

**The Role of Social Relationships in the Development and Consequences
of Views of Aging Across the Lifespan**

by

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Dedication 题献

献给我的妈妈沈淑君，爸爸胡凌冰，姥爷沈树峰，以及已故的爷爷胡恒银、奶奶金秀英和姥姥杨静秀。

To my Mother, Shen Shujun, Father Hu Lingbing, Laoye (Maternal Grandfather), Shen Shufeng, and late Yeye (Paternal Grandfather) Hu Hengyin, Nainai (Paternal Grandmother) Jin Xiuying, and Laolao (Maternal Grandmother) Yang Jingxiu.

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Abstract

This dissertation investigates the role of social relationships throughout adulthood in shaping personal views of aging (VoA) and manifesting the effects of negative VoA in later life, particularly focusing on the concept of self-perceptions of aging (SPA). Study 1 assesses the impact of caregiving relationships across adulthood on later-life self-perceptions of aging (SPA). Through sequence and cluster analysis, caregivers were categorized into distinct groups based on their caregiving histories. The study found that different caregiving trajectories, particularly Lifelong Diverse Caregivers cluster membership, are associated with later-life negative SPA, suggesting that caregiving experiences shape aging perceptions beyond internalized ageism. Study 2 explores how non-kin relationships within a Continuing Care Retirement Community (CCRC) shape and reinforce VoA. Thematic analysis of qualitative data revealed that older adults' VoA is multidimensional. Social interactions among residents and staff can protect residents from forming negative personal VoA and reinforce negative age-related stereotypes. The findings highlight the significant role of non-kin relationships in shaping VoA. Study 3 examines the relationship between negative SPA and memory decline, with a focus on the mediating effects of social disconnectedness and loneliness. Using longitudinal data, the study demonstrates that negative SPA contributes to memory decline, with loneliness as a partial mediator. The findings indicate that negative aging views can exacerbate feelings of social isolation, further impacting cognitive health. Collectively, the findings of the three studies indicate that social relationships play a critical role in the development of VoA, with both

positive and negative implications for aging and well-being. Theoretically, this research integrates the stereotype embodiment theory with the convoy model of social relations, offering new insights into the dynamic interplay between social interactions and the development of VoA across the lifespan. This research has significant implications for social work, suggesting that interventions to improve older adults' health and well-being could explore ways to improve the social dimensions of VoA. By enhancing understanding of how VoA is formed and evolves, interventions and policies can be developed to foster positive VoA across the lifespan, mitigate the negative consequences of negative VoA on later-life health and well-being, and ultimately foster an inclusive society for all ages.

Chapter 1 Introduction

Progress in the biomedical sciences and different areas of technology has extended the average life expectancy in historically unparalleled ways, giving people longer and healthier lives (Crimmins, 2015; Crimmins et al., 2016). Furthermore, since the beginning of the last century, major legislations (e.g., the Social Security Act of 1935, the Older American Act of 1965, and the Age Discrimination Act of 1975) have improved older adults' financial security, health care, and services and reduced age-related discrimination in the United States (Neumark, 2009).

Despite these observable improvements, negative views of aging remain rampant throughout the U.S. and worldwide. Specifically, the general public tends to hold beliefs about aging that heavily focus on decline and loss and subscribe to fatalistic beliefs that aging is a fixed or malleable process (Lindland et al., 2015). Examinations of social media sites provide a sobering picture of negative age stereotypes and attitudes toward older adults (Ayalon et al., 2020; Levy et al., 2014). A linguistic analysis of 400 million words covering the 200 years from 1810 to 2010 showed that age stereotypes became increasingly hostile (Ng et al., 2015). The fact that age stereotypes are getting more negative in the U.S., despite valid reasons that they should be getting more positive, is a phenomenon Levy (2017) called the “age-stereotype paradox.” This paradox is not just in the U.S. A meta-analysis spanning 23 countries and over 20,000 participants found that individuals in countries with higher increases in population aging (e.g., East Asia) tended to hold more negative views of aging (North & Fiske, 2015). One interpretation is that fast population aging without additional economic and societal resources

may reinforce the public's general views of older adults as non-productive and burdens to society. These general views, in turn, may unwittingly be communicated to older adults and people of all ages, who then internalize and integrate them into their personal views of aging (Levy, 2017; North & Fiske, 2015; Wolff et al., 2018).

Most aging research focuses on the physical and cognitive aspects, but relatively limited research examines the sociopsychological experiences of growing older. *Subjective views of aging (VoA)* are an integral part of adults' aging process and have been shown to have short-term and long-term effects on health and well-being later in life (see reviews: Ayalon & Avidor, 2021; Hu et al., 2021; Sabatini et al., 2020; Westerhof et al., 2014). VoA is defined as individuals' perceptions, attitudes, and expectations of their own age and aging process, as well as old age and older adults in general (Shrira et al., 2022). In this dissertation, I aim to conceptualize VoA from life span and life course perspectives, explore and examine social relationships' role in shaping VoA, and mediate negative VoA's effects on health and well-being later in life.

Based on the lifespan developmental perspective, VoA is part of adult development. It can help to improve our understanding of the aging process and the factors that influence it. VoA can have a significant impact on an individual's experiences of aging. People with negative views of aging may be more likely to experience adverse outcomes such as poor mental health (Luo & Li, 2021), social isolation (Hu & Li, 2022), poor physical health (Wurm et al., 2007), and shorter life span (Levy et al., 2002). In addition to its effect on the individual level, VoA is situated within the cultural and social context. It can be a potential area for intervention and policy development, such as policies and programs that challenge negative VoA, support healthy aging, and improve the quality of life for older adults.

Definition of Views of Aging

This dissertation conceptualizes the view of aging (VoA) through the lens of ageism. Ageism is beliefs (stereotypes), attitudes (prejudice), and behaviors (discriminations) toward individuals based on their age (Ayalon, 2022; Butler, 1969). All three dimensions contribute to shaping generalized and personal VoA.

Generalized and Personal Views of Aging

Generalized VoA refers to socially shared descriptive and prescriptive stereotypes and prejudice about the aging process and older adults as a social group in general (Ayalon & Tesch-Römer, 2018). Descriptive stereotypes and prejudice include what older adults allegedly “are” and what old age allegedly “is like” (e.g., older adults are stubborn; older adults are warm; old age is a period of decline). Prescriptive stereotypes and prejudice focus on what older adults should or should not do (e.g., older adults should receive more benefits; older adults should not hang out in a bar) (North & Fiske, 2013). Although the stereotypes and prejudice of aging mentioned above can be expressed on the conscious level through age-related discrimination, they primarily operate on the subconscious level (Diehl et al., 2014; Wurm et al., 2017). They are affected by greater social and cultural contexts, such as cultural norms, expectations, and social policies. When these generalized VoA are internalized, they become personal VoA.

Personal VoA refers to individuals’ beliefs and attitudes regarding their own aging process and the state of being old, and it becomes more salient as people grow older (Levy, 2009). Concepts, such as subjective or felt age (Montepare, 2009) and self-perceptions of aging (e.g., as I get older, I feel uselessness; Lawton, 1975), all fall under the umbrella of personal VoA. These personal VoA operate on the conscious level, where individuals are mostly aware of

them and can, therefore, reflect on and potentially adjust them (Diehl et al., 2014). Generalized and personal VoA affect and shape each other across the lifespan.

Self-Perceptions of Aging

This dissertation focuses on personal views of aging, specifically *self-perceptions of aging (SPA)*. SPA has two features: first, SPA is assumed to be based on actual perceptions of changed behaviors, changed performance, or changed experiences; second, in noticing such changes, individuals attribute them to their increased chronological age and not to any other reasons, such as changes in health, lifestyles, or social circumstances. For example, when measuring SPA, older adults were asked to rate how much they agree with statements such as “The older I get, the more useless I feel” and “As I get older, things are better than I thought they would be” (Liang & Bollen, 1983; Smith et al., 2023). These statements are meant to examine the two features of SPA. The critical point is that the person has formed a cognitive representation of the perceived change and attributes it to the effects of chronological age.

Conceptual Framework

The lifespan (P. B. Baltes, 1987) and life course (Elder, 1998) perspectives stress that people experience aging differently due to different life trajectories. Personal views of aging involve the experience of time through developmental life stages and socially structured life transitions.

The lifespan perspective suggests that individuals construct and reconstruct their views of aging as they grow older and become increasingly salient and self-relevant (B. Levy, 2009). Moreover, the perspective emphasizes both the multi-dimensional and multi-directional nature of VoA. Individuals have expectations regarding age-related gains and losses as they move through adulthood and are actively involved in shaping their development (P. B. Baltes, 1997). Also,

individuals may have different age-related experiences in various life domains, such as interpersonal relations or physical functioning (M. Diehl et al., 2021; Wurm et al., 2017).

The life course perspective focuses on the age-related structuring of individuals' lives (Barrett & Barbee, 2022; Elder, 1998). Both perspectives can inform the study of personal VoA, given their links to the experience of time across multiple levels. At the micro (individual) level, personal VoA is shaped by movement through life stages with unique developmental gains and losses and socially structured transitions. At the macro (societal) level, personal VoA is influenced by social meanings of age often embedded within social institutions; for example, Social Security eligibility is associated with age 65 as the start of old age. This dissertation explores how personal VoA operates through social relationships and interactions at the mezzo level.

The Role of Social Relationships

Age-symbolic experiences and encounters can trigger the salience of age. Social interactions with others differ in age or hold different age-related expectations, which can shape and trigger our age identities (Cohn-Schwartz et al., 2022). The lifespan perspective also stresses the need to consider accumulated effects across developmental times that shape SPA (Smith & Larkina, 2021). There is a gap in the literature about the cumulative impact of social relationships and social interactions across one's life on personal VoA later in life.

In addition to individual life trajectories, the life course perspective suggests that the linked lives and timing of social role transitions in the context of age-structured life also shape one's SPA (Elder et al., 2003). The linked lives principle highlights the interdependence of the life paths of social network members. However, most of the linked lives research is limited to parent-child relationships (Barrett, 2003; Schafer & Shippee, 2010), and little attention is given

to the larger and more holistic social networks and relationships. Taken together with the growing evidence on the strength of weaker social ties, such as friendships and other non-kin relationships (Fingerman, 2009; Granovetter, 1983; Huxhold et al., 2020), non-kin relationships, especially age peers, may play a critical role in shaping personal VoA.

The stereotype embodiment theory describes how SPA influences individuals across the lifespan and eventually affects their health (Levy, 2009). The theory suggests that the accumulation process makes SPA more impactful on aging adults' health and well-being through multiple pathways, including physiological (Levy & Bavishi, 2018), psychological (Wurm et al., 2013), and behavioral (Sun & Smith, 2017). However, little is known about social relationships as a pathway (Hu & Li, 2022).

Multi-Dimensionality of Social Relationships

The Convoy Model of Social Relations describes social relationships as multi-dimensional and dynamic (Antonucci et al., 2014; Kahn & Antonucci, 1980). As suggested by the life course perspective's linked lives principle, the convoy model conceptualizes an individual's social relationships, forming a convoy and traveling with the individual through time, space, and the life course. One dimension of social relationships is network structure, such as network size, contact frequency, and contact mode. The second dimension is relationship quality, which refers to the individual's evaluation of their relationships. The quality can be positive and negative. Negative relationship quality could be a mismatch between perceived and actual support, resulting in feelings of loneliness. The third dimension is relationship type. The network member's role to the individual can be spouse, (step-) child, extended family member, friend, coworker, service provider, etc. Different types of relationships entail various roles and responsibilities but not emotional closeness (quality). Older adults have been developing

adaptation strategies, such as turning friends or neighbors into family-like members. A growing body of research has shown the critical role non-kin relationships play in later life (K. R. Allen et al., 2011; Huxhold et al., 2020). The Convoy Model allows for the study of views of aging in the context of their social relationships without the constraints of imposing traditional social norms, such as the assumption that one occupies any particular role or is close to another because of that role.

Figure 1.1 shows the conceptual framework of this dissertation. The lifespan perspective emphasizes considering the effects of experiences across developmental stages on personal views of aging. Yet, research seldom addresses the cumulative impact of social relationships throughout life on SPA in later years.

The life course perspective and the convoy model of social relations complement this by underscoring how different types of social relationships and their timing influence SPA (Elder et al., 2003). Investigations here largely ignore wider networks beyond parent-child dynamics, despite the potential significance of broader social ties like friendships and non-kin relationships in shaping SPA. Stereotype embodiment theory furthers our understanding by explaining how SPA impacts health throughout life via several channels, yet the role of social relationships in this process remains underexplored.

Dissertation Aims

My dissertation aims to bridge these gaps by investigating whether and how two different types of relationships at different life stages affect personal views of aging and how negative personal views of aging affect memory through social disconnectedness and loneliness. The dissertation examines the role of social relationships across adulthood in shaping later-life

personal views of aging and the consequences of negative personal views of aging in later life. This dissertation has three specific aims, each addressed by one of the following studies.

Aim 1: Explore the role of caregiving relationships across adulthood in shaping later-life self-perceptions of aging

Caregiving has rarely been conceptualized as a form of meaningful social relationships. Thus, I explored whether caregiving experiences earlier in life shape the caregivers' beliefs and outlooks about their own aging later in life. This study used data drawn from the Health and Retirement Study (HRS), a biennial longitudinal study of a nationally representative sample of individuals aged 50 and older in the U.S. Specifically, I identified caregivers ($n=2,182$) who provided data on caregiving history in the HRS Retrospective Life History Mail Survey (Smith et al., 2022) and SPA in the HRS Psychosocial and Lifestyle Questionnaires (Smith et al., 2023). To address Aim 1, I first used sequence and cluster analyses to construct individual caregiving trajectories and identified clusters of similar trajectories. Then, I used linear regression to examine the association of caregiving trajectory membership with later-life SPA.

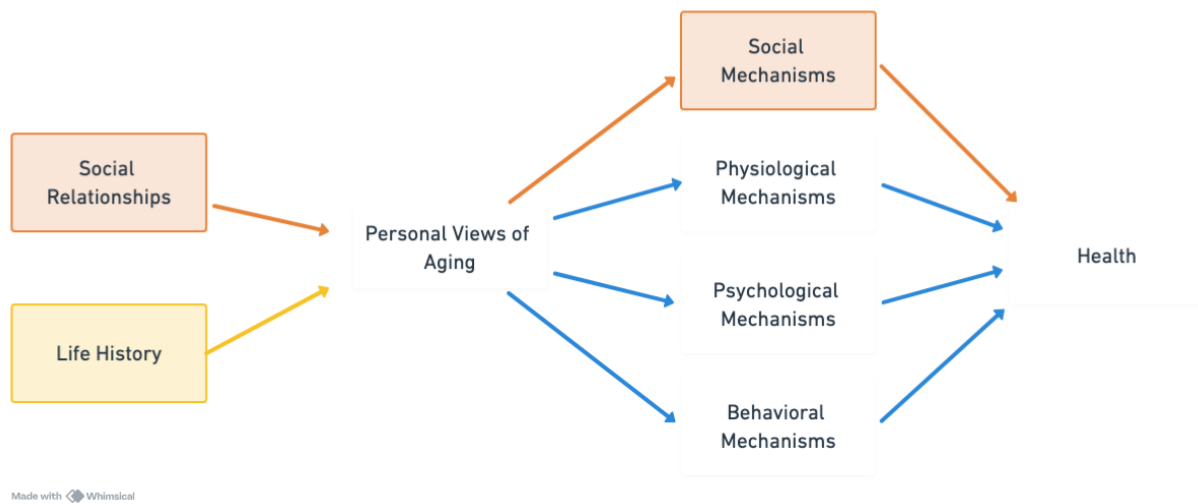
Aim 2: Explore the internalization and reinforcement of personal views of aging through non-kin relationships

Prior population-level longitudinal studies have few participants in advanced old age and limited information about older adults' daily interactions with their non-kin social relationships. This study used qualitative data from an ethnographic study in a Continuing Care Retirement Community (CCRC). The data include participant observations, semi-structured interviews, document collection, and field notes. Thematic analysis was used to develop themes about the specific personal views of aging older adults and how those were shaped and reinforced through interactions among non-kins (i.e., residents and staff) in the retirement community.

Aim 3: Understand negative self-perceptions of aging's effects on memory through social disconnectedness and loneliness in late adulthood

Negative SPA has longitudinal effects on social relationships' structure and quality differently, and various dimensions of social relationships are associated with cognitive health. However, little is known about the potential social relationship pathway linking negative SPA and the change in cognitive health in late adulthood. I used data from the HRS. I chose respondents aged 65 and older ($n=3,569$) who responded to the core and Psychosocial and Lifestyle Questionnaire in 2008/2010 (T1) as the baseline. Three waves of data were included in the analysis (2012/2014 [T2] and 2016/2018 [T3]), with each time point 4 years apart. I used path analyses to examine the associations between SPA and changes in memory four and eight years later. Then, I examine SPA's direct and indirect effects on memory through social disconnectedness and loneliness.

Figure 1.1. Conceptual Framework of The Dissertation



Chapter 2 Study 1: The Role of Caregiving Relationship Trajectories Across Adulthood on Shaping Later-Life Self-Perceptions of Aging

Self-perceptions of aging (SPA) are an integral part of adult development and have been shown to have short-term and long-term effects on physical and cognitive functioning, psychological and social well-being, and even mortality (see reviews: Chang et al., 2020; Hu et al., 2021; Westerhof et al., 2014). Under the views of aging (VoA) framework, SPA refers to individuals' attitudes and expectations about the outcomes and processes of themselves getting older in biological age (Shrira et al., 2022). SPA can be shaped by an individual's age-related experiences and interpersonal social relationships (Diehl et al., 2014; Kornadt et al., 2020). Past research has mainly focused on older adults' SPA as a predictor of health and well-being later in life. In contrast, this current study examines the early-life antecedents of SPA in later life.

Informal caregiving includes providing assistance, typically unpaid, to someone, usually older family members, who have limitations in physical, mental, or cognitive functioning (Schulz et al., 2020). Nearly one in five Americans provides informal care (National Alliance for Caregiving & AARP, 2020). Empirical studies and reviews have documented caregiving's physical and psychological effects on caregivers (see reviews: Bom et al., 2019; Cohn et al., 2020). In addition, the life span and life course perspectives suggest that earlier life experiences may shape later-life SPA (Barrett & Montepare, 2015). Prior research has found that having caregiving experiences during adulthood is associated with more negative later-life SPA, and having early-life caregiving experiences for older adults is associated with lower negative attitudes toward aging during emerging adulthood (Canell & Caskie, 2021; Hu et al., 2023). The

current study extends the literature by using a more comprehensive approach to describe complete trajectories and patterns of caregiving history across adulthood and examining its associations with later-life SPA.

Caregiving History and SPA

Caregiving is a critical and complex part of life experiences involving intensive, intimate, and meaningful social interactions between caregivers and care recipients. The life course perspective's timing and linked lives principles suggest that factors such as caregiver-care recipient relationship type (e.g., a family member and a friend), duration, caregiver's age, and intensity may all shape individuals' caregiving experiences and eventually their well-being and perceptions of their own aging process (Barrett & Montepare, 2015; Elder et al., 2003).

Previous research on caregiving limits caregiving experiences to a particular caregiver-care-recipient relationship type or a life period. For example, studies have found that caregivers of aging parents and spouse(s) and caregivers of children with health conditions or disabilities are all more likely to experience short-term and long-term negative consequences on their health and well-being (see review: Pinquart, 2019; Pinquart & Sörensen, 2011). However, focusing on one caregiving-care-recipient relationship type assumes that caregiving is a one-off event in life, which reduces the complexity of caregiving and overlooks the interplay of caregiving embedded within an individual's life course.

To describe caregiving histories across adulthood, not only the relationship type is important, but the duration, timing, reoccurrence, and intensity are also part of the caregivers' history. For example, few studies have explored the possible situation in which caregivers could be providing care for multiple individuals in the same time period. A more comprehensive approach that could capture the heterogeneity and complexity of caregiving history is needed,

where caregiving is not isolated from an individual's life course but where various caregiving experiences covering an extended time frame are considered (Aisenbrey & Fasang, 2010).

Another shortcoming of existing research is that little is known about links between later-life SPA and experiences earlier in the life course. The lifespan perspective and subjective life-course framework suggest that one's life experience and progression might shape later-life SPA. Several studies have begun to explore earlier life history, including childhood health and caregiving experiences, which have long-lasting effects on later-life SPA (Hu et al., 2023; Smith & Larkina, 2021). Moreover, stereotype embodiment theory suggests that people start to develop and internalize perceptions of aging from a young age through socialization. A recent study found that having meaningful social interactions with older adults through caregiving during emerging adulthood is associated with lower negative attitudes toward aging (Canell & Caskie, 2021). There is some evidence that earlier-life experiences are linked with later-life SPA. However, few have explored complete patterns of caregiving history across adulthood and their association with later-life SPA.

The Life Course Perspective

More recent literature on the life course perspective suggests that life course research should take a more holistic perspective that describes entire patterns of life course trajectories (Aisenbrey & Fasang, 2010; Studer & Ritschard, 2016). The life course perspective's linked lives and timing principles suggest that caregiving history trajectories, encompassing relationship type(s) and timing, may affect individuals' perceptions of their own aging process later in life.

Linked Lives

An important aspect of the life course perspective is recognizing that lives are linked. Individuals play different roles and hold different responsibilities depending on relationship

types. The relationship type of a caregiver to a care recipient can range from a child with special needs to an aging parent, spouse, relative, or non-relative (e.g., friends or neighbors). SPA is part of adult development that could be shaped by caregiving relationships.

Caring for a child with special needs could have negative effects not only on caregivers' long-term health and well-being (Cohn et al., 2020; Pinquart, 2019) but also on caregivers' views and outlooks of their own aging. As the parents and caregivers age, they may become increasingly concerned about continuing to provide care for their children (Mengel et al., 1996). Indeed, they might eventually need care, and they might not be able to receive support from their children (Ingersoll-Dayton et al., 2011). These concerns can lead to more negative outlooks and expectations about aging and reflect a more negative late-life SPA.

The possible selves theory (Markus & Nurius, 1986) suggests that people generate future-projected self-knowledge based on past and current experiences. Possible selves are cognitive representations of hopes, fears, and fantasies regarding oneself. People's caregiving experiences, especially caring for aging family members and/or friends, may generate hopes and/or fears about their own aging processes. For example, researchers found that adult children who cared for their parents with dementia shared their concerns about needing to plan ahead for themselves because they recognize that they may be at higher risk of developing dementia than those whose parents do not develop dementia (Choi et al., 2021).

Timing

The age at which a person is a caregiver may also shape later-life SPA. From a life course perspective, beginning to provide care early in life can be viewed as “off-time” because social institutions typically expect informal caregiving to occur later in life (Elder et al., 2003, p. 20). Moreover, having caregiving episodes that span many years and multiple caregiving

responsibilities across the lifespan may derail the caregiver from original life plans and a traditional life trajectory (Pearlin, 2010). Being off-time can lead to risks of experiencing social isolation, financial hardships, and health-related issues later in life, as shown in a sequence analysis of employment and information caregiving histories comparing full-time career trajectories with informal caregiving trajectories (Carmichael & Ercolani, 2016).

Nevertheless, the perceptions of aging that people start to form through caregiving could become more self-relevant as people advance into older age (Meisner & Levy, 2016). They can produce powerful expectations and lead to chronic activations of self-relevant schemas. For caregivers who provide care later in life, the physical and psychosocial burdens could be interpreted as reminders of aging and eventually manifest as negative SPA (Barrett & Gumber, 2020). However, caregivers who provided care earlier in life may not internalize the caregiving burdens as reminders of aging, which may protect them from developing and internalizing negative perceptions of aging.

The Present Study

Using retrospective caregiving history data, the current study first mapped caregiving history trajectories capturing the heterogeneity and complexity inherent in caregiving experiences; then examined whether caregiving history is internalized and salient reminders of one's own aging and manifests in later life as negative SPA. This study proposed the following research questions:

1. Which clusters of caregiving history trajectories can be distinguished based on sequencing individual caregiving history?
2. What are the associations between cluster memberships and later-life SPA?

Methods

Data

Data were drawn from the Health and Retirement Study (HRS), a biennial longitudinal study of a nationally representative sample of individuals aged 50 and older in the United States since 1992. The study was supported by the National Institutes on Aging (NIA) with additional funding from the Social Security Administration to follow age-eligible individuals and their spouses as they made the transition into retirement and to examine the dynamic interactions between health, family, and economic variables in the post-retirement period. The Institute for Social Research's (ISR) Survey Research Center (SRC) at the University of Michigan conducted the survey. Half of the sample completes the core interview over the phone every two years, and the other half completes it through an enhanced face-to-face interview (EFTF). Every six years, a new cohort is added. For example, in 2016, the late baby boom cohort (born 1960–1965) was added. The current study used sociodemographic and health variables from the 2016 and 2018 core interviews, which had a response rate of 73.9% and 74.4%, respectively (HRS Staff, 2023).

Starting in 2006, the Psychosocial and Lifestyle self-administered questionnaire was launched to obtain information about participants' evaluations of their life circumstances, subjective well-being, personality, and self-related beliefs (Smith et al., 2023). The questionnaire is obtained in each biennial wave from a rotating 50% of the core panel participants who complete the EFTF. The questionnaire was left with respondents at the end of the EFTF interview for them to complete and mail back to the study offices. To obtain the full panel, variables were used to assess SPA from the 2016 and 2018 waves, with a response rate of 61.8% and 64.7%, respectively (Smith et al., 2023).

In addition to the core interviews, in 2015, the Life History Mail Survey (LHMS, Smith et al., 2022) was launched to collect retrospective data about HRS participants' early and mid-life residential, education, and health histories. In 2017 and 2019, partnership, employment, and caregiving histories were added. The LHMS paper-and-pencil questionnaire was mailed in an envelope containing a cover letter describing the purpose of the survey, an information sheet, and a pre-paid incentive of \$25.00. Non-respondents were followed up after four, eight, and 12 weeks. In 2019, the 2017 non-respondents received a follow-up phone call three weeks after sending the questionnaire, and a telephone life history interview was offered. The response rate for the cross-wave data was 66% (Smith et al., 2022).

