity factor of the TMS evidenced a Cronbach’s alpha of .86, and the decentering factor has an alpha of .87 in a nonclinical, middle-aged sample with varying ranges of mindfulness experience. Evidence of both convergent and divergent validity has also been established in clinical samples (Lau et al., 2006). The TMS has been used previously in college samples (e.g., Weger, Hooper, Meier, Hopthrow, 2012). The internal consistency for the undergraduate sample was .91, and the internal consistency reliability was .90 for the older adult sample.

Digit Span (DS)

The digit span task is adapted from the Weschler’s Adult Intelligence Scale (WAIS; Weschler, 2014). This assessment has been heavily researched and the use of it as a cognitive performance task is well cited in the literature (see Schroeder, Twumasi, Baade, & Marshall, 2012). The digit span was used in this study as a means of participant’s provocation of cognitive performance distress related to age-based expectations of cognitive performance. A question was asked to the participants at the end of this task gauging their level of experienced stress from this task on a Likert-type scale from 1 (*not at all stressed*) to 5 (*very stressed*).

Positive and Negative Affect Schedule – Short Form (PANAS – SF)

The original PANAS (Watson, Clark, & Tellegen, 1988) contains 10 positive adjectives and 10 negative adjectives. Participants are asked to rate these adjectives from 1 to 5 (*very slightly or not at all* to *extremely*) based on how the adjective describes the way they feel within a given time period (e.g., *yesterday, last week*). Kercher (1992) created a short form of the PANAS, containing 5 positive and 5 negative affect adjectives, challenging the notion from Larsen and Diener (1992) that older adults' positive and negative affect scales would correlate highly. This iteration of the PANAS was validated both in a sample of older adults and by Mackinnon et al. (1999) in a community sample. It demonstrated adequate ($\alpha = .78$) and good internal consistency ($\alpha = .87$) for positive and negative affect, respectively. For this study, the participants were asked to rate their experience *right now* at two time points. The average internal consistency for the undergraduate sample was .81. The Cronbach's alpha was .60 for the older adult sample.

Fraboni Scale of Ageism-Revised (FSA-R)

The FSA (Fraboni, Saltstone, & Hughes 1990) is a 29-item measure revised by Rupp and colleagues (2005) that is used to assess affective and cognitive components of ageism based on three ageism factors: antilocution, avoidance, and discrimination (Rupp et al., 2005). The FSA has been used in undergraduate samples (Rupp et al., 2005), as well as in an older adult sample (e.g., Bodner & Cohen Fridel, 2010). In the original study (Fraboni et al., 1990), the FSA demonstrated adequate internal consistency in each subscale, and discriminant validity was demonstrated, with the FSA negatively correlating with the FAQ (-.28) and acceptance of others (-.22). In the revision, Cronbach's alphas for the subscales were also adequate ($\alpha = .76, .61, \&$

.77 respective to the factors), and there was strong construct validity with other measures of attitudes towards aging (i.e., Aging Semantic Differential Scale and Attitudes towards Old People scales; Rupp et al., 2005). This measure was used as an explicit scale to measure ageist attitudes that both older adults and undergraduates have following the experimental manipulation. Due to researcher error, items 6 and 25-29 were not administered and were imputed for all participants based on their individual mean score. The internal consistency for the undergraduate sample was .78, and it was .77 for the older adult sample.

Succession, Identity, & Consumption (SIC)

The SIC (North & Fiske, 2013) is a 20-item scale of ageism, particularly relating to intergenerational tension related to succession (i.e., moving aside/making room for younger people), identity (i.e., not “invading” youth territory), and consumption (i.e., not using up resources). The SIC presents declarative statements and asks the respondent to rate each prompt from 1 (*strongly disagree*) to 6 (*strongly agree*). The SIC demonstrates strong interitem reliability ($\alpha = .91$) across several samples and convergent validity with the FSA ($r = .86$) and symbolic racism (North & Fiske, 2013). Similar to the FSA-R, the SIC was used as a measure of ageist attitudes for both samples after the experimental manipulation. The internal consistency reliabilities for the undergraduate sample and older adult sample were .92 and .82, respectively.

Demographics and Subjective Reports (DSR)

The DSR questionnaire (Appendix B; created by the author) asked participant demographic information (e.g., gender identity, religion, SES, family history of cognitive health and impairment, disability status), loneliness (the Three-Item Loneliness Scale; Hughes, Waite,

Hawkley, & Cacioppo, 2008; internal consistency for both the undergraduate and older adult samples was .70), subjective health status (item 1 of the SF-12 Health Survey; Ware, Kosinski, and Keller, 1996; no internal consistency reported), as well as subjective questions about cognitive aging concerns. This measure also asked participants about their experiences completing the study and the usefulness of the didactic information and experiential exercise used in the experimental condition.

Procedure

For this study, only researchers who were trained in human subject research ethics and who were approved by the university's IRB. Consent was obtained prior to the beginning of the study by having the participant listen to, read, and sign the informed consent form electronically. Participants were given an opportunity to ask questions prior to the study beginning, and were given resources (i.e., numbers for the Suicide Prevention Hotline, National Alliance on Mental Illness, as well as 911) in the physical informed consent form in case they became agitated or distressed after the completion of the study. Participants were then assigned to one of the two conditions (i.e., experimental and comparison) by the researcher via a string of randomized conditions (i.e., 1 and 2) in the researcher manual participant log. Participants were kept blind to their condition assignment. As mentioned previously, older adult participants ($n = 60$) completed their data in several locations, (residences, public libraries, local community centers, assisted living, and senior living communities) in Massachusetts and Texas. Undergraduates ($n = 60$) completed their data in the psychology department building on campus. All participants completed their measures individually with the presence of one researcher/research assistant (i.e., one-on-one); however, due to the nature of community space and resources, occasionally older

adults were run two at a time in separate locations by the same researcher. Importantly, besides the location and the means of data collection - either self-completing or interviewed - the two groups' experimental procedures were the same. As such, both samples are discussed below as those who are in the experimental condition or control condition.

After the participants consented to move forward with the study and were assigned to a condition via the random number generator, all participants completed measures of state affect (PANAS-SF), trait mindfulness (MAAS), psychological flexibility and avoidance (AAQ-II), and measures related to aging (SAPS and ERA-12), in this order. After completing these measures, all participants were asked to follow along on paper and listen to age-based stereotypes related to aging (adapted by the researcher from Rowe & Kahn, 1998; Appendix C). In the experimental condition, participants listened to a brief didactic lesson on mindfulness and acceptance (Appendix D) and participated in a related experiential exercise (i.e., a metaphor which incorporated ACT principles of contact with the present moment, defusion, self-as-context and values; Appendix E). In the control condition, participants were asked to only sit quietly and think about the information they read and heard. The length of both condition exercises was approximately 13 minutes. Participants then completed a measure of state mindfulness (TMS) related to their respective activities, an ACT processes measure (CompACT), as well as the state affect measure (PANAS-SF) a second time. All participants were then given the cognitive task (DS), ageism measures (FSA and SIC), a general health questionnaire (SF-12), and were asked to provide their demographics. Procedures are presented graphically in Appendix F.

As mentioned previously, accommodations were made for all participants for dexterity, hearing, and/or visual impairments. The measurements were gathered online on Qualtrics, and the survey was programmed to not allow the participant to continue until all the items on each

measure were completed. After completion of the study, the participants in all conditions were debriefed on the structure and purposes of the study, and any questions the participant had were answered. Along with standard debriefing, the primary researcher asked the older adults to share, if willing, their experience of participating in this study. The primary researcher also verbally shared psychoeducational information on aging and attitudes (positive and negative) towards aging. Last, the primary researcher also summarized their overall participation, as well as their immediate recall score on the Digit Span task. This material gathered from the older adult, if clinically relevant or substantial, was recorded in the researcher log and explored qualitatively later on. Upon dismissal, the researcher and/or research assistant requested that participants not share information about the study to reduce experimental diffusion.

CHAPTER 3

RESULTS

Preliminary Data Analysis

First, data was examined to see whether measures from the online survey were completed in full. One participant in the older adult sample consented to participate and stopped shortly after due to nursing staff arriving to the room. The participant did not wish to complete the study at a different time, and thus the incomplete data was removed from the dataset. Also, two other older adults consented to participating and completed the study – however, both participants were younger than age 65 (ages 53 and 59) and were subsequently removed from the dataset. One undergraduate participant was removed due to apparent random responding (e.g., in questions such as age and “what are you looking forward to?,” the participant entered the number “2”). No other participants were removed on the bases of incomplete data or random responding.

Second, before total scores were calculated, online data were compared to original forms from the dissertation manuscript. Although the online data matched the dissertation appendices, it was revealed during subscale scoring that the FSA-R was missing several items (i.e., items 6, and 25-29) due to researcher item-entry error. These data were later imputed by using a mean imputation from the participants’ total score of the FSA-R (subscales were decided not to be used given one of the three subscales was more directly affected by the missing data than the other two). Two items (i.e., 5 and 7) were also missing on the SF-12 due to researcher error; therefore, only the general health question (question 1) was used for these two samples. All other measures were in their complete forms.

Next, missing data analyses revealed missing data on five measures, including the MAAS ($n = 5$), ERA-12 ($n = 3$), TMS ($n = 2$), Loneliness scale ($n = 1$), and the FAQ ($n = 2$). Each

participant with missing items was missing one item per measure, and Little's MCAR test was used to determine that these data were missing completely at random; therefore, means from the individual participants for each measure were imputed for these measures. No other missing data were discovered, and total scores were then calculated.

Descriptive statistics and correlations of total scores were then analyzed for outliers. Pre-experimental variables (i.e., MAAS, AAQ-II, FAQ, SAPS, and ERA-12) were examined by condition for each sample to assess whether covariate analyses were necessary after randomization. Although the ERA-12 for the undergraduates and the AAQ-II for the older adults were close to significance ($p = .053$ and $p = .064$, respectively), no pre-experimental differences on variables of interest were statistically significant. Seven undergraduate participants' total scores appeared above the third quartile (interquartile range of 3) on one of the two timepoints of the negative affect subscale of the PANAS-SF. One undergraduate also appeared as an outlier on the total score of the SIC. After close examination on a case-by-case basis of these participants, the data appeared to be exclusive to the three measurements above, and was not more indicative of global outlier responses for these identified participants. Also, meaningful qualitative data were gathered from these participants during the demographic questionnaire (end of survey), and therefore it did not appear to be an issue of effort or motivation, but maybe more indicative of actual responding, and hence potentially meaningful. Therefore, these data points were retained and untransformed for these analyses.

