

**Self-Perceptions of Aging and Activity Engagement:  
Linking Positive and Negative Appraisals to Behavior**

by

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## **DEDICATION**

To my mother and my sister, the strongest women I know.

You two have always been, and will always be, my heroes.

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## ABSTRACT

The importance of both self-perceptions of aging (SPA) and activity engagement for late life health and well-being have been well documented in the gerontological literature. Attitudes about aging have been found to predict cardiovascular health, cognitive and physical functioning, and even longevity. Engagement in cognitively and physically stimulating activities has also been identified as a key predictor of cognitive and physical health and well-being outcomes in late life. Several lifespan developmental theories offer frameworks for considering how individuals' internal perceptions of their own developmental change map on to changes in behavior patterns across the life course. Additionally, Levy's (2009) Age Stereotype Embodiment Theory highlights health behaviors as potential mechanisms through which aging attitudes influence health. Recent discussions about the multidimensionality of aging attitudes emphasize the need to consider that people may have positive attitudes about some aspects of becoming older and negative attitudes about other aspects. However, to date, relatively little research has explicitly examined linkages between positive and negative SPA and engagement in social, productive, and leisure activities of everyday life. In three distinct but linked papers, I use nationally representative data from the Health and Retirement Study (HRS), and data from a local sample of adults ages 50 and over, to examine this research gap.

The first study examined whether positive and negative items of the brief HRS SPA measure show differential associations with psychosocial correlates and differential patterns across age groups over 50. Confirmatory factor analysis of HRS 2010 data ( $N = 7,190$ ) revealed that a two-dimensional structure of SPA was a better representation of the eight-item HRS SPA

measure than a unidimensional structure (replicated with HRS 2012 data;  $N = 5,963$ ). Additionally, the positive and negative dimensions of SPA independently predicted other indicators of psychological functioning [positive affect (PA), negative affect (NA), life satisfaction, purpose in life, perceived control, optimism, and pessimism], and demonstrated distinct patterns of variation in mean levels across middle-age, young-old, and oldest-old age groups.

The second study used HRS 2014 data ( $N = 6,524$ ) to examine whether positive and negative dimensions of SPA differentially relate to activity participation and activity-related affect within a day, above and beyond sociodemographic, health, and trait-level affect covariates. Findings revealed that higher positive SPA were associated with a higher likelihood of exercising, and with a lower likelihood of watching TV, and with higher activity-related PA for each of the eight activities that were measured. Higher negative SPA were associated with a higher likelihood of engaging in health-related activities, and with lower PA while spending time alone, and with higher NA while watching TV, exercising, travelling, socializing, and spending time alone.

The third study used a local sample ( $N = 123$ ) to examine whether positive and negative SPA relate to individuals' self-reported reasons for doing activities. Findings revealed that higher positive SPA were associated with having a lower proportion of externally-driven activities (e.g., *someone else wanted me to*) in a day, and higher negative SPA were associated with having a higher proportion of externally-driven activities in a day.

Together these studies expand the literature by emphasizing the importance of examining outcomes associated with positive and negative dimensions of SPA separately, and by providing

a first look at linkages between positive and negative SPA and proximal affective and motivational determinants of activity engagement within the context of a day.

## CHAPTER I

### **Aging and Self-Perceptions**

Age, like gender and race, is a prominent part of our self-concept and social identity. Attitudes surrounding the meaning of age are tied to social roles and expectations that play into how we are viewed by others and how we view ourselves. Age is also tied to biological, social, and emotional aspects of developmental change across the life span. Although there are individual differences in the rates and trajectories of change in each of these domains, everyone encounters some sort of change in their experience of the world across childhood, adolescence, early adulthood, midlife, and late adulthood. How we experience, think about, and feel about such changes may also shift throughout our lives: with certain aspects of change evoking feelings of pride or excitement, and other aspects of change evoking new challenges or feelings of apprehension. As researchers of human development, we can attempt to understand developmental changes by observing individuals' social, cognitive, behavioral, and physiological outcomes. However, missing from such observations are individuals' self-reflective thoughts and evaluations associated with their own changing experiences of becoming older each year.