Sample

The current study included participants who provided data on at least one episode of caregiving history in one of the 2017 and 2019 life history mail surveys and self-perceptions of aging in the 2016 or 2018 psychosocial and lifestyle questionnaire. The final analytic sample includes 2,182 participants.

Since creating a caregiving sequence requires complete information, start year, end year, and relationship type, 365 participants were excluded from the final analytic sample because they failed to report at least one complete caregiving episode. In addition, 33 participants were excluded because the caregiving episode(s) were before the age of 18. Participants excluded from the analytic sample are more likely to be Black (odds ratio [OR]=1.51, 95% Confidence Interval [CI 1.07, 2.13]), Hispanic (OR=1.93, 95% CI [1.12, 2.95]), married (OR=1.36, 95% CI [1.04, 1.79]), and have lower memory score (OR=0.90, 95% [0.86, 0.94]).

Measures

Caregiving History

In LHMS, participants reported their relationships with at most five people for whom they provided unpaid care for six or more months. Information on caregiving includes the starting and ending date of each caregiving episode and the type of relationship (P=Parent/Parent-in-law, S=Spouse or partner, C=Biological, adopted, or step child, and other that was coded as R=Relative, N=Non-relative, O=Other).

Caregiving History Characteristics. Based on the caregiving sequences, descriptive variables on overall caregiving history, timing, relationship type, and intensity were created. *Years since last care* was calculated based on the number of years between the last year the participant reported providing care and the year (2016 or 2018) the participant's SPA was measured. *Number of caregiving years* was measured by the total number of years the participant reported providing care. *Number of caregiving episodes* was measured by the total number of caregiving episodes reported. *Number of different caregiving relationship types* was measured by the total number of episodes that the individual cared for different types of relationships. For example, if a respondent reported two caregiving episodes, but both were for a parent or in-law, the respondent's number of different caregiving relationship types is one.

The *start age of first care* was measured by the starting age of the first caregiving event, and the *end age of last care* was measured by the ending age of the last caregiving event. Relationship type was measured by *the longest duration relationship type*, which was the relationship type of the caregiving episode with the longest continuous duration. Caregiving intensity includes the *number of persons cared for in the same year*, which was measured by the maximum number of persons cared for in the same year, and *the duration of the maximum*

care episode, which was the number of years the participants were caring for the maximum number of people.

Self-Perceptions of Aging

The eight-item measure of SPA was derived from the Attitudes Toward Own Aging Scale and the Berlin Aging Study and collected in 2016 and 2018 from the self-administered LBQ (Lawton, 1975; Liang & Bollen, 1983; Smith et al., 2023). Supplemental Table 2.2 shows the exact wording of each item. The LBQ was administered to half of the core HRS sample during each wave; therefore, some participants answered the SPA questions in 2016 and others in 2018. The respondents were asked about their perspectives on their own aging on a six-point scale (1=strongly disagree, 6=strongly agree). Five items described negative evaluations (e.g., “things keep getting worse as I get older”), and three items were positive (e.g., “I am as happy now as I was when I was younger”). A SPA score was created for each participant after reverse-coding the positively worded items and averaging them across all eight items. Higher SPA scores indicate more negative SPA, and the score was set to missing if four or more items had missing values (< 1% of the sample, Cronbach’s alpha = 0.81).

Covariates

Based on the literature on SPA, two sets of covariates were included—sociodemographic characteristics and health-related factors. All covariates were obtained from the same wave that SPA was measured (2016 or 2018). Sociodemographic characteristics included current age, gender (0=man, 1=woman), race/ethnicity (0=Non-Hispanic White, 1=Non-Hispanic Black, 2=Hispanic, 3=Other), years of education (range 0–17), marital status (0=not currently married/partnered, 1=currently married/partnered), employment status (0=not currently working for pay, 1=currently working for pay), and total wealth (0=60th percentile or above, 1=under 60th

percentile). Current health-related factors included the number of chronic conditions (range 0–8), physical limitations (range 0–12), memory (range 0–20), and depressive symptoms (range 0–8). Chronic conditions were a count of doctor-diagnosed conditions, including high blood pressure, diabetes, cancer, lung disease, heart condition, congestive heart failure, stroke, and arthritis, as reported by participants. Physical limitations were assessed by counting the number of difficulties in walking, sitting down and getting up, climbing stairs, stooping, stretching arms, pulling/pushing, lifting weights, and picking up a dime. Memory was assessed by the immediate and delayed recall of a 10-word list. Depressive symptoms were measured by the eight-item Center for Epidemiological Studies-Depression scale (Turvey et al., 1999).

Analytic Strategies

To answer the first research question (RQ1) on identifying caregiving history trajectory clusters, I took a three-step approach: (1) creation of caregiving history trajectories for each individual; (2) sequence analysis to calculate the distance (i.e., dissimilarity) between caregiving trajectories; and (3) cluster analysis to group similar trajectories (Abbott, 1995; Aisenbrey & Fasang, 2010). To answer the second research question (RQ2), I used linear regression to examine associations between caregiving history cluster membership and later-life SPA.

Step 1: Create Caregiving History Trajectories

Based on the start and end year of each caregiving episode in relation to the participant's birth year, obtained from the HRS core data, a sequence of each respondent's caregiving history was created between ages 6 to 91, which was identified by the earliest and oldest age a respondent reported the start and end of a caregiving episode. For each age, the participants were assigned one of the caregiving states: --No care, P=Parent/Parent-in-law, S=Spouse or partner, C=Biological, adopted, or step-child, R=Relative, N=Non-relative, O=Other. 23% of participants

reported providing care to multiple individuals in the same year. In that case, the state reflected all the relationships the individual cared for in the same year. Figure 2.1 provides an example of how a participant's caregiving history grid was transformed into a caregiving sequence. In this case, the person cared for both a parent and a spouse from 1990 to 1993, and the state during those years was coded as PS. Supplemental Table 2.1 shows the number of participants and incidences of each caregiving state.

Step 2: Sequence Analysis

I first used optimal matching (OM) to calculate the difference between each individual's caregiving history trajectory and all other trajectories observed in the data and calculate the difference between every single sequence and another (pairwise distance) (Studer & Ritschard, 2016). The OM method calculated the difference based on the number of changes (i.e., substituting states, inserting states, or deleting states) necessary to make one sequence identical to another. The substitution cost was set to twice the indel costs (1.0 and 0.5, respectively) so that it would not cost less to make an insert or a deletion in place of a substitution (Abbott & Tsay, 2000). A matrix was generated to quantify the distance between each pair of individuals in the sample.

Step 3: Cluster Analysis

I used hierarchical cluster analysis, specifically Ward's method, to identify empirically homogenous groups with similar sequences (Wahrendorf et al., 2018). The matrix generated by OM was used. Initially, each caregiving history sequence was considered a separate cluster. Ward's method focuses on minimizing within-cluster variance as clusters are combined. At each step of the algorithm, all possible pairs of clusters are evaluated to determine which pair's merger would result in the smallest increase in total within-cluster variance across the dataset.

The pair of clusters that minimally increases the total within cluster variance is merged to form a new cluster. After merging, the distance matrix is updated, and the clustering process repeats.

To determine the most appropriate number of clusters, I compared a two to five-cluster solution based on measures of cluster quality, the average silhouette width, which measures how similar an object is to its own cluster compared to other clusters (> 0.5) (Studer, 2013) and R-square, which measures the proportion of variance explained by the clustering (Aisenbrey & Fasang, 2010).

Also, I examined the resulting clusters to verify that the cluster solutions had a reasonable structure and distinct and informative clusters. A test of significance (chi-square) was performed on sociodemographic, health, and caregiving variables among the clusters. A multinomial regression model was constructed to test current sociodemographic and health status associations with cluster membership. I used the TraMineR package in R for sequencing (Gabadinho et al., 2011), and WeightedCluster (Studer, 2013), and Flexible Procedures for Clustering (Hennig, 2020) for cluster calculations and partition quality measures.

To help interpret and name the clusters, I generated descriptive statistics of caregiving history characteristics for each identified cluster. I also conducted multinomial logistic regression, where I regressed the categorical variable cluster membership onto sociodemographic characteristics and later-life health.

RQ2 Linear Regression

To answer RQ2 on the association between caregiving history cluster membership and later-life SPA, I used linear regression to regress the continuous SPA variable onto the categorical variable, cluster membership. Given the nature of merging retrospective history data with more current data, the number of years between the last year of care and SPA was

controlled for in addition to sociodemographic and later-life health-related covariates measured in 2016 or 2018.

I conducted follow-up analyses to examine individual caregiving characteristics' assertions with later-life SPA to help interpret the findings of RQ2. I first regressed the continuous SPA variable on the caregiving history characteristics, followed by controlling for the sociodemographic characteristics and the current health-related covariates measured in 2016 or 2018.

Results

First, I discuss the sample characteristics ($N=2,182$), then describe the caregiving history trajectory clusters identified and descriptive statistics of each cluster. Next, I present results from the linear regressions examining the associations between caregiving history clusters and later-life SPA.

As shown in Table 2.1, the sociodemographic profile of the caregivers in this study was predominantly female (72.5%), with an average current age of 69.5 years ($SD=9.64$), measured in the year of later-life SPA. Racial and ethnic composition was mainly White (Non-Hispanic) at 74.7%, Black (Non-Hispanic) at 15.3%, Hispanic at 7.1%, and other ethnicities at 2.8%. The average educational attainment was 13.7 years ($SD=2.51$), and just over half were currently married (53.8%). Less than one-third were working for pay (28.0%). In terms of wealth, 46.5% of the sample was below the 60th percentile. The sample's later-life health status includes an average of 2.17 ($SD=1.39$) chronic conditions, 2.46 ($SD=2.67$) functional limitations, 1.29 ($SD=1.83$) depressive symptoms, and an average memory score of 10.6 ($SD=3.11$).

The caregiving characteristics of the overall sample indicated that the age at which participants first became caregivers averaged 50.8 years ($SD=13.6$), with the end of the last

caregiving episode at an average age of 60.5 years (SD=12.1). The average total number of years of caregiving is 8.88 years (SD=8.95), and the years between the outcome wave and the last caregiving event averaged 9.69 years (SD=11.1) apart.

Most participants only had one caregiving episode (67.6%) and provided care for one type of relationship (80.2%), but a sizable group had two caregiving episodes (22.4%) and provided care for two types of relationships (16.9%). The last caregiving relationship was most frequently with a parent (53.8%), followed by a spouse (20.9%) and a relative (12.1%). The first caregiving relationship followed a similar pattern. The longest duration of care was predominately caring for parents (57.4%). Regarding the intensity of caregiving, most participants cared for one person at a time (81.6%), and a sizable group cared for two people in the same year (15.4%), with the duration of the most intense caregiving averaging 6.71 years (SD=7.12).

Four Clusters of Caregiving History Trajectories

Table 2.2 shows the cluster solution quality measures used to decide which four clusters represent the data best. Despite the average silhouette width (ASW) slightly decreasing from 0.57 for two clusters to 0.54 for four clusters, it remains relatively high. In addition, it shows an improvement in R^2 from 0.12 to 0.19, indicating that the four-cluster model explains a higher proportion of variance within the data compared to solutions with fewer clusters. Table 2.3 presents the descriptive statistics and tests of significance among the four clusters of caregiving history trajectories.

Cluster 1: Lifelong Diverse Caregivers (n=447). This group has the highest average total years of caregiving of 11.7 years and the youngest average starting age of caregiving of 47.1 years. A sizable percentage of caregivers had multiple caregiving episodes across adulthood

(42% reported more than one caregiving episode), and 33% reported caring for more than one type of relationship. The group had the most people caring for children (40.3% longest duration relationship type) and relatives (49.2%), and 26% had experience caring for more than one person in the same year.

Cluster 2: Later-Life Spouse Caregivers (n=406). This group has the oldest average starting age of care of 58.1 years and ending age of 67.3 years. Almost all group members cared for their spouse (99.8% longest duration relationship type, 92.4% first episode relationship type, and 91.4% last episode relationship type). The average total years of caregiving is 7.87; 20.7% of the group reported more than one caregiving episode across adulthood, 17% reported caring for more than one type of relationship, and 6.1% of the group cared for more than one person in the same year.

Cluster 3: Parent Caregiver (n=1,254). This group has a relatively young average starting age of care of 49.2 years and the youngest average ending age of care of 57.9 years. Almost all the group members cared for their parents (99% longest duration relationship type, 98% first episode relationship type, and 88.2% last episode relationship type). The average total years of caregiving is 8.19; 32% reported more than one caregiving episode across adulthood, 15.3% reported caring for more than one type of relationship, which is the lowest among the four clusters, and 19.2% of the group cared for more than one person in the same year.

Cluster 4: Later-Life Non-Relative Caregivers (n=75). This group has the second longest average total years of caregiving of 9.07 years, the second oldest average starting age of 57, and the oldest average ending age of 67.7 years. All group members cared for a non-relative (100% longest duration relationship type); many cared for two or more people (38.6%), and 26.6% cared for two or more people in the same year.

Tests of significance (χ^2 for categorical variables and Kruskal-Wallis for continuous variables) indicate statistically significant differences in most caregiving characteristics except for the duration of the maximum care episode among the four clusters.

Later-Life Sociodemographic and Health Status Associations with Cluster Membership

Table 2.4 shows the descriptive statistics and test of significance of sociodemographic and health status measured in the year SPA was measured (2016 or 2018). *Cluster 1: Lifelong Diverse Caregivers* have the highest percentage of people of color (32%). The group member's average current age was 68.9 years, and they received, on average, 13.7 years of education; 55% were married, 26% were working, and 50% had total wealth below the 60th percentile. The group reported the highest average number of functional limitations (2.63) and the second-highest average number of depressive symptoms (1.38). The group, on average, had 2.21 chronic conditions and an average memory score of 10.7.

Cluster 2: Later-life Spouse Caregivers have the oldest average current age of 74.6 years and the lowest percentage of being married (31%) and currently working (17%). Twenty percent of the group are people of color, received on average 13.1 years of education, and 53% had wealth below the 60th percentile. The group reported, on average, experiencing 2.55 functional limitations. The group reported the highest average number of chronic conditions (2.39), the number of depressive symptoms (1.48), and the lowest average memory score of 10.0.

Cluster 3: Parent Caregivers have the youngest average current age of 68 years, the highest percentage of people being married (61%), currently working (32%), and having wealth above the 60th percentile (56%). Twenty-five percent of the group members were people of color and the average years of education was 13.8. The group members, on average, reported 2.38

functional limitations, 1.22 depressive symptoms, and an average memory score of 10.8. The group has the lowest average number of chronic conditions (2.07).

Cluster 4: Later-Life Non-Relative Caregivers are the most educated (Mean=14.2 years), in better financial shape (39% lower than the 60th percentile), and the healthiest with the lowest average number of functional limitations (2.41), depressive symptoms (0.99), and the highest average memory score (11.1).

Table 2.5 shows results from the multinomial logistic regression. Compared to the largest group, Cluster 3: Parent Caregivers, Cluster 1: Lifelong Diverse Caregivers were less likely to be White (RRR [Relative Risk Ratio] = 0.61, 95% CI [0.47–0.79]). Compared to Cluster 3 Parent Caregivers, Cluster 2: Later-Life Spouse Caregivers were more likely to be older (RRR=2.01, 95% CI [1.73–2.36]) and less likely to be woman (RRR=0.71, 95% CI [0.54–0.95]), more likely to be Hispanic (RRR=1.64, 95% CI [1.07–2.51]), less likely to be educated (RRR=0.92, 95% CI [0.88–0.97]), less likely to be married or partnered (RRR=0.31, 95% CI [0.24–0.41]) and more likely to be lower than the 60th percentile in wealth (RRR=1.52, 95% CI [1.16–2.01]). The group members were also more likely to report less functional limitations (RRR=0.90, 95% CI [0.85–0.96]) and more depressive symptoms (RRR=1.15, 95% CI [1.01–1.31]) than Cluster 3 Parent Caregivers.

Compared to Cluster 3 Parent Caregivers, Cluster 4: Later-Life Non-Relative Caregivers were more likely to be older (RRR=1.65, 95% CI [1.22–2.24]), less likely to be White (RRR=0.40, 95% CI [0.22–0.72]), less likely to be Black (RRR=0.22, 95% CI [0.09–0.51]).

Effects of Caregiving History Cluster Membership on Later-Life SPA

As shown in Table 2.6, linear regression analyses were conducted to examine the association between caregiving history cluster membership and later-life SPA. First, the largest cluster, Cluster 3: Parent Caregivers, was set as the reference group. Compared to Cluster 3: Parent Caregivers, Cluster 1: Lifelong Diverse Caregivers were more likely to report higher negative SPA later in life ($\beta = 0.16$, $SE = 0.06$, $p = 0.005$), and the association remained statistically significant after controlling for current sociodemographic characteristics ($\beta = 0.14$, $SE = 0.05$, $p = 0.01$) and health status ($\beta = 0.11$, $SE = 0.05$, $p = 0.01$). Compared to Cluster 3: Parent Caregivers, Cluster 2: Later-Life Spouse Caregivers were more likely to report higher negative SPA later in life ($\beta = 0.16$, $SE = 0.06$, $p = 0.007$); however, the association was no longer significant after controlling for current sociodemographic characteristics and health status. The associations between Cluster 4: Later-Life Non-Relative Caregivers and later-life negative SPA were not statistically significant across all three models.

Supplemental Table 2.2 shows the results of linear regressions when rotating other clusters as the reference group. When setting Cluster 1: Lifelong Diverse Caregivers as the reference group, members of Cluster 3: Parent Caregivers were less likely to report higher negative SPA later in life ($\beta = -0.11$, $SE = 0.05$, $p = 0.01$) after controlling for current sociodemographic characteristics and health status. When setting Cluster 2: Later-Life Spouse Caregivers as the reference group, members of Cluster 3: Parent Caregivers were less likely to report higher negative SPA later in life ($\beta = -0.15$, $SE = 0.06$, $p = 0.007$), but the association was no longer significant after controlling for current sociodemographic characteristics and health status. Compared to Cluster 2: Later-Life Spouse Caregivers, members of Cluster 1: Lifelong Diverse Caregivers were more likely to report more negative SPA after controlling for current sociodemographic characteristics ($\beta = 0.16$, $SE = 0.07$, $p = 0.017$), but the association was no

longer significant after controlling for current health status. Due to the small cluster size of 75, Cluster 4: Later-Life Non-Relative Caregivers was not set as a reference group.

Follow-Up Analyses

Supplemental Table 2.3 shows results from the analyses examining the assertions between specific caregiving history characteristics and later-life SPA. The unadjusted model found that people with more years of caregiving experiences ($\beta = 0.10$, SE = 0.03, $p < 0.001$) had longer times between the outcome wave and last episode ($\beta = 0.13$, SE = 0.02, $p < 0.001$). People's first caregiving experience at a younger age ($\beta = -0.10$, SE = 0.03, $p = 0.001$) and older ending age of last care ($\beta = 0.08$, SE = 0.03, $p = 0.008$) are more likely to report higher negative SPA later in life. Compared to those who cared for a parent during their longest caregiving episode, those who care for spouses ($\beta = 0.17$, SE = 0.06, $p = 0.003$) and children ($\beta = 0.25$, SE = 0.08, $p = 0.003$) are more likely to report higher negative SPA.

After controlling for sociodemographic characteristics and later-life health status, caregivers with a longer time between the outcome wave and the last caregiving episode ($\beta = 0.05$, SE = 0.02, $p < 0.05$) and cared for children ($\beta = 0.15$, SE = 0.07, $p = 0.03$) were more likely to report higher negative SPA.

Covariates

Across regression models, later-life sociodemographic variables, including higher age, being a woman, not being non-Hispanic Black, fewer years of education, not being married, not working, and having wealth below the 60th percentile, were associated with reporting more negative SPA. However, after adding later-life health status, the associations were no longer statistically significant between these current sociodemographic characteristics, except for being a woman, not being non-Hispanic Black, and not working. All of the later-life health status

variables, including more chronic conditions, physical limitations, depressive symptoms, and lower memory scores, were significantly associated with reporting higher negative SPA.

Discussion

This study explored the dynamics of caregiving experiences across the lifespan and examined their associations with later-life self-perceptions of aging. Through analyzing data from 2,182 caregivers, the sequence and cluster analyses identified four distinct caregiving history trajectories: Lifelong Diverse Caregivers, Later-Life Spouse Caregivers, Parent Caregivers, and Later-Life Non-Relative Caregivers. The current study contributes a novel perspective by constructing individual caregiving history trajectories, considering the timing, order, and diversity of caregiving relationships and intensity. Using retrospective life history data, this study expands prior research by conceptualizing caregiving history as an important life experience, focusing on types of relationships and a potential antecedent of later-life SPA.

Four Clusters of Caregiving History Trajectories

The four distinct clusters show that caregiving is a diverse and dynamic life experience influenced by the relationship between the caregiver and the care recipient. Although most caregivers provided care primarily to their aging parents and spouse(s), the clustering revealed a potentially vulnerable group of members of *Cluster 1: Lifelong Diverse Caregivers* who engaged in caregiving from a young age across multiple relationship types (mostly children and relatives) and for an extended duration. This group had the highest percentage of people of color, the second highest percentage of people's wealth below the 60th percentile, and poorer health status. Providing informal care might often be a choice forced by financial constraints and other life circumstances (Cohen et al., 2019; Moore & McArthur, 2007). Providing care for a prolonged period and during multiple parts of the lifespan can derail an individual's life plans and

accumulate physical and emotional stress (DePasquale et al., 2016; Pearlin, 2010). Members of *Cluster 2: Later-Life Spouse Caregivers* were at higher risk of experiencing more depressive symptoms, suggesting the differences in caring for an age-peer than a parent.

The cluster analysis also revealed a small but distinct group of Later-Life Non-Relative Caregivers who primarily provided care to non-relatives. The group members are the most educated and financially secure. Despite the group having the second highest average starting caregiving age and current age, they are the healthiest. These individuals may be providing care to their friends or neighbors. Compared to caring for kin, caring for non-kin might look different, where the support provided might be less intensive, such as feeding or helping the care recipient get in and out of bed. The caregivers may be less likely to live with the care recipient, so the time spent on caregiving can be shorter and less burdensome on the caregiver's health. It is also possible that caring for non-kin requires the caregivers to have better physical, mental, and cognitive health to travel to places, provide emotional support, and keep track of vital information.

Cluster Membership's Effects on Later-Life SPA

The distinction between caregiving clusters highlights the heterogeneity of caregivers' experiences and their differential effects on later-life SPA. The findings that members of *Cluster 1: Lifelong Diverse Caregivers* were more likely to report higher negative later-life SPA than both *Cluster 3: Parent Caregivers* and *Cluster 2: Later-Life Spouse Caregivers* suggest unique life experiences and burdens for these caregivers.

Several potential explanations may underlie this finding. First, members of Cluster 1: Lifelong Diverse Caregivers are more likely to endure prolonged and intense caregiving periods, with the accumulated stress having long-lasting effects on later-life health, which can become

reminders of one's own aging and contribute to negative SPA (Barrett & Gumber, 2020). Additionally, starting caregiving at a younger age and experiencing multiple caregiving responsibilities across the lifespan may derail caregivers' life plans, social interactions, and societal expectations (Pearlin, 2010), leading to social isolation and a heightened sense of being "off-time" (Barrett & Montepare, 2015; Hu & Li, 2022).

The findings from the follow-up analyses add nuance. A sizeable number of members of Cluster 1: Lifelong Diverse Caregivers cared for children during the longest caregiving episode. The finding that those who cared for a child during the longest caregiving episode were more likely to report a higher level of later-life negative SPA than those who cared for a parent may suggest that as the caregivers age, they may become concerned about how to take care of their children and who will take care of them, which can all reflect as having more negative SPA (Ingersoll-Dayton et al., 2011; Mengel et al., 1996).

Moreover, these caregivers are more likely to have prolonged periods to witness age-related health declines and mental or physical limitations. Even if the declines are not age-related, they still experience the frustrations and challenges associated with limitations and health declines. These findings resonate with the possible selves theory (Markus & Nurius, 1986), indicating that caregivers' experiences may influence their expectations and fears about their aging process. Members of Cluster 1: Lifelong Diverse Caregivers, with their complex caregiving histories, may have internalized a heightened awareness of the burdens of aging, reflecting in more negative SPA. Research on healthcare professionals (formal caregivers) also indicates that caregiving experiences may foster negative attitudes and behaviors toward older adults (Baltes & Silverberg, 2019; Baltes & Wahl, 1992). As the stereotype embodiment theory

suggests, these internalized stereotypes become salient as the caregivers get older and/or start to experience limitations and decline later in life, reflecting as negative SPA.

Lifelong Diverse Caregivers could be trapped in a vicious cycle where starting caregiving at a young age derails their education and career, negatively impacting their career and wealth development. Not having a stable career or wealth could set the caregivers up to take on additional caregiving responsibilities, further derailing them and accumulating physical and mental stress that can negatively affect their views of aging and advancing into later life.

The finding from the unadjusted model on the positive associations between *Cluster 2: Later-Life Spouse Caregivers* group membership and later-life negative SPA suggests a unique role age peers play in shaping and reinforcing negative SPA. Although caring for aging spouses and parents exposes the caregiver to age-related declines, the age differences between parent and child may serve as a buffer. While the associations were no longer significant after controlling for later-life sociodemographic characteristics and health status, the associations became negative, suggesting that compared to members of *Cluster 3: Parent Caregivers*, members of *Cluster 2: Later-Life Spouse Caregivers* were less likely to report negative SPA. When considering the sociodemographic and health-related factors and focusing on relationships, the finding hinted at the potential buffering effect of spouse caregiving on SPA, potentially due to the perceived reciprocity and emotional bonds in marital relationships. This finding adds nuance to the caregiving literature, which often emphasizes the burdensome aspects of caregiving, suggesting that the context and meaning attributed to caregiving roles may significantly modulate their impact on SPA.

The findings also point to potential race or cultural differences in caregiving and SPA. On the one hand, one-third of the members in the Lifelong Diverse Caregiver cluster were people

of color. A meta-analysis found racial and ethnic minority caregivers were more likely to have a lower socioeconomic status, were younger, and provided more family care than White caregivers (Pinquart & Sörensen, 2005). Moreover, Black female informal caregivers provided significantly higher levels of care than White females and males for both IADL caregiving and hours/month spent caregiving (Cohen et al., 2019). On the other hand, across all regression models, compared to White, non-Hispanic Black caregivers were more likely to report less negative SPA. This pattern is consistent with research highlighting cultural differences in aging and SPA specifically (Huo et al., 2023). Research also found that non-Hispanic Black and Hispanic caregivers were more likely to report better psychological well-being and self-rated health compared to their White counterparts (Moon et al., 2020). Future studies should explore the racial and ethnic differences in caregiving history.