Multivariate outliers were then analyzed using Mahalanobis distance (MD). The MD probability score was then calculated for each participant, where a percentage less than .001 signified multivariate outlier data. This test identified two multivariate outliers in the undergraduate sample. Participant total score data was then examined individually and compared

to sample specific means for each measure. These two participants were found to have several (i.e., > 4) total scores which were 2.5 standard deviations or more above their sample mean and were thus removed from the dataset for future multivariate analyses.

Next, normality was tested by examining skewness and kurtosis z-scores (calculated by dividing the skewness/kurtosis statistic by the skewness/kurtosis standard error). Z-scores greater than 3.3 were considered indicative of questionable normality. However, two measures were not normally distributed in one sample but were in the other (i.e., the AAQ-2 and Three-Item Loneliness scale were slightly positively skewed in the OA sample, but not the UG sample) and were perhaps more indicative of sample specific variations rather than greater normality violations. Therefore, these total scores were not transformed. However, the PANAS-SF negative subscale for both timepoints was substantially positively skewed (z score > 6.0) for both samples and was therefore transformed using the common logarithm (i.e., $\log_{10}$) function of SPSS. Last, Multicollinearity (i.e., correlations $> .80$) was examined via correlational analyses for variables of interest and proved absent in this dataset. Upon completion of data cleaning, the total sample consisted of 60 undergraduates (30 in each condition) and 60 older adults (27 experimental condition and 33 comparison condition). Descriptive statistics for all variables of interest are presented in Tables 3 and 4 for each age sample. Means, standard deviations, and statistics for primary analyses can be found in Tables 3-12.

Frequencies and Group Differences for Demographic Variables

A majority of older adults reported that their religious identity was important to them ($n = 35$, 58%) and that they participated regularly in religious activities ($n = 31$, 52%). Undergraduates reported approximately equal importance of their religious identity ($n = 36$,

60%), but overall less participation ($n = 14$, 23%). A chi-square analysis between older adults and undergraduates on self-reported religious importance revealed no significant differences between samples, $\chi^2(1) = .03$, $p = .853$.

A majority of the older adult sample reported having at least one health or mental health condition ($n = 39$, 65%), with the majority of the ailments relating to physical health.

Undergraduates reported less health and mental health conditions ($n = 18$, 30%), with the majority being related to mental health difficulties. A chi-square analysis between older adults and undergraduates demonstrated significant differences between samples, $\chi^2(1) = 16.38$, $p < .001$, with older adults self-reporting more health related issues than undergraduates.

Almost all older adults reported being satisfied with their lives ($n = 55$, 92%), while fewer undergraduates reported life satisfaction ($n = 39$, 65%). A significant difference between samples, $\chi^2(1) = 14.28$, $p < .001$, was found with older adults expressing more instances of life satisfaction than undergraduates. Also, most older adults reported that they did not experience boredom ($n = 48$, 85%). Undergraduates, however, reported experiencing more boredom on average ($n = 31$, 52%). A significant difference between samples was found, $\chi^2(1) = 14.21$, $p < .001$, with older adults self-reporting less boredom compared to undergraduates.

Almost all older adults denied feelings of helplessness ($n = 51$, 85%) and uselessness ($n = 56$, 93%). Undergraduates reported more helplessness on average ($n = 19$, 32%) and uselessness ($n = 19$, 32%). Chi-square analysis revealed significant differences between older adults and undergraduates related to helplessness, $\chi^2(1) = 7.78$, $p = .005$, and uselessness, $\chi^2(1) = 13.95$, $p < .001$, with more undergraduates feeling these two features more than older adults.

About half of the surveyed older adults reported having a relative, either living or dead, with some form of dementia ($n = 32$, 53%). The majority of the responses specified a parent or

close family member (i.e., uncle, aunt). Equally, about half ($n = 28$, 47%) of the older adults reported having a fear or concern of developing dementia themselves. Undergraduates reported slightly lower instances of relatives with dementia ($n = 23$, 38%), with an approximate equal concern/fear of developing it themselves related to their older adult counterparts ($n = 31$, 52%). There were no significant differences between older adults and undergraduates for instance of familial dementia, $\chi^2(1) = 2.72$, $p = .010$, or fear of development $\chi^2(1) = .21$ $p = .646$.

Approximately half ($n = 33$, 55%) of the older adults reported familiarity with mindfulness or meditation prior to the study, and 35 older adults (58% reported) having practiced some form of mindfulness or meditation prior to the study. The same number of undergraduates ($n = 33$, 55%) reported familiarity with mindfulness or meditation, with 47% ($n = 28$) reporting having practiced in some form previously. There was no significant difference between samples was seen for mindfulness familiarity or mindfulness practice, $\chi^2(1) = 0.00$, $p = 1.00$ and $\chi^2(1) = 1.64$, $p = .201$, respectively.

Forty-three percent of older adults reported occasional to frequent difficulties paying attention ($n = 26$), 35% reported experiencing anxiety when trying something new ($n = 21$), 83% expressed tolerance for others viewpoints ($n = 50$), and 87% reported being open to new experiences ($n = 52$). Undergraduates also reported attention issues ($n = 47$, 78%), anxiety when trying something new ($n = 47$, 78%), tolerance for others ideas ($n = 54$, 90%), and openness to experience ($n = 49$, 82%). Chi-square analyses highlighted significant differences between samples, with undergraduates reporting significantly more difficulties with attention, $\chi^2(1) = 15.42$, $p < .001$, and more anxiety about trying new things, $\chi^2(1) = 22.19$, $p < .001$.

Hypothesis Testing

Hypothesis 1

To test Hypothesis 1, two analyses were conducted. First, a MANOVA was used to examine differences between conditions (i.e., experimental and comparison), as well as differences between condition by age group (i.e., 2X2) for levels of ageism, using two dependent variables (FSA-R and SIC). It was hypothesized that the experimental condition would have lower FSA-R and SIC scores than the comparison group, and that both older adults and undergraduates in the experimental condition would have lower FSA-R and SIC scores compared to their respective comparison groups.

First, specific assumptions of MANOVAs were examined to check for any violations. All assumptions were met, and no multicollinearity between the FSA and the SIC was present ($r = .70$). A one-way MANOVA was used to examine differences between conditions for measures of ageism. There was no statistically significant difference in ageism based on participant condition, $F(1, 120) = .823, p = .442$; Wilk's $\Lambda = .986$, partial $\eta^2 = .14$, observed power = .19. Therefore, the first part of the hypothesis was not supported.

Second, a 2X2 MANOVA was used to examine the relationship of condition assignment X sample with both measures of ageism. There was a statistically significant difference in ageism based on the interaction of condition and sample, $F(1, 120) = 4.43, p = .014$; Wilk's $\Lambda = .928$, partial $\eta^2 = .07$, observed power = .75. Between-subjects effects revealed that the significant difference was found for the FSA, $F(1, 120) = 8.60, p = .004$, with older adults having higher FSA scores in the experimental condition than control ($M = 94.74, SD = 17.49$, Cohen's $d = .38$) and undergraduates having higher FSA scores in the comparison condition ($M = 98.70, SD = 17.03$, Cohen's $d = .71$). The second part of the first hypothesis was partially

supported with undergraduates in the experimental condition having lower levels of ageism than undergraduates in the comparison condition (per the FSA-R) after the MABP was presented. However, the older adults having higher scores in the opposite condition contradicts the hypothesis.

Hypothesis 2

For Hypothesis 2, a 2X2 between-subjects factorial ANOVA was used to examine differences between conditions, and between condition by age groups on levels of state mindfulness (TMS). It was hypothesized that the experimental condition would have higher TMS scores than the comparison group, and that both older adults and undergraduates in the experimental condition would have higher TMS scores compared to their respective comparison groups.

The 2X2 factorial ANOVA was used to examine differences between conditions for state mindfulness. First, there was a statistically significant difference in state mindfulness based on participant condition, $F(1, 120) = 5.95, p = .016$, observed power = .68 with the experimental condition having more self-reported state mindfulness ($M = 39.93, SD = 11.14$) than the control ($M = 35.02, SD = 11.34$; Cohen's $d = .46$). Next, the sample (i.e., either undergraduate or older adult) was examined for differences in state mindfulness. No statistically significant difference in state mindfulness based on sample existed, $F(1, 120) = 1.258, p = .27$. Last, the analysis of condition X sample with measures of state mindfulness as the dependent variable was run. There was no statistically significant difference in state mindfulness based on the interaction of condition and sample, $F(1, 120) = .04, p = .85$. In summary, the hypothesis that the participant's

condition would predict state mindfulness scores was supported, but the condition X sample was not.

Hypothesis 3

For Hypothesis 3, a mixed-design ANOVA was used to examine differences between conditions, and between conditions by sample group, to examine negative state affect change scores (PANAS-SF NEG; pre to post difference). It was hypothesized that the experimental condition would have higher PANAS-SF NEG change scores than the comparison group, and that both older adults and undergraduates in the experimental condition would have higher PANAS-SF NEG change scores compared to their respective comparison groups. It was also hypothesized that the older adults in the experimental condition would experience greater changes in negative state affect compared to undergraduates in the experimental group due to the content being self-relevant for older adults. Since there were notable violations to normality, the Log10 transformation was used in this analysis for PANAS-SF total scores. Although a hypothesis was not specifically proposed for sample differences between PANAS-SF NEG scores, the undergraduate sample had significantly higher levels of negative state affect than the older adult sample, $F(1, 116) = 23.92, p < .001$; Wilk's $\Lambda = .99$, partial $\eta^2 = .17$, observed power = .99.

The mixed-design ANOVA was used to examine the relationship of condition assignment to PANAS-SF NEG change scores from pre to post test. There was no statistically significant difference in PANAS-SF NEG based on condition, $F(1, 116) = 1.72, p = .19$; Wilk's $\Lambda = .99$, partial $\eta^2 = .02$, observed power = .26.

Second, the interaction between condition assignment X sample to PANAS-SF NEG change scores was then examined. There was also no statistically significant difference in PANAS-SF NEG change scores based on the interaction of condition X sample, $F(1, 116) = 1.41, p = .237$; Wilk's $\Lambda = .99$, partial $\eta^2 = .01$, observed power = .22. Overall, the hypothesis that the participant's condition and condition X sample would predict negative state affect change scores was not supported.

