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A Comparison of Two Theoretical Approaches to Addressing Ageism: Education and Extended

Contact

A Dissertation Presented

by

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to

The Graduate School

in Partial Fulfillment of the

Requirements

for the Degree of

Doctor of Philosophy

in

Social/Health Psychology

Stony Brook University

May 2016

Stony Brook University

The Graduate School

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Abstract of the Dissertation

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Ageism continues to be a widespread problem and is of increasing concern given the growing older population worldwide and youth-centered focus of many societies. Despite the need for a better understanding of attitudes towards older adults, ageism is a relatively understudied area of social psychology. This dissertation sought, for the first time, to compare two theoretical approaches to addressing ageism: education about aging (providing accurate information about aging) and extended contact (knowledge of positive intergenerational contact) as well as their potential combined impact (education plus extended contact). Across two studies, participants were randomly assigned to one of the four conditions: education, extended contact, combined condition, and a control condition. As expected, in Study 1, participants (community adults ages 18-59) in all three experimental conditions (vs. participants in the control condition) reported decreased negative attitudes toward older adults and increased aging knowledge immediately after the study. Building upon the design of Study 1, in Study 2, attitudes toward older adults

were assessed before, immediately after the conditions, and in a delayed post-test. In Study 2, participants (undergraduate students) in all three experimental conditions (vs. participants in the control condition) reported decreased negative attitudes toward older adults as well as increased aging knowledge. Generally speaking, the three experimental conditions did not differ from one another pointing to the efficacy of the theoretical background underlying each experimental condition. Overall, these findings point to the effectiveness of a brief online intervention in reducing ageist attitudes among age-diverse adult community members as well as undergraduate students. Implications and future directions are discussed.

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## **Acknowledgments**

Thank you to my advisor, Sheri Levy, for the guidance and support she has provided over the past 5 years.

Thank you to my friends and family who have encouraged and supported me throughout my graduate career.

## Introduction

By the year 2030, 72 million Americans will be over the age of 65 and account for 20% of the United States population (Centers for Disease Control and Prevention, 2013; World Health Organization, 2014). Research demonstrates that older persons are evaluated more negatively than younger persons and such negative attitudes stem from individuals across the age continuum (e.g., Kite, Stockdale, Whitley, & Johnson, 2005; Nelson, 2009). As the population of older adults continues to grow and as many societies worldwide remain youth-centered, concern over the prevalence of ageism (negative stereotyping, prejudice, and discrimination toward older adults) also rises (e.g., Levy & Macdonald, 2016; Nelson, 2009; World Health Organization, 2014). As such, there is an urgent need to understand ageism and ways to combat it. This dissertation sought to test theoretically-driven strategies for reducing ageism in two studies among individuals across a wide age range who have been shown in prior research to report high levels of ageism: 1) an adult community sample and 2) undergraduate students. In the sections to follow, research on the manifestation of ageism and two relevant theoretical approaches to understanding ageism – aging education and extended intergenerational contact – are provided. This dissertation focuses on attitudes toward older adults, defined here as persons ages 65 and older.

### **Ageism Overview**

Robert Butler introduced the concept of ageism in the late 1960s (Butler, 1969), making it a relatively newly addressed type of prejudice. According to Butler (1975), ageism involves the stereotyping of and discrimination against older people. Although Butler (1969, 1975) defined ageism as specific to older adults, other researchers have broadened the term to include negative attitudes or behaviors toward an individual based on their age (Greenberg, Schimel, &

Martens, 2002). Thus, ageism can be directed toward both younger (North & Fiske, 2012; Westman, 1991) and older adults (Nelson, 2009). However, for the purposes of this dissertation, I focus on ageism against older adults, given concerns about ageism toward this growing segment of the population.

Ageism like other attitudes has a prejudice or affective component (e.g., liking or disliking a group), a discrimination or behavioral component (e.g., behaving negatively or avoiding contact with a group), and a stereotyping or cognitive component (e.g., associating attributes such as personality and morality traits) with a group (Aboud, 1988; Allport, 1954), and therefore the sections to follow focus on each component of attitudes toward older adults, respectively.

### **Ageism: Prejudice**

Compared to other types of prejudice (e.g., racism, sexism), little research in social psychology has been conducted on ageism, even though some researchers have found that age-based prejudice is reported more than any other type of prejudice (e.g., Banaji, 1999; Hutchison, Fox, Laas, Matharu, & Urzi, 2010; Nelson, 2002; Rupp, Vodanovich, & Crede, 2005). The same finding holds when examining implicit associations or negative affect that operate outside of conscious awareness, with Nosek, Banaji, and Greenwood (2002) finding that negative implicit associations toward older adults were stronger than implicit associations regarding race or gender. As such, ageism has been called the “ultimate prejudice” because it is both common and often overlooked compared to other types of prejudice (Palmore, 2001, p. 572).

Prejudice toward older adults is unique since age is a social category that everyone may eventually join. Other types of prejudice that are studied (e.g., racism, sexism) involve evaluations of people in categories that one will never join, making age-based prejudice different

than other types of prejudice. Ageism is also unique because some regard it as the most socially acceptable forms of prejudice (Nelson, 2009; Palmore, 1999).

Ageism is an institutionalized form of prejudice in the United States where older adults are often marginalized and removed of their responsibility and power (Nelson, 2002). Negative feelings about older persons and the aging process are commonplace within the United States and convey that older adults are seen as offering little or nothing of value to society. These feelings are often subtle and designed to be light-hearted (e.g., ‘you look good for your age’) so that many people do not view certain attitudes as ageist. Such subtle ageist attitudes are prevalent in birthday cards (Ellis & Morrison, 2005) and the overall negative commentary on birthday celebrations as individual’s age. Anxiety and fear of aging drives billions of dollars worth of sales of anti-aging products. The overall message behind such marketing focuses on how aging is scary and unpleasant and something to be dreaded.

### **Ageism: Discrimination**

Researchers have studied and documented older adults’ experiences of discrimination in many everyday settings and situations such as in the workplace and in health care (see Levy & Macdonald, 2016). Age discrimination such as being fired or passed over for promotion because of one’s age is one of the most socially acceptable forms of discrimination in the workplace (Tougas, Lagace, De la Sablonniere, & Kocum, 2004).

In addition to workplace discrimination, discrimination based on age has been documented in health care (Bell, Micke, & Kasa, 1998; Hillerbrand & Shaw, 1989; Meisner, 2012; Pasupathi & Lockenhoff, 2002). Often ageism within the health care system is subtle and can go unnoticed by both medical professionals and individuals experiencing ageism. Ageist behaviors such as not including older adults in clinical trials, avoidance or limiting the number of

older patients, and less aggressive diagnostic and treatment decisions have been documented (Gunderson, Tomkowiak, Menachemi, Brooks, 2005; Levy, Kosteus, Slade, & Myers, 2006; Meisner, 2012; Pasupathi & Lockenhoff, 2002; Weiss, 2008).

Older adults encounter ageist attitudes and behaviors in other everyday situations and interactions, in addition to the specific ageism experienced both at work and in health care settings. Palmore (2001) found that 77% of older adults reported experiencing one or more incidence of ageism with more than half reporting incidences that have occurred multiple times. Palmore (2001, p. 573) provided examples of ageism such as “told a joke that pokes fun” at older adults, “waiter or waitress ignored” and “denied employment” and had participants report how often each event occurred. Likewise, Ory, Hoffman, Hawkins, Sanner, and Mockenhaupt (2003) found that 84% of Americans reported at least one incident of ageism, with more than half reporting multiple incidences. Similar to the Palmore (2001) study, participants were provided with a list of potential experiences of ageism including being given a birthday card that made fun of older adults or experiencing discrimination in regards to health care. Older adults experience ageism in everyday interactions with young and middle aged adults. For example, research suggests that people use patronizing speech with older adults (Ryan, Kennaley, Pratt, & Shumovich, 2000) and demeaning emotional tones (Kemper, Ferrell, Harden, Finter-Urczyk, & Billington, 1998). Such negative interactions contribute to the negative climate that ageism creates.

### **Ageism: Stereotypes**

The aforementioned treatment of older adults is perpetuated by the differing social expectations or stereotypes of older adults that have historically been and continue to be prevalent in the United States. Stereotypes of older adults include both positive and negative

attributes of aging, though these stereotypes are predominately negative (Levy, Kasl, & Gil, 2004; Ng, Allore, Trentalange, Monin, & Levy, 2015; Palmore, 1999). Ageist stereotypes are widespread and common among children, young adults, and even among older adults themselves (Kite et al., 2005). Older adults hold similar stereotypes about aging as younger adults (Hummert, Garstka, Shaner, & Strahm, 1994). Even among children, perceptions of aging are more negative than positive (Montepare & Zebrowitz, 2002), and children's view of older adults are stereotyped (Robinson & Howatson-Jones, 2014).

Positive stereotypes of aging include personas such as the "golden ager" who is active and sociable, the "perfect grandparent" who is patriotic, religious and conservative or the "John Wayne conservative" who is loving, supportive, wise and generous (Hummert, 1999, p. 185). In contrast, some of the negative stereotypes of aging view older adults as miserable, lonely and senile (Abramson & Silverstein, 2006). Palmore (1990) identified nine major negative stereotypes of older adults as being sick or disabled, impotent or unromantic, unattractive, unable to learn or in mental decline, senile or mentally ill, useless or unable to work effectively, isolated and non-social, poor, and miserable or depressed.

Another line of research proposes older adults are stereotyped as being both warm and incompetent (e.g., Cuddy & Fiske, 2002; Cuddy, Norton & Fiske, 2005). This research builds off the stereotype content model (SCM), which posits that groups are evaluated based on both their perceived warmth and competence (Fiske, Xu, Cuddy, & Glick, 1999). Ratings of competences come into play when individuals stereotype older adults in the workforce. Older workers are perceived as less adaptive than younger workers, specifically with regard to learning work tasks, technologies and procedures as well as being interpersonally, culturally and physically adaptive. In another study, participants rated an older worker willing to perform

varying tasks as less flexible than a younger worker with the same willingness to perform different tasks (Vrugt & Schabracq, 1996). Based on their perceived warmth and low competence, older adults are pitied (Fiske, Cuddy, Glick, & Xu, 2002). Negative perceptions of aging can result in a self-fulfilling prophecy that has consequences for one's health and mental capabilities.

In light of existing positive and negative stereotypes of older adults and aging, Levy et al. (2004) created the image of aging scale with an equal number of positive and negative stereotypes. Positive stereotypes include “wise,” “full of life” and “family-oriented” while negative stereotypes include “senile,” “dying” and “lonely.” The scale was designed so each positive stereotype had a matching negative stereotype (e.g., wise vs. senile). Thus, the image of aging scale can assess a range of positive and negative stereotypes that individuals hold about older adults.

Ageism has negative consequences for both older and younger adults. A growing body of research suggests that older adults who believe in negative age stereotypes may experience worse health while individuals who endorse positive age stereotypes may experience better health. Levy and Myers (2004) found that individuals with positive self-perceptions of aging were more likely to practice preventive health behaviors over the next two decades. Older adults with more positive self-perceptions of aging lived 7.5 years longer than those with less positive perceptions of aging (Levy, Slade, Kunkel, & Kasl, 2002, also see Levy, Slade & Kasl, 2002; Kotter-Gruhn, Kleinspehn-Ammeriahn, Gerstorf, & Smith; 2009). Moreover, younger adults who negatively stereotype the aging process may be creating a self-fulfilling prophecy for poor health as they age. For example, Levy, Zonderman, Slade and Ferrucci (2009) found that holding negative stereotypes of aging early in life predicts a greater likelihood of having a

cardiovascular event than those who hold more positive stereotypes about aging. Not only does holding negative attitudes about older adults influence older adults' mental and physical health, it also can influence the future health of a young person who believes the negative aging stereotypes.