Contributions, Limitations, and Future Directions

This study makes several notable contributions to the caregiving and SPA literature. First, it expands the understanding of caregiving trajectories by identifying distinct clusters based on relationship type, timing, and duration, offering a nuanced perspective on the caregiving experience. Caregiving is conceptualized as life experiences, critical social interactions, and complex and dynamic relationships. Second, examining the impact of caregiving history on later life SPA underscores caregiving relationships' long-lasting effects on caregivers' SPA. Consistent with the life span and life course perspectives, earlier life social interactions and relationships can shape later-life SPA. Lastly, the study's step-wise regressions revealed a potential indirect pathway between caregiving experiences, later-life health, and negative SPA.

Despite its strengths, this study is not without limitations. There is the possibility that participants may not have remembered all the episodes of informal caregiving clearly and

correctly. Smith and colleagues (2021) compared data on employment history and found no significant discrepancies between the life history mail survey and the HRS core interview. Nonetheless, this potential bias could still affect the accuracy of the caregiving history reported. To mitigate this, participants' later-life memory was included in the model as a control variable. However, the interpretation of these findings remains constrained by the limited information about each caregiving history. Future studies could benefit from using more details and verified records of caregiving episodes to enhance data accuracy.

Moreover, the current data lacked details on what types of support the caregiver provided (e.g., emotional, financial, and instrumental). Although the current study assessed caregiving intensity by counting the number of people the caregivers cared for in the same year, the characteristics of later-life non-relative caregivers suggest it is likely that the caregiving support they provided was not as intense as caregivers who live with their kin. Future studies would benefit from integrating different types of support to explore the association of caregiving intensity with later-life SPA. The quality of caregiving relationships may play a greater role than the practical aspects of providing care in shaping caregivers' later-life SPA.

Although years between the last caregiving episode and the year the outcome was measured were controlled, and there was a temporal order of caregiving episodes before sociodemographic and health status and SPA, the current study is cross-sectional in nature. Consequently, the findings do not provide insights into the temporal dynamics and potential mechanisms between caregiving history and later-life SPA. Future research should consider longitudinal designs to understand how caregiving experiences evolve and influence SPA over time and investigate the mediating and moderating effects of sociodemographic factors, health status, and psychological resilience.

This study's findings have implications for interventions, especially those supporting caregivers. The findings revealed the complexity and diversity of caregiving relationships and experiences across the lifespan and their long-lasting effects on later life. Integrating caregiving history with an assessment could provide insights into older adults' sense of self and views of aging since it would be difficult to discuss and confront negative perceptions of aging. Moreover, long-term programs should be developed to identify and support lifelong caregivers caring for one person for a prolonged period or having multiple caregiving responsibilities throughout their lives. Caregiver support should be more long-term and holistic, following the caregivers even after they transition out of or into another caregiving role, as well as engaging in conversations with caregivers about their sense of self and outlook for themselves.

In conclusion, this study illuminates the intricate relationship between caregiving history trajectories and self-perceptions of aging, highlighting the importance of considering the multifaceted nature of caregiving roles. The associations between caregiving characteristics and self-perceptions of aging highlight the complex interplay between caregiving experiences and individuals' perceptions of aging. Caregiving roles, especially prolonged and intense ones, can significantly impact individuals' SPA. Understanding these associations is crucial for developing targeted interventions to support caregivers' well-being and promote positive aging perceptions.

Tables and Figures for Chapter 2

Table 2.1. Sample Characteristics (N=2,182)

	Range	M (SD)/%
Sociodemographics Measured in 2016 or 2018		
Age	50-102	69.5 (9.64)
Woman		72.5%
Race and Ethnicity		
White (Non-Hispanic)		74.7%
Black (Non-Hispanic)		15.3%
Hispanic		7.1%
Others		2.8%
Education	0-17	13.7 (2.51)
Married		53.8%
Working		28.0%
Wealth (Lower than 60th Percentile)		46.3%
Health Measured in 2016 or 2018		
Number of chronic conditions	0-8	2.17 (1.39)
Functional limitations	0-10	2.46 (2.67)
Depressive symptoms	0-8	1.29 (1.83)
Memory	0-20	10.6 (3.11)
Caregiving History Characteristics		
Years since the last episode	0-71	9.69 (11.1)
Number of caregiving years	1-62	8.88 (8.95)
Number of caregiving episodes	1-5	1.48 (0.83)
	1	67.6%
	2	22.4%
	3	6.6%
	4	2.1%
	5	1.4%
Number of different types of relationship	1-4	1.23 (0.50)
	1	80.2%
	2	16.9%
	3	2.5%

	4	0.3%
Longest Duration Relationship Type		
	Parent	57.4%
	Spouse	19.2%
	Child	8.2%
	Relative	10.1%
	Non-relative	3.6%
	Others	1.2%
First Episode Relationship Type		
	Parent	59.6%
	Spouse	18.4%
	Child	7.7%
	Relative	10.0%
	Non-relative	3.3%
	Others	1.1%
Last Episode Relationship Type		
	Parent	53.8%
	Spouse	20.9%
	Child	7.5%
	Relative	12.1%
	Non-relative	4.1%
	Others	1.7%
Start age of first care	18-87	50.8 (13.6)
End age of last care	18-91	60.5 (12.1)
Number of persons cared for in the same year		
	1	81.6%
	2	15.4%
	3	2.5%
	4	0.5%
	5	0.0%
Duration of the maximum care episode	1-62	6.61 (7.12)

Table 2.2. Cluster Solution Quality Criteria

Number of Clusters	Average Silhouette Width	R^2	Squared R^2
2	0.57	0.12	0.21
3	0.53	0.17	0.31
4	0.54	0.19	0.37
5	0.24	0.25	0.42

Table 2.3. Caregiving History Characteristics Grouped by Cluster Membership (N=2,182)

	Cluster 1: Lifelong Diverse Caregivers	Cluster 2: Later-Life Spouse Caregivers	Cluster 3: Parent Caregivers	Cluster 4: Later- Life Non-Relative Caregivers	Tests of Significance
N	447	406	1254	75	
Caregiving History Characteristics					
Years since the last caregiving	9.43 (12.3) [0-63]	7.92 (8.73) [0-55]	10.6 (11.4) [0-71]	5.12 (8.82) [0-56]	***
Number of caregiving years	11.7 (11.8) [1-58]	7.87 (8.99) [1 - 62]	8.19 (7.49) [1-53]	9.07 (8.21) [1-42]	***
Number of caregiving episodes					
1	58%	79.3%	68%	57%	***
2	22%	16.6%	25%	25%	***
3	12%	2.7%	6%	9%	***
4	4%	1.2%	2%	4%	***
5	4%	0.2%	1%	4%	***
Number of Different Types of Relationships					
1	67%	83%	84.8%	72%	***
2	26%	16%	13.5%	24%	***
3	6%	1%	1.7%	4%	***
4	1%	0%	0.1%	0%	***
Longest Duration Relationship Type					
Parent	2.5%	0%	99.0%	0%	***
Spouse	2.0%	99.8%	0.3%	0%	***
Child	40.3%	0.0%	0.0%	0%	***
Relative	49.2%	0.0%	0.0%	0%	***

	Non-relative	0.2%	0.0%	0.2%	100%	****
	Others	5.8%	0.2%	0.0%	0%	****
First Episode Relationship Type						
	Parent	8.1%	6.9%	98.1%	8%	****
	Spouse	2.9%	92.4%	0.9%	3%	****
	Child	36.5%	0.5%	0.2%	0%	****
	Relative	47.2%	0.2%	0.6%	0%	****
	Non-relative	0.4%	0.0%	0.2%	89%	****
	Others	4.9%	0.0%	0.1%	0%	****
Last Episode Relationship Type						
	Parent	10%	4.7%	88.2%	5%	****
	Spouse	4%	91.4%	4.9%	5%	****
	Child	32%	1.5%	1.1%	1%	****
	Relative	46%	1.7%	3.7%	3%	****
	Non-relative	2%	0.5%	1.1%	85%	****
	Others	6%	0.2%	0.9%	0%	****
Start age of care		47.1 (15.6) [18-81]	58.6 (14.3) [19 - 87]	49.2 (12.3) [18 - 81]	57.0 (14.3) [23 - 81]	****
End age of care		57.9 (10.7) [20 - 87]	67.3 (11.8) [30 - 91]	57.9 (10.7) [20 - 87]	67.7 (11.5) [24 - 88]	****
Number of persons cared for in the same year						
	1	74%	93.8%	80.8%	73%	****
	2	19%	5.7%	16.8%	21%	****
	3	5%	0.2%	2.3%	4%	****
	4	2%	0.2%	0.1%	1%	****

Duration of the maximum care episode	7.80 (9.26) [1 - 58]	6.60 (7.61) [1 - 62]	6.24 (6.04) [1 - 46]	5.85 (5.80) [1 - 22]	ns
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Notes. Tests of significance include χ^2 for categorical variables and Kruskal-Wallis for continuous variables.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 2.4. Later-Life Sociodemographic and Health Status Grouped by Cluster Membership (N=2,182)

	Cluster 1: Lifelong Diverse Caregivers	Cluster 2: Later-Life Spouse Caregivers	Cluster 3: Parent Caregivers	Cluster 4: Later- Life Non-Relative Caregivers	Tests of Significance
<i>N</i>	447	406	1,254	75	
Sociodemographic Characteristics measured in 2016 or 2018					
Age	68.9 (9.57) [50 - 94]	74.6 (9.77) [51 - 102]	68.0 (9.04) [50 - 94]	72.1 (8.99) [53 - 90]	***
Woman	75%	70%	72%	71%	ns
Race and Ethnicity					
White (Non-Hispanic)	68%	80%	75%	81%	***
Black (Non-Hispanic)	21%	11%	15%	8%	***
Hispanic	7%	8%	7%	5%	ns
Others	4%	1%	3%	5%	ns
Education	13.7 (2.38) [2-17]	13.1 (2.70) [1-17]	13.8 (2.44) [0-17]	14.2 (2.04) [11-17]	***
Married	55%	31%	61%	51%	***
Working	26%	17%	32%	25%	***
Wealth - < 60 percentile	50%	53%	44%	39%	**
Health Status measured in 2016 or 2018					
Number of chronic conditions [0- 8]	2.21 (1.43)	2.39 (1.33)	2.07 (1.38)	2.31 (1.56)	***
Functional limitations [0-10]	2.63 (2.70)	2.55 (2.62)	2.38 (2.69)	2.33 (2.54)	ns
Depressive symptoms [0-8]	1.38 (1.86)	1.46 (1.88)	1.22 (1.81)	0.99 (1.58)	**
Memory [0-20]	10.7 (2.98)	10.0 (3.35)	10.8 (3.05)	11.1 (3.19)	***

Notes. Tests of significance include χ^2 for categorical variables and Kruskal-Wallis for continuous variables.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 2.5. Multinomial Logistic Regression of Cluster Membership on Current Sociodemographic and Health Status – Cluster 3 Parent Caregivers as Reference (N=2,182)

	Cluster 1: Lifelong Diverse Caregivers RRR [95% CI]	Cluster 2: Later-Life Spouse Caregivers RRR [95% CI]	Cluster 4: Later-Life Non- Relative Caregivers RRR [95% CI]
<i>N</i>	447	406	75
Age	1.14 [0.99 – 1.32]	2.02*** [1.73 – 2.36]	1.65** [1.22 – 2.24]
Woman	1.11 [0.86 – 1.45]	0.71* [0.54 – 0.95]	0.84 [0.48 – 1.45]
Race and Ethnicity			
White (Non-Hispanic)	0.61*** [0.47 – 0.79]	1.12 [0.81 – 1.54]	0.40** [0.22 – 0.72]
Black (Non-Hispanic)	0.96 [0.71 – 1.29]	0.83 [0.56 – 1.22]	0.22*** [0.09 – 0.51]
Hispanic	0.76 [0.52 – 1.10]	1.64* [1.07 – 2.51]	0.48 [0.19 – 1.18]
Others	0.88 [0.52 – 1.48]	0.74 [0.33 – 1.65]	0.89 [0.33 – 2.39]
Education	1.01 [0.96 – 1.06]	0.92** [0.88 – 0.97]	1.05 [0.94 – 1.17]
Married	0.89 [0.70 – 1.13]	0.31*** [0.24 – 0.41]	0.63 [0.38 – 1.05]
Working	0.82 [0.62 – 1.08]	0.83 [0.59 – 1.15]	1.09 [0.59 – 2.03]
Wealth - < 60 percentile	1.19 [0.92 – 1.54]	1.52** [1.16 – 2.01]	1.08 [0.62 – 1.87]
Number of chronic conditions [0- 8]	1.02 [0.93 – 1.12]	1.02 [0.92 – 1.13]	1.10 [0.91 – 1.35]
Functional limitations [0-10]	0.99 [0.95 – 1.05]	0.90 *** [0.85 – 0.96]	0.97 [0.87 – 1.09]
Depressive symptoms [0-8]	1.04 [0.92 – 1.18]	1.15* [1.01 – 1.31]	0.88 [0.65 – 1.20]
Memory [0-20]	1.01 [0.97 – 1.06]	1.04 [1.00 – 1.09]	1.08 [0.99 – 1.18]

Notes. RRR = Relative Risk Ratio. 95% CI = 95% Confidence Interval. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 2.6. Linear Regression of SPA on Cluster Membership (N=2,182)

	Negative SPA β (SE)		
	Model A	Model B	Model C
Intercept	3.04*** (0.03)	3.24*** (0.06)	3.20*** (0.06)
Cluster - Parent Caregivers as reference			
Lifelong Diverse Caregivers	0.16** (0.06)	0.14* (0.05)	0.11* (0.05)
Later-life Spouse Caregivers	0.16** (0.06)	-0.03 (0.06)	0.00 (0.05)
Later-life Non-relative Caregivers	0.13 (0.12)	0.11 (0.12)	0.12 (0.10)
Years since the last episode		0.06** (0.02)	0.04* (0.02)
Age		0.06* (0.03)	0.06* (0.02)
Woman		-0.15** (0.05)	-0.16*** (0.04)
Race and Ethnicity—White (Non-Hispanic) as reference			
Black (Non-Hispanic)		-0.37*** (0.06)	-0.38*** (0.05)
Hispanic		-0.08 (0.09)	-0.15* (0.07)
Others		-0.01 (0.13)	-0.14 (0.11)
Education		-0.06** (0.02)	-0.02 (0.04)
Married		-0.16*** (0.05)	0.02 (0.04)
Working		-0.26*** (0.05)	-0.03 (0.05)
Wealth - < 60 percentile		0.39*** (0.05)	0.15*** (0.04)
Number of chronic conditions			0.08*** (0.02)
Memory			-0.05* (0.02)
Depressive symptoms			0.36*** (0.02)
Physical Limitations			0.23*** (0.02)
Adjusted R-Square	0.01	0.09	0.33

Notes. Sociodemographic characteristics and health status were measured in the same year SPA was measured. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Figure 2.1. Example of Transforming a Participant's Caregiving History Grid to Trajectory

Episode	Relationship	Start Year	End Year
1	Child	1954	1960
2	Parent	1990	1993
3	Spouse	1990	2003
4	Relative	1998	2002
5	Parent	2008	2015

Age	18	19	20	21	22	23	...	53	54	55	56	57	58	59	60	61	62	63	64	65	66	...	71	72	73	74	75	76	77	78	...	91
	C	C	C	C	C	C	-	PS	PS	PS	PS	S	S	S	S	SR	SR	SR	SR	SR	S	-	P	P	P	P	P	P	P	P	-	-

Supplemental Materials for Chapter 2

Supplemental Table 2.2. Negative Self-Perceptions of Aging Scale

The statements are about the way people feel about their age and about the things that happen as they get older. Please tell us how much you agree or disagree with each statement for you personally.

1=Strongly disagree, 2=Somewhat disagree, 3=Slightly disagree, 4=Slightly agree, 5=Somewhat agree, 6=Strongly agree

Things keep getting worse as I get older.
I have as much pep as I did last year.
The older I get, the more useless I feel.
I am as happy now as I was when I was younger.
As I get older, things are better than I thought they would be.
So far, I am satisfied with the way that I am aging.
The older I get, the more I have had to stop doing things that I liked.
Getting older has brought with it many things that I do not like.

Supplemental Table 2.1. The Number of Participants and Incidences of Each Caregiving State

	# of People	# of Incidences (years)
P	1,366	9,332
S	529	3,496
R	298	1,797
C	217	2,244
PP	172	780
N	111	694
PR	56	179
PS	54	213
O	39	225
PC	35	208
RR	25	148
PN	17	56
CC	17	125
PPR	14	45
NN	14	48
SC	13	52
SR	10	40
PPS	10	33
CR	9	39
PPP	8	780
PO	8	25
CCC	6	88
RRR	5	23
RN	5	10
PSR	4	8
PRR	4	8
SS	3	8
PPC	3	11
PCC	3	33
RNN	2	3
PPN	2	2

OO	2	6
CO	2	6
SO	1	3
SCR	1	7
RRRR	1	5
RO	1	3
PSRR	1	3
PSO	1	1
PRRR	1	5
PRN	1	2
PPSR	1	1
PCR	1	8
PCN	1	1
PCCO	1	9
NO	1	1
NNNN	1	1
NNN	1	3
CRRN	1	5
CRR	1	3
CRN	1	1
CCRR	1	5

Notes. P=Parent, S=Spouse, C=Child, R=Relative, N=Non-relative, 0=Others

Supplemental Table 2.2. Linear Regression of SPA on Caregiving History Trajectory Clusters (Rotating Reference Cluster, N=2,182)

	Negative SPA b (SE)		
	Model A	Model B	Model C
Panel A. Lifelong Diverse Caregivers as Reference			
Intercept	3.19*** (0.05)	3.37*** (0.08)	3.31*** (0.06)
Cluster: Lifelong Diverse Caregivers as Reference			
Later-Life Spouse Caregivers	0.00 (0.07)	-0.17* (0.07)	-0.12 (0.06)
Parent Caregivers	-0.16** (0.06)	-0.14* (0.05)	-0.11* (0.05)
Later-Life Non-Relative Caregivers	-0.03 (0.13)	-0.06 (0.12)	0.00 (0.11)
Years since the last episode		0.06** (0.02)	0.04* (0.02)
Age		0.06* (0.03)	0.06* (0.02)
Woman		-0.15** (0.05)	-0.16*** (0.04)
Race and Ethnicity: White (Non-Hispanic) as reference			
Black (Non-Hispanic)		-0.37*** (0.06)	-0.38*** (0.06)
Hispanic		-0.08 (0.08)	-0.15* (0.07)
Others		-0.01 (0.13)	-0.14 (0.11)
Education		-0.06** (0.02)	-0.02 (0.02)
Married		-0.16*** (0.05)	0.02 (0.04)
Working		-0.26*** (0.05)	-0.03 (0.05)
Wealth: < 60 percentile		0.39*** (0.05)	0.15*** (0.04)
Number of chronic conditions			0.08*** (0.02)
Memory			-0.05** (0.02)
Depressive symptoms			0.36*** (0.02)
Physical Limitations			0.23*** (0.02)
Adjusted R-Square	0.04	0.09	0.33
Panel B. Later-Life Spouse Caregivers as Reference			
Intercept	3.20*** (0.05)	3.21*** (0.07)	3.20*** (0.06)
Cluster – Later-Life Spouse Caregivers as reference			
Lifelong Diverse Caregivers	0.00 (0.07)	0.17* (0.07)	0.12 (0.06)
Parent Caregivers	-0.16** (0.06)	0.03 (0.06)	0.00 (0.05)
Later-life Non-relative Caregivers	-0.03 (0.13)	0.10 (0.12)	0.12 (0.11)
Years since the last episode		0.06** (0.02)	0.04* (0.02)

Age	0.06* (0.03)	0.06* (0.02)
Woman	-0.15** (0.05)	-0.16*** (0.04)
Race and Ethnicity – White (Non-Hispanic) as reference		
Black (Non-Hispanic)	-0.37*** (0.06)	-0.38*** (0.06)
Hispanic	-0.08 (0.09)	-0.15* (0.07)
Others	-0.01 (0.13)	-0.14 (0.11)
Education	-0.06 (0.02)	-0.02 (0.02)
Married	-0.16*** (0.05)	0.02 (0.04)
Working	-0.26*** (0.05)	-0.03 (0.05)
Wealth - < 60 percentile	0.39*** (0.05)	0.15*** (0.04)
Number of chronic conditions		0.08*** (0.02)
Memory		-0.05** (0.03)
Depressive symptoms		0.36*** (0.02)
Physical Limitations		0.23*** (0.02)
Adjusted R-Square	0.01	0.09
		0.33

Notes. Sociodemographic characteristics and health status were measured in the same year SPA was measured. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Supplemental Table 2.3. Linear Regressions of SPA on Caregiving History Characteristics (N=2,182)

	Negative SPA b (SE)		
	Model A	Model B	Model C
Panel A. Overall Caregiving Characteristics			
Intercept	3.02*** (0.06)	3.25*** (0.06)	3.22*** (0.05)
Number of caregiving years	0.11*** (0.02)	0.08*** (0.02)	0.02 (0.02)
Number of caregiving episodes	-0.03 (0.04)	-0.01 (0.03)	0.01 (0.03)
Number of different relationship types	0.11 (0.06)	0.03 (0.03)	0.00 (0.03)
Years since the last care	0.14*** (0.02)	0.09*** (0.02)	0.05* (0.02)
Age		0.04 (0.03)	0.06* (0.02)
Woman		-0.15** (0.05)	-0.16** (0.04)
Race and Ethnicity - White (Non-Hispanic) as reference			
Black (Non-Hispanic)		-0.36*** (0.06)	-0.37*** (0.05)
Hispanic		-0.07 (0.09)	-0.14 (0.07)
Others		0.00 (0.13)	-0.13 (0.11)
Education		-0.06* (0.02)	-0.01 (0.02)
Married		-0.15*** (0.05)	0.02 (0.04)
Working		-0.27*** (0.05)	-0.04 (0.05)
Wealth < 60th percentile		0.39*** (0.05)	0.15*** (0.04)
Number of chronic conditions			0.08*** (0.02)
Memory			-0.05* (0.02)
Depressive symptoms			0.36*** (0.02)
Physical Limitations			0.23*** (0.02)
Adjusted R-Square	0.02	0.09	0.33
Panel B. Relationship Type			
Intercept	3.03*** (0.03)	3.23*** (0.06)	3.20*** (0.06)
Longest duration relationship type - Parent as reference			
Spouse	0.17*** (0.06)	-0.01 (0.06)	0.01 (0.05)
Child	0.25** (0.08)	0.21** (0.08)	0.15* (0.07)
Relative	0.08 (0.07)	0.07 (0.07)	0.11 (0.06)
Non-relative	0.12 (0.12)	0.07 (0.12)	0.12 (0.10)
Others	0.36 (0.20)	0.29 (0.20)	0.23 (0.17)

Years since the last care		0.06** (0.02)	0.04* (0.02)
Age		0.06* (0.03)	0.06* (0.02)
Woman		-0.15** (0.05)	-0.17*** (0.04)
Race and Ethnicity – White (Non-Hispanic) as reference			
Black (Non-Hispanic)		-0.37*** (0.06)	-0.39*** (0.05)
Hispanic		-0.07 (0.09)	-0.39*** (0.06)
Others		-0.01 (0.13)	-0.14 (0.11)
Education		-0.07** (0.02)	-0.02 (0.02)
Married		-0.16*** (0.05)	0.02 (0.04)
Working		-0.27*** (0.05)	-0.03 (0.05)
Wealth < 60th percentile		0.39*** (0.05)	0.15*** (0.04)
Number of chronic conditions			0.08*** (0.02)
Memory			-0.05** (0.02)
Depressive symptoms			0.36*** (0.02)
Physical Limitations			0.23*** (0.02)
Adjusted R-Square	0.02	0.09	0.34

Panel C. Timing of Care

Intercept	3.11*** (0.02)	3.25*** (0.06)	3.22*** (0.05)
Start age of first care	-0.10*** (0.03)	-0.09*** (0.03)	-0.02 (0.03)
End age of last care	0.08** (0.03)	-0.01 (0.03)	-0.04 (0.03)
Age		0.11*** (0.03)	0.10*** (0.03)
Woman		-0.15** (0.05)	-0.16*** (0.04)
Race and Ethnicity – White (Non-Hispanic) as reference			
Black (Non-Hispanic)		-0.36*** (0.06)	-0.37*** (0.05)
Hispanic		-0.07 (0.09)	-0.14 (0.07)
Others		0.00 (0.13)	-0.13 (0.11)
Education		-0.06* (0.02)	-0.01 (0.02)
Married		-0.15*** (0.05)	0.02 (0.04)
Working		-0.27*** (0.05)	-0.04 (0.05)
Wealth < 60th percentile		0.39*** (0.05)	0.15*** (0.04)
Number of chronic conditions			0.08*** (0.02)
Memory			-0.05** (0.02)
Depressive symptoms			0.36*** (0.02)
Physical Limitations			0.23*** (0.02)

Adjusted R-Square	0.01	0.09	0.33
Panel D. Caregiving Intensity			
Intercept	2.99*** (0.06)	3.11*** (0.08)	3.15*** (0.09)
Number of persons cared in the same year	0.07 (0.04)	0.09* (0.04)	0.06 (0.04)
Duration of the maximum care episode	0.01 (0.00)	0.00 (0.00)	0.00 (0.00)
Years since the last care		0.08** (0.02)	0.05* (0.02)
Age		0.06* (0.03)	0.06** (0.02)
Woman		-0.15** (0.05)	-0.16*** (0.04)
Race and Ethnicity – White (Non-Hispanic) as reference			
Black (Non-Hispanic)		-0.36*** (0.06)	-0.37*** (0.05)
Hispanic		-0.07 (0.09)	-0.14 (0.07)
Others		0.00 (0.13)	-0.12 (0.11)
Education		-0.06** (0.02)	-0.01 (0.02)
Married		-0.15*** (0.05)	-0.02 (0.04)
Working		-0.27*** (0.06)	-0.03 (0.05)
Wealth < 60th percentile		0.39*** (0.05)	0.15*** (0.04)
Number of chronic conditions			0.09*** (0.02)
Memory			-0.05** (0.02)
Depressive symptoms			0.36*** (0.03)
Physical Limitations			0.23*** (0.03)
Adjusted R-Square	0.002	0.09	0.33

Notes. Sociodemographic characteristics and health status were measured in the same year SPA was measured. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Chapter 3 Study 2: Shaping and Reinforcing Personal Views of Aging Among Older Adults: The Role of Non-Kin Relationships

Academic interest in views of aging (VoA) has grown in recent decades. This is partly driven by a growing body of experimental, cross-sectional, and longitudinal observation research showing the negative views of aging have long-lasting and detrimental effects on older adults' health and well-being (Hu et al., 2021; José & Amado, 2017). Negative age stereotypes and ageism revealed during the COVID-19 pandemic provide a sobering picture of the current culture's negative views of aging (L. D. Allen & Ayalon, 2021; Ayalon et al., 2020).