Hypothesis 4

To test Hypothesis 4, an independent samples t -test was used to compare older adult groups (i.e., experimental vs. comparison condition) on cognitive performance distress (DS-distress). It was hypothesized that older adults in the experimental condition would provide lower ratings of distress related to the digit span task. There were no significant differences between older adults in the experimental condition and those in the comparison condition on cognitive performance distress, $t(58) = .82, p = .13$, Cohen's $d = .21$. Therefore, Hypothesis 4 was not supported.

Manipulation Check

As a manipulation check for audio adherence, a question was asked to examine whether the participants listened to the audio recordings during the experiment. All but one older adult reported paying attention to the audio on age-based stereotypes ($n = 59, 98\%$), and approximately one-third found the audio with negative age-based stereotypes to be upsetting ($n = 17, 28\%$). Fewer undergraduates reported paying attention to the audio ($n = 45, 82\%$), and a majority of them found the audio upsetting ($n = 38, 63\%$). Significant differences existed

between samples, with undergraduates reporting less attention paid to the audio, $\chi^2(1) = 15.37, p < .001$, and feeling more upset from the age-based stereotypes, $\chi^2(1) = 14.80, p < .001$, than older adults.

Exploratory Analyses

Although several of the hypotheses proposed did not yield significant findings, analyses related to the original hypotheses were examined.

Pre-Experimental Differences between Samples

Differences between samples (UG and OA) were examined based on variables that were either presented before the experimental manipulation (i.e., MABP or sit-and-think task) or with key variables from the demographic questionnaire which were hypothesized as stable and unaffected by condition assignment (e.g. religious affiliation, previous mindfulness experience). They do not correspond with proposed hypotheses, and as such will be presented as relationships between variables based on sample differences via independent samples *t*-tests. All analyses are assumed to have equal variances unless otherwise specified (i.e., Levene's *F* Test).

First, total scores between samples were compared for experiential avoidance (EA) as measured by the AAQ-II. The independent samples *t*-test was statistically significant, $t(118) = -4.15, p < .001$, with undergraduates reporting more experiential avoidance ($M = 20.07, SD = 7.94$) than older adults ($M = 15.18, SD = 7.60$).

Total scores were compared for trait mindfulness as measured by the MAAS. The independent samples *t*-test was statistically significant, $t(118) = 5.30, p < .001$, with older adults reporting more trait mindfulness ($M = 4.63, SD = .76$) than undergraduates ($M = 3.83, SD = .90$).

Next, total scores were compared for aging expectations as measured by the ERA-12. The independent samples t -test was not statistically significant, $t(118) = -1.45$, $p = .147$, with no difference between the two samples. However, subscale analyses of the ERA-12 revealed that undergraduates had significantly higher scores on *Expectations of Physical Health* ($M = 46.81$, $SD = 18.73$), $t(118) = -2.53$, $p = .012$, than older adults. These significant differences between samples were not seen for the *Expectations Regarding Mental Health* or *Expectations Regarding Cognitive Function* scales of the ERA-12.

Last, total subscale scores were compared for pre-experimental positive and negative state affect as measured by the PANAS-SF POS and PANAS-SF NEG (Log10 transformation). For positive affect, the independent samples t -test was statistically significant, $t(118) = 3.24$, $p = .002$, with older adults reporting more positive affect ($M = 1.15$, $SD = .12$) compared to undergraduates ($M = 1.07$, $SD = .15$). For negative affect, the independent samples t -test was also statistically significant, $t(118) = -4.99$, $p < .001$, with undergraduates reporting more negative affect ($M = .84$, $SD = .15$) compared to older adults ($M = .73$, $SD = .06$).

CHAPTER 4

DISCUSSION

The intention of this dissertation was to examine how mindfulness and acceptance-based clinical skills affect negative age-based attitudes and stereotypes in an experimental context in two samples – older adults and undergraduates. Specifically, skills from an ACT framework (e.g., contact with the present moment, self-as-context, defusion, valued-living, acceptance) were incorporated into an experiential metaphor so that, if deemed clinically useful for older adults, this intervention could more easily and readily be carried over to clinical work. Hypotheses were proposed to test differences between experimental conditions within these two different samples.

Undergraduates were studied for several reasons in this project; specifically, to examine how the experimental effects of MABPs may or may not affect ageist attitudes of participants at a younger age, as well as to understand group similarities and draw parallels between undergraduates' and older adults' attitudes. Also, it is clinically useful to study the broader context of aging attitudes in two distinct developmental life stages, given that societal attitudes are influenced by many different age groups – not just older adults. Younger adult perspectives are important to assess when considering making changes that may affect education, intervention, and social change.

Preliminary analyses were used to gain conceptual depth from the raw data, check for statistical test violations before analyzing, and identify demographic differences between samples prior to experimentation. Primary hypotheses and subsequent analyses were utilized to help understand differences between conditions, and differences between conditions by sample. Exploratory analyses were used to appreciate group (i.e., sample and condition) differences and relationships prior to experimental manipulation.

Frequencies and Group Differences for Demographic Variables

With the exception of self-reported health issues (significantly more older adults reported health issues compared to undergraduates), older adults tended to rate their health as being *Good* to *Excellent*. This is consistent with national statistics of non-institutionalized older adults, with almost 40% of older adults reporting similarly to this sample even with health ailments (AoA, 2017b).

More older adults in this sample expressed having greater life satisfaction, less boredom, and fewer feelings of uselessness and helplessness in comparison to undergraduates. Significantly fewer older adults reported difficulties with attention and anxiety about trying new things compared to undergraduates. These findings are on par with national averages of older adults as well (AoA, 2017), with data in this sample of healthy, active, and mostly independent older adults demonstrating statistically greater levels of self-reported well-being than undergraduates. This finding is noted in the literature as the *well-being paradox* (Homan, 2016), where older adults typically report greater levels of well-being compared to younger adults even with apparent life stressors (e.g., chronic pain, loss/grief, health issues). Given this robust paradoxical finding in the literature, the case continues to be made for (re)education of aging perceptions and expectations for all persons with a vested interest in aging well. Although these findings parallel the greater body of literature, the findings are likely not generalizable to older adults in a general sense and in a more diverse community sample. Community dwelling older adults still have high levels of anxiety, with a higher prevalence rate in women than in men (Byers et al., 2010). As such, limitations of this sample must be considered when interpreting these findings.

There were no significant differences between samples for reported instances of familial dementia or fear of development. Although the non-significant difference between the two samples for being related to someone who has/had dementia were less surprising (likely a product of random sampling; significant differences may have emerged had the question read “do you *know* or *have you known* someone with dementia?,” which more older adults likely would have responded affirmatively), a lack of significant findings related to fear were surprising given the pandemic nature (Burns & Jonney, 2012) of dementia, as well as its relevance to aging. One explanation for this is that a fear of Alzheimer’s disease may be more related to an individual’s propensity for having anxiety about their health and less about their age status. Rates of health anxiety are increasing given the availability of health information/misinformation and can give rise to psychological, physical, and financial issues. Tyrer (2018) suggests that psychological interventions, such as behavior therapy, stress management, mindfulness training, and ACT are effective ways of intervening for such issues. Given that the fear of developing dementia is high, these interventions may be suitable for dementia-related concerns as well. Also, with the lack of significant differences for rates of fear, it may even lend support to the notion that a single kind of intervention, and not necessarily one that is age-focused, may be most effective for addressing this concern.

There was also no significant difference between samples for mindfulness familiarity or practice. Given the ubiquitous nature of mindfulness in the general arena (Kabat-Zinn, 2014; Singh, 2014), these findings are likely more indicative of public access to this material than solely attributable to specific interests within these two populations. Still, it is important to note that any preconceived notions that undergraduates/younger adults would have either more familiarity or prior practice history were not true for this sample. Although currently at center

stage in psychological practice and science, mindfulness has historically been present in psychological interventions for quite some time (e.g., the “here and now” in dynamic psychotherapies), and for even longer as a means of addressing human suffering. Since Langer’s (1989) work for mindful aging, new intervention developments have continued to grow for older adults and will likely continue as treatments adapt and grow to serve an older clientele in the next 20 years.

Significantly more undergraduates reported paying less attention to the age-based stereotype audio. This finding may be accounted for by the higher prevalence of self-reported attention issues in the undergraduate sample than in the older adult sample. Although this was used as a measure of fidelity to the experiment, this question may have benefitted from probing with a Likert-type scale versus a dichotomous, yes-no answer choice. There were no behavioral observations noted in either sample when following along with the age-based stereotypes audio, and in fact, all participants turned the laminated sheet over when it was time to do so. Although speculation, it is possible that if given the choice participants may have selected an answer choice stating, “I was paying attention, but I did not find the information relevant to me,” or “I was mostly paying attention,” as opposed to selecting “no.”

Last, significantly more undergraduates reported feeling upset by the age-based stereotypes when compared to the older adult sample. Qualitatively, we noticed that several of the older adults were shaking their heads and saying “no” and “not true” while participating in the ABS audio task. Also, when asked, many of the older adults mentioned that they were not upset by the ABS audio because they knew they were not true. One of the older adults in this sample provided important qualitative data, reporting, “If I was interacting with someone in everyday life who actually believed those things... it would be very upsetting to me.” It may

have been that the power of the experimental context prohibited the formation of true or legitimate effects of ageism for the participants. Relatedly, older adults tended to interact more with the researchers (given survey accommodations) who were expressing interest in and empathy for participants, and therefore may have set the stage for less overall internalization of ageism. Several other experimental manipulations, such as who is delivering the experiment (e.g., warm and friendly vs cold and disinterested), whether there is perceived legitimate knowledge (e.g., speaking about stereotypes as truths rather than opinions), and implicit and explicit introductions of these stereotypes may affect outcomes of future research.

Primary Analyses

Hypothesis 1

It was proposed that there would be group differences in ageist attitudes based on condition assignment, as well as condition assignment by sample. Based on the MANOVA, there was no statistically significant difference between the experimental condition that received the MABP and the comparison condition who were asked to sit-and-think. Therefore, regardless of the condition to which the participants were assigned, no difference in ageist attitude was seen for the combined sample. Although not anticipated from the initial hypothesis, it is possible that the combined sample made it more difficult to detect an effect between conditions based on random assignment alone. This seems to be likely. Although no significant differences were seen for the experimental manipulation for the combined sample for ageist attitudes, condition by sample revealed a significant difference for both older adults and undergraduates based on condition.