In addition to health-related concerns, ageist stereotypes can create performance issues. For instance, among participants who were primed with negative (vs. positive) stereotypes, judges rated their handwriting worse on multiple aspects (e.g., shakiness, confidence, senility) and rated the participants as five years older on average (Levy, 2000). In another study, Hausdorff, Levy, and Wei (1999) found that positive aging primes resulted in improved walking performance for older adults. This study suggests that aging-related stereotypes also influence physical abilities.

Additionally, negative perceptions of aging can influence performance on memory tasks. Research suggests that negative stereotypes of aging can result in stereotype threat (Abrams et al., 2008; Abrams, Eller, & Bryant, 2006; Chasteen, Bhattacharyya, Horhota, Tam & Hasher, 2005; Haslam et al., 2012; Hess, Hinson & Hodges, 2009; Lamont, Swift, & Abrams, 2015). Stereotype threat occurs when knowledge of a stereotype about one's group (e.g., that older adults have memory problems) influences performance, resulting in individuals confirming the stereotype. While stereotype threat related to negative aging perceptions is widespread, a positive prime related to aging can improve performance on memory tasks (Levy, 1996).

As the aforementioned brief review of past work on ageism reflects, attitudes toward older adults involve prejudice, discrimination, and stereotyping which are widespread and can be regarded as socially acceptable (e.g., Nelson, 2005). While understudied in social psychology and often overlooked generally in society, ageist attitudes are prevalent in many aspects of

United States culture and society. Given the rapidly increasing older population, more research is needed that focuses on ageism. Toward this end, scholars have encouraged greater focus on strategies to reduce ageism. Recently, Levy (in press) proposed a new theoretical model for reducing ageism based on a review of the literatures on ageism in psychology, medicine, social work, and sociology. The PEACE (Positive Education about Aging and Contact Experiences) model focuses on two factors that have the potential to reduce ageism: (1) education about aging including facts on aging; and (2) positive contact experiences with older adults. In the sections that follow, I review the literature on these two key factors.

### **Education about Aging**

Many myths and misunderstandings of aging and the aging process perpetuate negative attitudes toward older adults and thus, one of the main theories of the causes of ageism is lack of education about aging (Ory et al., 2003).

Common misconceptions about the process of aging and older adults may include the belief that the majority of older people live below the poverty line, that older people are often angry, irritated, bored or lonely, that most older adults are senile, and that at least one in ten older adults are institutionalized (Abramson & Silverstein, 2006). Older adults are also seen as being old-fashioned, prejudiced, conservative, ill tempered, easily upset, and emotionless (Hummert, 1990) as well as incompetent, abrasive communicators and less sociable (Braithwaite, 1986). Many of these myths and stereotypes regarding older adults can be used to perpetuate discrimination, for example, the belief that older adults have less desire to learn new skills or are less flexible influences perceptions of older workers (Kooij & Zacher, 2016; Vrugt & Schabracq, 1996; Warr & Pennington, 1993).

Although myths and stereotypes regarding aging often have overlapping elements, when referring to myths that education about aging can debunk, this dissertation focuses on beliefs that can be challenged by scientific evidence. For example, the myth that the majority of older adults are senile can be challenged by the studies showing that the majority of people aged 65 or over are not senile, that is, they do not have defective memories, nor are they disoriented or demented. In the United States, community surveys indicate that about 10% of older adults suffer from some form of dementia, Alzheimer's, or severe mental illness. Or, for instance, the myth that older adults are more prone to anger or depression can be challenged by scientific studies that major depression ("clinical depression") is actually less prevalent in older adults than in young people. In fact, a growing body of research suggests the old age is associated with improved emotional well-being (Carstensen, Isaacowitz, & Charles, 1999; Carstensen et al., 2011; Charles, Reynolds, & Gatz, 2001).

Aging myths and misperceptions are perpetuated by popular culture and the mass media and can be found in movies, television, and books (Nelson, 2002; Palmore, 1999). The way the media portrays aging is important because it is used as a way to judge the aging process and aging amongst oneself (Featherstone & Hepworth, 1990). Aging portrayals from the media are used as a comparison for one's own cognitive, emotional, physical, and social experiences during the aging process. Studies examining the portrayal of older adults on television find that older adults are underrepresented in the media (Carrigan & Szmigin, 1999; Charren & Sandler, 1983; Kessler, Rakoczy, & Staudinger, 2004; Raman, Harwood, Weis, Anderson, & Miller, 2008), and when they are represented, they are represented in a narrow and often stereotyped way (Vasil & Wass, 1993). Some research finds that older adults are depicted in a negative or ambiguous nature (Bell, 1992; Cohen, 2002; Harwood & Anderson, 2002; McConatha, Schnell, &

McKenna, 1999). Other studies report that older adults are portrayed more positively than negatively in both television (Cassata, Anderson & Skill, 1980) and commercials (Miller, Leyell, & Mazachek, 2014). Harwood (2000) examined how viewing a clip from a television show depicting a negative scene of aging would influence participants' attitudes toward older adults. Results suggest that attitudes toward the specific individual in the clip were influenced by the negative portrayal of aging, though attitudes toward older adults in general were not influenced. In regards to movies, Bazzini, McIntosh, Smith, Cook and Harris (1997) examined 100 films from the 1940s – 1980s, finding that ageist stereotypes were prevalent throughout all five decades. Older characters were portrayed as less friendly, experiencing less romantic activity and enjoying fewer positive outcomes at the end of the film. Similarly, an analysis of Disney films found that a large percentage of the older adult characters (42%) were portrayed in a negative manner (Robinson, Callister, Magoffin, & Moore, 2007). Within children's literature, ageism is widespread, with common depictions such as the "wicked old witch" or "demented hag" (Henneburg, 2010, p. 128; Hollis-Sawyer & Cuevas, 2013). One of the most common and subtle types of ageism that many adults encounter is the joke birthday card that depicts aging as an overly negative process. A review of the text of 150 birthday cards revealed that the majority of cards promote a negative portrayal of aging (Ellis & Morrison, 2005).

As demonstrated by the prevalence of negative stereotypes and misunderstandings, a general lack of accurate knowledge surrounds the aging process. Erdman Palmore (1977, 1981, 1998) developed the "Facts on Aging Quiz," a short 25-item true/false quiz containing factual items regarding aging and the aging process. The Facts on Aging Quiz was designed to assess the basic physical, mental and social facts of aging as well as the most common misconceptions about aging (Palmore, 1977; Palmore 1982). Reflecting on almost two decades of research using

the Facts on Aging Quiz, Palmore (1998) noted that the main finding from most studies were that people do not know much about aging and most misconceptions regarding aging reflect negative stereotypes about older adults. In one study, Pulliam and Dancer (1996) found that undergraduate and graduate student's performance on the Facts of Aging Quiz was barely above chance, highlighting how little many know about the aging process.

A small body of literature suggests that education is an effective way to reduce ageism (e.g., Adelman, Capello, LoFaso, Greene, Konopasek & Marzuk, 2007; Boswell, 2012; Cottle & Glover, 2007; Liu, Norman, & While, 2013; Ragan & Bowen, 2001; Stuart-Hamilton & Mahoney, 2003; Wurtele & Maruyama, 2013). Utilizing education to reduce prejudice derives from the aforementioned research showing that there are many misconceptions about the aging process and negative stereotypes of older adults (e.g., Palmore, 1999). Accordingly, using education as a theoretically driven approach to altering attitudes involves providing accurate information on the aging process (e.g., about memory loss) and on the lives of older adults (e.g., activity levels, rates of employment, frequency of volunteering). The theory behind this approach is that correct information about aging will reduce inaccurate beliefs and dispel myths about the aging process and ageist attitudes.

Ragan and Bowen (2001) explored the effectiveness of education about aging on reducing ageism among ninety-nine college students. Participants completed the aging semantic differential (ASD), which is composed of 32-item adjective pairs (e.g., Progressive – Old Fashioned; Friendly – Unfriendly). The ASD served as a measure of each participant's attitudes about older adults and in general participants displayed more negative than positive attitudes toward older adults. Participants were randomly assigned to one of three groups: an information-only group, an information plus reinforcement group and an information plus an innocuous

discussion group. All three groups watched a video entitled “The Myths and Realities of Aging” that presented accurate information on aging. The information only group completed the post-test (aging attitudes survey) immediately following the video. In the second condition, information plus reinforcement, participants watched the video and then encouraged to discuss aspects of the video that challenged previously held beliefs. In the third condition, the information plus innocuous discussion group, participants watched the video and then participated in a discussion about their classes and current events at the university. Participants in both the second and third conditions completed the post-test (aging attitudes survey) following the second discussion session. Accurate information about aging resulted in initial attitude improvement in all conditions as measured by the ASD. However, only participants in the information plus reinforcement condition reported improved attitudes one-month later (Ragan & Bowen, 2001).

In a recent study on education about aging, Wurtele and Maruyama (2013) had undergraduate students in a lifespan human development course complete the “Activities of Older Adults” survey which involved writing down five activities that came to mind when thinking of older adults. The five most commonly listed activities were used to generate a discussion regarding participant’s perceptions of older adults’ typical activities compared to their actual activities. Additionally, information that countered participant’s stereotypes of older adults was presented (e.g., 35% of 65 to 74 year olds volunteer), and ageism was discussed. To assess potential changes in attitudes and stereotypes regarding older adults, the Fraboni scale of Ageism (FSA; Fraboni, Salstone, & Hughes, 1990), was given two weeks earlier (Time 1) and immediately following the discussion on ageism (Time 2). Negative attitudes about older adults

were significantly reduced between Time 1 and Time 2 following the accurate information and discussion on ageism (Wurtele & Maruyama, 2013).

Some studies of the relationship between aging education and ageism have delved into other variables that may impact ageism such as aging anxiety. For example, individuals with lower levels of knowledge about the aging process and older adults are more likely to feel anxious about aging (Abramson & Silverstein, 2006). In one study of undergraduate students, knowledge of aging was found to have an indirect effect on ageism due to knowledge's effect on anxiety. Therefore, more knowledgeable participants had less anxiety about aging, and this reduction in anxiety reduced ageist attitudes (Allan & Johnson, 2009). However, Boswell (2012) found that undergraduate participants with greater knowledge of aging reported less ageism even when controlling for aging anxiety.

Studies aimed at increasing factual knowledge of aging usually have that intended effect, though there is some debate as to whether increasing knowledge of aging results in improved attitudes toward older adults. Yet, other studies have not found a relationship between knowledge and attitudes toward older adults. Cottle and Glover (2007) found that undergraduate participants' knowledge of the aging process was unrelated to attitudes toward older adults measured during two time-points, which suggests that attitudes toward older adults and knowledge of aging can exist independently from one another. In another study, Stuart-Hamilton and Mahoney (2003) had middle-aged adult employees participant in an age awareness workshop. Participants' knowledge of aging and attitudes toward aging were assessed twice, one month apart using the Fraboni scale of ageism and Palmore's "Facts of Aging" quiz. During the first session, knowledge of aging was associated with lower levels of ageism. However, in the follow-up session, the significant negative correlation between knowledge of aging and ageism

disappeared suggesting that attitudes toward older adults did not change in the theorized direction with increased knowledge.

Taken together, the efficacy of the educational ageism reduction strategy is mixed. Some studies found that aging education reduced negative stereotypes (Wurtele & Maruyama, 2013) or increased positive attitudes (Boswell, 2012; Ragan & Bowen, 2001). Other studies found that providing factual information about aging provided participants with greater awareness of ageism (e.g., Adelman et al., 2007) and increased factual knowledge, but failed to change attitudes toward older adults (Cottle & Glover, 2007; Stuart-Hamilton & Mahoney, 2003). In the light of the many myths and stereotypes about aging, more research is needed to whether accurate knowledge about aging impacts ageism.