Negative views of aging refer to individuals' beliefs and attitudes regarding older people, old age in general (general VoA), as well as their own age and aging process (personal VoA; Kornadt et al., 2020; Palgi et al., 2022). The stereotype embodiment theory suggests people internalize negative views of aging from the greater social and cultural context across the lifespan (Levy, 2009). Taken together with the lifespan perspective, individuals construct and reconstruct their VoA as they grow older through experiencing and interpreting interactions, events, behaviors, and sensations (e.g., changes in physical abilities and people offering help) (P. B. Baltes, 1987). It is critical to recognize that VoA can be changed or reinforced and to understand how various experiences shape individuals' VoA.

One of the under-explored but essential life experiences that may shape individuals' VoA is social relationships. The literature and the theoretical framework on self-stereotyping and interpersonal contact suggest that individuals who desire to get along with others may align their self-views with perceived stereotypes held by others, leading to self-stereotyping (Baldwin &

Sinclair, 1996; Sinclair et al., 2009). While most research in this area has been done in a laboratory setting and focused on gender and race-related stereotypes, the effects of daily social interactions within a unique age-homogenous social environment of a Continuing Care Retirement Community (CCRC) on older adults' personal views of aging remain largely unexamined. The current study uses qualitative data collected with the ethnographic method to explore residents of a CCRC's personal views of aging and how non-kin relationships shape personal views of aging.

Negative Views of Aging in Continuing Care Retirement Communities

The CCRC is a housing option that tends to attract residents who are affluent (and thus can afford high entrance fees) and are physically and socially active (Ayalon & Avidor, 2021; Heisler et al., 2003). Older adults may decide to move to a CCRC as an “insurance policy,” safeguarding against future increasing care needs such as transitioning to assisted living or skilled nursing homes (Ayalon, 2018; Krout et al., 2002; Marx et al., 2011). Those residents who experience declines can remain active physically and socially through services provided by the CCRCs, such as exercise classes, group activities, home modifications, and transportation. The combination of financial security and availability of services in CCRCs seems to make it a safe haven from negative VoA and systematic discrimination of older adults (e.g., poor services).

However, research indicates that older adults tend to disassociate from peers who appear older and more frail (Kydd et al., 2018). Some older people do not want to move to CCRCs because they associate CCRCs with a place of frailty and death, which reflects their negative VoA (Ayalon, 2015). Among CCRC residents, those who are active and healthy tend to refrain from interacting with those with visible signs of aging and disability, such as moving to the assisted living or skilled nursing unit or using a walker or a wheelchair (Ayalon, 2016; Shippee,

2009). Moving to higher levels of care can lead to social isolation and invisibility among their peers (Ayalon, 2016; Roth et al., 2012; Shippee, 2009). Some research even suggests that older people in CCRCs are ageist towards other older adults, even more so than community-dwelling older adults (Bodner et al., 2011). While CCRCs embody the mission to promote aging in place, independence, and productive aging, the over-emphasis on independence may backfire and amplify residents' anxiety about their own aging and vulnerabilities (Gamliel & Hazan, 2006).

Although it appears that older adults living in CCRCs live similar lives to those residing in local neighborhoods (Pearson et al., 2021), the COVID-19 pandemic imposed more restrictions and isolation on CCRC residents than their community-dwelling counterparts. Due to lockdown measures, residents were isolated from their families and increasingly explored ways to maintain health and well-being with their fellow residents and staff in the CCRC. Ayalon and Avidor (2021) found that these restrictions led residents in Israeli CCRCs to feel as though they had become “prisoners of their own aging,” a sentiment reflecting negative personal VoA. The lockdown period further complicated the social dynamics within CCRCs since many restricted visitors, including family members. Nevertheless, few studies have explored the role of non-kin relationships during the pandemic and whether they played a role in reinforcing or buffering the development of negative views of aging.

Multi-Dimensionality of Personal Views of Aging

Adopting the life span perspective (P. B. Baltes, 1987), it is clear that VoA develops over time and is multi-dimensional. Older adults may experience changes in various life domains (e.g., cognition and lifestyles) (Diehl et al., 2021; Kornadt & Rothermund, 2011) and have different beliefs and expectations concerning age-related gains and losses in development (positive and negative) (Heckhausen et al., 1989; Steverink et al., 2001). Based on a nationally

representative sample of German adults between 40 and 85, Steverink et al. (2001) identified three dimensions of aging and well-being: individuals' perceptions of physical decline, social losses, and perceptions of continued growth. Diehl and Wahl (2010) further expanded the three-dimensional model. They proposed that in addition to the dimension of gain and loss, there should be five categories of changes: health and physical functioning, cognitive functioning, interpersonal relationships, social-emotional functioning, and lifestyle and engagement (Kaspar et al., 2019).

There remains a gap in understanding the multi-dimensional nature of personal VoA within age-homogenous environments such as CCRCs. This study aims to bridge the gap by applying Diehl and Wahl's (2010) multi-dimensional framework to explore the specific dimensions that residents of the CCRC identified when prompted to talk about their aging experiences.

Non-Kin Relationships and Personal Views of Aging

Interpersonal relationships have been identified conceptually as a domain of VoA (Kaspar et al., 2019; Palgi et al., 2022). Theories and empirical research have suggested changes in social relationships as we age (Antonucci et al., 2014; Carstensen, 2006). However, the impact of social relationships and their changes on personal VoA remains under-explored. Social networks commonly consist of multiple types of relationships ranging from kin (e.g., spouse/partner, children, parents, and relatives) to non-kin (e.g., friends and neighbors) (Antonucci, 1986; Kahn & Antonucci, 1980). Wrzus and colleagues (2013) found that while the size of family networks tends to remain stable across the lifespan, the overall size of individuals' social networks tends to shrink in late adulthood, suggesting that non-kin relationships are shrinking, potentially due to health-related limitations or death. The socioemotional selectivity

theory suggests that older adults tend to maintain relationships that are more meaningful and emotionally satisfying (Carstensen, 2006). Thus, it is reasonable to expect older adults to identify interpersonal relationship-related changes and attribute those changes to their chronological age.

Moreover, CCRCs provide a unique opportunity to understand how, specifically through non-kin relationships and social environments, the internalization and reinforcement of views of aging are taking place. In the social context of a CCRC, non-kin relationships among residents and with staff play an even more critical role in older adults' daily lives compared to those who reside in their home community. An ethnographic study of older adults living in senior housing complexes highlighted the unique role age-homogenous communities could play in preventing social isolation and providing a place where older adults could worry less about "acting their age" in the youth-oriented society (Hochschild, 1978).

On the one hand, there is a growing body of research highlighting that having non-kin relationships in later life can be beneficial to physical and cognitive functioning as well as emotional well-being (Fingerman, 2009; Huxhold et al., 2020; Zahodne et al., 2019). The CCRC residents may be able to form new non-kin relationships to replenish their social networks, which, in turn, may positively contribute to reducing their negative VoA, especially in the dimension of interpersonal relationships. On the other hand, research findings showed a high prevalence of negative views of aging being expressed among CCRC residents, and research on long-term care staff indicates that the work environment and experiences may foster negative attitudes and behaviors toward older adults (M. M. Baltes & Silverberg, 1994; M. M. Baltes & Wahl, 1992). All these general negative VoA from fellow residents and staff could be internalized and developed into negative personal VoA. Therefore, the current study explores how non-kin relationships shape or reinforce personal VoA among older adults.

The Present Study

Using the ethnographic method, this study aimed to answer the following research questions:

1. What are residents of a CCRC's personal views of aging?
2. Within the CCRC's social environment, an age-homogenous community, how are personal views of aging expressed, reflected upon, and reinforced through non-kin relationships?

Methods

This study used data collected during the summer of 2022 as part of a larger qualitative research project on the lived experience of growing old, conducted at an upscale, non-religious continuing care retirement community (CCRC) in the midwestern United States. Formal data collection (semi-structured interviews) occurred in June and July 2022, followed by a research presentation sharing preliminary results in August 2022. The larger study began in December 2020 and is ongoing.

The study used an ethnographic data collection method, including participant observations, semi-structured interviews, document collection, field notes (Charmaz & Belgrave, 2012), and member checking (Padgett, 2016). This allowed the researcher to immerse in the community and understand the social and physical environment through daily interactions and in-depth conversations with residents and staff (Creswell et al., 2025). The study was approved by the Institutional Review Board of the CCRC, Marquette University (HR-3889), and the University of Michigan (HUM00220093).

Study Participants and Data Sources

Participant Sample

Participants in the formal interview sample included 22 residents of Independence Living. The inclusion criteria were cognitively intact to complete the interview. The participatory observation part of the study included primarily residents of Independence Living and a few residents (five known to the researcher) of Assisted Living who attended community events.

Data Sources

Data sources used in the current study included field notes, interview transcripts, and communication and policy-related documents. Field notes documented roughly 180 hours of observations and experiences at the CCRC during the study period. Seventeen interviews with 22 residents of Independence Living were de-identified and then transcribed. The CCRC's administration provided data on the sociodemographics of the residents and the weekly event calendars during the study period. Some residents volunteered to share communications they received from the administration on COVID-19-related policies and updates and the resident-run monthly publications. Field notes and interview transcripts were used for data analysis, while statistics and documents provided context for interpreting results.

Recruitment Protocols and Strategies

The current study's participant sample of 22 residents was recruited following the larger study's recruitment protocols and strategies, which have been implemented since December 2021. Participants were primarily solicited through convenience sampling and snowball sampling. The Principle Investigator (PI) of the larger study hosted meet-and-greets at the community center for residents to learn about the researcher and the study. The study was also advertised on the CCRC's weekly event calendar. The PI also extended invitations during casual

daily interactions with residents and offered to do small focus groups. Combining these strategies helped recruit 48 participants in the summer of 2022.

Since most of the study period was during the COVID-19 pandemic, recruitment was affected by the CCRC's changing policies. Despite easing social restrictions, the CCRC maintained several COVID-19 preventive measures, including temperature checks and mandatory masking indoors for visitors, not residents. Access to Assisted Living was limited, with entry permitted exclusively to authorized individuals such as volunteers or residents' visitors. Although group size was no longer limited to events and activities in the summer of 2022, the CCRC gradually began reintroducing community events like neighborhood and community dinners and other casual social gatherings.

During the study period, I hosted two meet-and-greets and posted a brief study description on the weekly event calendar. In addition, the administration helped send an email with study descriptions and an interview scheduling link to 195 residents whose email addresses were on file. The 48 residents who had previously been interviewed were included in the recruitment this time since interview questions had changed and to conduct a follow-up interview. However, the residents included in the current study were all new participants.

Data Collection Procedure

Verbal consent was received from residents and staff before conducting research and observing any activities. Participant observations involved attending resident meetings, exercise classes, support groups, community meals, and social events. Interviews lasted 45-60 minutes, with open-ended questions about aging experiences, professional service gaps, the pandemic's impact, and ageism (see Supplemental Material 1 for interview questions). Interview questions were modified during the summer of 2022 to expand on views of aging by including prompts

such as “As I get older, I...”. The wording of the questions was adjusted from “80s/advanced old age” to “later life” to be inclusive of residents who were younger than 80 years old and/or not identified as in advanced old age. Also, questions about gender differences in aging were added. Interviews were recorded, de-identified, and transcribed.

Documents collected included resident publications, event calendars, demographic information, and pandemic-related communications from the administration. The communications were organized into a timeline, providing context when coding field notes and interviews. Member checking occurred through presentations and community discussions, with residents and staff invited to comment on interview quotes. I was involved in two presentations (one in July 2022 and one in August 2022) in which residents and staff were given quotes from interviews and invited to comment. Field notes documented these discussions.

Data Analysis

This study used thematic analysis to analyze interview data and field notes (Braun & Clarke, 2012). An undergraduate Research Assistant (RA) and I worked on coding the interview data together. The RA was first introduced to the key concepts and aims of the study through reading selected book chapters, journal papers, and discussions with me. Interview transcripts were open-coded by the RA, who was not involved in the data collection process, and me independently to explore potential themes related to perceptions of aging and non-kin relationships. We met to review the emerging themes and define and name the themes to ensure inter-theme consistency and inter-rater consistency. Then, we independently coded the transcripts based on the themes identified.

To answer the first research question about residents’ personal VoA, we open-coded the entire transcript to identify quotes related to aging and growing old. Next, we organized them

into five categories: physical functioning, cognitive functioning, interpersonal relationships, socio-emotional functioning, and lifestyle and engagement. Then, we distinguished between those quotes regarding their personal views of their own aging and observations of others.

To answer the second research question about the relationship between non-kin relationships and VoA, we open-coded the entire transcript to identify blocks of quotes when participants talked about non-kin relationships. Some quotes overlapped with those identified for the interpersonal relationship dimension of personal VoA. We then open-coded those block quotes to identify themes and categories. We discussed the disagreements until reaching a consensus. The two coders had an 83–86% agreement on all but one personal VoA dimension, lifestyle, and engagement (67%) (O'Connor & Joffe, 2020). My field notes documenting daily activities, observations, and reflections were used to refresh memory and provide contexts when coding the interview data. I coded the field notes and integrated them with the interview data later.

Results

Sample Characteristics

Table 3.1 shows the sociodemographic characteristics of all 22 participants of the semi-structured interview. The average age of the participants was 79.13 years old (SD=7.54, Range=65–98). All the participants identified as White. Among the men, 36% (8/22), six were married and interviewed with their wives; two were married, and one was never married. Among the women, ten were married or partnered, four were widowed, and one was divorced. All participants at least had a bachelor's degree, and eight held a graduate degree. On average, participants lived in the CCRC for 3.38 years, with the shortest moving in three weeks before the interview and the longest since 2009 (the pioneers).

Compared to the demographic statistics from the CCRC, the sample was younger than the CCRC's average age of 86.7 years. The sample also had a slightly higher proportion of men (sample=36%, CCRC=35%) and a greater percentage of married couples (sample=66%, CCRC=39%).

Multiple Dimensions of Personal Views of Aging

Participants' personal VoA encompassed diverse experiences, revealing the nuanced nature of the concept across various life domains. Thematic coding captured participants' views of their own aging within five domains: physical functioning, cognitive functioning, interpersonal relationships, socioemotional functioning, and lifestyle, as detailed in Figure 3.1.

Participants (95%) shared views on the *physical domain*, 55% shared on the *social-emotional domain*, 50% shared on the *interpersonal domain*, and 45% shared on *cognitive and lifestyle domains*. There are differences in perceived gains and losses under each domain. Participants mentioned more losses than gains in physical, cognitive, and interpersonal domains but more gains than losses in social-emotional and lifestyle domains. Supplemental Table 3.1 shows specific examples each participant shared about each personal VoA domain.

Physical Domain

All but one participant ($N=20$) gave examples of losses in physical domains, including experiencing physical limitations, changes in appearances, and diseases. One participant stood out for sharing a gain in the *physical domain*, expressing that as she grows older, she can better listen to her body.

Cognitive Domain

Ten out of the 22 participants mentioned there are changes in cognition as they grow older. Participants' examples of losses are predominately about memory ($n=9$). Gains in the cognitive domain included gaining wisdom and being more thoughtful/philosophical.

Interpersonal Domain

Under the interpersonal domain, more participants identified losses of family and friends ($n=8$), and a few identified the gains of family relationships ($n=4$). Six participants identified losing friendships as one of the losses of growing old. One participant shared that friends are his support group, and "Family doesn't replace them" (ID 46). Another participant shared that losing friends affects their engagement with religion, "The people that we had any kind of a relationship within the church were all gone; it seemed our relationship with the religion had changed because the people weren't there" (ID 53a). These examples revealed loss of friendships may be a salient negative VoA.

Social-Emotional Domain

Under the social-emotional domain, participants shared more gains that come with growing old than losses. Four participants shared the recognition that attitudes matter when dealing with challenges that come with growing old, and participants also shared growth in humor, spirituality, patience, and emotional regulation ($n=11$). Nevertheless, one participant shared that aging is emotionally discouraging when facing all the losses.

Lifestyle Domain

Despite five participants sharing that they had to give up driving, traveling, or other engagements as they aged, six participants shared gains in pursuing old and new hobbies and being responsible for less (e.g., no longer accountable for taking care of children).

Non-Kin Relationships as a Buffer Against Developing Negative Personal VoA

Multiple participants pointed out that losing friendships was a difficult part of aging. The social environment of a CCRC provides a unique opportunity to form new interpersonal relationships and foster a sense of community and solidarity, which can protect residents from developing negative personal VoA, especially in the interpersonal domain.

Replenishing Interpersonal Relationships

Almost all participants shared examples of positive social engagements and praised the opportunities to socialize because of being in a CCRC. One participant shared, “Our group of friends had shrunk either through death or moving, or attrition. And this has given us an opportunity to meet some new people” (ID 45b). Another participant pointed out they benefited from the social and physical environment of the CCRC:

We don’t have to drive anywhere. We can just go over to the community center. So socially, we’ve done a lot more here in the last two years than we probably did at home in the last four years or so. (ID 53b)

Groups, organizations, and activities are all opportunities for people to build interpersonal relationships, such as shared meals, exercise classes, lectures, separate discussion groups for men and women, and the Resident’s Association. One participant shared, “You can go to the community center any time of day, and there’ll be people there to talk to, and you’ll find people here that share common interests and have the time and interest to pursue them” (ID 41). A resident shared that he looks forward to participating more.

But [focusing on my wife’s recovery] has been our work for the last year and a half. Only now I am able to begin for myself to get involved in the men’s group. It was like finding the kind of person that I knew had to be here that I was looking forward to making new friends (ID 47b).

Before the COVID pandemic, some residents said there used to be many more reoccurring social events to get people together, such as the monthly neighborhood dinner in the community center,

and “you just showed up, and a lot of people [were there]... It did bring everyone together more together” (ID 52). The CCRC’s social and physical environment supports social interaction and engagement to form new non-kin relationships, potentially breaking the view that aging comes with losses of interpersonal relationships.

Preventing Social Isolation and Loneliness

Non-kin relationships, especially those formed in CCRCs, can be critical in creating a sense of belonging, community, and agency. Many participants mentioned that, during the initial months of the COVID lockdown, they formed social pods and shared what a critical role those played in preventing them from being socially isolated and feeling lonely.

We all had the group of us that did [the social pod], about six. We definitely made it so that we interacted with each other. We played card games, and we knew that we were safe. And we have a leader of all of us, and she’s fantastic with getting us [together]...so that we’re not left alone (ID 49).

The friendships formed during the COVID lockdown gave residents a sense of security. To prevent social isolation and loneliness during the lockdown period, the Resident’s Association launched a friendly callers program, and a friendly caller shared her experience:

[COVID is difficult]. Especially people that were living alone. That’s why here we had friendly callers...I’m supposed to be checking on them and calling them. And I was kind of nervous about that because I called one lady, and she said, ‘No, don’t call me anymore. I get too many calls.’ Because she lives alone and she was frail. Now, my neighbor since has died, which is sad, but I think they were worried about these people that were living alone (ID 52).

Outside of the COVID lockdown, one woman living alone shared how she and one of her neighbors had each other’s backs.

Because I don’t have children...so I wanted to be in a place where I would make friends. One of my friends in this building called me one day and said [she was not feeling well and asked me to call 911 for her], and I ran down and I [took care of everything], and she went off to the hospital. One night, I called her [at 10:30] and said my heart’s been pounding, and she hooked me up to her [heart-rate monitor] and told me that I’m okay and just dehydrated...Knowing that your friends are here and having that support is what

I was looking for; I wanted to be somewhere where I could count on being cared for the rest of my life (ID 57).

The non-kin relationships formed at the CCRC became essential in promoting a sense of security and agency and preventing the development of negative VoA, which means that experiencing social isolation and loneliness is an inevitable part of aging.

Promoting Physical and Cognitive Health

In addition to making friends, some residents shared social groups such as the men's and women's discussion groups to help them stay active physically and cognitively.

Because you're now older, but you can remain active. That's what's so good about this place, you know. I have a men's club luncheon, which I'm going to be going to. They have subjects that we discuss every Monday afternoon at lunch. I don't know what the subject is gonna be. What was the subject last week? That's part of the problem, man. You get a little older...you begin to forget things (ID 50).

The women's group is structured a little differently, with a presentation on a topic from a leadership committee member or an outside speaker, and people sat at tables of eight. One of the group's leaders highlighted, "It is a discussion. It's not a positional period. It's more, how do you feel about this issue" (ID 54). The topic interests vary across a broad spectrum, and the topic the group focused on during my fieldwork period was an organization that runs a local shelter and services for women who are victims of domestic abuse. During casual discussions I had with participants of the group, multiple people acknowledged that this discussion group motivated them to learn new things and get out of their homes.

Having Role Models

During interview conversations, participants mentioned role models living in the CCRC. Those role models are usually residents over 90 years old and still active. Other residents draw aspirations and learn from them. For example, a participant (ID 57) shared:

Interviewee: My friend, who's 92, who I go to happy hour with, I mean, she's just... She is as much fun to spend time with. I just don't think of her as old.

Interviewer: So, she's not old to you?

Interviewee: No, she is not old to me. She's just, she's like the Energizer bunny. She just keeps on clicking...and she takes... like every exercise class, she has a personal trainer. I mean, she is doing everything in her power to stay balanced. Balance is so important to keep moving.

Other residents feel looking at those role models eases their anxiety about running out of time and age-related changes. "My neighbor at 90 across from me... he just had a second hip done. He's fine. So, I feel a lot younger. I've realized that 80 is not so old, really. When I see people in their 90s, that's a long way off" (ID 57). A couple shared their social interactions with their friends in advanced old age, which helped them realize that growing old can be not just about physical and cognitive decline. "I'm the youngster in the group, and [aging] is not something we talk about. [A friend] is 96, and you think she was 20. She's a sparkle. Aging just does not seem to have a lot to do with my friends" (ID 58a).

Although the role model stories shared by the participants revealed negative general VoA, such as being old means you are no longer active, positive and meaningful social interactions with role model friends could prevent internalizing negative general VoA to personal VoA about their aging process.

Community Solidarity in Aging

When asked why they chose to move to a CCRC, most participants shared that they want to be in an environment that can support them stay independent for as long as possible. Some participants pointed out that after moving here, they started to appreciate living among their age peers. Participants shared that they no longer felt connected with their neighborhood because they are in different life stages: "When I was living in [the neighborhood], I had people [a

generation younger than me] with college kids. They were very nice to us, but we had nothing in common other than admiring their kids” (ID 51).

Some participants shared that “everyone is on the same boat” (ID 41). Specifically, a participant shared “You need people that are in the same situation that you are. So, then, you have people to play with because that’s what you should do in your retirement. You should enjoy it and not have to sit home until everybody gets home from work” (ID 41). Another participant shared, “We laugh about things that happened to us. And the great thing about being here is you have the people that are sharing the same... wetting their pants. A lot of people have that problem, and they help each other solve it and laugh about it” (ID 51).

Another example of the mentality that we are all in this together is a resident-run Parkinson’s and Movement Disorders Support Group. A resident who is living with Parkinson’s disease and a resident who is caring for someone living with Parkinson’s led the group. On the flyer, it said, “We are all teachers. Open to everyone.” The group meets once a month, and the meeting I observed had three men living with Parkinson’s, two wives who were the spouses of the men with Parkinson’s, and two women with mobility challenges. The group usually gets together to share new information, experiences, and lessons learned. Because of advocacy from this group, the fitness and wellness staff started to bring in exercise activities more tailored to people living with Parkinson’s, such as the new Drum Alive class offered by a non-profit organization that focuses on Parkinson’s. The group also shared some challenges they are facing, including different symptoms and finding the correct dosage of medications. Caregivers shared that they were overwhelmed with the amount of information, and one group leader responded that is why this group of us helped each other screen information. Being with age-peers who acknowledge and share support could mitigate negative personal VoA.

Non-Kin Relationships as a Reminder and Reinforcer of Negative VoA

Most participants shared examples of how non-kin relationships prevent the development of negative personal VoA. There were, nevertheless, also examples of how there are constant reminders of health decline and death and othering people being old, which could contribute to developing and reinforcing negative VoA.

Reminders of Health Decline and Death

Residents admit that living in a CCRC, there are constant reminders of decline and death. One resident said, “Being here is a pretty good reality check because the squad (ambulance) is here two or three times a week. And it’s like...well, it could be your turn next” (ID 45b). Another participant commented that time seems to go slow and fast here, “There are ambulances going on around all the time. When people get sick, they don’t get a cold; they get leukemia. And we talk about it all the time that life changes on a dime. I mean, look at that lovely little [lady]..., she [used to walk] all the way down here every day, and then one day she was dead” (ID 57).

In addition to the indirect cues in the CCRC, sometimes there are reminders of aging from peers. In an exercise class that focuses on stretching and everyone is sitting in chairs, the trainer started a conversation about the golf match he watched, and a resident said, “We all got this disease spelled A-G-E.”

These reminders induced frustration and fear in some residents. A wife shared that her husband was against moving to the CCRC because this is “a place to die” (ID 51). She admitted that “Death happens here. It happens more than you usually see in the general population. But [chuckle] the population is apt to have that happen” (ID 51). Another resident shared, “What often really makes a change in people’s lifestyle here is a fall. And some recover, but a lot don’t.