Specifically, older adults who were assigned to the experimental condition tended to have

more ageist attitudes than those older adults in the comparison condition. This finding was different from what was expected for the older adult sample. Additionally, this finding is inconsistent with the body of research that suggests MABPs as a whole are beneficial for reducing stereotypes and self-stigma in specific, self-relevant populations (e.g., Luoma, Kohlenberg, Hayes, Bunting, & Rye, 2008; Skinta, Lezama, Wells, & Dilley, 2015; Yadavaia & Hayes, 2012), as well as for managing broader negative mood issues (e.g., depression, anxiety, sleep disturbances, rumination; Foulk, Ingersoll-Dayton, Kavanagh, Robinson, & Kales, 2014). Given the prevalence of ageism in society, older adults may be more likely to experience higher levels of emotional distress related to ageism. Recent research has demonstrated that older adults, and in particular older women, who have experienced an ageism-related event (i.e., been affected by ageism) were more likely to have higher levels of depression (Ferraro, 2015).

In contrast, undergraduates in the experimental condition tended to have significantly fewer ageist attitudes than undergraduates in the comparison condition. This finding was consistent with the proposed hypothesis, as well as with research employing MABP consistent interventions (e.g., ACT) for broader societal attitudes and stigmas (e.g., Lillis & Hayes, 2007; Luoma & Platt, 2015; Masuda et al., 2007). Given that ageism is an attitude towards aging which develops in earlier age as a function of both anxiety about aging (Terror Management Theory; TMT) and decreased exposure/contact with older adults (Social Development Theory; SDT; Wisdon, Connor, Hogan, & Callahan, 2014), the need for earlier identification and education around ageist ideas is clear for prevention of ageism. Other research (e.g., Bodner, Shrira, Bergman, Cohen-Fridel, & Grossman, 2015) and theory (Levy, 2016; Lytle & Levy, 2017) supports these ideas.

Considering the limitations of this sample (e.g., demographics, nonclinical) the

significant, opposite findings in the OA sample from this experiment still provide new research questions that may be beneficial for conceptualizing ageism across two points in the lifespan. Based on research by Bennett and Gaines (2010), self-relevance was seen as being central to whether ageist ideas would “stick” (i.e., adhere) more for older adults after being introduced during the experiment, and whether positive priming (i.e., MABP) may also play a role in reducing the adherence of negative stereotypes (Bennett & Gaines, 2010). It may be important in future research to examine and assess for the experience of self-relevance when introducing ageist ideas with a question on the demographics questionnaire.

Although self-relevance was assumed based on sample age differences, how participants interpreted the experimental task after the age-based stereotypes were listened to may have influenced these results. Older adults may have taken the time during the “sit-and-think” task to consider whether the material presented to them was self-relevant in the first place. It may have been that the experimental condition was presented with an assumption that the material was self-relevant, making adherence more likely than if they were just processing and organizing (i.e., “sit-and-think”) the information and examining the self-relevance. Although the intention of the MABP was to bring awareness to the participants’ experience and to reduce the negative effects of the age-based stereotypes, the exercise may have had paradoxical effects for older adults by increasing the salience and level of self-relevance.

Relatedly, older adults in the comparison condition may have enacted more psychological reactance (Brehm, 1966) to age-based stereotypes given their age location during their experimental task, and therefore less internalization may have taken place. This difference between conditions in the older adult sample may have also been a feature of the experimental task. Older adults in the MABP condition may have had less time to form reactance towards the

material, given that they were mentally occupied for longer with the next recording. Research on age differences is varied, suggesting both positive and negative correlations between increasing aging and psychological reactance (Hong, Giannakopoulos, Laing, & Williams, 1994; Woller, Buboltz, & Loveland, 2007). However, given that measures of psychological reactance were not administered, this conceptualization of the findings is limited and speculative in nature.

Older adults may have also used the “sit and think” task as a time to employ distraction for any discomfort they may have experienced. Although experimental research supports the notion that mindfulness meditation is more effective for counteracting an experimentally induced dysphoric mood above distraction or active rumination in an undergraduate sample (Broderick, 2005), this research has not been replicated in an older adult sample and the effects of mindfulness over distraction for this population are unclear. Importantly, distraction in the Broderick (2005) experiment was still more effective than rumination in reducing dysphoric mood, but not to the extent of mindfulness meditation for undergraduates. In the current study, although all participants in the “sit-and-think” comparison task were asked to think about the negative aging attitudes, it is possible that the older adults in the comparison condition were not actively ruminating, and instead using distraction as a means of counterbalancing negative effects of the ABS audio. In fact, some of the older adult participants were seen mouthing words to themselves, picking at their skin, and looking out available windows. Distraction as a means of coping may be beneficial in the short term, but can lead to issues with emotional, cognitive, and physical issues for older adults in the long term (Vitaliano, Russo, Paulsen, & Bailey, 1995). Given that rumination and distraction were not measured and appear similar as observable behaviors, only conjectures can be made about the extent to which older adults may have been using distraction as a strategy to deal with any discomfort they may have been experiencing due

to the ABS audio, and therefore influencing later internalization of the age-based stereotypes. More research is needed with older adults to understand how mindfulness may or may not be influential in experimentally induced dysphoric mood.

Hypothesis 2

The second analysis examined the difference in state mindfulness directly after the experimental manipulation by condition, and condition by sample. The hypothesis assessing state mindfulness by condition was supported in that those assigned to the MABP condition had higher levels of state mindfulness after participating. This is an expected and intuitive finding given that the comparison group was given a task which was not related to mindfulness, and therefore scores would likely reflect increases in the related construct. These results indicate that the state mindfulness measure could differentiate between conditions which have mindfulness and those which did not. This study difference suggests that participants responded accordingly and expectedly with measurement to the experimental manipulation.

This finding also demonstrates that brief mindfulness and acceptance-based skills (e.g., 10-minute experiential exercise) can influence state mindfulness scores in participants who receive them. Research demonstrates that time-limited interventions, like a brief 20-minute mindfulness practice, can produced significantly higher levels of state mindfulness when compared to a control group (Bonamo et al., 2015). Notably, in this study (Bonamo et al, 2015), the 45-minute condition demonstrated lower scores in state mindfulness than did the 20-minute mindfulness intervention. In the context of managed care and psychotherapy, it is often impractical to use lengthy mindfulness exercises or meditations. Therefore, effective ways of introducing and utilizing mindfulness exercises in brief and measurable ways is desired. Still,

other researchers (e.g., Baer, 2011) remain skeptical as to how changes are assessed and maintained over time from brief interventions. Baer (2011) identifies the difficulty of measuring state mindfulness due to it being both state-like and trait-like, as well as its quality as both a process and an outcome. Depending on how these skills are taught to participants, brief interventions without focus on common misconceptions may not allow for accurate acquisition of these skills in the long term (Lester, Murrell, & Dickson, 2018), and may ultimately influence participants' likelihood of practicing mindfulness meditation in the future. Research examining state mindfulness should consider these limitations when assessing changes due to time-limited processes.

Part 2 of this analysis involved using a factorial ANOVA to examine how condition by sample affected state mindfulness directly after the experimental manipulation. The interaction effect of this analysis was not significant, and there was no effect seen by condition when analyzing the two samples individually. Although state mindfulness was significantly different between conditions, these effects were not significant when looking at conditions by age samples. Although considered controversial by some, post-hoc power-analysis revealed a 67% power, using the condition means and standard deviations, their sample sizes, and alpha level set at .05. Given that the observed effect size was virtually zero, it may be likely that no true effect existed in this study. However, it is possible that with adequate power this study may have demonstrated a significant interaction effect of condition by sample. Similar studies should be conducted with larger samples.

In a clinical sense, state mindfulness was hypothesized to increase in both groups together and separately to increase active agents of mindfulness (e.g., non-judgmental attitudes, awareness, openness, acceptance, and non-reactivity) more broadly when confronted with

negative ageist ideas – ultimately reducing the effects of these beliefs. Benefits of state mindfulness as a means of cognitive reappraisal are documented in the literature and produce positive effects. In a small, majority female sample, state mindfulness predicted increases in reappraisals over time, increasing overall emotion regulation (Garland, Hanley, Farb, & Froeliger, 2013). Initial research examining state mindfulness shows positive correlations to self-awareness, openness, internal state awareness, and psychological mindedness (Lau et al., 2006). With the total sample demonstrating increases in state mindfulness by condition, there may be some evidence for the MABP having downstream effects of increasing emotion regulation and other positive psychological attributes for younger and older adults. However, this interpretation is limited given that constructs such as emotion regulation and psychological mindedness were not formally or explicitly measured in this study.

Related to the ABS audio, which involved overly inflexible styles of thinking related to aging, mindfulness may still be an appropriate channel of intervening over time when confronting caustic attitudes. The experimental condition in this study was presented with a cross-sectional, general MABP metaphor as a means of reducing negative aging attitudes as well as ageism. To see larger effects from this intervention, multiple timepoints, age-specific MABPs, and longer sessions may be necessary. Research documents the effects of mindfulness practices over time, with clear gains in both state and trait mindfulness (e.g., Kiken, Garland, Bluth, Palsson, & Gaylord, 2015). Specifically, an MBSR program was used for older adults ages 60 and older for 8-weeks. Of their initial sample, 141 older adults completed the intervention. Overall, levels of emotional distress for older adults improved following the intervention, with greater than 50 percent reduction in reports of clinically significant depression and anxiety (Young & Baime, 2010). Notable limitations of this research included the lack of a control group

and no validated measurement of mindfulness. All considered, it may be that more exposure to the MABP over time would lead to greater gains in state mindfulness between the two samples and their respective conditions.

Older adults also appeared to have some difficulty on the TMS. Regardless of whether they were being administered the survey or they were self-administering, older adults would ask for clarification on the TMS more than any other measure (second most clarification was with the PANAS-SF), and they expressed some confusion. This confusion occurred in about 20% of cases (approximation). It was observed that the wording, as well as the theory of state mindfulness, was challenging for older adults, especially those who did not receive the MABP recording and were asked to answer the TMS with what they “had just experienced” (sit-and-think). This is a possible limitation of both this measurement and methods more broadly.