### **Intergenerational Contact**

Misunderstandings, myths and stereotypes about aging are not the only reasons for the increasing prevalence of ageism. A long-standing and extensive body of research deriving from intergroup contact theory suggests that negative attitudes derives in part from lack of personal and positive contact between groups (e.g., Allport, 1954; Pettigrew, 1998). Since social exclusion and stigmatization can occur in intergroup contexts, Allport (1954) proposed intergroup contact that is individualized, cooperative, maintains equal status between individuals, and is sanctioned by authorities will lead to intergroup understanding and positive contact. As evident by Allport's conditions for intergroup contact, intergroup contact as a mechanism for reducing negative attitudes refers to positive contact between groups. Subsequent research accordingly finds that intergroup contact is an effective means for reducing negative attitudes toward marginalized ethnic, national, racial, and sexual orientation groups (e.g, Davies, Tropp, Aron, Pettigrew, & Wright, 2011; Pettigrew & Tropp, 2006).

Within the ageism literature, positive contact with older adults predicts lower levels of ageism, supporting the tenets of intergroup contact theory (e.g., Abrams et al., 2006; Bousfield & Hutchison, 2010; Caspi, 1984; Hale, 1998; Meshel & McGlynn, 2004; Schwartz & Simmons, 2001). To state it another way, some researchers have noted that one of the sources of ageist attitudes is a lack of close, positive interactions with older adults (Ory et al., 2003). For example, in communities where different ages interact on a regular basis (e.g., a religious community) in presumably positive ways, ageism is relatively non-existent (Evans, 2011). Caspi (1984) found that children who had contact with older adults at school where the older adults served as helpers in the classroom reported more positive attitudes toward the older adults than children without such contact. More recently, Stewart, Giles, Paterson, and Butler (2005) found that health professionals who had contact with older adults more than once a month reported significantly less negative bias toward older adults. Similarly, past intergenerational contact was related to greater interest in working with older adults among nursing and social work students (Gonçalves et al., 2011). In contrast, less contact was associated with fear of aging and older persons as well as ageism among students, faculty, and practitioners from psychology and social work (Chonody, Webb, Ranzijn, & Bryan, 2014). Intergenerational contact programs that aim to foster positive interactions between young persons and older adults have successfully improved attitudes toward older adults (Aday, McDuffie, & Sims, 1993; Cummings, Williams, & Ellis, 2003; Kalisch, Coughlin, Ballard, & Lamson, 2013; McCleary, 2014; Meshel & McGlynn, 2004; Olejnik & LaRue, 1981). Among undergraduate students, greater contact with older adults was associated with more positive attitudes. More specifically, contact with older adults via friendship and volunteer opportunities was related to more favorable attitudes (Van Dussen & Weaver, 2009). Attitudes toward older adults improved among undergraduate students during a

program that involved small group discussions with older adults (Penick, Fallshore, & Spencer, 2014). Although, contrary to intergroup contact theory, some studies have not found a relationship between contact with older adults and reduced ageism (e.g., Boswell, 2012).

Many studies of contact do not specify between positive and negative contact (e.g., Boswell, 2012; Stewart et al., 2005), but simply ask whether a participant has had contact with older adults. The lack of specificity as to whether the contact was positive or negative could explain why findings vary and do not demonstrate consistent positive effects of contact. Similarly, studies have found that sheer quantity of contact with older adults is not associated with attitudes toward older adults; however, quality of contact is associated with positive attitudes (Allan & Johnson, 2009; Schwartz & Simmons, 2001). Bousfield and Hutchison (2010) found that quality of contact with older adults was positively related to attitudes and behavioral intentions toward older adults. Behavioral intentions included things like willingness to take a job that would involve regular contact with older adults or spending free time on an activity supporting older adults. Characteristics of contact with older adults are important, which harps back to Allport's (1954) original proposition that there are optimal conditions for positive contact. Based on the principles of intergroup contact, contact with older adults should be voluntary, cooperative, equal, and have the potential for friendship (Brown & Hewstone, 2005; also see Grefe, 2011; Levy, in press). Therefore, the type of contact (ideally being high quality and positive) is important in predicting more positive attitudes toward older adults.

Although intergroup contact theory often focuses on direct contact, sometimes, different group members do not typically interact with one another or have few opportunities to interact with one another leading researchers to explore *extended contact*. The Extended Contact Theory (contact that is extended through a friendship) proposes that knowledge that one's friends from

the same group have friends from another group provides many of the same benefits of having direct cross-group friendships, such as reduced prejudice and increasing positive attitudes (e.g., Cameron, Rutland, & Brown, 2007; Cameron, Rutland, Hossain, & Petley, 2011; Eller, Abrams, & Gomez, 2012; Turner, Hewstone, Voci, & Vonofakou, 2008; West & Turner, 2014; Wright, Aron, McLaughlin-Volpe, & Rupp, 1997). For example, extended contact posits that knowing a member of one's own group (e.g., a young adult) is friends with a member of another group (e.g., an older adult) will result in less negative attitudes toward that other group (e.g., older adults).

In the original extended contact research, Wright et al. (1997) examined the impact extended contact had on attitudes toward an outgroup (a social group with which an individual does not identify) by having participants observe an ingroup (a social group an individual identifies with) and outgroup member interact as they tried to solve a puzzle. Wright et al. (1997) manipulated whether the interaction between the ingroup and outgroup member appeared to be a friendship, between strangers, or disliked acquaintances. To assess extended contact's effect, participants completed various measures of ingroup and outgroup bias after observing the ingroup/outgroup interaction. In support of extended contact theory, Wright et al. (1997) found that observing an ingroup member interacting like a friend with an outgroup member resulted in more positive evaluations of the outgroup than observing an ingroup member interact with a strangers or disliked acquaintance.

Subsequent studies of extended contact use both correlational and experimental designs to examine how extended contact impacts attitudes. Turner et al. (2008) assessed extended contact among White participants by asking questions about how many ingroup members (same race: acquaintances, friends, family members) were friends with outgroup members (different

race: Asian individuals). They found that extended contact was related to more positive outgroup attitudes. In another study, Eller et al. (2012) found that extended contact reduces affective prejudice when direct contact is low. More specifically, among Americans who had little direct contact with Mexicans, those who knew more ingroup members (White American undergraduate students) with Mexican friends demonstrated lower prejudice toward Mexicans. Experimental studies of extended contact have utilized media content such as television, film, and books by showing or describing a close relationship between members of different groups. For example, watching an ingroup television character develop or maintain a close relationship with an outgroup member can be used to measure the effect that extended contact has on attitudes. Mazziotta, Mummendey, and Wright (2011) demonstrated that extended contact via video improved attitudes toward the outgroup and increased participants' willingness to engage in direct contact with the outgroup. Cameron and Rutland (2006) had children read a story in which extended contact is present (e.g., reading that another English child is friends with an immigrant child), which resulted in increased positivity toward that other group (in this case, immigrants).

More than a decade worth of research supports the efficacy of extended contact in reducing prejudice toward a variety of different groups and identities. Studies of extended contact demonstrate improved attitudes toward people with disabilities (e.g., Cameron et al., 2007), mental health disorders (e.g., West & Turner, 2014), racial/ethnic minorities (e.g., Cameron et al., 2011), religious outgroups (e.g., Turner, Tam, Hewstone, Kenworthy & Cairns, 2013) and refugees (e.g., Cameron, Rutland, Brown, & Douch, 2006). While a relatively new extension of intergroup contact theory, extended contact holds promise as an ageism reduction strategy.

Although there are no studies of extended contact and ageism, there is one potentially relevant experimental study examining how television portrayals of older adults impact attitudes. Using a scene that depicted an intergenerational relationship, in which the characters find common ground despite their age differences, Harwood (2000) found that participants had more positive general attitudes if they evaluated the characters as more satisfied in their conversation (e.g., indicative of having a closer relationship). While Harwood (2000) did not set out to specifically test extended contact, his research provides some evidence that extended contact may impact attitudes toward older adults. To our knowledge, no other study has examined extended contact as a potential ageism reduction technique.

Despite the lack of research on extended contact of intergenerational relationships, extended contact represents a promising area of study in regards to ageism since there are few intergenerational homes and concerns about negative intergenerational contact (Angelis, 1992; Hagestad & Uhlenberg, 2005). In light of negative ageism, there is growing concern about negative intergenerational contact. Research suggests that negative contact is a stronger predictor of attitudes than positive contact (Barlow et al., 2012). Based on the tenets of intergroup contact and past research demonstrating a link between positive contact with older adults and more positive attitudes, extended contact is expected to hold promise for reducing ageist attitudes.

### **Target Participants: General Community Adults and Undergraduate Students**

The current studies examined the two theoretical factors from the PEACE model (Levy, in press) for addressing ageism among general community adults (Study 1) and undergraduate students (Study 2). Past work indicates that these populations (general community adults and students) report relatively high levels of ageist attitudes (e.g., Kite et al., 2005). In regards to a more general community sample, very few studies have examined ageism-reduction strategies

among the general public (North & Fiske, 2013; Nosek et al., 2002; O’Hanlon, Camp, & Osofsky, 1993; Stuart-Hamilton & Mahoney, 2003). Researchers have noted the paucity of study of age diverse samples for decades (see Kite et al., 2005 meta-analysis).

In contrast, most of the ageism research within social psychology has been conducted on either undergraduate students (unspecified in their major or career) or undergraduate/graduate students (specified in their major or career such as nurses or social workers). Among unspecified college students, past research indicates that college students generally report negative attitudes toward older adults (Kite et al., 2005; Rupp et al., 2005). As mentioned earlier, young people engage in a variety of ageist behaviors when interacting with older adults such as using demeaning emotional tones (Kemper et al., 1998) and display generally negative attitudes toward older adults (e.g., Bousfield & Hutchison, 2010; Kite et al., 2005; O’Hanlon et al., 1993).

Existing prejudice reduction studies that use education within the ageism literature often focus on a convenient sample of college students in gerontology or human development courses (e.g., Cottle & Glover, 2007; Wurtele & Maruyama, 2013). In contrast, little is known about attitudes toward older adults among students in general (Van Dussen & Weaver, 2009).

Among the specified student population, ageism research focuses on students limited by career such as medical students or nurses (Adelman et al., 2007; Bauer, McAuliffe, Nay, & Chenco, 2013; Stewart et al., 2005). While some of these participants represent graduate students (e.g., social workers or medical students) and other participants are undergraduates (e.g., students taking a gerontology course), researchers exploring such populations often focus on the types of ageist attitudes and discrimination that older adults experience when seeking medical care. Attitudes toward older adults are generally negative among nursing students (Ferrario, Freeman, Nellett, Scheel, 2008). Such negative attitudes are important to study since they

impact career choice, with many medical students and nurses ranking working with older adults as one of the least desirable fields (Stevens, 2011). Understanding ageist attitudes and combating ageism among medical providers in training is important for health of older adults, however, it is also important to understand ageism among the general public, especially with a gap in the workforce of young people interested in careers involving the growing older population (Marshall, 2015; McGuire, Klein, & Couper, 2005; Stevens, 2011).

Ageism is pervasive across all age groups, making it is necessary to gain a better understanding of ageism among young and middle-aged adults and ultimately how to reduce ageism.

### **Current Studies**

Given the prevalence of ageism and the ever-growing population of adults ages 65 and older, the purpose of the current studies is to pinpoint the effective ingredients in reducing ageism. Drawing on the PEACE model (Levy, in press), this study focuses on two key factors: education about aging and positive contact experiences. The PEACE model suggests that these two main contributing factors may work hand in hand to reduce ageism and therefore this study examines the combined effect of education and contact. This research aims to contribute to the existing literature on ageism by drawing from two samples of adults: an age diverse community sample (Study 1) and undergraduate students (Study 2).