From the early 1950s to the 1970s theoretical and empirical work in the area of late life development began discussing the topic of individuals' subjective appraisals of their own age and aging experiences (e.g., Tuckman & Lorge, 1954; Peters, 1971; Kastenbaum, Derbin, Sabatini, & Artt, 1972). Over the past several decades there has been a growing body of research demonstrating interesting phenomena about the antecedents, correlates, and outcomes of such subjective appraisals, highlighting the importance of understanding the role they play in



individuals' developmental trajectories. Recently, Diehl, Wahl, Barrett, Brothers, Miche, Montepare, Westerhof, and Wurm (2014) argued for the integration of the many subjective aging processes under a superordinate construct: Awareness of Aging (AoA). They proposed that adoption of the superordinate concept of AoA in the literature would help to incorporate several lines of research and identify future research needs, directions, and applications (Diehl et al., 2014). Accordingly, despite the broad body of research that involves subjective aging processes, a prior lack of unity in measures and constructs has left several gaps in our understanding about aging and self-perceptions that warrant further exploration.

Perhaps one of the most pervasive ways that age interacts with self-perceptions is through the activities in which we engage. Many activities themselves are traditionally associated with certain age groups. For example, in the U.S., attending primary school and working for pay are types of activities that are often thought to be linked to certain phases of the life span. Additionally, the extent to which we feel we can engage in particular activities that are central to our identity (e.g., participating in a favorite sport) as we age may play a role in the extent to which we endorse positive or negative perceptions about our own aging process. Thus, our attitudes and beliefs surrounding our own age and aging process may both shape, and be shaped by stability or change in the activities in which we engage throughout life.

My central aim is to address some of the open questions surrounding how self-perceptions of aging, as complex and multidimensional components of our identity, color our interaction with the surrounding world through our activity participation and engagement. I begin this introductory chapter by briefly summarizing several theoretical perspectives that inform my understanding of self-perceptions of aging and how these perceptions are associated with activity engagement. I continue with a discussion of antecedents, correlates, and outcomes

related to subjective appraisals of aging. I then provide a brief description of commonly used subjective aging-related measures, followed by a section detailing the open questions I aim to address. I end the chapter with a preview of the three dissertation studies that will follow.

Figure 1.1 displays a conceptual model that provides an overall framework for my dissertation. This conceptual model draws from the large body of literature on subjective appraisals of aging and the associated correlates and outcomes across the life span. Because self-perceptions of aging, activity engagement, and health all change over time and influence each other through complex and bidirectional processes, the associations are considered to be part of a dynamic system, which also includes contextual factors.