Hypothesis 3

Changes in negative state affect were examined by using a mixed-methods ANOVA investigating differences between condition, and then examining the interaction of condition by sample. PANAS-SF NEG scores were transformed to correct for normality, since they were substantially positively skewed. With the exception for significant difference between the undergraduate and older adult sample in pre-experimental negative state affect, there were no significant findings from these analyses, with negative state affect staying consistent from pre to post-experiment by condition and conditions by sample. Before any further discussion of these results, it should be noted that the reliability of the PANAS-SF was questionable in the older adult sample. It is unclear why the widely used measure, which has been validated with older adults, only evidenced a Cronbach’s alpha of .60. Older adult participants may or may not have

responded in a consistent fashion to this measure and all interpretative findings should be taken with caution.

The lack of change on the PANAS-SF is consistent with recent mindfulness research that has used the PANAS-SF in experimental research, where scores did not change significantly from pretest to posttest as a result of a “brief mindfulness induction” task (Eddy, Brunyé, Tower-Richardi, Mahoney, & Taylor, 2015). However, other research using the PANAS-SF with an MBSR intervention and daily diary entries found that changes in mindfulness predicted daily state affect changes (both positive and negative; Snippe, Nyklíček, Schroevers, & Bos, 2015). Remarkably, the latter study is less similar in design than the former given the delivery of intervention over time and that it was not experimental research. Laboratory-style experimental research using mindfulness is becoming more robust, but it is still quite limited to younger undergraduate populations. Recent research by Lancaster, Klein, & Knightly (2016) using a brief laboratory-based intervention demonstrated that both a mindfulness intervention and progressive muscle relaxation (i.e., PMR) reduced reductions in overall state affect (positive and negative affect).

Although these findings are indicative of greater improvements in negative affect as it relates to experimental mindfulness interventions, the limitations of a sample composed strictly of undergraduates may contribute to these findings not generalizing to this sample, specifically related to measurement of negative state affect. For this sample, it appears that there may have been a restriction in range for the PANAS-SF NEG. With the measure ranging from total scores of 5 to 25, both undergraduate ($M = 7.36$, $SD = 3.22$) and older adult ($M = 5.47$, $SD = .99$) pre-experimental negative state affect averaged at 6.42 ($SD = 2.56$). This was only 1.5 points higher than the lowest score possible, and minimally different (.10 change score) from PANAS-SF

NEG scores at time two for the total sample. With this possible restriction of range, significant differences between timepoints - regardless of condition assignment - may have been less likely to occur for this study. Specifically, for older adults, restriction of range may be more greatly related to context than measurement for our sample in that older adults in this study were non-clinical, active, positively minded, and embedded in supportive living and familial situations. It may be that older adults without this context may have reported more negative state affect and may have shown greater range and change in their state affect scores than this sample did.

Overall, older adults in this sample tended to have less self-reported negative state affect than did undergraduates – making differences in negative affect based on the ABS audio induction less pronounced as well. Related to negative state affect, the literature is mixed for these two age populations. Research suggests that older adults tend to have lower negative state affect than their younger counterparts (e.g., Ben-Zur, 2002), and longitudinal reductions in negative state affect over time occur as well. However, these reductions tend to attenuate in the oldest adults, resulting in slight reductions in positive affect for older adults over time compared to younger and middle-aged adults (Charles, Reynold, & Gatz, 2001).

Hypothesis 4

Last, differences in digit span stress were examined in the older adult sample by condition. There were no significant differences between the two conditions in older adults for digit-span distress. Although this may appear inconsistent with research demonstrating the effects mindfulness has on increasing emotion regulation (Corcoran, Farb, Anderson, & Segal, 2009; Garland et al, 2013; Roemer, Williston, & Rollins, 2015) and well-being (e.g., Gu, Strauss, Bond, Cavanagh, 2015; Morone et al., 2008), considerations for this sample must be made. In

this sample, older adults were remarkably unbothered/upset by the ABS audio for the induction of stress/negative affect. In theory, participants would need to have some internal activation of these age-based stereotypes as a pretense and then reflect negatively on them for digit span stress scores to be directly affected in this study. This was not seen to be the case.

Second, although many older adults reported the DS task to be no more than moderately stressful, it was much more difficult to draw a true experimental relationship between the experimental task and digit span stress scores than initially anticipated. That is, individual differences we did not measure (such as neuroticism, intelligence) to participating in these kinds of tasks likely play a much larger effect on the individual's stress experience related to the task than a brief ageist audio and mindfulness induction. Of the individual differences we informally assessed with Likert-type scales, there were no significant relationships between self-reported attention issues or anxiousness and digit span stress. Notably, there was also no correlation between subjective stress level of the digit span task and actual performance on the task.

In a greater sense, stress and performance has been well documented in the psychological literature. Current research with older adults that suggests that older adults' perceived stress effects cognitive functioning on direct recall tasks (e.g., digit span forward task; Korten, Comijs, Penninx, & Deeg, 2017), and further effects self-efficacy in older adults on such tasks. Negative stereotypes can affect older adults' neuropsychological functioning during assessment, with reductions in memory performance when these stereotypes are activated in older adults (Desrichard & Kopetz, 2005; Kang & Chasteen, 2009; Rahhal, Hasher, & Colcombe, 2001). Very little research has been conducted from an experimental paradigm examining the effects that stress has, in particular with aging attitudes, on neuropsychological testing in older adults, and whether noxious attitudes towards aging (either implicit or explicit) at different levels

(personal, interpersonal, institutional) affect older adult stress and actual performance. Some research suggests that these negative attitudes can be activated explicitly (e.g., Hess, Hinson, & Hodges, 2009) or implicitly (e.g., Stein, Blanchard-Fields, & Hertzog, 2002) and affect performance; still, more research is needed in this domain.

For a statistical explanation, it also appeared that this analysis with only older adults was underpowered to detect a significant effect if one truly existed. Similar to Hypothesis 2, post-hoc power-analysis revealed 20% power for this study, using the obtained effect size of $d = .209$, conditions respective sample sizes, and alpha level set at .05. The observed effect was small and lacked adequate signal to detect an effect if one truly existed. Although this study was limited by the practical consideration of recruiting and retaining participants, a study with adequate power and variability may have demonstrated a significant interaction effect of condition by sample. In all, caution is recommended before proceeding to fail to reject the null hypothesis (Type II error) given the lack of statistical power.

In summary, a majority of the primary analyses revealed null findings for this experiment. Related to ageism, findings were consistent with the proposed hypothesis for the undergraduates, but opposite of what was proposed for older adults. The participants in the experimental condition responded as anticipated with increases in state mindfulness for their administered MABP, however condition by sample revealed no significant difference for state mindfulness. Change scores for negative state affect also returned null findings, with both condition and condition by age revealing no significant changes in state affect. Last, digit span stress was not significantly different between conditions for older adults. Given the varied results, exploratory analyses were used to aid in revealing more sample specific features which may contextualize and generalize initial findings.

Exploratory Analyses

Older adults in this sample tended to have significantly more trait mindfulness and less EA than undergraduates. These two findings are consistent with research conducted by Mahoney, Segal, and Coolidge (2015), where older adults reported higher levels than trait mindfulness and lower levels of EA and anxiety sensitivity than younger adults. They propose that older adults may have more adaptive coping strategies (e.g., mindfulness skills) when confronting distress, than do younger adults. The authors suggest that older adults may use trait mindfulness as a way of accepting internal negative experiences without judgement and to observe and process, whereas younger adults may be more likely to engage in avoidance as a means of resolving in-the-moment distress (Mahoney et al., 2015). These skills may provide older adults with a buffer against poor outcomes (Morone et al., 2007) and increase well-being (Fiocca & Mallya, 2015).

Although there was no significant difference between samples for aging expectations, subscales revealed that undergraduates had significantly higher scores on Expectations of Physical Health than older adults. These findings are both encouraging for older adults and undergraduates given that one's aging expectation has a key influence on how adults react to their future health experiences (Levy, 2009). However, other research suggests a bidirectional relationship between these two features (Rotherund & Brandtstädter, 2003; see Warmoth et al., 2015), possibly suggesting that one's personal experience of their health may determine aging perception and expectation. Given that we did not assess in full participants' subjective health experience, it is difficult to draw any directional conclusions from these data. Still, if undergraduates report greater expectations of aging, it is possible these positive features can serve as a platform lead to effective interventions though education at younger ages.

As knowledge can be a powerful change agent for aging difficulties, knowledge between the two samples was assessed. Older adults tended to have more aging knowledge when compared to undergraduates – however, not drastically different (5% difference). This difference may be more related to the older adults referring to their own experience of their aging as a means of knowledge, where undergraduates were required to speculate on questions they both did not know and had no personal experience with. As mentioned previously, aging education is uncommon (McGuire, 2017), but highly targetable at younger stages of development. Future research may benefit from using this information, as well as the context of the education system for children, a jumping off point for teaching about aging that is more consistent with research and less related to societal assumptions and attitudes.

Older adults also report significantly less loneliness than do undergraduates. Although it is a common belief that older adults would be lonelier than younger adults due to a potentially reduced social network (e.g., loss of loved ones and friends, social roles changes), some research suggests this assumption is inconsistent with the larger research body, with only 5-15% reporting frequent feelings of loneliness (Pinquart & Sörensen, 2001). However, the authors suggest that this percentage increases in the oldest old (>80 years old), with about 50% often feeling lonely.