In order to compare theoretically-driven ageism reduction strategies, participants were randomly assigned to one of four conditions: an education condition, an intergenerational extended contact, an education plus extended contact condition, and a control condition. Participants in the control condition were not exposed to any information related to aging, older

adults, or intergenerational contact between younger and older adults. Instead, participants in the control condition read information about an intended neutral topic: wallpaper.

The design of this study represents an empirical test of the PEACE model, which focuses on two key factors related to ageism: education and positive contact experiences. The education condition in this study is based on a relatively small body of studies that suggest ageism can be reduced by providing accurate educational information about aging and the aging process (Adelman et al., 2007; Boswell, 2012; Cottle & Glover, 2007; Liu et al., 2013; Wurtele & Maruyama, 2013). Utilizing extended contact in the context of intergenerational relationships is a novel extension of the existing intergroup contact literature and one that has not been used in the ageism-reduction literature. Extended contact is especially appropriate as positive intergenerational contact may be infrequent with increasingly negative attitudes toward aging and older adults (Angelis, 1992; Hagestad & Uhlenberg, 2005; Kite et al., 2005; North & Fiske, 2012).

In the light of these two potentially effective prejudice-reduction strategies (education and extended contact), a third ageism reduction condition in which participants are exposed to education on aging *and* extended contact of an intergenerational relationship was also tested. To my knowledge, the inclusion of a combined education plus extended contact condition is unique to the current studies and represents a test of whether education and contact experiences may have additive ageism reducing potential as proposed by the PEACE model (Levy, in press). The inclusion of a combined condition utilizing education and intergenerational contact stems from recognition in the literature that ageist attitudes vary based on these two theoretical approaches to reducing ageism: contact with older adults and individuals' knowledge and attitudes toward

aging (Bousfield & Hutchison, 2010; Cottle & Glover, 2007; Levy, in press; McCleary, 2014; Ory et al., 2003; Sainsbury, Wilkinson, & Smith, 1994; Wurtele & Maruyama, 2013).

**Hypotheses.** Building on the PEACE model (Levy, in press) and past research in both the ageism and broader intergroup contact literature, I hypothesize that all three ageism reduction strategies will decrease prejudice and negative stereotyping toward older adults while increasing positive stereotyping toward older adults, behavioral intentions and aging knowledge (as measured by Palmore's Facts on Aging Quiz) compared to the control condition. Additionally, based on the PEACE model and the promising findings of both the educational approach in the ageism literature and extended contact from the intergroup contact literature, I hypothesize that the combined education plus extended contact condition will produce the largest effect on reducing prejudice and negative stereotypes while increasing positive stereotyping toward older adults, behavioral intentions toward older adults compared to the other experimental conditions.

The current studies used a variety of established and reliable measures of ageism to test the effectiveness of the ageism reduction strategies (see measures section). For the general community sample (Study 1), participants were randomly assigned to one of the ageism-reduction strategies (or control condition) and their attitudes, stereotypes, and behavioral intentions toward older adults were assessed immediately afterwards.

Extending the design of Study 1 in which attitudes were measured at an immediate post-test, in Study 2, undergraduate students participated in a 3-part study which involved a pre-test (Time 1), a post-test immediately following the ageism-reduction strategies (Time 2), and a delayed post-test (Time 3). The pre-test (Time 1) served as a baseline of participant's attitudes toward older adults. Attitudes toward older adults were reassessed immediately following the exposure to the ageism-reduction strategies in the post-test (Time 2). Lastly, a delayed post-test

(Time 3) allowed for an examination of the longer-term impact of the experimental conditions on participants' ageism. Participants received an email to complete the post-test (Time 3), 1 week after the ageism-reduction strategies (or control condition). Importantly, then, Study 2 allowed for tests of both within-subject changes as well as between-subject changes.

Given that many of the existing ageism-reduction strategies focus on specific populations (e.g., students in a gerontology course or social workers) but that ageism is widespread, it is important to extend the sample of participants to include a wider range of ages, educational levels, career paths, etc. This dissertation examined a more general sample of participants (general community members aged 18-59 and undergraduate students) to determine the impact of ageism-reduction strategies.

## **Study 1**

Study 1 was a one-session study among a sample of age diverse general community members during which participants were exposed to one of three ageism-reduction strategies (or a control condition) with the hypothesis that negative attitudes, stereotypes and intended behavior toward older adults would be lower in the experimental conditions following exposure to ageism-reduction strategies compared to the control condition.

## **Method**

### **Participants**

A total of 610 community participants (384 females) ages 18-59 with a mean age of 35.74 ( $SD = 10.49$ ) participated in Study 1. Participants included 78% European American, 6.5% African American or Black Caribbean, 5.7% Latino/Latina, 5.7% Asian, and 4.1% Other or Mixed. Participants were only eligible to participate if they indicated being at least 18 years old, reported that they were currently living in the United States, and that English was their first language (due to the reading comprehension aspect of the current study). The original sample included 811 participants; however, a total of 201 participants were removed for the following reasons: 91 participants were removed for not providing relevant information in at least 2 of the 4 summaries throughout the reading comprehension portion of the study, 79 participants were removed that were 60 years old or older, 24 participants were removed for indicating English was not their first language, and 7 participants were removed for reporting they did not live in the United States.

### **Procedure**

Community participants were directed to a secure online website, Qualtrics, to complete the survey. If participants consented, they were given access to the survey. Participants were

randomly assigned to one of four conditions: an education condition, an intergenerational extended contact condition, a combined education plus extended contact condition, or a control condition. Minor deception was necessary for Study 1. Participants were told the objective of the study was to “examine people’s ability to read and comprehend material online.” In reality, this study was interested in whether exposure to ageism-reduction strategies would reduce negative attitudes, stereotypes, and increase positive behavioral intentions toward older adults. The cover story, that the study was about reading comprehension on the internet, was used to reduce the likelihood that participants would provide socially desirable answers or be influenced by demand characteristics.

Participants in the three experimental conditions (education, extended contact, and the combined condition) were exposed to information aimed at reducing their ageism, whereas participants in the control condition were exposed to information about wallpaper, a neutral topic. To facilitate the cover story, participants were told during this study they would see a series of ten questions with true/false answers, and their task was to answer each question. After providing an answer, participants were presented with the correct answer and an elaboration of the correct answer. Participants were told “make sure you pay close attention to the information as you will be asked to summarize what you have read every few questions.” Participants were asked to list three things they remembered every three to four questions (resulting in three post-intervention check-ins). In addition, manipulation checks at the end of the ‘reading comprehension’ portion asked participants to summarize the overall message of what they had just read (fourth post-intervention check-in). In total, participants provided four summaries of what they had read.

After completing the reading comprehension portion of the study, participants answered a series of measures regarding participants' attitudes, stereotypes, and behavioral intentions toward older adults. The last page included a debriefing. The university's institutional review board approved Study 1 prior to any data collection.

General community participants were recruited using Craigslist, Reddit, and Mechanical Turk (MTURK). Research assistants posted Craigslist advertisements in the online volunteer section for numerous cities around the United States multiple times a week to recruit community participants. To recruit for Reddit, advertisements were posted on the r/samplesize which is a subreddit dedicated to survey research. Craigslist and Reddit participants completed the survey in exchange for a chance to win one of four \$25 giftcards. The last page of the online survey directed the participant to send an email with their name and contact information to an email address that was affiliated with the study if she/he was interested in being entered into the raffle. Having participants email the investigator to enter the raffle ensured that the survey data collected was not associated with any personally identifiable information.

General community participants were also recruited from Amazon.com's MTURK website, where anyone who met the inclusion criteria (individuals 18-years or older who are currently in the United States and speak English as their first language) could choose to complete the survey in exchange for compensation that is directly added to his or her Amazon.com account. MTURK is an online, crowd sourced employee marketplace offered by Amazon.com, which allows workers to complete tasks online. Social psychologists have increasingly turned to MTURK for data collection because of the high quality participant responses it yields and the utility of a community sample (Ipeirotis, Provost, & Wang, 2010; Mason & Suri, 2012; Paolacci, Chandler, & Ipeirotis, 2010). MTURK participants completed the survey in exchange for a

payment. Participation was completely voluntary, and participants were able to leave the study at any time by closing their browser window or leaving the survey website.

## **Measures**

### **Intergroup attitudes**

***Fraboni ageism measure.*** Participants completed the 22-item scale designed to measure their attitudes toward older adults (Fraboni et al., 1990; Rupp et al., 2005). Participants answered the items using a 1 (*Strongly Disagree*), 2 (*Disagree*), 3 (*Somewhat disagree*), 4 (*Somewhat agree*), 5 (*Agree*) to 6 (*Strongly Agree*) scale ( $\alpha = .92$ ). Sample items include “many old people are stingy and hoard their money and possessions,” “feeling depressed when around old people is probably a common feeling,” and “the company of most old people is quite enjoyable” (reversed scored). Consistent with past research (Allan, Johnson, & Emerson, 2014; Boswell, 2012; Fraboni et al., 1990), items were summed and averaged such that a higher score on the Fraboni measure indicates more negative attitudes toward older adults.

### **Stereotyping measures.**

***Positive and negative age stereotypes.*** Participants completed the 18-item ‘image of aging’ scale designed to measure their stereotypes of older adults (Levy et al., 2004) with 9 positive items (“active”;  $\alpha = .89$ ) and 9 negative items (“walks slowly”;  $\alpha = .89$ ). Participants were asked to rate from 0 (*not at all characteristic*) to 6 (*very characteristic*) how well the word matches your image or picture of a 65 year old. A higher score on the positive items indicates greater endorsement of positive age stereotypes while a higher score on negative items indicates greater endorsement of negative age stereotypes.

### **Prejudice measures.**

***Aging anxiety.*** Participants completed a 4-item measure designed to assess their anxiety about aging (Bousfield & Hutchison, 2010). Participants answered the items using a 1 (*Strongly Disagree*) to 6 (*Strongly Agree*) scale ( $\alpha = .82$ ). Sample items include “I am relaxed about getting old” and “I am concerned that my abilities will suffer when I am old.” Items were scored so that a higher score indicates more aging anxiety.

***Anxiety about interacting with older adults.*** Participants completed a 3-item measure designed to assess their anxiety about interacting with older adults (Hutchison et al., 2010). Participants answered the items using a 1 (*Strongly Disagree*) to 6 (*Strongly Agree*) scale ( $\alpha = .85$ ). Sample items include “I would feel awkward when interacting with an elderly person” and “when interacting with an elderly person, I would feel nervous.” A higher score indicates more anxiety about interacting with older adults.

***Feeling thermometer.*** Participants completed a 2-item measure designed to assess feelings toward older adults (Turner & Crisp, 2010) on an 11-point 0 (*Cold*) to 100 (*Warm*) and 0 (*Negative*) to 100 (*Positive*) scale ( $r = .85$ ). Participants rated their feelings toward 65-70 year olds using both scales and the 2-items were averaged together. In addition, as filler items participants also rated their feelings toward 18-24, 25-34, 35-44, 45-54, and 55-64 year olds on both the cold/warm and negative/positive scales.

#### **Discrimination measures.**

***Behavioral intentions.*** Participants completed a 5-item measure of positive future behavioral intentions toward older adults (Bousfield & Hutchison, 2010) on a 1 (*strongly disagree*) to 6 (*strongly agree*) scale ( $\alpha = .75$ ). Sample items include “I would not give money to someone collecting for an organization which helps older adults” or “I would be happy to take a

job which involved regular contact with older adults.” A higher score indicates more positive behavioral intentions.