So, that would be my primary fear, fear of falling” (ID 41). Nevertheless, many residents shared how they have been coping, including being “intellectually prepared to deal with it” (ID 45b), but also disassociations by not getting involved in the CCRC community.

Constantly being exposed to ambulances, death, and health declines could fuel the development of negative personal VoA with the belief and expectation that aging is only about dying. However, some residents also shared that those reminders are reality checks and help physically and mentally prepare for experiencing the aging process. Reminders could also help participants to develop a realistic personal VoA.

Reinforcing Negative General VoA by Othering People “Being Old”

There is a pattern of labeling and othering people “being old.” A resident shared the story that a neighbor came to her and complained about some “older members” of an exercise class, “she said some of the ‘older people’ in our class resented the fact that she had called everybody after she tested positive for COVID... Well, I’m 80 years old. So, I was flattered” (ID 42). Here, “older” implies being stubborn and unreasonable.

Another behavior associated with being “old” is hiding signs of aging and decline. As one participant shared, “I know people that really should use a cane or a walker and don’t because they think it makes them look old. And you say, for God’s sake, you’re 87, you are old. What are you worried about? Do you think anybody looks at you and says, ‘That’s an interesting young man.’” (ID 41).

Being dependent is another sign of “being old.” A participant brought this up when comparing herself and a friend:

Well, I’m pretty independent, but with friends, I think they become dependent on their children.... My neighbor above me... she’s very dependent on her daughters. We hoped to have invited her for dinner, and she called me up and said, “Well, my daughter’s gonna be out of town, I can’t get dressed.” (ID 43).

In addition to labeling certain behaviors as being old, participants who are younger shared that they felt isolated and out of place because of seeing signs of decline. One of the younger participants shared how seeing walkers everywhere makes him feel out of place.

I thought it was like one of my parents' Christmas parties... It was all old people staggering around with their walkers. You couldn't move easily. I just thought, Oh my God, this is awful. This is awful. I don't want this, I don't want to be a part of it (ID 48).

Multiple participants younger than 80 expressed a sense of not belonging and feeling isolated. A resident shared,

I am surrounded by elderly people who are not my friends. I go to Happy Hour downtown. And now that I'm here [living at a CCRC], the age range [at the bar downtown] is a benefit of that, whereas it wasn't before. I see the world when I'm out of here. And that wasn't something I thought about when I came here. Seeing that makes me feel isolated here (ID 48).

Another relatively younger participant also talked about "missing younger people."

But the women that are [on my floor] are all much older than I am. We have a 94-year-old, a 93-year-old, a 91-year-old... They can't hear well; they don't see well. They're not as up on technology. Not that I am, but I can at least run my computer and get what I need done. So, it was very different. And then, after this last year, when I was finally able to get out and be mobile again, I realized I was missing younger people, people my age, with my interests and my brain activity. So, I started to make new friends, and I'm happy with the new friends I've made through the different activities. I still get together with my older friends. There are times when I am so bored I can't stand it. They repeat stories, and they have much more rigid opinions. They don't hear well. They can't see (ID 54).

Examples of "being old" shared by participants generally revealed negative VoA, where being old is associated with being stubborn, unreasonable, and dependent and having visible signs of disabilities. Participants who shared those examples had the mentality that those people are old and that I am not old. Some residents actively resisted being associated with being old by avoiding assistive devices and feeling displaced. These avoidance behaviors reinforce the negative general VoA and contribute to the development of more negative personal VoA that could become salient when the younger participants experience declines and dependency.

Perpetuating Negative General VoA by CCRC Staff

CCRC staff are new non-kin relationships residents form that could play a critical role in their aging experiences. Some participants shared examples of staff making assumptions based on age and trivializing residents' concerns. A participant shared two examples from her conversations with the CCRC staff. One is when she was talking to the administrator about constantly switching the TV system:

[The administrator] said: "I wanna study just what is involved with elderly TV." And I said, "What do you mean by elderly TV?" I mean, unless we're in the dementia group, we still have the same intellect, the same appreciation for music, or dance, or blah, blah, blah. And I thought, that is ageism, isn't it? (ID 59a)

Another incident the participant shared was a comment from the maintenance team administrator about rumors she had heard about people living in the apartments.

[The administrator] said, 'Ah, I just let those old people squawk away. They're old. What do you expect? They've been cooped up all winter.' So, really, I do mind, my gosh, the lack of respect. I don't think they realize their bias. They're thinking they're working with funny people (ID 59a).

During an unrecorded casual conversation with a resident, she shared that she wanted to organize a group chat about grief during the COVID-19 pandemic. Although there was no COVID-related death in the community, she had the intention to discuss grief and loss more broadly, including topics such as loss of freedom due to lockdown and loss of social connections. When she sent the group discussion description to the administrator in charge of programming, the administrator pushed her to replace the word "grief" because "people don't use the word 'grief' around [the CCRC]."

The example shared by participants revealed that this non-kin relationship could perpetuate negative general VoA through daily interactions with residents, which could lead to

residents internalizing and developing negative personal VoA that aging is about diminishment rather than continued growth.

Coping with Feeling Out of Place

Although participants, especially those younger, shared feelings of being out of place, people have found different coping methods. One participant shared, “The way I can get into [the social circle of CCRC] is to get my name known by getting it out there in a couple of articles, be on the editorial board of *The Cardinal*, and at least they’ll know my name” (ID 48). Another participant shared her recent reflections and changes in her attitude:

Bridge is a good example, and I love Bridge. But, half the players at that little Bridge group have those sensory deficits. I was getting really irritated and, like, I’m wasting my time... But this week, I made an attitude shift... my attitude now is, these are people who like the socialization, used to love Bridge, still do it, and I’ll just play at their level and not get hooked into thinking that their deficits have to make me have a bad time. They’ll make terrible mistakes. But I’m gonna look at it more as a group for senior activities (ID 54).

The social and physical environment of the CCRC encouraged participants who felt a lack of belonging to explore alternative ways to form and maintain non-kin relationships. The coping strategies could protect participants from internalizing the negative general VoA that has led to their feeling out of place and facilitate the development of positive personal VoA in the socio-emotional and interpersonal domains.

Gender Differences in Forming New Interpersonal Relationships

There are noticeable gender differences in activities residents participate in and their social experiences. Based on the participatory observations, most participants and leaders of group activities and organizations were women, with one clear exception being the editorial board of *The Cardinal*, with seven men and six women. Some male participants shared:

For the women, they seem much more social. The women are always hanging out together, chit chatting, and the men are just kind of lost. But you don’t see many women

like that. They all seem to be, and boy, these are aggressive women. I mean, they want to be on every committee, but you don't see many men on the committees (ID 48).

Another widower shared, "If you had a happy marriage, you just follow your wife. To re-establish [social groups] is difficult. Of course, through your lifetime, you have [your group]" (ID 46). These gendered experiences suggest that men and women are likely to view and adapt to the interpersonal relations domain of aging differently.

Some participants revealed that there is an invisible line between single women and married couples. A divorced woman shared, "But there's a big dividing line between single and married couples...It's just not acceptable to hang out with married couples if you're a single woman. After I divorced my husband, I was single for 15, 17 years, and the same thing applied" (ID 54). Another divorced woman echoed the observation and feeling.

It was one of the reasons that I moved from [the other CCRC] is when I got divorced, all of a sudden, it was like you're wearing a scarlet letter around your neck, D, divorced, and A, available. I'm after your husband. All of a sudden, I was in such social isolation...It's funny because there are people who go out to dinner all the time, and then they invite different people to join them. I see there are groups here that would never have me, which I think is because of my age or maybe just [I was divorced] (ID 57).

The experiences shared by participants seem to suggest that there is a social divide against divorced women in the CCRC. The social exclusion could affect this group's ability to form new non-kin relationships, suggesting that they may be more likely to develop more negative personal VoA, especially in the interpersonal dimension.

Discussion

This study explored how residents of a Continuing Care Retirement Community perceived aging and the role that non-kin relationships play in reflecting and shaping residents' personal views of aging. The findings revealed that residents' personal VoA is multi-dimensional, and multiple participants acknowledged that aging comes with losses of

interpersonal relationships, especially friendships. The non-kin relationships in the CCRC both buffered against developing negative personal VoA, potentially reinforcing negative personal VoA and facilitating negative general VoA to be internalized.

Multi-Dimensionality of Personal Views of Aging

Consistent with Diehl and Wahl's (2010) framework, participants' personal VoA appears multi-dimensional. The findings reveal that individuals have a holistic view of aging across multiple life domains. Although most recognized losses in physical and functional health, many participants mentioned changes in interpersonal relationships, social-emotional well-being, and lifestyle. Moreover, the findings complicate the current conceptualization by highlighting gains and losses across various life domains. Most participants recognized physical and cognitive losses, with a smaller proportion acknowledging gains, particularly in the social-emotional domain. These findings align with Baltes and Baltes' (1990) model of selection, optimization, and compensation, suggesting that gains and losses change across the lifespan. People develop adaptive strategies to manage these changes, such as social-emotional growth (e.g., changing attitudes toward self, others, and life) or interpersonal growth (e.g., building new relationships).

The multi-dimensional approach also revealed the possible associations between negative personal VoA and social isolation. Many participants shared that losing family members and friends is part of aging, specifically mentioning the loss of friends. Experiencing such losses can serve as a reminder of one's aging process and the passing of time (Carstensen, 2006). However, the literature and measurement overlooked losses in interpersonal relationships. A recent 10-item scale (Kaspar et al., 2019) identified only one item for interpersonal relations loss ("I feel more dependent on the help of others") and one for gain ("I appreciate relationships and people much more"). While the scale and current findings identified appreciation of relationships as an

interpersonal gain, the scale does not capture the loss of family and friends. Some participants used being dependent as an example of being old, suggesting it was undesirable. However, few mentioned dependency when discussing their personal VoA. It is possible that the current study sample could be biased toward more active and independent older adults. Nevertheless, the findings suggest further research is needed to understand the interpersonal domain of views of aging.

Non-Kin Relationships as a Buffer Against Developing Negative Personal VoA

The desire to live among age peers reflects a search for communal solidarity based on shared experiences of aging. The CCRC residents' accounts highlight a collective identity that might mitigate the stereotypical general view of aging, as observed in the supportive exchanges and humor regarding common age-related challenges. The solidarity likely serves as a social buffer. Losing friends due to death or relocation is a shared experience, which is why older adults are vulnerable to experiencing social isolation and loneliness (Cudjoe et al., 2020). Residents' experiences of and opportunities to build and strengthen non-kin relationships are likely to boost their interpersonal relations and socio-emotional aspects of personal VoA, preventing them from developing the belief and outlook that aging is about losing loved ones and being lonely.

Non-Kin Relationships as a Reminder and Reinforcer of Negative Personal VoA

While most participants shared positive social experiences at the CCRC, there were constant reminders of declines and an observed pattern of "othering" those perceived as "older." Residents seem to use age as a social stratification, differentiating "us" from "them" based on perceived age-related characteristics, such as being over-reactive, hiding symptoms, being dependent, using a walker, or no longer engaging and active. This differentiation reflects

participants' general VoA and may influence personal VoA in the long run since it reinforces the stigma attached to aging, and everyone should avoid being old. Even though people shared examples of role models who are active in their 90s, on the one hand, these examples can provide opposite examples to negative general VoA and demonstrate a sense of agency and control in their aging process; on the other hand, these examples reflect internalized views of aging that being active in your 90s is unexpected.

Being 'old' is not a reflection of chronological age but rather a social construct influenced by attitudes and behaviors. This othering within the community may lead to internalized age stereotypes among the residents, where being 'old' is associated with negative stereotypes such as being stubborn, out-of-touch, or physically dependent. As seen in the narratives, some residents actively resisted these stereotypes by avoiding assistive devices or feeling displaced amidst their older peers. Such behaviors may be a reaction to the fear of being othered, highlighting the critical role non-kin relationships play in shaping individuals' self-perceptions of aging.

The avoidance behaviors reinforce age-related stereotypes like using assisted devices and having sensory deficiencies. Younger residents' avoidance could partially explain why many participants shared that residents needing assisted devices or experiencing symptoms often deny and hide them. This creates a feedback loop where avoidance further reinforces younger residents' age-related stereotypes, contributing to developing more negative personal VoA. When experiencing symptoms and health declines later in life, they are more likely to disassociate from the stigma of growing old by denying, hiding symptoms, or socially withdrawing.

Moreover, the findings unveiled internalized ableist attitudes intertwined with negative personal VoA (Gendron et al., 2024). Residents using mobility aids or with visible disabilities

were often stigmatized and labeled “old,” reflecting intersecting negative attitudes toward disability and aging (Resnik et al., 2009). Internalized ableism can lead people of all ages to devalue and marginalize those perceived as having disabilities. Associating being disabled with being old is one of the ways to stigmatize aging, in addition to other age-related stereotypes. Future research should explore how ableism compounds negative VoA and vice versa.

Participants highlighted instances where CCRC staff’s attitudes and language perpetuate negative stereotypes about aging. Remarks that trivialize older adults’ concerns or suggest a homogenized view of their interests can reinforce age-related othering, impacting residents’ personal VoA. This finding is consistent with research findings that staff working in the long-term care setting are more likely to engage in patronizing behaviors and have negative perceptions toward older adults (M. M. Baltes & Silverberg, 2019; M. M. Baltes & Wahl, 1992). These studies also suggest that patronizing behaviors could lead to an increase in dependency from older adults. These interactions underscore the need for age-sensitive communication training for staff to foster a community culture that respects the individuality and diversity of the aging experience.

Two themes were unexpected. The younger residents’ approach to feeling out of place showed the interplay between relationships and attitudes. One resident decided to seek their social place within the community through involvement in activities that offer a sense of contribution and recognition. Another resident reframed her expectations of social activities to focus on building interpersonal relationships rather than playing the game right. Both ways of coping indicate changes in the socio-emotional domain to compensate for the losses in the interpersonal domain, which could prevent social isolation and loneliness.

Gender differences in social participation and experiences within the CCRC vary. Men reported feeling less integrated into the community's social fabric, while women were more proactive in forming social networks. These gendered experiences suggest that men and women may perceive and adapt to the interpersonal aspects of aging differently, aligning with studies examining gender differences in social participation (Dury et al., 2021). Moreover, the study shed light on the experiences of aging of divorced women. The stigma attached to being single or divorced can lead to social exclusion, which can potentially affect personal VoA, especially the interpersonal relations domain.

Nevertheless, one of the divorced women shared a close and trusted relationship she formed with one of her neighbors because she had no family members to rely on. This not only revealed that this group is at higher risk of developing more negative personal VoA due to lack of social support but also that the group could potentially be resourceful and have a strong sense of agency as they grow older. Future research should recognize the lived experiences of aging single and divorced women and potentially explore whether there are cohort differences in their experiences since values surrounding marriage have been changing (Huxhold, 2019).

Contributions, Limitations, and Future Directions

The current study contributes to the literature by understanding older adults' personal VoA in an open-ended way to shed light on the multi-dimensionality of the concept. Moreover, this study explored non-kin relationships and the social environment of a CCRC's associations with shaping older adults' VoA. The findings integrate and expand on the stereotype embodiment, self-stereotyping, and interpersonal context frameworks, suggesting age-related stereotypes that manifested as negative general and personal VoA were unique from gender- and race-related stereotypes. Although most residents want to get along with their age peers, many

seem to avoid self-stereotyping and aspire to violate the general VoA. This study highlights the critical role of non-kin relationships in older adults' continuous development of views of aging and their well-being.

The study has some limitations. First, the small sample is not representative of the U.S. older adult population, as CCRC residents are predominantly White, highly educated, and of high socioeconomic status due to high entrance costs. Moreover, given recruitment strategies and COVID-19 restrictions, the sample is biased toward younger, socially, and physically active residents. Thus, findings may not generalize to VoA and non-kin relationships of older U.S. adults. However, this study provides a holistic, in-depth perspective examining older adults' complex VoA and a CCRC environment's role in shaping it, highlighting the importance of integrating social and physical environments in VoA research. Second, being cross-sectional, findings on non-kin relationships should not be interpreted as causal to shaping personal VoA. Future research could explore longitudinal changes in residents' perceptions of aging and how they adapt to evolving social dynamics within CCRCs, investigating experiences of being "othered" and coping strategies employed.

Considering the CCRC context, the physical environment likely shaped residents' VoA. Activities (e.g., exercise classes, clubs) and amenities (e.g., accessibility, safety measures, facilities) contributed to residents' VoA, providing opportunities to experience gains and avoid losses in domains like interpersonal and physical. However, the environment may also magnify losses due to fear of being labeled "old." This study highlights an important future research direction: the role of neighborhood context in shaping older adults' VoA. Neighborhoods integrate physical and social environments, ranging from intentionally built retirement communities like CCRCs to naturally occurring retirement communities (NORCs; Rivera-

Hernandez et al., 2015; Torres, 2020). Non-kin relationships and a shared physical environment may contribute to constructing and reconstructing VoA.

Although more empirical studies are needed before intervention development, practice implications exist. The findings suggest the need to take a dynamic and holistic view when service providers and the larger society talk about aging. As people advance into older age, they experience both gains and losses across different life domains. Social workers can develop strategies to assess older adults' personal VoA across multiple dimensions and participate in and lead social movements reframing aging.

Moreover, when working with a client, understanding non-kin relationships and a greater social environment could be beneficial since it is possible views of aging and social relationships have a reciprocal effect on each other. Targeting non-kin relationship building and identifying negative personal VoA thinking patterns could go hand in hand when exploring an intervention targeting older adults' social health.

In conclusion, this study reveals that views of aging are embedded within a complex social context. In addition to family members, non-kin relationships are an important part of aging experiences. Non-kin relationships could play a critical role in shaping and reinforcing personal VoA.

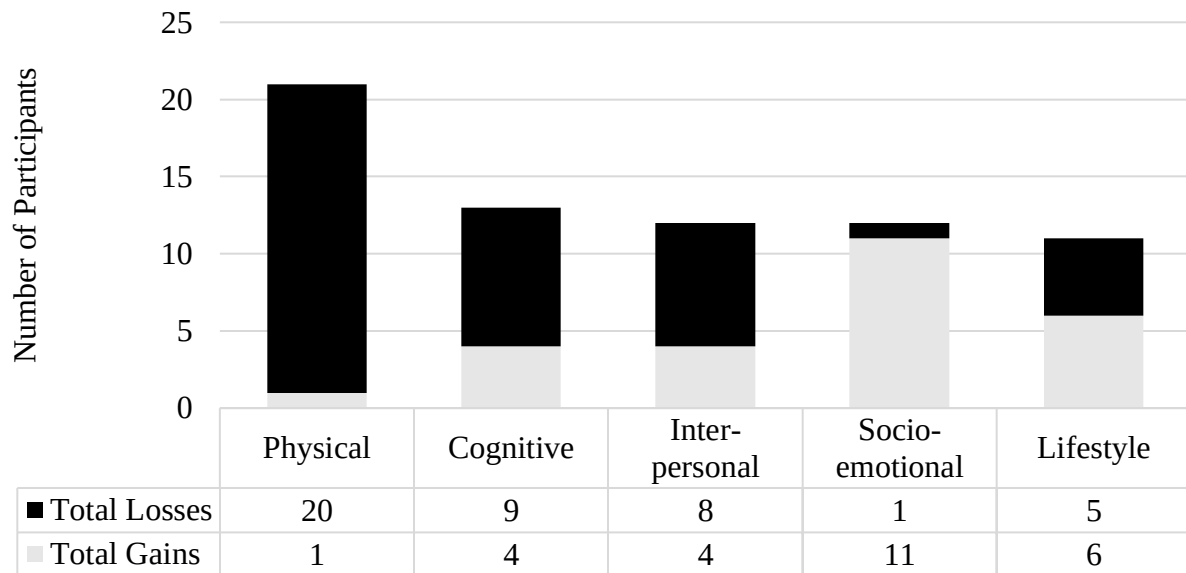
Table and Figures for Chapter 3

Table 3.1. Interview Participants' Sociodemographic Characteristics (N=22)

	Mean (SD) / %
Age [65-98]	79.13 (7.54)
Man	36%
Race and ethnicity – White	100%
Earned a graduate degree	36%
Marital status	
Married	64%
Widowed	27%
Divorced	5%
Never married	5%
Years lived at the CCRC [3 weeks to 13 years]	3.37 (3.38)

Note. CCRC=Continuing Care Retirement Community.

Figure 3.1. Counts of Gains and Losses Interview Participants Mentioned in Each Personal View of Aging Dimension



Supplemental Materials for Chapter 3

Supplemental Material 1: Interview/Focus Group Questions

Background

How long have you been living here? What brought you here as a place to live? How important was it for you to be living among older adults, and why?

Concepts of aging and who is “old.”

What were your concepts of who is old and what aging is like? In other words, who is “old”?

Please finish the sentence, “As I get older, I...” (Prompt: physically, mentally, socially).

How old do you feel? Why?

Experiences of aging (and more broadly)

In your own experiences and observations here, what are the greatest gifts of reaching older age? (such as physical, psychological, social, spiritual, or cultural)

In your own experiences observations here, what are among the greatest challenges of reaching older age? (such as physical, psychological, social, spiritual, or cultural)

Public policy and professional concepts of who is “old”:

What is one thing you’d like your doctor or other helping professionals to know about living into older age?

In your observations of people here, do you observe that they are independent or dependent (or somewhere in between)?

Getting older is often associated with loss. In your observations here of people, what are significant losses, which might be physical, psychological, and/or social? Are these losses different if one is a man or woman? How so?

Societal and cultural levels

Are you familiar with the concept of “ageism”?

(Ageism is a term for societal levels of discrimination based on age.) In your observations and experience, how prevalent is ageism, and in what contexts might it be observed or experienced?

Are there societal-level examples of positive attitudes and treatment of adults who are in the “oldest-old” age category? In your observations and experience, how prevalent is this, and in what contexts might this be observed or experienced?

Gender and Aging

Do you think men and women age differently? How so?

Covid-19 Pandemic impacts

How has COVID disrupted your work experience here? And how has it impacted residents?

Are there any “silver linings”?

Supplemental Table 3.1. Multi Dimensions of Personal Views of Aging

ID	Physical	Specific Examples	Cognitive	Specific Examples	Inter-personal	Specific Examples	Socio-emotional	Specific Examples	Life style	Specific Examples
41	1	Physical limitations; take more medications	1	Not as spry	1	Learn the value of family and friends	0		1	Prioritize my interests because of limited energy and time
42	1	Losing abilities	1	More thoughtful/ philosophical	1	Treasure friendships and family	1	Savor good times	0	
43	1	Listen to bodies; take care of health	0		0		1	Gifts after tragedies, spiritual.	1	Less responsibility; let younger people take the reigns
46	1	“health knocked down”; many symptoms	0		1	Loss of wife; loss of support group/ friends; loss of authority in front of children	1	Aging is emotionally discouraging	1	Giving up driving
48	1	Changes in body, energy level, and appearance	0		0		0		0	
49	1	Physically starting to fail; slow	1	Forgetful; Dementia	0		0		1	Time to have fun

50	1	Loss of abilities	1	Forgetfulness	1	Engage with grandkids, not worthy to interact; family “moved” me here	1	Better emotional regulation	0	
51	1	Changes to your body and physical appearance; everything slower	0		1	Recognize friends are aging	1	Become kinder	1	Time to enjoy the world
52	1	Physically not the same	1	Your mind (loss); gain wisdom; respond differently	1	Loss of friends	1	Change attitude; Accept limitations	1	Had to stop doing things
54	1	Physical injury; diseases	0		0		1	Attitudes matter; adaptation	0	
55	1	Fear of falling; surgeries	1	Losing memory	1	Miss family involvement	0		1	Try baking
57	1	Physical appearance (hunching over); falls; weight gain	0		0		0		0	
45a	1	Serious medical issues	1	Loss of short-term memory due to brain tumor	0		1	Have humor	0	

45b	1	Lower physical capacity	0		0		1	Attitudes matter	0
47b	0		1	Brain functions less efficiently	0		1	Attitudes matter, focus on mental health, spiritual	
53a	1	Parkinson's; inability to balance	1	Loss of mental stamina; wisdom	1	Limited social, loss of friends	1	Learning to adapt	1 Unable to travel, adapt to our capabilities
53b	1	Rapid physical changes	1	Rapid mental change; loss of recall	1	Treasure relationships with family	1	Learning to be patient	1 Unable to travel; Learning to take on less responsibilities
58a	1	Becoming disabled	0		1	Watching friends "fade"	0		0
58b	1	Decline in physical health	0		1	Losing family members and friends	0		0
59a	1	Wear and tear	0		0		0		0
59b	1	Parkinson's; becoming slower physically	0		0		0		1 Stopped doing stuff (in part due to the pandemic)

Supplemental Table 3.2. All the Quotes in the Interviews on Non-Kin Relationships and Personal Views of Aging

ID	Quote
<i>Loss of Friendships</i>	
46	Interviewer: What were some of the big surprises for you? Interviewee: I'd say one other important one is losing your support group, your friends. Your family doesn't replace them. They've always been there.
47b	Interviewee: As far as challenges go, some of those wind up having to do with loss of... a lot of them have to do with losses. And some of those have to do with relationship losses. Some of that has to do with the death of other people who die before they're 85. And that's an adjustment.
52	Interviewer: How have you been coping with loss around because there's a lot happening and especially toward the later years? Interviewee: I've lost a lot of good friends, which is hard. And I say things reminded me of them and you just can't focus on the past. It's what we have here now and look at the positives that's here and just move on.
53a	The people that we had any kind of a relationship with in the church were all gone, it seemed our relationship with the religion had changed because the people weren't there.
58a58b	Interviewee: [A number of our friends] they're in their mid 80s, most of them. Interviewee: And we have lost a number of them. Our friends do not determine what happens in our life. We enjoy them immensely. But I love them all. We cherish all the good times. I mean, we've done this for, we're talking about for 45 years. So, we've had a good time with all of them. But what happens to them is not going to denigrate our life. We regret losing any of them as they would regret it if one of us passed away. But I don't think it's gonna affect our lives.
59a59b	Interviewer: So, for you, what are some significant losses that come with aging, especially in the 80s and 90s, if any? Interviewee a: Just either friends, family members, we've lost a lot of family members. Interviewee b: We lost a lot of family members.
<i>Community Solidarity in Aging</i>	
41	The people here are great and everybody's sort of in the same boat.
41	What I figured out is that if you just live in a neighborhood where there are working people and students and all, you're off all day long and there's nobody to play with. You need people that are in the same situation that you are. So then you have people to play with because that's what you should do in your retirement, you should enjoy it and not have to sit home until everybody gets home from work, because then they gotta feed the kids and do the homework and do the house cleaning and they don't have time to play with you.