Other research suggests that loneliness is more prevalent in an older adult population than young adult population and that it presents with risk factors for older adults, including low family support and strained friendships (Hawkley & Kocherginsky, 2017), and related poor physical and mental health outcomes (e.g., Ong, Uchino, & Wethington, 2016). Although significantly different from the undergraduate sample, both samples reported low levels of loneliness. As mentioned previously, this may be more a feature of the context from which we sampled. Most older adults in this sample reported positive relationships with their family in

qualitative responses, were active, financially stable, and mostly independent. Undergraduates in this sample were also nonclinical and overall well-adjusted based on AAQ-II and initial state affect scores. Qualitative research suggests that intervention for loneliness include enhancing social skills, contact, and support, as well as addressing maladaptive social cognitions (Masi, Chen, Hawlkey, & Cacioppo, 2011). Relatedly in older adults, research also supports mindfulness-based interventions (i.e., MBSR) as a way of reducing both loneliness and the expressed pro-inflammatory gene related to loneliness (Creswell et al., 2012)

Last, older adults reported more positive affect and less negative affect when compared to undergraduates. Related to *Hypothesis 3*, these differences may have been indicative of either true age-based sample differences (e.g., Ben-Zur, 2002; Schneider, 2018), other variables contributing to these differences, such as defensiveness, gender, rumination, life events (Thomsen et al., 2005), mindfulness skills (Raes et al., 2013), or even the experimental procedure more broadly. Notably, when assessing the older adults, several occasions emerged when older adults asked for clarification as to what the measure was referencing with “right now.” After clarification was given (“how you are feeling *in this moment*”), several older adults asked for further clarification as to whether they were being asked about the experiment, or even about the location they were taking the survey. Participants were again encouraged to answer with how they were feeling “right now,” but it is unclear if this affected overall responses for these older adults. Although these qualitative data points do not exist for the undergraduate sample, it is conceivable that they also interpreted this measure as asking about their affect related to the experiment versus their affectual experience more broadly.

In all, education appears to be a large part of confronting ageism and negative aging attitudes. As McGuire (2017) states, “aging education is not a common occurrence” and should

be taught beginning in childhood and carried forward throughout life. Ageist attitudes are transmitted across generations and affect how an individual experiences aging in a multitude of ways (Dychtwald & Fowler, 1990; McGuire, 2017). Changing aging education can revise ageist myths and stereotypes by shifting the focus of aging to good health, creativity, productivity, and activity (Pratt, 1992), as opposed to decline (McGuire, 2016). McGuire makes the argument that aging is often spoken about as being synonymous with decline, instead of within the context of a lifetime. As McGuire quotes from Pratt (1992), “People will learn about aging whether we teach them or not, but all too often what they learn about aging is based on myths about the aging process and stereotypes of people that are entrenched in our cultures.” Simply put, raising awareness and teaching about aging and improving aging knowledge can provide an evenly weighted view of aging and help confront ageism (McGuire, 2017).

Limitations and Future Directions

Although this project had several strengths (e.g., experimental design with clinical utility, use of random assignment, diversity in undergraduate sample), several limitations of this project should be considered when interpreting the results of this study. First, the older adult sample in this study tended to be demographically homogeneous. Except for age, the majority of the demographic variables between older adult participants were very similar (e.g., race, religion, marital status) and are less reflective of the greater older adult community population. Socioeconomic status was not assessed; many of the older adults interviewed for this project participated in their senior living communities where the average resident was much more affluent and socially connected than an older adult might be in the greater community. Older adults also tended to be well-educated and well-adjusted with very little variation in clinical

presentations (e.g., lower negative state affect, lower experiential avoidance) which may have affected variability due to restricted range. Specifically, older adults had polar responses on measures of state affect and ageism which were two main variables of interest, possibly affecting results. All of these factors may have influenced the effects that the introduced age-based stereotypes had on older adults, as well as the utility of the MABP skills for those in the experimental condition.

Relatedly, the use of a convenience sample may have restricted the demographic variation with regards to older adults. Several points of contact were made with sites and facilities (e.g. senior centers, local businesses, churches) to help with recruitment and enrollment, but few of these connections were brought to fruition. Many of these sites with which we were unable to make connections had access to more diverse older adult populations. Sites that we had success at were typically residential or member-based (i.e., retirement communities, local recreational centers, public libraries), and these factors may have played a role in some of the demographic makeup of this sample.

The cross-sectional nature of this study was also a limitation in that it is unclear how these age-based stereotypes develop and adhere over time. It is possible that multiple or longer exposures to the age-based stereotypes may have a different effect than a one-time exposure. Also, given that we used survey-style questionnaires with this experiment, we did not give multiple forms of the “assessment package” to examine possible ordering effects on participant responses. Future research may benefit from using multiple forms of surveys given that questions on aging expectations and perceptions could prime older adults to participate and self-report in certain ways.

Many of the older adults did not find the actual ABS material to be upsetting, and

anecdotally, many of the participants stated that they knew the ABS material was not true. It may be that in vivo or situational tasks where a confederate interacted with an older adult in a caustic way would produce different results in a similar future study. We also did not assess the saliency of the age-based stereotypes directly after their presentation. Measuring this may have provided more information on in-the-moment distress versus retrospective accounts of the distress which may have reduced as a function of time during the course of the experiment.

Further, this study has limitations in measurement. We did not ask participants about previous experiences or frequencies of experienced or witnessed ageism, whether they had close connections with older adults at a younger age, socioeconomic and specific cultural statuses, health behaviors (e.g., exercise, nutrition), college major/educational focus, or past/future careers. These questions may have assisted in targeting more specific relationships between participant data and attitudes towards aging by providing more contextual information related to the older adults' aging experience (e.g., discrimination based on health/illness, contact with younger communities as a source of ageism/age acceptance). Although it is difficult to gather and assess in older adult samples, future research may also benefit greatly from using experienced ageism as an inclusion criterion for a study similar to this one.

Last, several measures in the older adult sample and one measure in the undergraduate sample had questionable internal consistency which may have affected the results of this study. Although the origin of these low alphas is unclear, it is possible that older adults in this sample had a higher likelihood of extreme item responses when presented with multiple answer choices. Also, due to research error, items 25-29 for the FSA-R were not administered and responses were inserted by mean imputation – possibly affecting psychometrics as well. Future research will likely benefit from giving consideration to how measures are presented and adapted for

older adult in an experimental context.

A strength we had in this study was our ability to assist older adults in completing computer-based measures. Many of the older adults either had difficulty seeing the text on the screen or self-reported computer limitations. In hindsight, it would have been helpful to record participant limitations which required the assistance of a researcher, as this might have provided useful information for how to better work with older adults in a research context. Qualitative observation suggests that many older adults are willing to participate in research if they anticipate both personal enjoyment and assistance if needed.

Another notable and unpredicted strength of this study were the positive effects that the debriefing had for both the participants and the researcher/research assistants. Many of the interactions with both age samples revealed informative and sincere dialogue on the effects of age-based stereotypes, aging expectations and perceptions, as well as an opportunity for psychoeducation on aging (e.g., addressing myths and misconceptions, providing accurate information on dementia). Older adult participants were genuinely engaged in the dialogue, and in many instances, became an active part of the referral process at the senior living and community centers. In one instance, a participant even offered to volunteer to stand outside the cafeteria to help recruit other participants at her site (given IRB procedures, we thanked her but asked that she not recruit in this way on our behalf). Participants in the older adult sample expressed sincere enjoyment from participating in the study, and as researchers, we felt both honored and grateful for this shared sentiment. Although not an intervention in a traditional sense, many of the interactions felt therapeutic given the topic and purpose of the study.

Conclusions

Ageism is part of our country's sociocultural milieu and it can act as an invisible and all-

encompassing barrier to aging well and living fully. Although rationales have been proposed for the *whats* and *whys* of ageism (e.g., TMT), the real work begins with *how* we address this issue. In line with Sue and Torino (2005), awareness of multicultural issues precedes gathering knowledge and skills to address these concerns. In this sense, awareness likens to mindfulness. The discipline of behavioral psychology attempts to predict and influence behavior, and for this to occur, typically a functional analysis (examining the context) must first be present – identifying antecedents, behaviors, and consequences. When we examine ageism from this lens, we can recognize function without need for labeling as “good” or “bad” behavior. For instance, ageism may function as a means of distancing ourselves from a fear of the future and the unknown – it may serve as a way of saying “not me” and “not yet.”

With an understanding of context, it is possible that ageism can be eliminated from the American vernacular by introducing aging education thoughtfully, much sooner, and in more healthful contexts. As so many authors (e.g., McGuire, Levy, Klein, Council, Fahey, and so on) have articulated previously, aging education is essential to changing the way we think about growing older. Simply put, “Aging Education can prepare people for the long life ahead of them, promote “aging with optimism,” and combat ageism (McGuire, 2017).” As mentioned, education can come in many different forms. During this dissertation survey, participants were asked a series of simple qualitative questions – those being: “What are some positive aspects of aging?,” “What advice would you have for young people today?,” and “What are you most looking forward to right now?” Many older adults in this sample proposed positive aspects of aging as being *knowledge, wisdom, maturity, better judgement, healthy developed boundaries, perspectives, less stress, and having more time to think*. Older adults offered advice as well, related to *saving finances, letting go and forgiving others, enjoying life, listening to parents,*

being attentive, working hard, getting a good education, and to take yourself less seriously. And notably, our older adults had much to look forward to, with themes of *family, friends, activities, new hobbies, traveling, getting more active, and continuing to live.*

Although not a surprise to us as people interested in aging and older adult development, these attitudes may surprise younger adults who view aging and older adults in a negative frame. Recalibrating younger adults' perceptions and expectations of aging may hold the key to healthy aging and the reduction or even elimination of ageism. In this way, we can approach aging as something that we are an active participant in, rather than as something that just *happens* to us.

Through this research, we also saw limitations in true experimental research for older adults. Most experimental research occurs in the university context and with a convenience sample of undergraduate students, and very little of it efforts to sample from older populations. Notably, the bulk of older adult research tends to either be correlational or intervention-based without true experimental methods. This research attempted to use an experimental design to assess the effects of mindfulness and acceptance-based skills for ageism. The metaphor was constructed with clinical utility in mind so that results suggested that this specific intervention would be helpful for older adults in reducing ageism, and translation to clinical work could occur easily and efficiently.

Although this kind of research can be time consuming (and in some cases expensive), the effects that can be witnessed in interactions and in vivo observation and analysis is worthwhile. Convenience of survey-based research allows for larger sample sizes and more diverse recruiting, but it limits (or in some cases, eliminates) facetime with those individuals who are needing intervention. Experimental research can effort to intentionally incorporate psychoeducation and basic empathic skills which can affect post-experiment outcomes in ways

that survey-based research cannot. We found opportunities in the debriefing portion of this study to educate older adults on ageism, health behaviors, dementia and memory, as well as express empathy for struggles and appreciation for dedication and participation. Experimental research may have a reputation for being sterile and procedural, but it is possible to incorporate deep meaning into these designs as well. Older adults, as well as undergraduates, appreciated the explicit confrontation of debunking ageist stereotypes post-experiment, and many participants asked important questions and engaged in evocative dialogue.