***Aging knowledge.*** Palmore’s (1998) Facts on Aging quiz was updated and adapted to ensure all facts were accurate and relevant. Participants responded either true or false to a series of 10 questions that covered various topics related to older adults and the aging process. Participants answered the same 10 ‘facts on aging’ questions that were seen during the reading comprehension portion of the study for the three experimental conditions. For the control condition, the 10 questions were new, as participants in the control condition had not been exposed to any information on aging. Sample questions include “the majority of older adults (age 65 and older) are senile” (false) and “the majority of older adults feel miserable most of the time” (false). A higher score on the Palmore quiz indicates greater knowledge of aging.

***Filler items.*** The following items were included as fillers to reduce social desirability concerns and facilitate the cover story used for the dependent measures. Following completion of the reading comprehension portion of the study, participants were asked to complete an ostensibly separate study regarding participant’s “attitudes and beliefs about various social groups.” Participants completed the following filler items: a 6-item measure of egalitarianism (Levy, West, Ramirez, & Karafantis, 2006), a 4-item measure of protestant work ethic (Levy et al., 2006), a 5-item measure of modern sexism (Swim, Aikin, Hall & Hunter, 1995), and a 7-item measure of social dominance orientation (Levy et al., 2006, which was adapted from Pratto, Sidanius, Stallworth, & Malle, 1994).

***Manipulation checks.*** Participants were asked to list three things they remembered every three to four questions (resulting in three post-intervention check-ins). In addition, manipulation checks at the end of the ‘reading comprehension’ portion asked participants to summarize the

overall message of what they had just read (fourth post-intervention check-in). In total, participants provided four summaries of what they had read. Additionally, to determine whether the conditions influenced mood, after the conditions, participants were asked “how do you feel right now on a scale of -6 (very negative) to +6 (very positive) and “how do you feel right now on a scale of -6 (very sad) to +6 (very happy)?

**Demographics.** Participants also answered a set of demographic questions concerning their age, gender, race/ethnicity, income, education level, whether English was their first language, and whether they currently lived in the United States. Participants also completed a 2-item quantity of contact and 3-item quality of contact measure (Hutchison et al., 2010) on a 1 (*Strongly Disagree*) to 6 (*Strongly Agree*) scale ( $\alpha = .86$ ). Sample items for quantity include “In the past, I have rarely interacted with elderly people” and for quality “Over the course of my life I have had many elderly people as friends.” A higher score indicates more frequent positive contact with older adults. Given the relationship between positive contact and attitudes toward older adults (e.g., Bousfield & Hutchison, 2010), quantity/quality of contact was included as a control in the following analyses.

## Results

Multivariate analyses of covariance (MANCOVAS) were used to examine potential differences between the four conditions. When warranted, three planned contrasts were then conducted to examine differences between the three experimental conditions and the control condition. First, to test whether the experimental conditions as a whole differed from the control condition, a planned contrast in which all three experimental conditions were compared to the control condition was conducted. Second, a planned contrast tested whether the combined education plus extended contact condition differed compared to the education condition. Third, a

planned contrast tested whether the combined education plus extended contact condition differed compared to the extended contact condition. The second and third planned contrasts were designed to test the effectiveness of the combined condition, which was hypothesized to be the most effective of the three experimental conditions. Means and standard deviations for each measure by condition are reported in Table 1.

Past research from the ageism literature suggests that men hold more negative attitudes toward older adults than women (Allan & Johnson, 2009; Fraboni et al., 1990, Rupp et al., 2005). Consistent with past research (e.g., Fraboni et al., 1990), gender differences were found with males ( $M = 2.71$ ,  $SD = 0.80$ ) reporting significantly more negative attitudes toward older adults than females ( $M = 2.19$ ,  $SD = 0.68$ ) on the Fraboni ageism measure,  $t(601) = 8.46$ ,  $p < .01$ . As such, gender was controlled for in the following analyses. Additionally, given that both quantity and quality of contact with older adults are related to attitudes toward older adults (Caspi, 1984; Evans; 2011; Van Dussen & Weaver, 2009), I controlled for quantity and quality of interactions with older adults reported by participants. Lastly, given the sample was age diverse (a range of 18-59 years old with mean age of 35.74), I controlled for age.

A MANCOVA revealed a significant effect of condition on attitudes, stereotypes, and behavioral intentions toward older adults,  $F(24, 1794) = 10.99$ ,  $p < .01$ , eta squared = .13 when controlling for age, gender, and quality/quantity of contact with older adults. Separate ANCOVAs revealed a significant effect for both the Fraboni ageism measure,  $F(3, 606) = 5.28$ ,  $p < .01$ , eta squared = .03 and aging knowledge,  $F(3, 606) = 105.88$ ,  $p < .001$ , eta squared = .35. There were no significant effects for the feeling thermometer ( $F[3, 606] = 1.49$ ,  $p = .22$ , eta squared = .01), aging anxiety ( $F[3, 606] = 1.31$ ,  $p = .27$ , eta squared = .01), behavioral intentions,  $F[3, 606] = 1.38$ ,  $p = .25$ , eta squared = .01, positive age stereotypes ( $F[3, 606] =$

1.77,  $p = .15$ , eta squared = .01), negative age stereotypes ( $F < 1$ ), and anxiety about interacting with older adults ( $F < 1$ ).

For the Fraboni ageism measure, the first planned contrast (comparing all three experimental conditions to the control condition) revealed that participants in all three experimental conditions ( $M = 2.32$ ,  $SD = 0.78$ ) reported significantly less negative attitudes toward older adults compared to participants in the control condition ( $M = 2.54$ ,  $SD = 0.72$ ),  $t(608) = -3.08$ ,  $p < .01$ ,  $d = -0.28$ . The second planned contrast (comparing the combined condition to the education condition) revealed no significant difference between the combined condition ( $M = 2.32$ ,  $SD = 0.74$ ) and education condition ( $M = 2.27$ ,  $SD = 0.81$ ),  $t(309) = -0.57$ ,  $p = 0.57$ . The third planned contrast (comparing the combined condition to extended contact) revealed no significant difference between the combined condition and extended contact condition ( $M = 2.37$ ,  $SD = 0.77$ ),  $t(289) = 0.61$ ,  $p = 0.54$ .

In regards to aging knowledge, planned contrasts revealed that participants in all three experimental conditions ( $M = 9.54$ ,  $SD = 0.88$ ) reported significantly more aging knowledge compared to those participants in the control condition ( $M = 7.75$ ,  $SD = 1.65$ ),  $t(608) = 17.10$ ,  $p < .001$ ,  $d = 1.56$ . The second planned contrast revealed no significant difference between the combined condition ( $M = 9.56$ ,  $SD = 0.94$ ) and education condition ( $M = 9.72$ ,  $SD = 0.66$ ),  $t(309) = 1.70$ ,  $p = 0.90$ . The third planned contrast revealed that participants in the combined condition reported significantly more aging knowledge compared to those in the extended contact condition ( $M = 9.32$ ,  $SD = 0.94$ ),  $t(289) = -2.16$ ,  $p < .05$ ,  $d = -0.25$ .

## **Discussion**

As hypothesized, participants in all three experimental conditions reported significantly less negative attitudes toward older adults and greater aging knowledge compared to participants

in the control condition. However, contrary to expectations that the combined condition would be the most effective of the experimental conditions, the combined condition was only significantly different from the other experimental conditions in one instance. Participants in the combined condition reported significantly greater aging knowledge than participants in the extended contact condition.

While the Fraboni ageism measure and Palmore measure of aging knowledge are two of the most popular measures in ageism studies, it is noteworthy that significant effects were not found for the other included dependent measures. It is possible that a post-test only design limited the ability to determine the effect of the experimental conditions.

## Study 2

Building upon the design used in Study 1, Study 2 involved a pre-test (Time 1) in addition to the immediate post-test (Time 2). Moreover, Study 2 included a delayed post-test (Time 3) of participant's attitudes toward older adults to examine whether the expected effects of the experimental conditions lasted beyond the experimental session. Study 2 was conducted among a sample of racially/ethnically diverse undergraduate students from a large university in the Northeastern United States.

## Method

### Participants

A total of 354 (257 female) undergraduate students with a mean age of 19.69 ( $SD = 1.90$ ) participated in Study 2. Participants included 46.0% European American, 26.3% Asian, 8.2% African American or Black Caribbean, 6.8% Latino/Latina, and 12.7% Other or Mixed). When considering the past month, most participants reported that they had at least some contact with older adults: 10.1% reported no contact, 27.0% reported a little contact, 32.3% reported some contact, 24.2% reported a lot of contact, and 6.4% reported contact with older adults everyday. Participants were only eligible to participate if they indicated that English was their first language due to the reading comprehension aspect of the current study. The original sample included 447 participants; however, 93 participants were removed for the following reasons: 40 participants were removed for participating more than once in any of the timepoints (Times 1, 2, and/or 3), 39 participants were removed for not providing relevant information in at least 2 of the 4 summaries throughout the reading comprehension portion of Time 2, 2 participants were removed that were 30 years old or older, and 12 participants were removed for indicating English was not their first language.

## **Procedure**

All three parts of Study 2 were conducted online using Qualtrics, a secure survey website. Potential participants logged into the psychology department subject pool, which is accessible to all students taking a psychology class. Interested participants were able to sign up for Time 1 throughout the first two months of the semester and received credit for participating. In Time 1, participants completed a short pre-test designed to obtain a baseline measure of participant's attitudes toward older adults. Just as in Study 1, minor deception was necessary for Study 2. During Time 1, participants were told they were participating in a survey about their "attitudes and beliefs about groups" rather than a study examining their attitudes toward older adults. The survey included filler measures (e.g., egalitarianism, Protestant work ethic, modern sexism) to fit with this cover story. Participants were debriefed following Time 1 as it was presented to participants as a stand-alone study.

Qualified participants, native English speakers, who completed Time 1 were invited to participate in an ostensibly separate study (Time 2) one week after completing Time 1 (consistent with similar studies, e.g., Malinen & Johnston, 2013). The same design and cover story ('reading comprehension') from Study 1 was used during Time 2. Participants were randomly assigned to one of four conditions: an education condition, an intergenerational extended contact condition, a combination education plus extended contact condition, or a control condition. Participants were informed that the study objective was to "examine people's ability to read and comprehend material online."

After completing the 'reading comprehension' portion of the study, participants completed the same measures from Time 1 again plus a few additional measures (e.g., aging anxiety, anxiety about interacting with older adults, an anti-age discrimination petition,

behavioral intentions). This served as the immediate post-test and as a way to measure of the effectiveness of the ageism-reduction strategies. To reduce the possibility that participants were aware that Times 1 and 2 were connected, there was a one-week delay between Times 1 and 2 and the dependent measures were framed as an ostensibly separate study to the ‘reading comprehension’ study. After completing the reading comprehension portion of the study, participants were told “the next set of question is for a separate study that our lab is conducting on your attitudes and beliefs toward various social groups. You'll be asked questions about different social groups. There are no right or wrong answers.” Additionally, the same series of filler items used in both Study 1 and Time 1 (e.g., egalitarianism, Protestant work ethic, modern sexism) were placed among the dependent variables.

One week after completing Time 2 (ageism-reduction strategies), participants were invited to complete Time 3 (delayed post-test) of the study, which included the same measures from Time 2 (minus the filler items). Participants were debriefed following Time 3 and provided additional credit for participating in Times 2 and 3. The university’s institutional review board approved Study 2 prior to any data collection.

## **Measures**

### **Intergroup attitudes**

\* Indicates that measure was included only in Time 2 and Time 3, but not Time 1 (pre-test).

***Fraboni ageism measure.*** Participants completed the 22-item scale designed to measure their attitudes toward older adults (Fraboni et al., 1990; Rupp et al., 2005). Participants answered the items using a 1 (*Strongly Disagree*) to 6 (*Strongly Agree*) scale (Time 1  $\alpha = .88$ ,

Time 2  $\alpha = .90$ , Time 3  $\alpha = .93$ ). A higher score on the Fraboni measure indicates more negative attitudes toward older adults.