- 51 Where... when I was living in Dexter, I had people your parent's age with college kids in the neighborhood. They were very nice to us, but we had nothing in common other than admiring their kids. That's all I can say.
- 50 We're all the same age. We're all old here.
- 51 I find the people here, at least the ones that I've gotten to know, we just, we laugh about things that happened to us. And the great thing about being here is you have the people that are sharing the same... wetting their pants. A lot of people have that problem, and they help each other solve it and laugh about it. And also, we're interested in each other.
- 54 Interviewer: How important was it for you to be working... Living among older adults?
Interviewee: Very important. I wanted to live in a facility where I can make companions of my own age, or a little bit younger, which leads me to another topic that emerged in January where I had to kind of reform relationships.

Rebuilding Interpersonal Relationships

- 45b But we're very happy that we're here because our group of friends had shrunk either through death or moving, or attrition. And this has given us an opportunity to meet some new people. And [my wife] likes it 'cause there's all activities that you can socialize with. And it is just been a very good fit.
- 47b But [focusing on my wife's recovery] has been our work for the last year and a half. Only now am I able to begin for myself to want to and begin to get involved in the men's group. It was like finding the kind of person that I knew had to be here that I was looking forward to making new friends.
- 53b So, coming here, we are much more social here than we were in our house because people are here, they're close by. We don't have to drive anywhere. We can just go over to the community center. And because we're in an attached building, we can go inside when the weather is poor. So that, again, is a benefit for us. So socially, we've done a lot more here in the last two years than we probably did at home in the last four years or so.
- 55 The gifts would be family and new friends and keeping in touch with older friends or past friends and I'm enjoying the different classes that I take and different things that they offer here. It's really nice.
- 57 I mean, it's great... I think the friendships are; I think the lack of drama. So, you have these friendships that are so deep and so, really supportive especially, I mean, in this building. I honestly don't think there's anyone I couldn't call on that wouldn't jump in a second to help me through whatever I needed.

Promoting a Sense of Community

- 41 You can go up to the community center any time of day and there'll be people there to talk to and you'll find people here that share common interests and have the time and interest to pursue them.
- 41 It still was isolating, but we worked... Some of my closest friends here, and my husband and I formed like a pod, and once a week, they would either come to our apartment for dinner. We'd have meals delivered here, or we would go to one of

- their apartments for dinner or a house for dinner, and have the meals delivered there, and we sort of all stayed healthy and we were all very careful.
- 42 A couple of times, I rented a van so we could just push him in the wheelchair into the van and then take him to the wine bar where we go Tuesday nights with a group from South Franklin Circle every Tuesday night. So, we celebrated his birthday there...It was so sweet. They all clapped when he came in 'cause he hadn't been able to come to Tuesday night things. We were all outside on the patio and they all clapped and came over and said, "Well, we don't know you, but Happy Birthday."
- 42 Well, I think there's a sense of we're all in this (COVID) together, but interestingly just this morning I heard about a negative situation. My neighbor got COVID and she was in an exercise class that I was in and there were five, four other people. She called everyone in the class and told them she tested positive. We all had to go get tested. But when she dropped by this morning, she said some of the older people in our class resented the fact that she had called everybody. I can't believe that. And she said, well, another person in our class had a conversation with some of what she called the "older members." Well, I'm 80 years old. So, I was flattered that...
- 46 Oh, it was just like a fraternity house. There were an awful lot of us about the same age and just promotional parties started about five years—or four.
- 47b And I have been focusing a lot on [my wife]'s recovery, for the last year and a half. And it's almost like being a caregiver in a way. But I got around the community more than she was able to... We live in an apartment purposely to be in a community. But we haven't been able to be in the community as much as we thought we would from day one. Health makes all the difference in the world as to whether you can participate fully or not.
- 49 We started going to each other's apartments and having dinner together [during COVID]. And so, we definitely made it so that we interacted with each other. We played card games and we knew that we were safe. We had all had the group of us that did this, about six. And we have a leader of all of us, and she's fantastic with getting us to do things like having Christmas together or New Year's together or things like that on special occasions so that we're not left alone. There are five of us who like to play cards; it's great. We just had a long game yesterday, so it's four hours, and we sit and we chat and we laugh and we play the game. It's good.
- 50 Because you're now older, but you can remain active. Like, that's what's so good about this place, you know, I have a men's club luncheon, which I'm going to be going to. They have subjects that we discuss every Monday afternoon at lunch. I don't know what the subject is gonna be. What was the subject last week? That's part of the problem, man. You get a little older; you begin to forget things.
- 52 [COVID] In some ways, that was very difficult. Especially people that were living alone. That's why here we had friendly callers. And my neighbor was a friendly caller and she passed it on to me and I felt a little nervous because I didn't know everyone in my neighborhood very well. Some I knew but some I didn't know at all and then I'm supposed to be checking on them and calling them. And I was kind of nervous about that because I called one lady and she said, "No, don't call me

anymore. I get too many calls” because she lives alone and she was frail. Now, my neighbor since has died, which is sad, but I think they were worried about these people that were living alone.

52 And still some things have not gone back to the way they were because when we first moved here every month they would have a neighborhood dinner and they set it up in the Chautauqua room; just round tables sat maybe eight of us. And you didn’t have to reserve or sign up or anything; you just showed up and a lot of people. And they served a nice dinner and then there was some entertainment and there were themes. We did, Oh, it was Valentine’s Day I guess was the theme. The one I went to. And there hasn’t been one since February of 2020. So, things like that I think people miss because it did bring everybody together more.

54 In living here and you look around and reflect on what the gifts of aging are, I think...there are plenty of social interaction that’s available. All the way from bingo, which I never thought I’d play in a million years. It’s just funny, we just laugh a lot. And I just never thought I’d do that.

54 [The COVID lockdown] shifted kind of right away. I think I was here two months or something, and one of the people here on this floor reached out, and she said, Oh, we get together every Wednesday night for dinner and we did it at each person’s house. We would rotate every week, and we still do that; we either go to Radius now, which we all prefer ‘cause it’s so much easier, or if Radius can’t accommodate us then we just do it in one of our houses. It’s nice. It was kind of reinforcing the value of whole friendships and making friendships and being consistent; sometimes it’s too rigid for me. It’s just like, Oh God, I can’t hear that conversation again, but I’m not gonna say no because I respect my friends.

54 Women’s discussion group. There are five of us on the committee. And we present something once a month, and it started out as a discussion group and will be again, but this particular topic came up. So, it was a presentation and then we had questions from the floor. But the discussion group is we’re breaking into tables of eight. And then we have a topic and questions and each of the committee people sits at a table and leads the group, their group through the discussion. So, it’s supposed to be a discussion... it’s not a positional period. It’s more, how do you feel about this issue. Last time, it was on Women’s Safe, a shelter and services for spousal abuse. It was very well received and it was good.

58b When you get someplace... this is again... goes back to why we chose this place. Whichever one of us has left after the other places, we have a community, we can go and do whatever we choose to do. In my mother’s age, when we became a widow or a widower basically, they pretty much did their gardening in the yard and sat and watched television. And that was their senior life. And that’s what they chose. That’s not what we were gonna choose. And we have seen people, as we said, suffer some things, but they are good people.

Promoting a Sense of Security

57 Which kind of comes around as to why I moved here because I don’t have children. And I’m like, “Who’s gonna be my advocate?” And so, I wanted to be in a place where I would make friends. One of my friends in this building called me one day and said, “Look at my heart, I’m really... My heart is... I have to go to the hospital. Would you come down and call 911

for me?” And I ran down and I did. And I got everything. I took care of her dog and she went off to the hospital. People have your backs here. I called her one night and I said, “I don’t know what’s wrong with me. My heart’s been pounding all day long and it just doesn’t seem to wanna settle down.” And it was 10:30 at night and I was in my PJs and she goes, “Get down here right now, just come down here right this minute.” ‘Cause she has one of those Procardia things that hooks you up and gives you your heart rhythms and your heart rate. And so, she said, “Okay, put your fingers right here on this thing. And she does it ‘cause she has a heart issue as well. And she goes, “Okay, normal rhythms and your heart rate is 65. I think you’re good.” I think you’re dehydrated. She said, “Go upstairs right now and have a glass of water before you get into bed and take one to bed with you,” which I always do anyway. Knowing that your friends are here and having that support is what I was looking for. I wanted to be somewhere where I could count on being cared for for the rest of my life.

Reminders of Declines and Death

- 41 That’s what often really makes a change in people’s lifestyle here is a fall. And some recover, but a lot don’t. So, that would be my primary fear, not fear of dependency. It would be fear of falling.
- 45b Being here is a pretty good reality check because the squad is here two or three times a week. And it’s like, do you ever see the movie for or read the book *For Whom the Bell Tolls*? Well, it could be your turn next. And so, you’ll intellectually have to prepare for that and then hope when it comes, you can deal with it fairly well.
- 51 My husband was very against it. He’s made comments like, “You dragged me out of my dream house to go someplace to die.” And I admit, death happens here. It happens more than you usually see in the general population but voila, [chuckle] the population is apt to have that happen.
- 57 There are ambulances going on around all the time. When people get sick, they don’t get a cold, they get leukemia. They’re not kidding. And we talk about it all the time that life changes on a dime. I mean, look at that lovely little Marry Waterson who every day had those big earmuffs on. I loved you ‘cause I wear earmuffs until April. She had those earmuffs on, she walked all the way down here every day and then one day she was dead.

Role Models

- 49 Socially, sometimes it’s difficult. Some of the people here in their 90s are remarkable. I have a friend. She’s... I don’t know, 95, 96, and she’s just fantastic. And she’s even gone through surgeries and she comes out of it and she’s the funniest lady. And we so enjoy her when we get in a group of people to have a meal. And then I have another friend and she has an aneurysm on her aorta, and there’s... It’s inoperable. And so, she’s fantastic though. She’s sharp as a tack and she’s in her 90s. So, they’re very, very impressive. But because of their frailty, I would consider them old.
- 52 But I look at examples of people who have aged well. I love to see women especially who are running into their 90s or doing things that you know are, well look, yeah. Look at that, that you don’t have to stop because you’re older. You can keep doing things or you can start new things.

- 52 My neighbor at 90 across from me... he just had a second hip done at 90. He's fine. He hasn't driven for a long time but he's a darling wonderful. So, I feel a lot younger. I've realized that 80 is not so old really. When I see people in their 90s that's a long way off.
- 57 But, I mean, like I said, my friend, Inez, who's 92, who I go to happy hour with, I mean, she's just... She is as much fun to spend time with. I just don't think of her as old. And she takes... like every exercise class, she has a personal trainer. I mean, she is doing everything in her power to stay balanced. Balance is so important, to keep moving. And...
- Interviewer: So, she's not old to you?
- Interviewee: No, she is not old to me. She's just, she's like the Energizer bunny. She just keeps on clicking.
- 57 And I mean, there's nowhere like South Franklin Circle that you don't... You really notice it. I was in the gym the other day with a guy who's fine, I mean, who can have a serious, wonderful or jolly conversation with you. And he can hardly move his legs and he's on the machine saying, "If I could just move my legs, I would be fine." And he can... They just moved this teeny tiniest little bit. And I'm thinking, how do you deal with that? And that just psychologically has to be so depressing. And so, I just think if you can keep yourself strong, if you really understand nutrition, keep yourself strong, that psychologically that's gonna be great for you, mentally staying off...
- 58a I'm the youngster in the group. Age 77. And [aging] is not something we talk about. [A friend] is 96, and you'd think she was 20. She's a sparkle. Aging just does not seem to have a lot to do with my friends.

Otherring People Being Old

- 41 I do know of examples of a number of people on this campus who really should have help and don't. And have this sense that I know people that really should use a cane or a walker and don't because they think it makes them look old. And you say, "For God's sake you're 87, you are old." What are you worried about? Do you think anybody looks at you and say, "That's an interesting young man." But they won't do it. So, I'm hoping that we just had that self-defense program...We said if you don't need a cane, you should carry one 'cause it's a wonderful weapon. So, I'm hoping maybe that will make... [chuckle] But there are people here who just fight that and feel that as long as they can "Do it themselves" they should. But the fact of the matter is they're not doing it themselves. They still have unpacked boxes from when they moved in.
- 46 I'm a great believer that a person is a whole person. Otherwise, your brain's gotta function. Your heart's gonna function. Your gut has to work. As those things fail, you gotta make adjustments. On the physical side, it's just something you have to face. Some people don't face it. I see them all around here, which is—unless you're pretty well put together, emotionally, is very discouraging. You meet somebody new. You don't know if they have dementia.
- 42 Well, I think there's a sense of we're all in this (COVID) together, but interestingly just this morning I heard about a negative situation, my neighbor got COVID and she was in a exercise class that I was in and there were five, four other people. She called everyone in the class and told them she tested positive. We all had to go get tested. But when she dropped by this morning, she said some of the older people in our class resented the fact that she had called everybody. I

can't believe that. And she said, well, another person in our class had a conversation with some of what she called the "older members." Well, I'm 80 years old. So, I was flattered that...

- 43 Well, I'm pretty independent, but with friends, I think they become dependent on their children.... My neighbor above me she moved in here, and we... I joined [an organization] very quite recently in old age because I had friends who liked it so much and she was in it, and she used to come and pick me up, and then she's moved in here. She's very dependent on her daughters; maybe physically she just can't do otherwise. But we were... we hoped to have invited her for dinner and she called me up and said, "Well, my daughter's gonna be out of town, I can't get dressed."
- 48 I thought it was like one of my parents' Christmas parties. [chuckle] First of all, they're all talking in groups, so they must know each other, but the men have jackets on and the ladies are dressed up. I haven't worn since I retired. But I thought this is so unnecessary. Nobody dresses like this anymore, yet it was the thing, I felt I can't go down here anymore. And it was all old people staggering around with their walkers. You couldn't move easily. I just thought, "Oh my God, this is awful. This is awful. I don't want this, I don't want to be a part of it."
- 52 The gifts, I don't know, 'cause sometimes in this country there is ageism of people are not revered like they are in some places as they age. But I do find it occasionally when I've gotten on a bus or something somewhere and someone says, "Oh here, let me give you a seat." And I'm thinking, well, I'm not that old [laughter]. I can really stand, but I thank them and I sit down. But I thought, well that was nice. They didn't have to do that. But I'm not ready to have people do that for me quite yet. I don't like to be dependent. I don't like to have to ask anybody for help.
- 54 I have many acquaintances and friends who, as they get older, are not honest. They cover up because they don't want to be; they lie about their real needs and it causes problems. At that point, there needs to be a family member who steps in. Family members visit, but there are plenty of times when they don't do anything. And it's... I don't know whether it's because of the senior person. It is unhealthy.

Longing for Age Diversity

- 47a We go to the library in Bainbridge and a lot of times we've been there during the week and the kids are there. So, there're all these age groups. And one of the library aids said to me, "Are these students bothering you?" I said, "No, I'm just so used to being with old people. I really find them rather fascinating." And then I said, and one of the girls was so nice, she got up and opened the door for me, 'cause I'm in a walker I recognize that and I don't see that very much here unless somebody has visitors.
- 48 I'm surrounded by elderly people who are not my friends. And for that reason, I go downtown for happy hour almost every day. And I go to Starbucks in the morning just to be around people that are more balanced in terms of age distribution.
- 54 I realized I was missing younger people, people my age with my interests and my brain activity. So, I started to make new friends and I'm happy with the new friends I've made just through the different activities.

- 54 And I went through this thinking process...When I started to think I really need to be around younger people who have a sense of humor, who can talk about a variety of issues. And I need to think about why I wanna do this and who in my social arena can do that. So, that's kind of what I did. So, I didn't drop my old friends at all. No way, because that's not fair. It really isn't. But I opened up another area. There's room in my life for something that I want.
- 57 I think there are people who love to talk to you in the gym. I'll talk to people and we'll become friends. I think it's good to have people that are a little younger here because a lot of the older people, it makes them feel younger when they're conversing with younger people. And I enjoy hearing all the stories of what all these people did all their lives.
- 59ab I think we do miss our neighborhood with hearing the laughter of little children; our next-door neighbors are very young, and in their reproductive years, so they have three adorable little children. And then people who're older... diversity in that sense in our street.

Feeling Out of Place

- 48 I go to Happy Hour downtown. I like to chit chat with the regulars that go there, I like to chit chat with the bartenders and they all know me. And now that I'm here [living at a CCRC], the age range [at the bar downtown] is a benefit of that, whereas it wasn't before. I see the world when I'm out of here. And that wasn't something I thought about when I came here. Seeing that makes me feel isolated here.
- 48 And I can see myself diverging from friends that are, 5, 10 years younger than I am, slowly. I'm slowing down. And since I don't see them that often, I think when I do see them, they probably pick up on that. And that bothers me.
- 49 Well, again, I said I was felt... I think I was very young when I came here initially. There were... I don't think there was anybody my age, maybe one or two. So, that was uncomfortable for a while. It took me a while, took me a couple of years, to really meet anybody or... And the two really close friends that I have came after I came, but they're in their 80s.
- 50 That's troublesome. Not being... Not associating with younger people. Having to associate with older people. I used to like to hang around with the younger people. It made me feel young. You can't do that when you're 85. Certainly, when you get here you realize, hey, your group of friends now, your associates are older people.
- 51 You don't realize. I look here and I think, "Oh my goodness. What am I doing with all these old people?" And then I realize I am one. But there's a lot of people here that are a heck of a lot of fun. Some of the most fun people here are 90.
- 52 But when I brought my daughter-in-law and granddaughter here for lunch one time and showed them our place before we moved in, she said, "Mom, I think you're a little young to be coming here." [chuckle] But now I know there are people younger than I am here, so it's okay.
- 54 When I moved here, because of COVID, I was very isolated. Finally, this floor, we started to get together for dinner once a week. But the women that are here are all much older than I am. We have a 94-year-old, a 93-year-old, a 91-year-old. That's a significant difference at my age. They can't hear well, they don't see well. They're not as up on technology. Not that I am,

but I can at least run my computer, and get what I need done. So, it was very different. And then after this last year, when I was finally able to get out and be mobile again, I realized I was missing younger people, people my age with my interests and my brain activity. So, I started to make new friends and I'm happy with the new friends I've made through the different activities. I still get together with my older friends. There are times when I am so bored I can't stand it. They repeat stories, they have very... much more rigid opinions. They don't hear well. They can't see.

57 **Interviewer:** Did you intentionally want to live in a community of older adults?

Interviewee: Well, because my husband was 12 years older than I was, it seemed that the majority of people that I hung out with were always older. I just feel like I always got on well with older people.

Coping with Feeling Out of Place

48 I just don't see myself getting into it here. So, the way I can get into it is to get my name known by getting it out there in a couple of articles, be on the editorial board of *The Cardinal* and stuff, and at least they'll know my name.

54 And Bridge is a good example, and I love Bridge. But, half the players at that little Bridge group have those sensory deficits. I was getting really irritated and like, "I'm wasting my time." It's two or three hours, I learn all these things and then I can't use them because they don't... I play... I just play College Bridge. It's like, "What is that?" And... But this week I made a attitude shift and I thought to myself, when my friend, who's a good bridge player and she's younger. And I thought, I really want to do that because I respect the game, I love the game, and I wanna play it well. But the other people, my attitude now is, these are people who like the socialization, used to love Bridge, still do it, and I'll just play at their level and not get hooked into thinking that their deficits have to make me have a bad time. They'll make terrible mistakes. But I'm gonna look at it more as a group for senior activities.

Negative General Views of Aging Perpetuated by the CCRC

41 If it weren't for winter [laughter] and you could sit outdoors all year long and sort of see people come by and chit-chatting and all, it probably would help. But in the winter, you're pretty isolated. And I think it's probably a little bit more so in [Assisted Living] and I know, I've heard from some of my friends that are there that I think there's a real issue. They used to have... the first floor was memory care. The second floor was assisted living and now that's gotten mixed up and I think the people that are cognitively with it have a limited number of people they can befriend because the cognitively impaired can't really interact with them. And so, I think it's made them more isolated than they needed to be.

59a The [administrator] said: "I promise you...Now, I've just been to a national meeting and people running places. I wanna study just what is involved with elderly TV." And I said, "What do you mean by elderly TV? I mean, unless we're in the dementia group, we still have the same intellect, same appreciation for music, or dance, or blah, blah, blah." And she said, "Well, I mean, senior TV, we wanna know what we should provide for television for seniors." And I thought, that is ageism, isn't it?

59a And then even the head of [a service department in the CCRC]. All the people in the apartments said that they were kind of an irritated group. I said, "Well, you have a great personality. I'm sure you're dealing with their distress in a good way." And he said, "Ah, I just let those old people squawk away. They're old. What do you expect? They've been cooped up all winter." So really, I do mind, my gosh, the lack of respect. I don't think they realize their bias. They're thinking they're working with funny people.

Gender Differences

- 41 Most of the people moving in are younger and many of them are still couples. But losing a spouse, I know a lot of people that already, that I've only been here five years and I know a lot of people who have lost spouses. I know a few where the spouse has been the wife, but not many. But I know quite a number that have been husbands that have died after they've been here. And many women that move in are already widowed. So, I think that's a primary factor...that they're on their own. And I think it's pretty well established that loneliness is a problem for the aging and I think it's probably more of a problem for women than for men.
- 42 What helps me [coping with losing a spouse] is getting out with friends and upbeat friends and I think women are more accustomed to making close female friendships than a lot of men are; maybe that's what keeps this men's discussion group going so much 'cause it's a way it gives them permission to talk about whatever they talk about. I have no idea.
- 46 There's a group of things. There's another group of things, socially. If you had a happy marriage, you just follow your wife. To re-establish that is difficult. Of course, through your lifetime, you have [social groups].
- 48 For the women, they seem much more social. The women are always hanging out together, chit chatting, and the men are just kind of lost. They're wandering around... Some of them truly look lost. But you don't see many women like that. They all seem to be, and boy, these are aggressive women. I mean, they want to be on every committee, the same names and they're committees that don't even need to be committees, and they're all on there, same chairperson, but you don't see many men on the committees. And they're just passing their time, I guess.
- 51 I don't see how people cope with losses without being around here. [My friend, M]'s just so social. She's out and about. Mr. [C] across the street lost his wife two years ago and now he's failing.
- 54 But there's a big dividing line between single and married couples. Very big. And everybody's very social. It's just it is not acceptable to hang out with married couples if you're a single woman. I was... After I divorced my husband, I was single for 15, 17 years, and the same thing applied.
- 57 *Interviewee:* It was one of the reasons that I moved from [the other CCRC] is when I got divorced, all of a sudden it was like you're wearing a scarlet letter around your neck, D, divorced, available, I'm after your husband. All of a sudden, I was in such social isolation... I honestly don't feel that I have at all with like the married couples [here] although I just feel like there is kind of a cliquey kind of... It's funny because there are people who go out to dinner all the time, and then they

invite different people to join them. I see there are groups here that would never have me, which I think is because of my age or maybe just [I was divorced].

Interviewer: So, because you're too young for them?

Interviewee: Yeah and I really... And I'm by far not the youngest person here, so.

- 51 [As we age,] I would hope to say we're more accepting, but in this climate now, I have never been afraid in this country before now. Now, I am very afraid. I've heard people say, old people say, "Oh, the world's going to hell in the hand basket." And I thought, "Well, is that just because I'm old that I think things are going so badly?" But I think they're really going badly.
- 48 I imagine for anyone that's gay, but for older men, there is no culture. There is a firmly, strongly established culture for older men in Palm Springs, California, and in Fort Lauderdale.
- 51 Well, nobody told you what happens to your body and that everything takes longer and it's... The pup broke my leg last summer. She just clipped it. I didn't even fall down, but it... I had to be off my leg for two months and that made me really appreciate the people that are on walkers.
- 53a For example, on Friday nights we have the cocktail party down at the community center, which we like to attend. But if you think about any party that you go to, most of the people are standing and moving from group A to group B to group C as people come in and leave. When you're not mobile, it becomes less fun because you don't get to see as many people or chat with as many people as you might have before. And, of course, the hearing issues, things are harder to hear with the other noises.
- 58a Our friends, which we are the youngsters of our friends and we are not that young. So, we're seeing the difficulties both mentally and medically that happen to people. We've watched [a lot of our friends] slowly fade. I would say all of our friends are still living in their homes. But they have not moved on, which is okay 'cause if they're happy doing that. Because of the physical things that were happening and because of our realistic approach to what probably lies ahead for us, both physically and mentally, we wanted a place to go where we could get those as we wished. We can pick and choose them.
- 59a Well, maybe you feel like you're going down the hill, but you are amazing all that you do for people. Not a day goes by that he doesn't make this a better world still. He took [a neighbor] to the library.
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Chapter 4 Study 3: Effects of Self-Perceptions of Aging on Memory: Mediating Role of Social Disconnectedness and Loneliness

The association between aging and memory decline represents a significant concern in gerontological research. Alzheimer's disease, notably one of the most feared diseases among older Americans, underscores the critical public health challenge of aging-related cognitive impairments (MetLife, 2011). Stereotypical perceptions frequently characterize older adults as cognitively diminished and prone to dementia, contributing to a skewed understanding of aging (Molden & Maxfield, 2017). Within this context, self-perceptions of aging (SPA) emerge as a crucial construct, encapsulating older adults' beliefs and anticipations about their aging trajectories. These perceptions are instrumental in shaping their self-concept and identity across the lifespan (Weiss & Kornadt, 2018).

Expecting some degree of memory decline is among the more common views on late-life development across age groups (Heckhausen et al., 1989). The stereotype embodiment theory (Levy, 2009) suggests that negative age stereotypes (e.g., memory decline in old age is inevitable) can be internalized and continuously reinforced throughout the lifespan. These internalized perceptions of aging become increasingly self-relevant as individuals age and shape subjective perceptions and evaluations of their own aging experiences. Research is needed to examine the longitudinal associations between SPA and memory and mediating pathways. This will be useful in counteracting the widespread public view that decline in cognitive health is

primarily due to chronological age. This view may lead to reinforcement and internalization of negative age stereotypes among the current and future generations of older adults.