Despite these null findings, an effort to recontextualize aging via mindfulness and acceptance-based skills may prove beneficial for older adults and society at large by changing the way we think about aging and how we interact with older adults more generally. As it currently stands, aging is talked about in society as a parallel to deterioration – specifically focusing on what McGuire (2016) speaks of as “the devastating d’s of death, dying, disease, disability, dementia, decline, and dependence.” These conversations are imbedded in multiple arenas of society (e.g., financial, medical, legal, spiritual) and continue to craft a dismal narrative of later life expectations. Although it did not pan out experimentally in this context, the theoretical underpinnings of mindfulness (e.g., non-judgmental awareness, present moment focus, curiosity, acceptance) provide a basis for breaking an unworkable behavioral cycle of ageism, and pursuit to re-engage with the values of humans aging with autonomy, dignity, and respect. All things considered, mindfulness and acceptance in their essence – that is, the careful attention one pays without judgement to unfolding experiences during a *lifetime* as they really are – can make way for new perceptions and expectations regarding aging.

Table 1

Characteristics of Undergraduate Sample (n = 60)

		Frequency	Percent
Gender	Male	9	15
	Female	51	85
Ethnicity	White/Caucasian/European American	23	38
	Hispanic/Latino	18	30
	Black/African American	11	18.3
	Biracial	5	8.3
	Asian/Pacific Islander	2	3.3
Marital Status	Single	52	86.7
	Living with Another	4	6.7
	Married	4	6.7
Level of Education	High School Diploma	39	65
	Some College	6	6.8
	College Degree	14	23.3
Religious/ Spiritual Identity	Agnostic	15	25
	Atheism	1	1.7
	Buddhism	1	1.7
	Christian	33	55
	Islam	0	0
	Judaism	1	1.7
	Other	7	11.7
Primary Language	English	59	98.3
	Spanish	1	1.7
# of Children	0	58	96.7
	1	1	1.7
	2	1	1.7

		Frequency	Percent
Self-Rated Health Status	Excellent	3	5.0
	Very Good	16	26.7
	Good	30	50.0
	Fair	9	15.0
	Very Poor	2	3.3
Chronic Health Conditions	Yes	18	30.0
	No	42	70.0
Mindfulness Familiarity	Yes	33	55.0
	No	27	45.0
Mindfulness Practice	Yes	28	46.7
	No	32	53.3

Table 2

Characteristics of Older Adult Sample (n = 60)

		Frequency	Percent
Gender	Male	22	36.7
	Female	38	63.3
Ethnicity	White/Caucasian/European American	56	93.3
	Black/African American	1	1.7
	Biracial	1	1.7
	Other	2	3.3
Marital Status	Single	4	6.6
	Living with Another	2	3.3
	Married	33	55.0
	Divorced	7	11.6
	Widowed	14	23.3

		Frequency	Percent
Level of Education	Some High School	3	5.0
	High School Diploma	18	30.0
	College Degree	18	30.0
	Master's Degree	13	23.3
	Doctorate/Professional Degree	6	10.0
	Other	1	1.7
	No Response	1	1.7
Religious/Spiritual Identity	Agnostic	4	6.7
	Atheism	1	1.7
	Buddhism	1	1.7
	Christian	43	71.7
	Judaism	2	3.3
	Other	9	15.0
Primary Language	English	60	100.0
# of Children	0	11	18.3
	1	10	16.7
	2	14	23.3
	3	11	18.3
	4+	12	20.0
	No Answer	2	3.3
Self-Rated Health Status	Excellent	11	18.3
	Very Good	22	36.7
	Good	19	31.7
	Fair	6	10
	Poor	2	3.3
Chronic Health Conditions	Yes	39	65.0
	No	19	31.7

		Frequency	Percent
Mindfulness Familiarity	No Answer	2	3.3
	Yes	33	55.0
	No	27	45.0
Mindfulness Practice	Yes	35	58.3
	No	25	41.7

Table 3

Descriptive Statistics for Undergraduate Variables of Interest (n = 60)

Scale	Measure Range	Min.	Max	Mean	SD
PANAS-SF TOTAL POS	5-25	5.00	23.00	12.38	3.89
PANAS-SF TOTAL NEG	5-25	5.00	20.00	7.37	3.22
AAQ-II TOTAL	7-49	8.00	40.00	21.07	7.94
MAAS Total	15-90	1.60	5.53	3.83	.90
SAPS TOTAL	12-84	34.00	73.00	57.92	9.28
ERA TOTAL	12-48	11.11	88.89	51.67	14.86
TMS TOTAL	0-52	13.00	61.00	38.58	10.36
T2 PANAS-SF TOTAL POS	5-25	5.00	24.00	12.93	4.66
T2 PANAS-SF TOTAL NEG	5-25	5.00	16.00	7.03	2.74
FSA TOTAL	-116-116	58.00	129.00	93.37	15.86
SIC TOTAL	20-120	22.00	89.00	51.72	15.88
LONELINESS TOTAL	3-9	3.00	9.00	5.10	1.60
FAQ CORRECT TOTAL	0-25	.00	20.00	14.87	2.71

Table 4

Descriptive Statistics for Older Adult Variables of Interest (n = 60)

Scale	Measure Range	Min.	Max	Mean	SD
PANAS-SF TOTAL POS	5-25	7.00	23.00	14.57	3.58
PANAS-SF TOTAL NEG	5-25	5.00	11.00	5.47	.99
AAQ-II TOTAL	7-49	7.00	46.00	15.18	7.60
MAAS Total	15-90	1.80	5.80	4.63	.76
SAPS TOTAL	12-84	36.00	84.00	64.70	9.90
ERA TOTAL	12-48	11.11	100.00	47.27	18.01
TMS TOTAL	0-52	13.00	61.00	36.11	11.49
T2 PANAS-SF TOTAL POS	5-25	7.00	24.00	15.03	3.86
T2 PANAS-SF TOTAL NEG	5-25	5.00	10.00	5.57	1.33
FSA TOTAL	-116-116	55.00	140.00	91.33	16.49
SIC TOTAL	20-120	23.00	84.00	49.88	13.47
LONELINESS TOTAL	3-9	3.00	9.00	3.98	1.42
FAQ CORRECT TOTAL	0-25	9.00	21.00	16.08	2.94

Table 5

Means and Standard Deviation for MANOVA (Hypothesis 1)

		Mean	Std. Deviation	<i>n</i>
FSA_TOTAL	Experimental	Older Adult	94.741	27
		Undergraduate	88.033	30
		Total	91.211	57
	Comparison	Older Adult	88.546	33
		Undergraduate	98.700	30

		Mean	Std. Deviation	<i>n</i>
SIC_TOTAL	Total	93.381	16.827	63
	Total	Older Adult	91.333	60
		Undergraduate	93.367	60
		Total	92.350	120
	Experimental	Older Adult	50.370	27
		Undergraduate	47.800	30
		Total	49.018	57
	Comparison	Older Adult	49.485	33
		Undergraduate	55.633	30
		Total	52.413	63
	Total	Older Adult	49.883	60
		Undergraduate	51.717	60
		Total	50.800	120

Table 6

Significance Testing for MANOVA (Hypothesis 1)

		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power
CONDITION	FSA-R	149.196	1	149.196	0.605	0.438	0.005	0.120
	SIC	360.221	1	360.221	1.695	0.195	0.014	0.252
SAMPLE	FSA-R	88.673	1	88.673	0.359	0.550	0.003	0.091
	SIC	95.539	1	95.539	0.450	0.504	0.004	0.102
CONDITION * SAMPLE	FSA-R	2121.725	1	2121.725	8.602	0.004	0.069	0.829
	SIC	567.273	1	567.273	2.670	0.105	0.022	0.367

Table 7

Means and Standard Deviation for 2X2 Between-Subjects ANOVA (Hypothesis 2)

	Condition	Mean	Std. Deviation	N
TMS_TOTAL	Experimental	Older Adult	38.963	27
		Undergraduate	40.800	30
		Total	39.930	57
	Comparison	Older Adult	33.788	33
		Undergraduate	36.367	30
		Total	35.016	63
	Total	Older Adult	36.117	60
		Undergraduate	38.583	60
		Total	37.350	120

Table 8

Significance Testing for 2X2 Between-Subjects ANOVA (Hypothesis 2)

	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power
CONDITION	688.933	1	688.933	5.950	0.016	0.049	0.677
SAMPLE	145.511	1	145.511	1.257	0.265	0.011	0.199
CONDITION * SAMPLE	4.106	1	4.106	0.035	0.851	0.000	0.054

Table 9

Means and Standard Deviation for Mixed-Design ANOVA (Hypothesis 3)

			Mean	Std. Deviation	N
PANAS_NEG_TOT	Experimental	Older Adult	0.742	0.081	27
		Undergraduate	0.824	0.148	30
		Total	0.785	0.127	57
	Comparison	Older Adult	0.724	0.047	33
		Undergraduate	0.852	0.153	30
		Total	0.785	0.128	63
	Total	Older Adult	0.732	0.065	60
		Undergraduate	0.838	0.150	60
		Total	0.785	0.127	120
T2PANAS_NEG_TOT	Experimental	Older Adult	0.747	0.096	27
		Undergraduate	0.830	0.153	30
		Total	0.791	0.135	57
	Comparison	Older Adult	0.728	0.073	33
		Undergraduate	0.814	0.130	30
		Total	0.769	0.112	63
	Total	Older Adult	0.736	0.084	60
		Undergraduate	0.822	0.141	60
		Total	0.779	0.123	120

Table 10

Significance testing for Mixed-Design ANOVA (Hypothesis 3)

	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power
CONDITION	0.002	1	0.002	0.111	0.740	0.001	0.063
SAMPLE	0.533	1	0.533	23.920	0.000	0.171	0.998
CONDITION * SAMPLE	0.009	1	0.009	0.414	0.521	0.004	0.098

Table 11

Means and Standard Deviation for Older Adult T-Test (Hypothesis 4)

		Mean	Std. Deviation	N
Stress score for DS	Experimental	2.592	1.394	27
	Comparison	2.333	1.080	33

Table 12

Significance Testing for Older Adult T-Test (Hypothesis 4)

Levene's Test			t-test for Equality of Means					Cohen's <i>d</i>
F	Sig.		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	
Stress score for DS	2.407	0.126	0.812	58	0.420	0.259	0.319	0.209

APPENDIX A
INITIAL INCLUSION SCREENER

Please complete the information below so that we may contact you for the drawing. You will be asked to provide the date (date and time), your first and last name, the name of your residence, and a brief sentence about why you are here today. When you are done, please let the researcher know!