### **Stereotyping measures.**

***Positive and negative age stereotypes.*** Participants completed the 18-item ‘image of aging’ scale (Levy et al., 2004) with 9 positive items (“active”; Time 1  $\alpha = .82$ , Time 2  $\alpha = .87$ , Time 3  $\alpha = .90$ ) and 9 negative items (“walks slowly”; Time 1  $\alpha = .88$ , Time 2  $\alpha = .90$ , Time 3  $\alpha = .92$ ). A higher score on the positive items indicates more endorsement of positive age stereotypes while a higher score on negative items indicates more endorsement of negative age stereotypes.

### **Prejudice measures.**

***Aging anxiety\****. Participants completed a 4-item measure designed to assess their anxiety about aging (Bousfield & Hutchison, 2010). Participants answered the items using a 1 (*Strongly Disagree*) to 6 (*Strongly Agree*) scale (Time 2  $\alpha = .72$ , Time 3  $\alpha = .78$ ). A higher score indicates more aging anxiety.

***Anxiety about interacting with older adults\****. Participants completed a 3-item measure designed to assess their anxiety about aging (Hutchison et al., 2010). Participants answered the items using a 1 (*Strongly Disagree*) to 6 (*Strongly Agree*) scale (Time 2  $\alpha = .84$ , Time 3  $\alpha = .87$ ). A higher score indicates more anxiety about interacting with older adults.

***Feeling thermometer.*** Participants completed a 2-item measure designed to assess their feelings toward older adults (Turner & Crisp, 2010) on a 10-point 0 (*Cold*) to 100 (*Warm*) and 0 (*Negative*) to 100 (*Positive*) scale (Time 1  $r = .64$ , Time 2  $r = .83$ , Time 3  $r = .83$ ). Participants rated their feelings toward 65-70 year olds using both scales and the 2-items were averaged

together. In addition, as filler items, participants also rated their feelings toward 18-25 year olds on both the cold/warm and negative/positive scales.

**Discrimination measures.**

***Behavioral intentions\****. Participants completed a 5-item measure of positive future behavioral intentions toward older adults (Bousfield & Hutchison, 2010) on a 1 (*strongly disagree*) to 7 (*strongly agree*) scale (Time 2  $\alpha = .63$ , Time 3  $\alpha = .71$ ). A higher score indicates more positive behavioral intentions.

***Anti-age discrimination petition\****. Adopted from other established measures of intended behavior, participants had the option to sign their initials to a petition in support of the passage of an anti-age discrimination law. Opting to include their initials in support of this petition was used as a measure of intended (positive) behavior toward older adults. In addition, as filler items, participants had the option to sign their initials to petitions supporting same-sex marriage and affirmative action.

***Aging knowledge\****. The same 10 updated and adapted Palmore's (1998) Facts on Aging questions from Study 1 were used. A higher score on the Palmore quiz indicates more knowledge of aging.

**Filler items.** In Time 1 and Time 2, the same filler items (egalitarianism, protestant work ethic, modern sexism, and social dominance orientation) from Study 1 were included to reduce social desirability concerns and reduce the likelihood that participants would connect Times 1 and 2 as part of the same study. Also in Times 2 and 3, all participants answered five filler questions about wallpaper.

***Manipulation checks.*** Participants were asked to list three things they remembered every three to four questions (resulting in three post-intervention check-ins). In addition, manipulation

checks at the end of the ‘reading comprehension’ portion asked participants to summarize the overall message of what they had just read (fourth post-intervention check-in). In total, participants provided four summaries of what they had read. Additionally, to determine whether the conditions influenced mood, after the conditions, participants were asked “how do you feel right now on a scale of -6 (very negative) to +6 (very positive) and “how do you feel right now on a scale of -6 (very sad) to +6 (very happy)?

**Demographics.** Participants answered a set of demographic questions, including their age, gender, race/ethnicity, whether they were born in the United States, and number years living in the country. Participants also completed a 2-item quantity of contact and 3-item quality of past contact measure (Hutchison et al., 2010) on a 1 (*Strongly Disagree*) to 6 (*Strongly Agree*) scale (Time 1  $\alpha = .88$ , Time 2  $\alpha = .86$ , Time 3  $\alpha = .86$ ). A higher score indicates more frequent positive contact with older adults. Consistent with Study 1, quantity/quality of contact was included as a control in the following analyses.

## Results

Similar to Study 1, multivariate analyses of covariance (MANCOVAs) were used to examine potential differences between the four conditions. Time 1 scores for the Fraboni ageism measure, positive age stereotypes, negative age stereotypes, and the feeling thermometer were controlled for in the following analyses. Consistent with Study 1 and past research (e.g., Fraboni et al., 1990), gender differences were found with males ( $M = 2.69$ ,  $SD = 0.58$ ) reporting significantly more negative attitudes toward older adults than females ( $M = 2.40$ ,  $SD = 0.58$ ) on the Fraboni ageism measure,  $t(349) = 4.11$ ,  $p < .01$ . Thus, as in Study 1, gender was controlled in the following analyses in Study 2. Additionally, as in Study 1, quality/quantity of contact was controlled for in Study 2 given past findings that quantity and quality of contact impact attitudes

(e.g., Abrams et al., 2006; Bousfield & Hutchison, 2010; Caspi, 1984; Evans, 2001; Hale, 1998; Meshel & McGlynn, 2004; Schwartz & Simmons, 2001).

Consistent with Study 1, three planned contrasts were examined. First, to test whether the experimental conditions as a whole differed from the control condition, a planned contrast in which all three experimental conditions were compared to the control condition was conducted. Second, a planned contrast tested whether the combined education plus extended contact condition differed compared to the education condition. Third, a planned contrast tested whether the combined condition differed compared to the extended contact condition. The second and third planned contrasts were designed to test the effectiveness of the combined condition, which was hypothesized to be the most effective of the three experimental conditions. Means and standard deviations for all measures by conditions are reported in Table 2.

### **MANCOVA Time 1 predicting Time 2**

A MANCOVA revealed a significant effect of condition on attitudes and stereotypes toward older adults,  $F(27, 1014) = 6.27, p < .01$ , eta squared = .14. Separate ANCOVAs revealed a significant effect for positive age stereotypes,  $F(3, 344) = 6.94, p < .01$ , eta squared = .06, negative age stereotypes,  $F(3, 344) = 3.82, p < .05$ , eta squared = .03, aging anxiety,  $F(3, 344) = 3.95, p < .01$ , eta squared = .03, and aging knowledge,  $F(3, 344) = 64.78, p < .001$ , eta squared = .36. There were no significant effects for the Fraboni ageism measure ( $F[3, 344] = 2.06, p = .11$ , eta squared = .02), feeling thermometer ( $F[3, 344] = 1.20, p = .31$ , eta squared = .01), behavioral intentions ( $F[3, 344] = 1.45, p = .23$ , eta squared = .01), anxiety about interacting with older adults ( $F < 1$ ), or the anti-age discrimination petition measures ( $F < 1$ ).

For positive age stereotypes, the first planned contrast<sup>1</sup> (comparing all three experimental conditions to the control condition) revealed that participants in all three experimental conditions

( $M = 5.03$ ,  $SD = 0.74$ ) reported significantly more positive age stereotypes of older adults compared to those in the control condition ( $M = 4.70$ ,  $SD = 0.68$ ),  $t(352) = 3.68$ ,  $p < .01$ ,  $d = 0.45$ . The second planned contrast (comparing the combined condition to the education condition) revealed no significant difference between the combined condition ( $M = 5.06$ ,  $SD = 0.75$ ) and education condition ( $M = 5.04$ ,  $SD = 0.72$ ),  $t(178) = 0.23$ ,  $p = 0.82$ . The third planned contrast (comparing the combined condition to extended contact) revealed no significant difference between the combined condition and extended contact condition ( $M = 4.98$ ,  $SD = 0.73$ ),  $t(178) = -.55$ ,  $p = 0.58$ .

For negative age stereotypes, the first planned contrasts showed that participants in all three experimental conditions ( $M = 3.29$ ,  $SD = 0.93$ ) reported significantly less negative age stereotypes of older adults compared to those in the control condition ( $M = 3.61$ ,  $SD = 0.991$ ),  $t(352) = -2.75$ ,  $p < .01$ ,  $d = -0.34$ . The second and third planned contrasts revealed no significant difference between the combined condition ( $M = 3.34$ ,  $SD = 0.90$ ) and education condition ( $M = 3.22$ ,  $SD = 0.96$ ),  $t(178) = 0.90$ ,  $p = 0.37$  and no significant difference between the combined condition and extended contact condition ( $M = 3.32$ ,  $SD = 0.94$ ),  $t(178) = 0.72$ ,  $p = 0.47$ .

However, for aging anxiety, the first planned contrast showed that participants in all three experimental conditions ( $M = 3.82$ ,  $SD = 1.00$ ) and those in the control condition ( $M = 3.77$ ,  $SD = 1.02$ ) did not significantly differ in their reported aging anxiety,  $t(352) = 0.44$ ,  $p = 0.66$ . Interestingly, the second planned contrast revealed that participants in the education condition ( $M = 4.10$ ,  $SD = 1.02$ ) reported significantly more aging anxiety than those in the combined condition ( $M = 3.60$ ,  $SD = 0.98$ ),  $t(178) = 3.35$ ,  $p < .01$ ,  $d = 0.49$ . The third planned contrast revealed no significant difference between the combined condition and extended contact condition ( $M = 3.79$ ,  $SD = 0.94$ ),  $t(178) = 1.35$ ,  $p = 0.18$ .

For aging knowledge, the first planned contrast revealed that participants in all three experimental conditions ( $M = 9.42$ ,  $SD = 0.81$ ) reported significantly more aging knowledge compared to the control condition ( $M = 7.80$ ,  $SD = 1.33$ ),  $t(352) = 13.64$ ,  $p < .001$ ,  $d = 1.68$ . In the second planned contrast, participants in education condition ( $M = 9.64$ ,  $SD = 0.75$ ) reported significantly more aging knowledge compared to the combined condition ( $M = 9.41$ ,  $SD = 0.72$ ),  $t(178) = 2.04$ ,  $p < .05$ ,  $d = 0.30$ . Lastly, for the third planned contrast, participants in the education plus extended contact condition did not differ significantly in aging knowledge compared to participants in the extended contact condition ( $M = 9.20$ ,  $SD = 0.91$ ),  $t(178) = -1.78$ ,  $p = .076$ .

### **MANCOVA Time 1 predicting Time 3**

A MANCOVA revealed a significant effect of condition on attitudes and stereotypes toward older adults,  $F(27, 1014) = 3.59$ ,  $p < .01$ , eta squared = .09. Separate ANCOVAs revealed a significant effect for the Fraboni ageism measure,  $F(3, 344) = 3.70$ ,  $p < .05$ , eta squared = .03 and aging knowledge,  $F(3, 344) = 28.17$ ,  $p < .001$ , eta squared = .20. There were no significant effects for positive age stereotypes ( $F[3, 344] = 2.00$ ,  $p = .11$ , eta squared = .02), negative age stereotypes ( $F[3, 344] = 1.31$ ,  $p = .27$ , eta squared = .01), the feeling thermometer ( $F[3, 344] = 2.16$ ,  $p = .09$ , eta squared = .02), behavioral intentions ( $F[3, 344] = 1.60$ ,  $p = .19$ , eta squared = .01), anxiety about interacting with older adults ( $F < 1$ ), or the anti-age discrimination petition measures ( $F < 1$ ).