SPA and Cognitive Health

While memory decline is a common stereotype associated with aging, the link between SPA and memory has been under-explored. While changes in memory are observed with increasing age, research suggests that much of memory loss in aging adults might be attributable to the progression of pre-clinical dementia and other non-normative aging processes that are not simply the result of chronological age (Sliwinski et al., 2003).

Longitudinal observation studies have identified associations between SPA and increased dementia and mild cognitive impairment risk over periods spanning four (B. R. Levy et al., 2018) to 12 years later (Siebert et al., 2018). Cross-sectional studies in laboratory settings have shown that negative SPA priming can negatively affect cognitive performance, including memory-related tasks, among middle-aged and older adults (Brown et al., 2021; Horton et al., 2008; B. Levy, 1996; Meisner, 2012). Levy et al.'s (2012) longitudinal observation study revealed negative age stereotypes held during middle or late adulthood are associated with declines in memory performance later in life. Siebert et al.'s (2018) study using a cognitive test battery found that negative SPA at baseline, when participants were young-old, is associated with fluid cognitive abilities (i.e., perceptual speed, reasoning, spatial ability, and working memory) but not crystallized intelligence (e.g., general knowledge) 12 years later. These studies support the hypothesis of a link between SPA and memory. This current study examined the associations between the initial level of SPA and subsequent changes in memory over two longitudinal time scales—four years and eight years.

Pathways Linking SPA and Cognitive Health

Despite growing evidence showing that negative SPA has long-term effects on cognitive health, little is known about pathways linking the association of SPA and cognitive health. The stereotype embodiment theory and recent empirical evidence indicate that SPA may affect memory through physiological, psychological, and behavioral pathways, but little attention has been paid to the social pathway.

Studies have examined and reported evidence of physiological (Levy & Bavishi, 2018), psychological (Tovel et al., 2019; Wurm et al., 2013), and behavioral pathways (Sun & Smith, 2017) between SPA and most physical health outcomes. In one study, Siebert et al. (2018) followed 260 older German adults at three time points over 12 years to examine the long-term effect of SPA on mild cognitive impairment and Alzheimer's disease as well as the mediating role of leisure activity and control belief. They found limited evidence supporting the mediating role of leisure activity (behavioral pathway) and control belief (psychological pathway). Several studies have specifically examined pathways between SPA and memory. Moreover, the field would benefit from examining potential pathways beyond the individual level. The current study examined social connections as a potential mediating pathway between SPA and memory.

Social Connections as a Mediating Pathway

The National Institutes of Health (NIH) in the U.S. and the National Institute for Health and Care Excellence (NICE) in the U.K. both identified social connections as one of the potentially modifiable dementia risk factors (Livingston et al., 2017). Despite growing evidence that SPA (B. R. Levy et al., 2018; Siebert et al., 2018) and social connections (Kelly et al., 2017; Meister & Zahodne, 2022; Rafnsson et al., 2020; Zahodne et al., 2019) are associated with

memory decline and Alzheimer's disease and related dementia (ADRD) risk, whether social connections mediate SPA's effects on cognitive health remains unclear.

Multi-Dimensionality of Social Connections

The stereotype embodiment theory (Levy, 2009) and the linked lives principle of the life course perspective (Elder, 1998) suggest that individuals' SPA is formed through and shaped by socializing with individuals and the greater community around them. The Convoy Model of social relationships (Antonucci, 2001; Antonucci et al., 2014; Kahn & Antonucci, 1980) suggests that people are embedded within the context of a social convoy. A person's social convoy represents an assembly of social relationships that serve to socialize and support the individual. Social connections theories suggest that social connections are complex and multi-dimensional, including the objective dimension of network structure and interactions, as well as the subjective dimension of the feeling that accompanies discrepancies between one's desired and actual social relationships (Antonucci et al., 2014; Cacioppo & Hawkley, 2009; Cornwell & Waite, 2009). Both dimensions, independently and interactively, have been shown to influence individuals' health and well-being (Cornwell & Waite, 2009; Santini et al., 2020; Zahodne et al., 2019).

The multi-dimensional nature of social connections suggests SPA may affect each dimension differently, and in turn, each dimension may uniquely influence cognitive health. The current study focuses on objective and subjective dimensions of social connections to examine how each mediates the associations between SPA and changes in cognitive health. For the purposes of this study, the objective aspect of social connections is operationalized as *social disconnectedness*, which refers to a lack of social contact and involvement. It is often indicated by a small and homogenous network structure and infrequent social contact with people. The subjective aspect of social connections is operationalized as *loneliness*, which refers to the

emotional experience of dissatisfaction with one's social relationships. Several systematic reviews have concluded that social disconnectedness and loneliness adversely affect individuals' physical, mental, and cognitive health and well-being (Evans et al., 2019; Holt-Lunstad et al., 2015; Kang & Oremus, 2023).

Social Connections and Cognitive Health

Social connections can play a preventative role in individuals' cognitive health (Lara et al., 2019; Wilson et al., 2007). Review studies found that various aspects of social disconnectedness, including small social network size, infrequent social contact, and low social activity participation, were significantly associated with a decline in cognitive health (Evans et al., 2019; Kelly et al., 2017). However, Kuiper et al.'s (2015) meta-analysis of social activity found that incident dementia risks were elevated for people who had little social activity participation and infrequent social contact (social disconnectedness) but not for people who had low satisfaction with social contact (loneliness).

Multiple theories could explain the association between social disconnectedness, loneliness, and cognitive health. The cognitive reserve theory (Barulli & Stern, 2013; Stern, 2002) suggests that social disconnectedness may affect cognition through the cognitively stimulating nature of social interactions. Complex interpersonal communication engages various cognitive resources (e.g., attention, orientation, language, memory), and taking part in social interactions more frequently or with a greater number or variety of individuals provides more opportunities to exercise these cognitive processes. The cognitive reserve theory suggests that older adults with a small network and low frequency of social contact and activities have fewer opportunities to maintain and develop their cognitive resources. This leads to declines in cognitive health. The Loneliness Model (Cacioppo & Hawkley, 2009) may explain loneliness'

associations with cognitive health. Loneliness is associated with an increased stress response that can have detrimental effects on the brain, particularly in areas like the hippocampus, which is vital for memory.

Although researchers have examined associations between various dimensions of social connections and cognitive outcomes, few have explored the constructs of social disconnectedness and loneliness simultaneously. For example, Zahodne et al. (2019) found that certain aspects of social disconnectedness (i.e., being married/partnered and reporting less frequent contact with friends) were associated with memory decline. Their study found no associations between the perceived quality of relationships and memory decline. However, their study did not include social engagement, an essential indicator of social disconnectedness (Cornwell & Waite, 2009), which affects cognitive functioning (Bassuk et al., 1999). Read et al. (2020) found that social disconnectedness (i.e., living alone, less than monthly contact with network members, and not being a member of any organizations) was associated with increased memory decline, while Ayalon et al. (2016) found no lagged effect of loneliness on memory.

SPA and Social Connections

Self-perceptions of aging have been shown to be associated with social connections. Researchers found that SPA was associated with new friendship development (Menkin et al., 2017), informal social engagement (Schwartz et al., 2021), satisfaction with social support (Cheng, 2017), and feelings of loneliness during the COVID-19 pandemic (Losada-Baltar et al., 2021). Hu and Li (2022) found that older people with more negative SPA at baseline are more likely to be socially disconnected and feel lonely eight years later (Hu & Li, 2022). Nevertheless, SPA may be linked to objective and subjective social connections differently. Hu and Li (2022)

also found that the effects of SPA on social disconnectedness are partially mediated by loneliness.

The cognitive theory suggests that beliefs and thoughts are the primary determinants of emotion and behavior (Beck, 1979; DiGiuseppe et al., 2016; Dozois & Beck, 2008). Negative views of aging could lead to distorted thinking and negative interpretations of social interactions, which can, in turn, lead to a heightened sense of loneliness and/or social withdrawal. Integrating this theory with the framework of contingency self-worth (Crocker & Wolfe, 2001) and age-contingent self-worth (Ravary et al., 2020), older adults with more negative SPA may feel bad about themselves for getting older because they implicitly expect that they will no longer be valued or respected members of society. Older adults' lower self-worth and negative views about their own aging can affect how they experience and perceive their social interactions and relationships. They might feel less deserving of attention and affection or believe others view them negatively because they are growing old. They may avoid social interactions, thereby becoming more disconnected from relationships and society.

Therefore, the current study examined the associations between negative SPA and changes in memory over four years and eight years and the indirect effects of SPA on changes in memory and mental status through social disconnectedness and loneliness.

Research Questions and Hypotheses

1. Is the baseline level of negative SPA associated with changes in memory four and eight years later?
 - a. Individuals with a higher level of baseline negative SPA will show a greater decline in memory over eight years.
2. How does SPA influence memory through social disconnectedness and loneliness?

- a. Negative SPA will have indirect effects on declines in cognitive health through social disconnectedness and loneliness.

Method

Sample

This research drew data from the Health and Retirement Study (HRS), a biennial longitudinal study of a nationally representative sample of individuals aged 50 and older in the United States since 1992. The study was supported by the National Institute on Aging (NIA) with additional funding from the Social Security Administration to follow individuals and their spouses/partners on their health, family, and finances as they transition into retirement. In 2006, the HRS launched the Psychosocial and Lifestyle self-administer questionnaire, the Leave-Behind Questionnaire (LBQ), to learn about participants' evaluations of their life circumstances, well-being, personality, and self-related beliefs, which includes questions on SPA (Smith et al., 2023). The LBQ was left with respondents who completed the core in-person interview to fill out and return by mail. Half the respondents were asked to fill out the LBQ in each wave. Three waves of data (2012/2014 (T2) and 2016/2018 (T3)), with each wave four years apart, were analyzed. This analysis included respondents aged 65 and above who returned the LBQ in 2008/2010 (T1), the first time the SPA measure was administered as the baseline sample. LBQ's response rate was 84% in 2008 and 73% in 2010.

We included participants with no missing data on key variables at baseline ($N=3,569$). One hundred seventy-two participants were removed due to missing data at baseline. Compared to those in the sample, the removed participants were more likely to be older (Odds Ratio [OR] = 1.05, 95% Confidence Interval [1.01 – 1.09]), not married or partnered (OR = 0.52, 95% CI [0.33 – 0.81]), and have at least one activity of daily living (OR = 2.25, 95% CI [1.27 – 3.87]).

Measures

Negative Self-Perceptions of Aging

SPA measured at T1 was an 8-item scale derived from the Attitudes Toward Own Aging Scale and the Berlin Aging Study and collected in 2008 and 2010 self-administered LBQ (Lawton, 1975; Liang & Bollen, 1983; Smith et al., 2023). Supplemental Table 4.1 shows the exact wording of the measure. The respondents were asked about their perspectives on their own aging on a 6-point scale (1=strongly disagree, 6=strongly agree). Five items described negative evaluations (e.g., “Things keep getting worse as I get older”), and three items were positive (e.g., “I am as happy now as I was when I was younger”). Supplemental Table 4.1 shows each item of the scale. I created a negative SPA score by reverse-coding the positively worded items and then averaging the score across all eight items. The score was set to missing if four or more items had missing values. A higher score indicated more negative SPA. Cronbach’s alpha = 0.81.

Memory

Memory was measured at T1, T2, and T3 using two-word list recall tasks: immediate free-recall and delayed free recall. The interviewer read the respondents a list of 10 nouns and asked them to recall as many words as possible from the list in any order. After approximately five minutes of responding to other survey questions (e.g., depressive symptoms), the respondent was asked to recall the nouns previously presented as part of the immediate recall task (Ofstedal et al., 2005). A memory score was calculated by summing the number of words correctly recalled in the immediate and delayed recall tasks (total possible points 0-20). A higher score indicated better memory.

Social Connections

Social disconnectedness was measured at T1 and T2 and included social network size, network diversity, frequency of contact with close network members, frequency of religious service participation, and frequency of social engagement (Cornwell & Waite, 2009).

Supplemental Table 4.2 shows the exact wording of each item. *Social network size* was the number of people respondents felt close to, including spouses/partners, children, family members, and friends. I top-coded network size at the 99th percentile to address outliers. *Social network diversity* was the percentage of people in the close network that are family members. A larger number indicates a less diverse network.

Frequency of contact with network members was measured by in-person, phone, and other (letter/email/social media) contact with children, family, and friends. Respondents were asked to rate their contact frequency on a 6-point scale (1=three or more times a week; 6=less than once a year or never). The nine items were averaged; a higher number indicates less contact with network members. *Religious service participation* was assessed by a single time on an 8-point scale (1=never, 8=daily). I reverse-coded and standardized; a larger number indicates less participation. *Social engagement* was assessed by attending group meetings (non-religious), educational training courses, and volunteering, which were on a 7-point scale (1=never/not relevant, 7=daily). The three items were reverse-coded and averaged; a larger number indicates less social engagement. A social disconnectedness index score was calculated by standardizing all five items and averaging them. A higher score indicates more socially disconnected.

Loneliness

Loneliness was measured at T1 and T2 using the 11-item UCLA Loneliness Scale (Lee & Cagle, 2017). Supplemental Table 4.3 shows the exact wording of the scale. A sample item is

“How much of the time do you feel left out?” Respondents were asked to rate each item on a 3-point scale (1=often, 2=sometimes, 3=hardly ever or never). Four positively worded items were reverse-coded. A loneliness score was calculated by averaging across all 11 items. A higher score indicates greater loneliness.

Covariates

Both theories (Fuller et al., 2020; Fuller-Iglesias & Antonucci, 2016) and prior studies have suggested sociodemographic characteristics and health status are risk factors for both social disconnectedness and loneliness (Evans et al., 2019; Mehrabi & Béland, 2020), as well as memory (Marden et al., 2017; Nelson et al., 2020).

Sociodemographic characteristics included gender (0=man, 1=woman), race/ethnicity (1=Non-Hispanic White, 2=Non-Hispanic Black, 3=Hispanic, 4=Others), years of education (range 0–17), marital status (1=not currently married/partnered, 1=currently married/partnered), and employment status (0=not currently working, 1=currently working).

Health-related factors included the number of chronic conditions (range 0–8), limitations in activities of daily living (ADL, 0=none, 1=at least one limitation), limitations in instrumental activities of daily living (IADL, 0=none, 1=at least one limitation), and depressive symptoms (range 0–8). Chronic conditions were reported by the respondents, including high blood pressure, diabetes, cancer, lung disease, heart condition, congestive heart failure, stroke, and arthritis. The ADLs included dressing, walking, bathing, eating, getting in or out of bed, and using the toilet. The IADL included meal preparation, grocery shopping, making phone calls, taking medication, house/yard work, and managing finances. Depressive symptoms were assessed by the eight-item Center for Epidemiological Studies-Depression Scale (CES-D). I summed up the eight items. All the covariates were measured at T1.

Analysis Strategies

The analysis began with examining descriptive statistics and Pearson correlations of the variables in the study. Next, the analysis used structural equation modeling to examine the main study questions.

I used path analysis to answer the first research question (RQ1) on the associations between baseline-level SPA and changes in memory four years and eight years later. The model was constructed with direct paths from T1 SPA to memory at T2 and T3 while controlling for memory, sociodemographic, and health covariates measured at T1.

Path analysis was used to answer the second research question (RQ2) on the direct and indirect effects of SPA and memory through social disconnectedness and loneliness. The model was constructed with direct paths from T1 SPA to T2 social disconnectedness, T2 loneliness from T2 social disconnectedness, and T2 loneliness to T3 memory. The model included social disconnectedness, loneliness, memory, and sociodemographic and health covariates measured at T1. I calculated the direct, indirect, and total effects of T1 SPA on T3 memory through T2 social disconnectedness and T2 loneliness using MacKinnon's (2008) formula (Preacher & Kelley, 2011).

Full information maximum likelihood was used to include all respondents in the data as long as they participated in the baseline. The approach uses all available information on the mean and the variance of variables. All the analyses were conducted in R using the lavaan package (Rosseel, 2012).

Results

Sample Characteristics

The descriptive statistics of sociodemographic and health-related variables at Time 1 (1008/2010) are presented in Table 4.1. The study sample consisted of individuals aged between 65 and 95, with an average age of 72.8 years (Standard Deviation [SD] = 5.67). The majority of the participants were women (61%) and identified as White (Non-Hispanic) (79%), followed by Black (Non-Hispanic) (12%), Hispanic (7%), and others (2%). On average, participants had completed 12.7 years of education (SD=3.02), with 63% being married and 19% currently working.

A portion of the sample reported having difficulties in activities of daily living (12%) and instrumental activities of daily living (23%). The average score for depressive symptoms was 1.12 (SD=1.71) out of a possible eight, indicating relatively low levels of depressive symptoms among the participants. Participants reported having an average of 2.16 (SD=1.24) chronic conditions out of a possible seven.

Negative self-perceptions of aging were measured on a scale from 1 to 6, with an average score of 3.03 (SD=1.00), suggesting moderate levels of negative aging perceptions. Social disconnectedness (SD) scores ranged from -3.74 to 1.52, with an average score of 0.00 (SD=0.58), indicating a neutral level of social disconnectedness on average. Loneliness scores ranged from 1 to 3, with an average of 1.46 (SD=0.41), reflecting low to moderate levels of loneliness. Memory performance was assessed on a scale from 0 to 20, with participants scoring an average of 9.84 (SD=3.00), indicating a wide range of memory abilities within the sample.

Table 4.2 shows the Pearson correlation between the key study variables. Negative SPA at T1 was consistently associated with declines in memory across time points, with significant negative correlations observed with T2 memory ($r = -0.158, p < 0.001$) and T3 memory ($r = -0.160, p < 0.001$). There was a strong correlation between T1 SPA and T2 loneliness ($r = 0.387,$

$p < 0.001$); however, the correlation between T1 SPA and T2 social disconnectedness is statistically significant but smaller ($r = 0.191, p < 0.001$). T2 social disconnectedness and loneliness were negatively correlated with T3 memory ($r = -0.114, p < 0.001$ with social disconnectedness and $r = -0.125, p < 0.001$ with loneliness).

Notably, the stability of loneliness and social disconnectedness from T1 to T2 was very high ($r = 0.633, p < 0.001$ between T1 and T2 loneliness and $r = 0.621, p < 0.001$ between T1 and T2 SD), indicating persistent levels of loneliness and social disconnectedness across these time points. There was also memory stability across time points ($r = 0.583$ between T1 and T2 memory and $r = 0.546$ between T1 and T3 memory).

Negative SPA Effects on Changes in Memory

The results of the path analysis (Table 4.3 and Figure 4.1) revealed that negative self-perceptions of aging at T1 were significantly associated with memory declines from T1 to T2 ($\beta = -0.03$, Standard Error [SE] = 0.01, $p = 0.01$) and from T1 to T3 ($\beta = -0.03$, SE = 0.01, $p = 0.02$). People who reported more negative SPA at baseline were more likely to experience memory decline four years and eight years later.

Results also showed that sociodemographic variables—older age, being a man, identifying as Black, and having fewer years of education—were all associated with experiencing memory declines four and eight years later. Identifying as Hispanic was only significantly associated with experiencing memory decline four years later, but not eight years later. Not all health-related variables were significantly associated with experiencing memory declines four and eight years later, only those reporting more depressive symptoms and experiencing at least one IADL.

The Direct and Indirect Effects of Social Disconnectedness and Loneliness

This study extended an investigation into the effects of negative SPA on cognitive changes by examining potential mediating pathways involving social disconnectedness (SD) and loneliness at T2 on changes in memory between T1 and T3 using path analysis (Table 4.4 and Figure 4.2).

Direct Effects

The direct effect of T1 SPA on T2 memory while controlling for T1 memory was significant ($\beta = -0.02$, $SE = 0.01$, $p = 0.04$), suggesting that more negative self-perceptions of aging at T1 are directly associated with greater memory decline eight years later.

Mediation Effects

Social Disconnectedness: The effect of T1 SPA on T2 social disconnectedness was not significant after controlling for social disconnectedness and loneliness at T1 ($\beta = 0.03$, $SE = 0.021$). The effect of T2 social disconnectedness on T3 memory was significant after controlling for memory at T1 ($\beta = -0.03$, $SE = 0.01$, $p = 0.03$).

Loneliness: In contrast, T1 SPA had a significant positive effect on T2 loneliness after controlling for social disconnectedness and loneliness at T1 ($\beta = 0.10$, $SE = 0.01$, $p < 0.000$). T2 loneliness had a significant negative effect on T3 memory after controlling for T1 memory ($\beta = -0.03$, $SE = 0.01$, $p = 0.03$).

Table 4.5 shows the direct, indirect, and total effects of T1 SPA on T3 memory through T2 social disconnectedness and loneliness. The direct path of T1 SPA $\rightarrow$ T3 memory accounted for 83% of the total effect. The indirect path of T1 SPA $\rightarrow$ T2 social disconnectedness $\rightarrow$ T3 memory was not significant ($\beta = -0.001$, $SE = 0.000$), accounting for approximately 4% of the total effect. The indirect path of T1 SPA $\rightarrow$ T2 loneliness $\rightarrow$ T3 memory was significant ($\beta = -0.003$, $SE = 0.001$, $p = 0.03$), accounting for 13% of the total effect.

Discussion

This study examined the influence of negative self-perceptions of aging (SPA) at baseline (T1) on longitudinal changes in memory over two time intervals: four years (T1 to T2) and eight years (T1 to T3). The second part of the study aimed to unravel the social pathway through which negative SPA influences memory decline over eight years. The findings reveal a nuanced association where negative SPA has both direct and indirect effects through loneliness on memory.

The significant effects of negative SPA on changes in memory across both four-year and eight-year intervals highlight how older adults view their aging process as it can have detrimental effects on their memory. Consistent with findings from both experimental and observational studies, negative SPA has effects on memory over short-term and long-term time intervals, suggesting negative age-related stereotypes on memory decline may operate through internalization (B. R. Levy et al., 2012; Meisner, 2012; Siebert et al., 2018).

The Social Pathway Between Negative SPA and Changes in Memory

While social disconnectedness did not mediate the relationship between negative SPA and memory decline, loneliness emerged as a partial mediator. This finding aligns with Hu and Li's (2022) study, showing that negative SPA effects on social disconnectedness are primarily mediated by loneliness. As suggested by the cognitive theory (Beck, 1967; Beck & Dozois, 2014; Clark et al., 1999), negative views about aging can lead to altered thinking and negative interpretations of social interactions, contributing to feelings of loneliness. According to the contingency self-worth framework (Crocker & Wolfe, 2001) and age-contingent self-worth (Ravary et al., 2020), older adults with more negative SPA might feel less deserving of attention and affection, or they may believe that others view them negatively because they are older,

leading to a heightened sense of isolation and loneliness. Experiencing loneliness could lead to social withdrawal and even a heightened vigilance against neutral social interactions (DeWall et al., 2009). Both loneliness and social disconnectedness are associated with declines in memory, consistent with the loneliness model (Cacioppo & Hawkley, 2009) and cognitive reserve (Barulli & Stern, 2013), suggesting social disconnectedness and loneliness' detrimental effects on memory decline. This pathway highlights the importance of addressing negative aging perceptions and the subjective experience of social isolation in mitigating cognitive decline.

The finding that the direct effects of negative SPA on memory decline remained substantial and statistically significant after adding the two indirect social pathways suggests there could be other potential pathways. Although Siebert et al. (2018) found limited evidence of a psychological mechanism, controlled belief, and a behavioral mechanism, leisure activity engagement, the study's outcome was a clinical diagnosis of mild cognitive impairment and Alzheimer's disease. Physiological, psychological, behavioral, and social mechanisms may play a role in explaining negative SPA's effects on memory decline. For example, stress could be a potential mechanism to explore since its association with cognitive decline has been well-established, and negative SPA has been shown to affect cumulative stress-related inflammation (B. R. Levy & Bavishi, 2018; McEwen et al., 2016). Other mechanisms, such as coping strategy utilization (Wurm et al., 2013) and healthcare utilization (Sun & Smith, 2017), are all worth further exploration.

Limitations and Future Directions

One limitation of the current study is that it focused solely on memory decline as the cognitive outcome measure. While memory is a crucial aspect of cognitive functioning that shows declines in aging, cognitive abilities are multi-faceted. Future research should explore

how negative self-perceptions of aging influence changes across a broader array of cognitive domains, such as processing speed, executive functioning, language, and visuospatial abilities. Examining a more comprehensive set of cognitive measures would provide a more nuanced understanding of how negative aging views impact different facets of cognition. It is possible that negative aging self-perceptions may have divergent effects across cognitive domains based on stereotypical expectations about which abilities “should” decline with age. Exploring effects on global cognitive functioning measures in addition to specific abilities would shed light on whether negative aging views have domain-general or domain-specific impacts. A multi-domain cognitive battery would also allow testing whether social factors like loneliness mediate effects on some cognitive areas more than others. Elucidating the full scope of cognitive impacts can inform targeted intervention approaches to mitigate aging self-perception effects on individuals’ overall cognitive health.

Another limitation is that the current study did not account for potential reciprocal effects and dynamics among the key variables over the eight years. By using baseline (T1) negative SPA as the independent variable, the current study aimed to clarify temporal ordering but did not capture possible bidirectional relationships. Prior research suggests potential reciprocal associations between SPA and social engagement (Schwartz et al., 2021), as well as between loneliness and memory (Ayalon et al., 2016). It is plausible that declines in cognitive functioning could also lead to more negative aging self-perceptions over time. Exploring such bidirectional effects using cross-lagged longitudinal models would elucidate potential cyclical, reinforcing patterns.

Additionally, although covariates were included, they were treated as time-invariant. However, significant life events (e.g., bereavement, relocation) or health changes (e.g., new

chronic conditions) likely occurred for some respondents during the 8-year period, impacting SPA, social well-being, or cognitive trajectories. Future waves should assess major life events and incorporate time-varying health covariates to model how changes in these factors may influence the relationships among SPA, social disconnectedness, loneliness, and cognitive outcomes over time.