Name: _____

Residence: _____

Date: _____

Time: _____

Why are you here today?

APPENDIX B

DEMOGRAPHICS AND SUBJECTIVE REPORTS

What is your current age?

How would you define your ethnicity?

- Asian/Pacific Islander
- Black/African American
- Hispanic/Latino
- Middle Eastern/Arab
- Native American
- White/Caucasian/European American
- Biracial (please specify) _____
- Other (please specify) _____

What is your primary language (i.e., the one you speak most of the time)?

- English
- Spanish
- Other (specify) _____

What religion do you identify as?

- Christian (all denominations)
- Jewish
- Muslim
- Buddhist
- Hindu
- Agnostic
- Atheist
- Other (please specify) _____

If you identify with a religion, how important is your religious identity to you?

Unimportant

- Important
- Other (please specify) _____
- I do not identify as religious

If you do identify as religious, do you participate in religious activities?

- No
- Sometimes
- Yes (please specify) _____
- I do not identify as religious

Please indicate your highest level of earned education.

- Some High School
- High School Diploma
- College Degree

- Master's Degree
- Doctorate or Professional Degree
- Other

What is your gender?

- Female
- Male

What is your current marital status?

- Single
- Living with another (please specify) _____
- Married
- Separated
- Divorced
- Widowed
- Other: _____

How many Children do you have?

Compared to others your age, would you say your health is:
Excellent

- Very good
- Good
- Fair
- Poor
- Very poor

Do you have any chronic health or mental health conditions?

- Yes
- No

If yes, please list:

Are you basically satisfied with your life?

- Yes
- No

Do you often get bored?

- Yes
- No

Do you often feel helpless?

- Yes
- No

Do you prefer to stay at home rather than going out and doing new things?

- Yes
- No

Do you feel pretty worthless the way you are now?

- Yes
- No

What are some positive aspects of aging?

What advice would you have for young people today?

What are you most looking forward to right now?

Do you have any relatives, living or dead, that have had some form of dementia (e.g., vascular dementia, Alzheimer's)?

Y N

(If yes) Who? _____

Do you have any personal fear or concern of developing some form of dementia?

Y N

(If yes) Would you care to share why?

Have you ever heard of mindfulness before this study?

- Yes (if so, how?) _____
- No

Have you ever practiced mindfulness or meditation?

- Yes (please specify in what form, when started, and how often) _____
- No

Have you ever taken part in the practice of (please check all that apply):

- Yoga
- Meditation
- Tai Chi
- Martial Arts
- Musical Performance (band/orchestra)
- Organized Sports (please specify) _____
- Therapy (if so, how long and for what purpose?) _____
- Organized religious practices (e.g., Catholic Mass, Fasting, etc.; If so, please specify) _____
- Other (please specify) _____

First, how often do you feel that you lack companionship?

Hardly ever	Some of the time	Often

How often do you feel left out?

Hardly ever	Some of the time	Often

Do you ever feel isolated from others?

Never	Rarely	Sometimes	Often	All of the Time

Do you ever have trouble paying attention?

Never	Rarely	Sometimes	Often	All of the Time

Do you ever get anxious about trying new things?

Never	Rarely	Sometimes	Often	All of the Time

I consider myself to be open to new experiences.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

I am tolerant of other people's ideas and points of views.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

I found the sheet of paper and audio about aging to be upsetting.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

I found the metaphor about the clothesline to be helpful.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

APPENDIX C
AGEIST STEREOTYPES

Please read the bulleted list below while listening to the audio:

- Older people are sick more often because their bodies cannot handle the stress of the fast-paced world.
- Older people are usually disabled and need a lot of help doing every day activities, like going to the grocery store and paying their bills.
- When you get older, your body starts to shut down and give up.
- Older people are typically stubborn and stuck in their ways.
- Older people cannot use new technology because it is too advanced for their generation.
- Older people would rather live in ignorance than learn something new.
- It is unlikely that older people will take up an active lifestyle if given the option to do so.
- Older people are just too slow to keep up with today's quick-moving world.
- Older people should not drive because it requires more attention and concentration than they have.
- Medicine should try to help people that can still be helped and not waste money on older people who are past their prime.
- Older people who are sick drain the resources for those who really need the help.
- Older people are lazy and boring.
- When an older person forgets something they knew before, they are probably losing their mind.
- Older people tell the same stories repeatedly because they are getting more forgetful and losing their memory.
- A "Senior Moment" is a sign of dementia.
- Older people are grouchy and mean.
- Older people are selfish and uninvolved with society by their own choice.

APPENDIX D

DIDACTIC LESSON ON MINDFULNESS AND ACCEPTANCE

Mindfulness and acceptance are two approaches to psychological and physical well-being. You may have heard the term mindfulness in the media or from other people. But in many cases, the way these things are talked about can be a little inaccurate. Below are a couple short paragraphs about what the science of psychology says about mindfulness and acceptance.

Mindfulness is known as awareness and attention to the present moment. This practice is an intentional one, meaning we engage in it on purpose – not by accident or coincidence. Mindfulness includes being curious and wondering about new and familiar experiences in an open way, with a nonjudgmental attitude. In other words, it involves being open to all of our experiences and not judging them as good or bad, right or wrong. It also involves accepting. Mindfulness is used commonly in newer forms of psychotherapy and medicine, as a way to help us become more aware of our thoughts, feelings, experiences, and environments – to help us make more informed choices.

Acceptance is an important tool for dealing with things that cannot be controlled or changed. It involves embracing things that happen without trying to change them. It is especially useful for times when attempts to control thoughts, feelings, bodily changes, or external circumstances just makes things worse. Acceptance is not the same as approval of circumstances. In fact, you can dislike something, but accept that it just is. Acceptance usually frees one up from their personal struggles, so that they can continue living their lives and doing things they care about.

Ways of practicing these two approaches to well-being may include meditation, connecting with others, guided imagery, practicing letting go, and directed exercises in psychotherapy, among others. Research has established that there are positive effects that people experience from engaging in these practices for a wide array of struggles.

APPENDIX E

EXPERIENTIAL EXERCISE: CLOTHESLINE METAPHOR

(Presented in audio form only)

Please find a position in which you can be comfortable for the next ten minutes or so. For this exercise, you may either close your eyes or keep them gently opened, focusing on an object that is not moving – like the wall or floor in front of you, or your hands in your lap.

Take a moment to gather yourself.

Begin by taking a breath in. And, out. Notice how the breath feels as it enters your body.

Notice if your breath has any qualities to it. Maybe you notice the breath is cooler as it enters your body, and warmer when it leaves. Remaining curious to the experience of your body

Now that we are centered and grounded in this experience, we will use our imagination for a few moments.

Imagine a beautiful green backyard on a crisp, bright day. Green grass, flowers and trees, a gentle breeze. Add to this space as you would like to for just a moment. What else is here?

In this backyard is a clothesline. There are two tall polls with a long, sturdy wire between them. Imagine this clothesline for another moment and where it is in this backyard.

It is laundry day and it is time to hang your clothes to dry. Reaching into your laundry basket, you pull out your first article of clothing... it is completely wet and cold to the touch. And as you unbundle this article of clothing, you notice that this piece of clothing is something you would rather not hang out to dry.

This article of clothing represents something in your life that has hurt you, or that you have failed at – something that you were told you were not good enough for, or that has limited you in some way. It represents your struggles. Maybe this article of clothing is an ugly, or scratchy, t-shirt that says *Bad Son, Bad Daughter, Bad Husband, Bad Wife, Bad Friend*. Maybe this article of clothing is a tattered and worn suit that says *Too Old, or Too Young, or Not Smart Enough*. Perhaps you notice the color of this clothing, or the way the soggy fabric feels in your hands as you shake it out. Does it feel heavy? Grabbing the clothespins, you begin to hang this first article of clothing out to dry.

Again, reaching into the basket, you find a new article of clothing... A pair of pants or a jacket. Whatever the clothing might be, take a moment to notice how it looks and feels. Notice what the article of clothing says about you... *Unloved, forgotten, lonely, angry, tired*. Hang this article of clothing next to the first.

Continue reaching into the basket and identifying this laundry. When you have hung these garments to dry, take a step back and look at your clothesline. Imagine how cold and wet and uncomfortable it would be to wear these clothes right now. How would it feel?

And if a storm came in and continued dampening your clothes, what would you need to take care of yourself? What would you need to know that it is okay?

See if you can also notice that everyone has their own clothesline. You are not the only one with a history of soggy, heavy, tight, ugly, tattered, scratchy clothes you would rather not wear. How does it feel to notice that others have these wet, uncomfortable clothes hanging as well?

Now imagine the sun peaking out and a gentle breeze blowing. How would it feel for these clothes to dry out in the sun and soften in the breeze? As we go to collect the clothes and fold them away, we can add them back to the larger collection of clothing that we have, and we may notice that these clothes do not define us.

You are the wearer of this clothing, but the clothes are not you. In fact, this clothesline of struggles is only a small part of your wardrobe. What other clothes do you have, waiting to be worn, that are not on your clothesline? Maybe you have a *Caring Grandparent* or an *I Am Loved* shirt, or maybe you have a *Good Friend* jacket that fits just right. Think about some of the other clothing you have waiting inside for you. Spend a few moments. What does it say to you?

And, occasionally, you might actually have a reason to put back on the clothing articles that have the difficult stuff on them. You might, for example, pull out that *Too Old* suit to go to a really important job interview. Or maybe when you are choosing an outfit for a party, the *Bad Friend* t-shirt shows up in your wardrobe rotation. Discomfort often signals meaning and growth. Having dirty clothes means we were brave enough to wear them in the first place. Your tight *Angry* pants may tell you it is important to feel understood and connected, and your *Too Young* shirt may signify the importance of living fully and authentically. As this clothing cycles and makes its way back to our clothesline, we may become less attached to the embarrassment, the sadness, and the feeling of failure or struggle. And, we hang it up to dry, and wear the clothes that take us closer to our values.

And in this moment, please reconnect with your breath. Notice again how your breath feels in your body. And in your own time, please open your eyes or refocus them and invite small movements back into the body. Please take your time.

APPENDIX F
STUDY LAYOUT

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