For the Fraboni ageism measure, the first planned contrast (comparing all three experimental conditions to the control condition) revealed that participants in all three experimental conditions ( $M = 2.39$ ,  $SD = 0.65$ ) reported significantly less negative attitudes toward older adults compared to those in the control condition ( $M = 2.55$ ,  $SD = 0.63$ ),  $t(352) = -$

1.99,  $p < .05$ ,  $d = -0.25$ . The second and third planned contrasts revealed no significant difference between the combined condition ( $M = 2.42$ ,  $SD = 0.63$ ) and the education condition ( $M = 2.39$ ,  $SD = 0.64$ ),  $t(178) = 0.32$ ,  $p = 0.75$  and no significant difference between the combined condition and the extended contact condition ( $M = 2.36$ ,  $SD = 0.68$ ),  $t(178) = -0.23$ ,  $p = 0.82$ .

For aging knowledge, planned contrasts revealed that participants in all three experimental conditions ( $M = 9.15$ ,  $SD = 1.10$ ) reported significantly more aging knowledge compared to the control condition ( $M = 7.83$ ,  $SD = 1.47$ ),  $t(352) = 8.98$ ,  $p < .001$ ,  $d = 1.10$ . The second planned contrast revealed no significant difference between the combined condition ( $M = 9.24$ ,  $SD = 1.03$ ) and education condition ( $M = 9.34$ ,  $SD = 0.97$ ),  $t(178) = 0.69$ ,  $p = 0.49$ . The third planned contrast, however, revealed that participants in the combined condition reported significantly more aging knowledge compared to those in the extended contact condition ( $M = 8.88$ ,  $SD = 1.26$ ),  $t(178) = -2.04$ ,  $p < .05$ ,  $d = 0.30$ .

## Discussion

Results from Study 2 demonstrate that participants in all three experimental conditions (education, extended contact, and education plus extended contact) reported significantly less negative attitudes toward and stereotyping of older adults as well as greater aging knowledge compared to participants in the control condition.

When examining differences from the pre-test to the immediate post-test (Time 1 to Time 2), participants in the three experimental conditions (vs. those in the control condition) reported an immediate reduction in endorsement of negative age stereotypes, an increase in endorsement of positive age stereotypes and an increase in aging knowledge. Unexpectedly, participants in the education condition reported significantly greater aging knowledge and greater aging anxiety

compared to participants in the combined condition. From Time 1 to Time 2, participants in the experimental conditions did not report significantly less negative attitudes (as assessed by the Fraboni ageism measure), more positive behavior intentions, more positive attitudes on the feeling thermometer, greater support of the anti-aging discrimination petition, or less anxiety about interacting with older adults compared to participants in the control condition.

When examining potential differences between the pre-test and delayed post-test (Time 1 to Time 3), participants in all three experimental conditions reported significantly less negative attitudes toward older adults (via the Fraboni ageism measure) and greater aging knowledge compared to those in the control condition. Participants in the experimental conditions did not report significantly more positive behavior intentions, more positive attitudes on the feeling thermometer, greater endorsement of positive age stereotypes, less endorsement of negative age stereotypes, greater support of the anti-aging discrimination petition, less aging anxiety, or less anxiety about interacting with older adults compared to participants in the control condition.

Interestingly, when examining the delayed-post test (Time 3), there were no longer significant differences aging anxiety by condition. Based on this finding, it appears as though the increase in aging anxiety in the education condition reflected only a temporary increase in Time 2. The temporary increase in aging anxiety among those in the education condition may have been related to participants reflecting on the aging process, what it means to age, and possibly contemplating their own age and inevitable aging. It is possible that reading facts about aging (even though they dispelled many myths and inaccuracies of the aging process) induced anxiety in participants in the education condition because thinking about aging reminded participants of their own mortality which prompted anxiety. Terror management theory proposes that older adults activate an existential threat because they remind individuals of the fallibility of life (e.g.,

Martens, Goldenberg, Greenberg, 2005; O’Conner & McFadden, 2012). Future research should explore this issue to determine whether simply providing accurate information on aging can have the unintended consequence of increasing aging anxiety (even if briefly as the current findings suggest).

Future research should also explore why the experimental conditions demonstrated an immediate reduction in the endorsement of negative age stereotypes and an increase in the endorsement of positive age stereotypes from pre-test to immediate post-test (Time 1 to Time 2), but this difference was no longer apparent from pre-test to delayed post-test (Time 1 to Time 3). Although the immediate shift in agreement with stereotypes of older adults is encouraging, it is important to gain a better understanding of how to sustain such changes over a longer period of time. It may be especially difficult to alter stereotypes of older adults given how pervasive they are in society (Cuddy et al., 2005; Levy et al., 2004; Nelson, 2009). It may be that a lengthier and more in-depth intervention than the current brief online intervention is needed to combat endorsement of negative stereotypes that are strongly interwoven in the mass media. Likewise, more research is needed to understand why there was a significant difference on the Fraboni measure from pre-test to delayed post-test (Time 1 to Time 3) but not from pre-test to immediate post-test (Time 1 to Time 2).

Findings from Study 2, like findings from Study 1, showed that the experimental conditions influenced the two of the most well-studied measures in the ageism literature - decreased negative attitudes toward older adults on the Fraboni ageism measure as well as an increase in Palmore’s aging knowledge measure. Nonetheless, there were no differences on the included behavioral measures. One potential explanation for the non-significant findings may be the lack of variability on the behavioral measures. For example, on the 5-item behavioral

intentions measure, the mean was 4.54 ( $SD = .67$ ) on a 6-point scale. Additionally, despite, the anti-age discrimination petition's optional nature, 301 (84%) of participants signed the petition, suggesting a possible ceiling effect. It may more difficult for a brief online intervention to affect behavioral-type measures. Future research should explore whether a longer or more in-depth online intervention impacts behavioral measures.

The hypothesis that the combined education plus extended contact condition would be the most effective of the experimental conditions was largely unsupported. In only one planned contrast, did the combined condition perform better than either one or both of the other experimental conditions: participants in the combined condition reported more aging knowledge than those in the extended contact condition from pre-test to delayed post-test. Generally speaking, the three experimental conditions did not differ from one another pointing to the efficacy of the theoretical background underlying each condition.

## General Discussion

The worldwide population of adults 60 years and older is growing rapidly and is projected to reach 22% of the worldwide population by 2050 (World Health Organization, 2015). Ageism (negative stereotyping, prejudice, and discrimination toward older adults) has real-world consequences ranging from workplace discrimination, to elder abuse, as well as poor physical and mental health outcomes (e.g., Levy & Myers, 2004; Palmore, 2004). Despite the need for a better understanding of attitudes towards older adults, ageism remains a relatively understudied area of social psychology (Nelson, 2009).

In this dissertation, I compared two theoretically-driven ageism reduction strategies: education about aging and intergenerational extended contact. I also examined a third condition, which combined the message of both theoretical approaches. In so doing, Studies 1 and 2 also represent the first empirical tests of the PEACE model (Levy, in press), which proposes that education about aging and positive contact experiences with older adults are two key factors that can be used to reduce ageism. The design of this study built upon past prejudice-reduction strategies from the ageism literature (education) and the broader intergroup contact literature (extended contact). The education condition was based on a small body of research that suggests that providing accurate information about the aging process can reduce ageism (Adelman et al., 2007; Boswell, 2012; Cottle & Glover, 2007; Liu et al., 2013; Ragan & Bowen, 2001; Wurtele & Maruyama, 2013). The extended contact condition was a novel extension of the existing intergroup contact literature and prejudice reduction literature, which has not examined extended contact in the context of ageism (Davies et al., 2011; Pettigrew & Tropp, 2006; Wright et al., 1997). Applying extended contact to ageism is an especially appropriate strategy as there are increasing concerns about negative intergenerational contact (North & Fiske, 2012). In the light

of these two potentially effective prejudice-reduction strategies (education and extended contact), a third condition in which participants were exposed to education on aging *and* extended contact of an intergenerational relationship was also tested.

Results from Studies 1 and 2 suggest that exposure to ageism-reduction strategies influenced the two of the most well studied measures in the ageism literature - the Fraboni ageism measure and the Palmore quiz on aging knowledge. Study 1 showed these theoretically-derived experimental conditions (compared to a control condition) reduced negative attitudes toward older adults and increased aging knowledge on an immediate post-test. Study 2 replicated and extended these findings by showing that negative attitudes decreased and aging knowledge increased from pre-test (Time 1) to delayed post-test (Time 3). Based on the design in Study 2, I was able to explore both between- and within-subject effects for the ageism-reduction strategies. Moreover, in Study 2, results suggest some temporary effects regarding increased endorsement of positive age stereotypes and decreased endorsement of negative stereotypes. Although it is encouraging to find that endorsement of stereotypes regarding older adults shifted immediately following the experimental conditions, future research should examine why these shifts in stereotypes were no longer apparent when stereotypes were reassessed in the delayed-post test. Given the pervasiveness of negative stereotypes about older adults in books (e.g., Hollis-Sawyer & Cuevas, 2013), film (e.g., Bazzini et al., 1997; Robinson et al., 2007) and in everyday items such as birthday cards (e.g., Ellis & Morrison, 2005), an intervention may need to be more long lasting, repeated over time, or provide a more-targeted approach to reducing stereotypes than provided in the current studies.

Taken together, these findings contribute to the literature in several ways. As reviewed from the outset, using aging education as a way to improve attitudes toward older adults has

mixed findings. Some studies find that education improves attitudes (Boswell, 2012; Ragan & Bowen, 2001), while other studies found that providing factual information did not change attitudes toward older adults (Cottle & Glover, 2007; Stuart-Hamilton & Mahoney, 2003). To shed light on this debate, the current studies included a condition in which the sole focus was to provide accurate information about aging. Findings from Studies 1 and 2 demonstrate that providing accurate information about aging did result in a decrease in negative attitudes toward older adults as well as an increase in aging knowledge.

The present investigations also represent the first time that extended contact was examined as a potential ageism-reduction strategy. In past research, only direct contact has been explored as a prejudice reduction strategy for ageism (e.g., Abrams et al., 2006; Bousfield & Hutchison, 2010; Caspi, 1984; Evans, 2001; Hale, 1998; Meshel & McGlynn, 2004; Schwartz & Simmons, 2001), thus the expansion to extended contact is an original contribution of this research. In light of the pervasiveness of ageism and the growing older population (World Health Organization, 2015), examining the efficacy of an additional ageism-reduction strategy is an important step forward.

Additionally, the online nature of these ageism-reduction strategies suggest that large populations of individuals could be reached (even those who are socially and culturally isolated from older adults) and introduced to these brief and effective strategies. As intergenerational contact may not be common (Angelis, 1992; Hagestad & Uhlenberg, 2005; Lofquist, 2012) and concerns about negative intergenerational contact are mounting (e.g., North & Fiske, 2012), the need for intervention strategies (such as extended contact) that can reach individuals who have little or no contact or negative contact with older adults is increasingly important.

In a similar vein, as detailed earlier, there is a scarcity of students in the health profession (e.g., social workers, nurses, doctors) interested in working with older adults such that these ageism reduction strategies might be fitting for health professionals in training. Attitudes toward older adults are generally negative among students in medical domains (Ferrario et al., 2008) and students rank working with older adults as one of the least desirable populations (Stevens, 2011). Research suggests that a lack of knowledge about aging and ageist attitudes drive students' lack of interest in working with older adults. A recent study found that students who have taken more aging-related courses and have experienced more formal contact with older adults report greater interest in working with older adults (Bergman, Erickson, & Simons, 2014). Similarly, Gonçalves et al. (2011) found that interest in working with older adults was related to positive attitudes, greater knowledge and past contact with older adults. As such, this brief intervention may provide a way to introduce students in future medical careers to aging information and intergenerational contact.