The findings indicate that assessing the SPA of older persons may help identify those at risk of loneliness and experiencing declines in cognitive health. Interventions addressing negative SPA have the potential to protect social and cognitive health. A few intervention studies reported promising findings on educational programs about myths of aging having positive effects on changing middle-aged and older adults' SPA, which in turn promote physical activity and healthy eating (Beyer et al., 2019; Brothers & Diehl, 2017; Klusmann et al., 2019; Wolff et al., 2014). However, since SPA reflects negative beliefs about one's aging process and the findings from the current study seem to support the cognitive theory, interventions based on cognitive behavioral therapy may empower older adults to identify and address age-related cognitive distortion, such as "I am too old to be interesting." Interventions that foster positive beliefs and outlooks of aging could prevent experiencing loneliness and potentially decelerate cognitive decline, particularly in memory. Moreover, understanding the pathways through which aging perceptions influence various aspects of cognitive function can inform tailored strategies to support cognitive health across the lifespan.

In conclusion, findings from this study indicate the complex interplay between self-perceptions of aging, social well-being, and memory over time. By highlighting the significant role of loneliness in mediating the impact of negative SPA on memory decline, these findings underscore the need for holistic approaches to cognitive health that address both the

psychological and social dimensions of aging. Interventions promoting positive aging perceptions and reducing loneliness may offer valuable strategies to support cognitive resilience in later life.

Tables and Figures for Chapter 4

Table 4.1. Sample Characteristics (N=3,569)

Variables [Range]	M (SD)/%
Age [65–95]	72.8 (5.67)
Women	61%
Race & Ethnicity	
White (Non-Hispanic)	79%
Black (Non-Hispanic)	12%
Hispanic	7%
Others	2%
Education [0–17]	12.7 (3.02)
Married	63%
Working	19%
Having any difficulties in activities of daily living	12%
Having any difficulties in instrumental activities of daily living	23%
Depressive symptoms [0–8]	1.12 (1.71)
Number of chronic conditions [0–7]	2.16 (1.24)
SPA [1–6]	3.03 (1.00)
SD [-3.74 – 1.52]	0.00 (0.58)
Loneliness [1–3]	1.46 (0.41)
Memory [0–20]	9.84 (3.00)

Table 4.2. Correlations of Key Variables

	T1 SPA	T1 Loneliness	T1 SD	T1 Memory	T2 Loneliness	T2 SD	T2 Memory	T3 Memory
T1 SPA	1	0.446	0.192	-0.150	0.387	0.191	-0.158	-0.160
T1 Loneliness		1	0.321	-0.120	0.6333	0.293	-0.123	-0.119
T1 SD			1	-0.088	0.291	0.621	-0.065	-0.056
T1 Memory				1	-0.113	-0.124	0.583	0.546
T2 Loneliness					1	0.330	-0.117	-0.125
T2 SD						1	-0.121	-0.114
T2 Memory							1	0.593
T3 Memory								1

Note. SPA = Self-Perceptions of Aging, SD = Social Disconnectedness. All correlations are statistically significant with *** $p < 0.001$.

Table 4.3. Results of Path Analysis of T1 SPA on T2 Memory and T2 Memory

	T2 Memory β (SE)	T3 Memory β (SE)
T1 SPA	-0.03* (0.01)	-0.03* (0.01)
T1 Memory	0.45*** (0.01)	0.45*** (0.01)
Chronic conditions	0.01 (0.01)	0.01 (0.01)
Depressive symptoms	-0.03* (0.01)	-0.03* (0.01)
Have ADL	-0.03 (0.04)	0.00 (0.04)
Have IADL	-0.09** (0.03)	-0.11** (0.03)
Age	-0.18*** (0.01)	-0.22*** (0.01)
Woman	0.20*** (0.02)	0.13*** (0.03)
Race & Ethnicity		
Black (Non-Hispanic)	-0.22*** (0.04)	-0.12** (0.04)
Hispanic	-0.11* (0.05)	-0.01 (0.05)
Others	-0.15 (0.08)	-0.09 (0.08)
Years of Education	0.17*** (0.03)	0.13*** (0.01)
Married	0.06* (0.03)	0.08** (0.03)
Working	0.03 (0.03)	0.00 (0.03)

Note. * $p < 0.01$, ** $p < 0.01$, *** $p < 0.001$. SPA = Self-Perceptions of Aging, SD = Social Disconnectedness, ADL = Activities of Daily Living, IADL = Instrumental Activities of Daily Living. All covariates were measured at T1. All continuous variables in the models were standardized.

Table 4.4. Results of Path Analysis of T1 Negative SPA's Effects on T3 Memory through T2 Social Disconnectedness and T2 Loneliness

	T2 SD β (SE)	T2 Loneliness β (SE)	T3 Memory β (SE)
T1 Negative SPA	0.03 (0.01)	0.10*** (0.01)	-0.02* (0.01)
T1 Memory	-	-	0.44*** (0.01)
T1 SD	0.65*** (0.01)	0.09*** (0.01)	-
T1 Loneliness	0.08*** (0.01)	0.54*** (0.01)	-
T2 SD	-	-	-0.03* (0.01)
T1 Loneliness	-	-	-0.03* (0.01)
Chronic conditions	-0.02 (0.01)	0.00 (0.01)	0.01 (0.01)
Depressive symptoms	0.01 (0.01)	0.08*** (0.01)	-0.02 (0.01)
Have ADL	0.01 (0.04)	0.00 (0.04)	0.00 (0.04)
Have IADL	0.03 (0.03)	0.03 (0.03)	-0.11** (0.03)
Age	0.03* (0.01)	0.03* (0.01)	-0.22*** (0.01)
Woman	-0.03 (0.01)	-0.02 (0.03)	0.12*** (0.03)
Race & Ethnicity			
Black (Non-Hispanic)	-0.01 (0.04)	0.08* (0.04)	-0.13** (0.04)
Hispanic	0.01 (0.03)	-0.10* (0.05)	-0.02 (0.05)
Others	0.09 (0.05)	0.12 (0.09)	-0.09 (0.08)
Years of Education	-0.06*** (0.01)	0.01 (0.01)	0.13*** (0.01)
Married	-0.04** (0.01)	0.01 (0.03)	0.07** (0.03)
Working	-0.01 (0.02)	-0.01 (0.03)	0.00 (0.03)

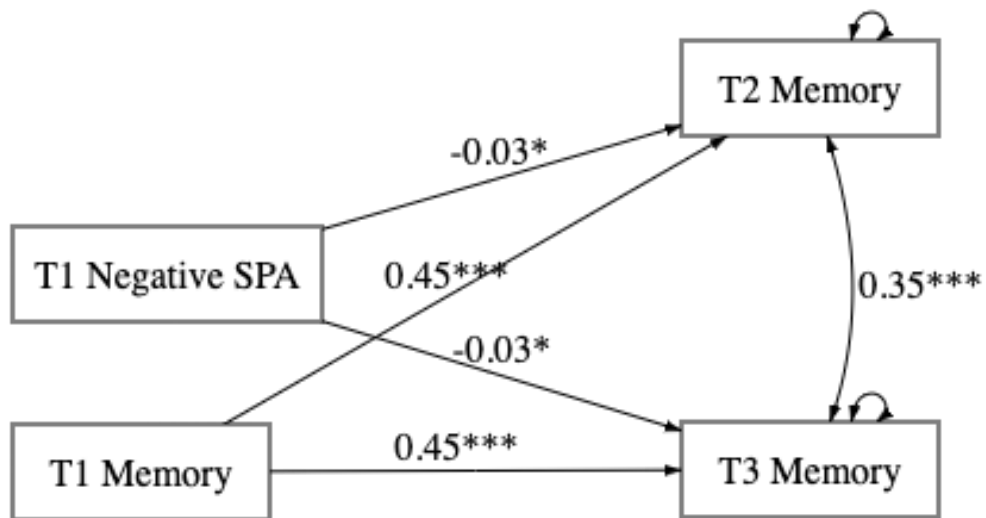
Note. * $p < 0.01$, ** $p < 0.01$, *** $p < 0.001$. SPA = Self-Perceptions of Aging, SD = Social Disconnectedness, ADL = Activities of Daily Living, IADL = Instrumental Activities of Daily Living. All covariates were measured at T1. All continuous variables in the models were standardized.

Table 4.5. Direct, Indirect, and Total Effects of T1 SPA on T3 Memory through T2 Social Disconnectedness and T2 Loneliness

	β (SE)	Effect Size
Direct Effect	-0.020* (0.01)	83%
Indirect through Social Disconnectedness	-0.001 (0.000)	4%
Indirect through Loneliness	-0.003* (0.001)	13%
Total Effect	-0.024* (0.014)	

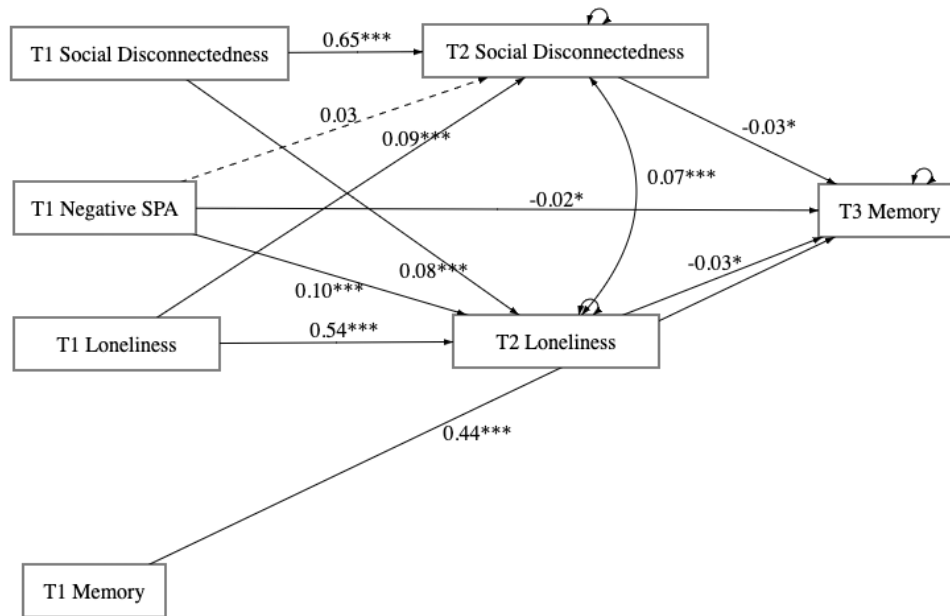
Note. * $p < 0.01$, ** $p < 0.01$, *** $p < 0.001$.

Figure 4.1. Path Analysis of T1 SPA Effects on T2 Memory and T3 Memory



Note. * $p < 0.01$, ** $p < 0.01$, *** $p < 0.001$.

Figure 4.2. Path Analysis of the Direct and Indirect Effects of T1 SPA on T3 Memory through T2 Social Disconnectedness and T2 Loneliness



Note. CFI = 1.00, RMSEA = 0.02 90%CI [0.01 – 0.04], sRMR = 0.002,
 * $p < 0.01$, ** $p < 0.01$, *** $p < 0.001$.

Supplemental Materials for Chapter 4

Supplemental Table 4.1. Negative Self-Perceptions of Aging Scale

The statements are about the way people feel about their age and about the things that happen as they get older. Please tell us how much you agree or disagree with each statement for you personally.

1 = Strongly disagree, 2 = Somewhat disagree, 3 = Slightly disagree, 4 = Slightly agree, 5 = Somewhat agree, 6 = Strongly agree

Things keep getting worse as I get older.

I have as much pep as I did last year.

The older I get, the more useless I feel.

I am as happy now as I was when I was younger.

As I get older, things are better than I thought they would be.

So far, I am satisfied with the way that I am aging.

The older I get, the more I have had to stop doing things that I liked.

Getting older has brought with it many things that I do not like.

Supplemental Table 4.2. Social Disconnectedness Items

Social Network Size and Diversity

Do you have a husband, wife, or partner with whom you live? 1 = Yes, 5 = No

Do you have any living children? 1 = Yes, 5 = No

Do you have any other immediate family, for example, any brothers or sisters, parents, cousins, or grandchildren? 1 = Yes, 5 = No

Do you have any friends? 1 = Yes, 5 = No

How close is your relationship with your spouse or partner? 1 = Very close, 2 = Quite close, 3 = Not very close, 4 = Not at all close

How many of your children would you say you have a close relationship with?

How many of these family members would you say you have a close relationship with?

How many of your friends would you say you have a close relationship with?

Frequency of Contact with Network Members

On average, how often do you do each of the following?

Meet up

Speak on the phone

Write or email

1 = Three times a week, 2 = Once or twice a week, 3 = Once or twice a month, 4 = Every few months, 5 = Once or twice a year, 6 = Less than once a year or never

with your children

with these family members

with your friends

Religious Service Participation

About how often have you attended religious services during the past year?

1 = More than once a week, 2 = Once a week, 3 = Two or three times a month, 4 = One or more times a year, 5 = Not at all

Social Engagement

How often do you do each activity?

1 = Daily, 2 = Several times a week, 3 = Once a week, 4 = Several times a month, 5 = At least once a month, 6 = Not in the last month, 7 = Never

Do volunteer or charity work?

Attend an educational or training course?

Go to a sport, social, or other club?

Attend meetings of non-religious organizations, such as political, community, or other interest groups?

Supplemental Table 4.3. Revised UCLA Loneliness Scale

How much of the time do you feel...
1 = Often, 2 = Some of the time, 3 = Hardly ever or never

You lack companionship?
Left out?
Isolated from others?
That you are “in tune” with the people around you?
Alone?
That there are people you can talk to?
That there are people you can turn to?
That there are people who really understand you?
That there are people you feel close to?
Part of a group of friends?
That you have a lot in common with the people around you?

Chapter 5 Conclusion and Future Directions

In this dissertation, I delved into the role of various dimensions of social relationships in shaping later-life personal views of aging (VoA) and manifesting the negative effects of personal VoA on cognitive health. Study 1 assessed the impact of caregiving relationships across adulthood on later-life self-perceptions of aging. Study 2 explored how non-kin relationships within a Continuing Care Retirement Community shape and reinforce views of aging. Study 3 examined the relationship between negative self-perceptions of aging and memory decline, with a focus on the mediating effects of social disconnectedness and loneliness.

Summary of Findings

The findings from three studies broaden our understanding of the aging process and highlight the potential avenues for enhancing the well-being of older adults. Below, I summarize the key findings from each study and discuss their collective contributions to the literature and the field of gerontology.

Study 1: The Impact of Caregiving History Trajectories on Later-Life SPA

Taking the life span and life course perspectives in Study 1, I conceptualized caregiving as critical life experiences and meaningful social relationships. Using a bottom-up data analysis approach, I sequenced caregiving history to include the heterogeneity of caregiving history trajectories. Cluster analysis revealed four distinct groups: Lifelong Diverse Caregivers, Later-Life Spouse Caregivers, Parent Caregivers, and Later-Life Non-Relative Caregivers.

Compared to the largest cluster, Parent Caregivers, the Lifelong Diverse Caregivers cluster members were likelier to report higher levels of negative SPA later in life. The findings revealed that caregiving experiences and relationships can be complex and dynamic and may have long-lasting impacts on later-life SPA. Moreover, the findings provided evidence of ways to interpret the development of negative SPA, other than internalized ageism, but as negative outlooks for aging that might be caused by worries about plans and complications of caregiving duties as individuals transition into later life stages.

Study 2: The Role of Non-Kin Relationships on Shaping and Reinforcing Personal Views of Aging

This qualitative study explored how non-kin relationships shape or reinforce personal views of aging among older adults living in a Continuing Care Retirement Community. The exploration reveals that participants' personal VoA can be categorized into two directions (gains and losses) across five domains—physical functioning, cognitive functioning, interpersonal relationships, socioemotional functioning, and lifestyle. Among those, many participants mentioned losses of family and friends as part of aging, in addition to losses in physical functioning. In the social environment of a CCRC, participants shared the unique opportunity to rebuild interpersonal relationships, especially friendships. The non-kin relationships formed in the community could protect residents from developing negative views of aging by replenishing interpersonal relationships, preventing social isolation and loneliness, maintaining physical and cognitive activities, and sharing solidarity in aging. Although most participants shared positive social experiences at the CCRC, residents seem to use old as a means of social stratification, differentiating 'us' from 'them' based on certain characteristics associated with being old. In addition, reminders of health declines and death (e.g., ambulances) and patronizing comments

and behaviors from staff reveal the feedback loop of internalizing age-related stereotypes and embodying them later. Gender differences emerged as a theme, notably the social exclusion that divorced women experience. This qualitative study explored older adults' VoA in an open-ended way to shed light on the multi-dimensionality of the concept. The multidimensional and multidirectional nature revealed that personal VoA is a developmental concept and non-kin relationships can shape VoA through building and strengthening social networks, as well as perpetuating stereotypes and prejudice of being old.

Study 3: The Mediating Role of Social Connections Between Negative SPA and Memory

Study 3 examined the consequences of negative SPA on later life memory changes through social disconnectedness and loneliness. Using longitudinal data spanning eight years, the study found that negative SPA has effects on memory declines over four and eight years. Moreover, negative effects of SPA on memory declines were partially mediated by feelings of loneliness. The findings validated negative SPA's long-term effects on memory and identified loneliness as a social mechanism. Older adults' negative views about aging can affect how they perceive their social integrations and relationships. They might feel less deserving of attention and affection or believe that others view them negatively. This could lead to a heightened sense of loneliness because they could perceive their social interactions as less meaningful or feel that they are not truly connected to others.

Contributions

Collectively, the three studies highlight the importance of individual and social context. Theoretically, the dissertation integrated stereotype embodiment and the convoy model of social relations and discovered the important role various aspects of social relationships, including relationship type, network structure, and perceived quality, could play in the development and

consequence of personal VoA. Findings from this dissertation provide evidence that social interactions and relationships formed across the lifespan can shape individuals' VoA. Although findings from Study 2 on othering people who appear old show that individuals internalize stereotypes and prejudice about being old through socialization (Levy, 2009), findings from Study 1 on Lifelong Diverse Caregivers and caregivers of children, as well as from Study 2 on rebuilding non-kin relationships, indicates that there is a complex and dynamic process between social interactions and relationships and development of SPA. Negative personal VoA could reflect internalized ageism but also worries and concerns about the aging process caused by other life experiences, such as being a lifelong caregiver for a child with special needs. Positive personal VoA could be shaped by seeing role models but also by changes in social relationships and environments, such as making new friends after moving to a retirement community. In addition to the development of VoA, this dissertation also identified a new potential social pathway explaining the negative effects of personal VoA on health. The findings further expand the stereotype embodiment theory beyond the individual level to identify mechanisms on the interpersonal level.

Empirically, this dissertation utilized various methods to study the concept and developmental process of personal VoA and social relationships. Study 1 showed a quantitative, bottom-up approach to examining the complexity of life experiences. Study 2 explored an open-ended way to examine the multidimensionality of personal VoA and social environment. Study 3 harnessed longitudinal data and an advanced statistical method—structural equation modeling—to unpack SPA's long-term effects on individuals' social and cognitive health.

Implications and Future Directions

The findings from this dissertation have implications for both research and social work practice. This research attempted to move beyond sociodemographic and health status and examine what dimensions of social context shape and can be shaped by individuals' personal VoA. Two areas related to VoA remain under-explored: (1) the social and physical environment and (2) the effects of VoA on health on dynamic temporal scales. Little is known about how the broader social and physical environment relates to where older adults are in a given moment and whom they are with at the time. Current studies have treated social and physical context correlated with VoA as static individual difference variables rather than momentarily varying. The few existing studies examining momentary loneliness suggest contextual factors matter (Compernelle et al., 2021). Utilizing ecological momentary assessments (EMAs) could be a potential future direction in understanding SPA in social and physical contexts.

The time scales of the studies in this dissertation are limited to either cross-sectional or biannual. However, human development consists of long-term trends and short-term varieties on which those trends are built. Several studies on VoA and health have revealed that developmental changes in personal VoA and the health of any individual are never smooth and orderly as more measurement points are being added (Luo & Li, 2019) and the time intervals are becoming smaller (Wolff et al., 2017). More recently, daily diary studies have examined the daily fluctuation of personal VoA (Graham & Neupert, 2023; Zhu & Neupert, 2021). Integrating EMA and measurement burst design, I could explore more short-term changes around a salient event (e.g., experiencing ageism) and follow those local changes to see if they will accumulate into long-term changes that alter the developmental trajectories of an individual. It is important to examine shorter-term variation in personal VoA as well as long-term trends because this

permits the identification of social and physical context factors most linked within momentary VoA—information that may guide future interventions.

Another under-explored topic is whether and how different identity groups, i.e., gender or racial/ethnic groups, may experience social and physical context differently regarding their real-time VoA. Momentary context may elicit unique sources of variation in VoA. The findings from this study indicate that there may be gender and racial/ethnic differences in VoA and social relationships, as noted by previous research (Newman, 2003; Torres, 2020). It is unclear whether the differences are driven by differential exposure to a specific context or differential reactivity to a particular context.

In this dissertation, Study 1 attempted to identify who is most likely to have more negative personal VoA later in life. Study 2 attempted to identify under what circumstances, and Study 3 attempted to identify the consequences. To understand when, studies have examined the role of individuals' social and physical context, which is lacking in the current field. A better understanding of context-VoA associations will help identify points of entry for possible interventions addressing disparity risks of negative VoA across these sub-populations.

Social Work Practice

Findings from this dissertation indicate that social relationships could affect personal VoA and have long-term and detrimental effects on older adults' health. Social work research and interventions should focus on identifying risk factors and exploring systematic interventions across levels. Targeting individuals' negative personal VoA may be one potential way to promote the idea that individuals can embody their aging through their actions and lifestyle. Several intervention studies have shown that education programs breaking age-related stereotypes not only encourage more positive personal VoA but also increase middle-aged and

older adults' engagement in health-promoting behaviors, such as physical activity and healthy eating (Beyer et al., 2019; Brothers & Diehl, 2017; Klusmann et al., 2019; Wolff et al., 2014).

Since personal VoA reflects negative beliefs about one's aging process, interventions based on cognitive behavioral therapy could identify and address age-related cognitive distortion (A. T. Beck & Haigh, 2014). Older adults with negative personal VoA might fall into a negative cognitive triad, which includes negative thoughts about themselves (e.g., "I am too old to be interesting"), their environment (e.g., "People don't want to spend time with older people"), and their future (e.g., "Things are only going to get worse as I age"). These thoughts could lead to isolation and feelings of loneliness as they distort the individual's perceptions of their social world and place within it. Moreover, older adults might over-generalize negative social interactions, such as "Young people don't enjoy talking to me because I am too old to have anything relevant to say," as well as catastrophizing a forgetful moment as a sign of dementia. Group-based cognitive behavioral therapy may be effective in challenging negative thoughts about older adults' aging while building peer support to prevent feelings of isolation and loneliness.

At the local neighborhood and community level, social workers could play a critical role in creating social and physical spaces to facilitate forming diverse social relationships and advocating for an age-inclusive community environment. Ethnographic studies of older adults aging in urban neighborhoods highlighted the critical role neighborhoods play in older adults' well-being, especially those of racial and ethnic minorities (Duneier, 1994; Newman, 2003; Torres, 2020). It provides important sources of social support, both emotional and practical, and helps to form relationships beyond family ties. Forming meaningful social relationships could promote positive VoA and prevent isolation and loneliness.

In addition to facilitating the social environment, developing an age-inclusive physical environment could promote positive VoA by removing physical barriers to leaving home and preventing interpreting physical barriers as reminders of age-related declines. Changes in the physical environment can include having longer pedestrian lights so that people who walk slowly can still cross the street, having wider and flatter pedestrian sidewalks to prevent falls, having more benches along the street for resting, normalizing ramps, and minimizing stairs. Social workers should work with older adults to identify changes needed, organize, and advocate for an age-inclusive social and physical environment.

At the societal level, negative views of aging and ageism are still rampant. Findings from this dissertation, especially Study 2, revealed the stereotypes and prejudice people internalized about “being old.” Although the developmental process of VoA remains under-explored, it is clear that societal views of aging would play a critical role in fostering positive SPA at the individual level. Since 2015, a coalition of leading national organizations on aging in the U.S., including the American Association of Retired People (AARP), the American Society on Aging (ASA), the American Geriatrics Society (AGS) and the Gerontological Society of America (GSA), launched an initiative to reframe the narrative on aging (Sweetland et al., 2017). The Reframing Aging Initiative addresses ageism by educating the general public about common misconceptions and stereotypes about aging as a process and life stage and about older adults as a social group. In addition, the United Nations Committee on Ageing and the World Health Organization (WHO) has paid attention to the issue of ageism worldwide. The AARP works in collaboration with the U.S. Administration on Aging to convene workshops with U.S. governmental offices to raise awareness of the increasing ageing population. AARP produced a paper, entitled, *Strategies for a Society for All Ages*.

In addition to reframing aging as a heterogeneous process, policies need to be in place to support heterogeneity. Older adults are the most diverse age group in the U.S. population in terms of health, functioning, and life experiences. This diversity is expected to increase in the coming decades regarding racial/ethnic and cultural backgrounds, socioeconomic status, immigration status, sexual orientation, gender identity, lifestyle, and living arrangements. Policies need to be in place to encourage and facilitate culturally appropriate practices, especially in healthcare settings. An example is the Culturally and Linguistically Appropriate Services (CLAS) standards, sponsored by the U.S. Department of Health and Human Services (Periyakoil, 2019). This set of standards provides guidelines for service providers to eliminate healthcare disparities and advance health equality by integrating medical interpreter services into the regular workflow and prompting culturally sensitive health literacy events. However, language is only one barrier that cultural-sensitive services must address. Even though there are standards like the CLAS available, policies and guidelines are still needed to support the development of culturally sensitive services. On the general policy level, policies should incentivize city and infrastructure designs to innovate in building age-friendly community environments. Another challenge that needs policymakers' attention is to close the urban and rural divide in services and physical infrastructure. These modifications will encourage older adults to leave their homes and promote their participation and social visibility.

In a just society, everyone can participate and contribute throughout their life stages. Everyone is appreciated for who they are. This dissertation is a launching pad for future research and intervention development that aims to explore and understand the intersectionality between aging, identities, life experiences, and social and physical environments and foster an inclusive society for all ages.

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