The ageism-reduction strategies examined in the current studies address the benefits that both education and extended contact can provide in decreasing ageism. Indeed, the inclusion of a combined condition utilizing education and extended intergenerational contact is a novel contribution to the ageism literature. Overall, it is encouraging that a simple, brief, and online intervention in which participants are exposed to ageism-reduction strategies can reduce negative attitudes toward older adults and increase aging knowledge among both general community adults and undergraduate students. It is also promising that all three experimental conditions were effective in reducing negative attitudes and increasing aging knowledge. The ability to draw from three effective ageism-reduction strategies provides even more flexibility for

implementation of these interventions designed to improve both accurate knowledge and attitudes toward older adults.

Importantly, this dissertation included both an adult community sample (Study 1) as well as an undergraduate sample (Study 2). The vast majority of the ageism literature has focused on undergraduate students, and little research has examined ageism reduction among a general community sample. To address the dearth of research examining ageism among more age diverse samples, participants in Study 1 ranged from 18 – 59 year olds. Past research suggests that negative attitudes toward older adults are prevalent across the lifespan (Kite et al., 2005; O’Hanlon et al., 1993; Nosek et al., 2005), thus adults across the age continuum can benefit from ageism-reduction strategies. In order to address ageism on a wider scale, it is especially pressing to investigate ageist attitudes among community samples in addition to the traditionally oversampled undergraduate student population. Ageism has been called both the most socially acceptable (Nelson, 2009) and common type of prejudice (Palmore, 2001); thus, findings from the present investigation contribute to progress in identifying effective and time-efficient ways to address ageism while reaching a wider spectrum of the population.

### **Limitations and Future Directions**

There are a few limitations that should be considered when interpreting the results of the current investigations. One possible limitation and common concern for any online research is the possibility of selection bias. Concerns of self-selection bias with online samples originated when the internet was first used as a research tool; however, concerns of biased sampling have largely decreased as accessibility to the internet as widened in Western societies (Gosling & Mason, 2015). In fact, some studies suggest that internet samples are more diverse and representative of the general population in the United States than conventional samples (Gosling,

Vazire, Srivastava, & Oliver, 2004). Given the pervasiveness of ageist attitudes, beliefs, and behaviors, designing and implementing a study in which a large community sample is examined provides a useful test of the theoretical ageism-reduction strategies. Few studies have explored ageism-reduction strategies; thus, it is necessary to examine the efficacy of this intervention among diverse individuals.

The inclusion of multiple well-established and validated measures of prejudice, stereotyping, and discrimination was a strength of the current studies. However, it should be noted that the current studies used predominately explicit measures of prejudice, stereotypes and behavioral intentions toward older adults. Future research would benefit from the consideration of more subtle or implicit measures of ageism. For example, the age-Implicit Associations Test (Nosek et al., 2002) or other subtle measures of ageism could be utilized to examine whether such beliefs are reduced following exposure to ageism-reduction strategies. Based on the results of this dissertation, participants did not indicate much variability in their responses to the included behavioral measures (e.g., behavioral intentions and the anti-age discrimination petition). As such, it is necessary to follow-up the current studies with a more in-depth investigation of behavioral responses to older adults following exposure to various ageism-reduction strategies. Future research could utilize some measures of actual behavior toward older adults. For example, as part of an ostensibly separate study participants could interact with an older adult immediately following exposure to the experimental procedure and measures of positive and negative nonverbal behavior could be coded (e.g., how close does the participant sit to the older adult, how much eye contact is made, etc). Another measure of behavior could involve asking participants if they would like to provide their information to be on a list of

volunteer for an organization that works with older adults or if participants would be interested in donating their earnings for participating to a charity that supports older adults.

It is also possible that the ageism-reduction strategies did not address behavioral intentions or that the strategies used were too brief to result in changes in behavioral intentions. As mentioned earlier, there was little variability on the behavioral intentions measure as well as the anti-age discrimination petition, which may partially explain the lack of significant differences between the experimental and control conditions.

I had also anticipated that the combined education plus extended contact condition would emerge as a significantly more effective ageism reduction strategy than the other two experimental conditions because the combined condition drew on the strengths of two theoretical traditions. Why was it not the most effective? It may be because in order to provide similar experiences for participants across all three experimental conditions, the combined condition did not include the full version of the education or the extended contact conditions. That is, I controlled for the length of each condition and ensured participants read the same approximately number of words in any of the four conditions. Thus, for the combined condition the lack of benefits above and beyond the other experimental conditions may be due to the abridged version of both education and extended contact conditions. Future research should examine whether a combined condition in which a full-length education and the extended contact condition are merged has a more powerful impact on participant's attitudes, beliefs, and behaviors toward older adults.

It is encouraging that all three experimental conditions reduced negative attitudes toward older adults and increased aging knowledge. A next step is to explore the potential moderating and/or mediating mechanisms behind these findings. For example, did participants report

reduced ageism in the extended contact condition because of reduced intergroup anxiety (Pettigrew & Tropp, 2008; Turner, Hewstone, & Voci, 2007)? It is also possible that the combined condition was not the most effective because the contact examined in the present investigations was extended contact and not direct contact as proposed by the PEACE model (Levy, in press). The PEACE model outlines the benefits of education about aging and direct positive intergenerational contact. Future research should examine whether education plus direct intergenerational contact is more effective than education plus extended contact.

While the samples in this dissertation were not homogenous with respect to race/ethnicity, I did not have the power to explore possible differences among these groups. Future studies should have more diversity in order to explore potential individual differences in ageism and to examine whether ageism-reduction strategies are more or less effective for particular populations or groups. Future research examining ageism-reduction strategies should test the generalizability of these findings with additional samples in the United States, as well as in other countries and cultures.

This dissertation focused on attitudes toward older adults from the perspective of young and middle aged adults. However, negative attitudes toward older adults are unfortunately held by older adults themselves with negative consequences to their health and well-being. Thus, future research should explore whether older adults receive any benefits from ageism-reduction strategies. Does exposure to accurate information about aging or stories of intergenerational contact result in reduced ageism among older adults? A few studies suggest older adults do benefit from intergenerational contact through reduced vulnerability to stereotypes threat (Abrams et al., 2006) and improved psychosocial outcomes such as greater perceived quality of life and reduced loneliness (Gaggioli et al., 2014). Future research can examine whether these

ageism-reduction strategies can help reduce the well-documented negative physical and mental health impacts of ageist attitudes (e.g., Levy & Myers, 2004; Levy et al., 2002) as well as the cognitive deficits attributed to stereotype threat (e.g., Hess et al., 2009) in both younger and older adults.

## **Conclusion**

Negative attitudes toward older adults are pervasive and reported across the lifespan. The current findings suggest that negative attitudes are reduced following exposure to one of three ageism-reduction strategies while aging knowledge is increased among both an age diverse adult community sample (Study 1) and an undergraduate sample (Study 2). Better understanding ways to reduce ageism among community adults can help future researchers implement widespread and far-reaching ageism-reduction interventions. Additionally, a better understanding of how to reduce ageism among undergraduate students can help researchers examine how to recruit and train the growing workforce needed to care for the aging population.

Ageist attitudes and beliefs are deeply ingrained in everyday culture, which can result in a lack of awareness of how problematic and common ageism is. The ability to reduce ageism using an online strategy could prove fruitful given the prevalence of ageism. An online ageism-reduction intervention, such as the one designed and tested in the current studies, could be implemented on a wide scale with the ultimate goal of improving attitudes toward older adults.

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## Footnotes

<sup>1</sup>For dependent measures that had a Time 1 pre-test score (Fraboni ageism measure, positive age stereotypes, negative age stereotypes, and the feeling thermometer), planned contrasts were conducted using both difference scores and using just the dependent measure during Times 2 or 3. The pattern of results was the same.

Table 1.

*Study 1: Means and Standard Deviations for all Measure by Conditions*


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	Education	Extended Contact	Combined	Control
Fraboni Ageism Measure	2.27 (0.81)	2.37 (0.77)	2.32 (0.74)	2.53 (0.72)
Positive Age Stereotypes	5.14 (0.84)	5.05 (0.92)	5.17 (0.75)	4.99 (0.87)
Negative Age Stereotypes	3.17 (1.01)	3.19 (1.06)	3.19 (0.98)	3.25 (1.01)
Feeling Thermometer	8.19 (2.12)	8.29 (2.23)	8.33 (2.14)	8.48 (1.80)
Aging Anxiety	3.59 (1.24)	3.64 (1.14)	3.74 (1.15)	3.89 (1.23)
Aging Knowledge	9.72 (0.66)	9.32 (0.99)	9.56 (0.94)	7.76 (1.66)
Anxiety Interacting	2.29 (1.04)	2.36 (1.11)	2.43 (1.14)	2.48 (1.07)
Behavioral Intentions	4.75 (0.88)	4.53 (0.96)	4.55 (0.89)	4.56 (0.84)

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Table 2.

*Study 2: Means and Standard Deviations for all Measure by Conditions*

	Education	Extended Contact	Combined	Control
<b>Fraboni Ageism Measure</b>				
Time 1	2.46 (0.64)	2.50 (0.58)	2.49 (0.57)	2.46 (0.58)
Time 2	2.28 (0.64)	2.27 (0.61)	2.25 (0.62)	2.38 (0.65)
Time 3	2.42 (0.63)	2.36 (0.68)	2.39 (0.64)	2.55 (0.63)
<b>Positive Age Stereotypes</b>				
Time 1	4.85 (0.66)	4.78 (0.71)	4.78 (0.62)	4.74 (0.70)
Time 2	5.06 (0.75)	4.98 (0.73)	5.04 (0.73)	4.70 (0.68)
Time 3	4.90 (0.80)	4.93 (0.89)	4.98 (0.77)	4.74 (0.72)
<b>Negative Age Stereotypes</b>				
Time 1	3.54 (0.92)	3.49 (1.07)	3.36 (0.85)	3.49 (0.99)
Time 2	3.34 (0.90)	3.32 (0.94)	3.22 (0.96)	3.61 (0.99)
Time 3	3.32 (0.99)	3.36 (1.03)	3.23 (1.07)	3.51 (0.99)
<b>Feeling Thermometer</b>				
Time 1	8.09 (1.75)	8.27 (1.51)	8.04 (1.75)	8.04 (1.56)
Time 2	8.11 (1.79)	8.15 (1.55)	8.27 (1.78)	7.90 (1.60)
Time 3	8.14 (1.69)	8.16 (1.63)	8.33 (1.64)	7.85 (1.65)
<b>Aging Anxiety</b>				
Time 2	4.10 (1.02)	3.79 (0.94)	3.60 (0.99)	3.77 (1.02)
Time 3	3.97 (1.12)	3.74 (1.03)	3.64 (0.98)	3.82 (0.95)
<b>Aging Knowledge</b>				
Time 2	9.64 (0.75)	9.20 (0.91)	9.41 (0.72)	7.80 (1.33)
Time 3	9.34 (0.97)	8.88 (1.26)	9.23 (1.04)	7.85 (1.47)
<b>Anxiety Interacting</b>				
Time 2	2.58 (0.88)	2.52 (0.91)	2.53 (0.95)	2.61 (0.89)
Time 3	2.56 (0.97)	2.50 (0.99)	2.53 (0.95)	2.61 (0.99)
<b>Behavioral Intentions</b>				
Time 2	4.53 (0.75)	4.60 (0.66)	4.60 (0.62)	4.45 (0.65)
Time 3	4.58 (0.72)	4.69 (0.74)	4.53 (0.69)	4.51 (0.62)
<b>Petition</b>				
Time 2	0.85 (0.36)	0.88 (0.32)	0.83 (0.38)	0.81 (0.40)
Time 3	0.87 (0.34)	0.91 (0.29)	0.85 (0.36)	0.82 (0.39)