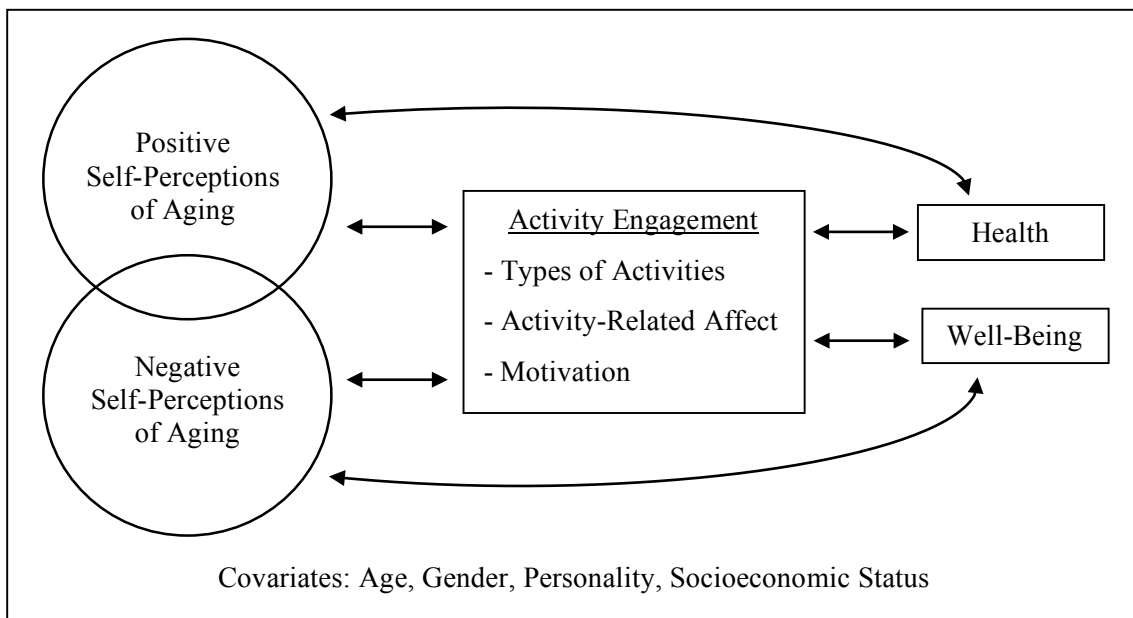


Figure 1.1. Conceptual model depicting dynamic system of associations between self-perceptions of aging, activity engagement, and health and well-being

## **Theories About the Incorporation of Aging into Self-Perceptions**

### **Age Identity**

Measures of chronological age provide an objective indicator of years since birth. Although chronological age is widely used to determine readiness thresholds for certain policy-regulated privileges (e.g., obtain a driver's license, register to vote, participate in military service, collect social security benefits) and to provide guidelines and expectations for healthcare decisions (e.g., vaccine schedules, cancer screenings), many of these age thresholds are arbitrary or inconsistent and do not necessarily perfectly align with an individual's internal sense of the age that they feel, or the age group they most identify with. Age identity, sometimes referred to as subjective age, is a multidimensional construct that indicates how old a person feels, and into which age group a person categorizes himself or herself. Early theoretical conceptualizations of age identity highlighted four dimensions: emotional (feel-age), biological (look-age), societal (do-age), and intellectual (interest-age) that encompass subjective and ideal aspects of an individual's age identity (Kastenbaum, Derbin, Sabatini, & Arrt, 1972). Recognition of the fact that one's age identity may vary by domain further highlights the socially constructed nature of age itself. Individuals may base their age group identification on how they spend their time or how they are treated by others, or they may experience discrepancies between the age that they feel, the way they are treated by others, and the social roles, interests, and activities they maintain. In this way, individuals' age identities both shape and are shaped by their experiences throughout life.

Measurement of age identity has involved both comparative age scales (which ask individuals to respond to the extent to which they feel older or younger than others their age) and ratio age scales (which ask individuals to report which age they perceive/consider themselves to

be, or ask individuals which age group they most identify with) (for a review see: Barak, 2009). How old an individual feels, apart from his or her actual chronological age, may reflect beliefs about experiences and life events that serve as markers of transitions into social roles people are expected to enact at different stages in life (Mathur & Moschis, 2005). For example, Montepare (2009) demonstrated that subjective age ratings vary depending on proximity to different age-related events and developmental reference points (birthdays, reunions, anniversaries).

Subjective age may also reflect individuals' perceptions of their own health and physiological changes in comparison to their expectations and assumptions about what people of a certain age commonly experience (Hublely & Russell, 2009). Encapsulated within this construct are complex, multifaceted, and implied notions about what it means to be a certain age—often making it challenging to interpret. Thus, most research on subjective age focuses less on the age identified and more on the relative discrepancy between the subjective and chronological measures of age. However, even interpretations of this nature must make assumptions about what an individual means by or feels about reporting to feel younger or older relative to their chronological age. For example, maintaining a youthful age identity in later life is considered to be self-enhancing and self-protecting in cultures where youth is greatly valued (Barak & Stern, 1986; Montepare & Lachman, 1989; Barrett, 2003; 2005). Nevertheless, research has shown that the extent to which feeling younger or older than one's chronological age is predictive of positive or negative well-being outcomes depends on one's overall attitudes about aging (Mock & Eibach, 2011). Variations in the relative association between age identity and well-being outcomes by socioeconomic status (Barrett, 2003), gender (Barrett, 2005), and cultural context (Westerhof & Barrett, 2005; Westerhof, Whitbourne, & Freeman, 2012) further highlight the many ways in which age is socially constructed.

Age identity has implications for the activities in which individuals engage. Just as other components of identity may link to individuals' social roles, personal interests, and activities, identification with a particular age group may be associated with holding social roles and engaging in activities commonly associated with that age group. For example, age identity in young adults has been linked to workforce participation (Johnson, Berg, & Sirotzki, 2007). However, relatively little research has explicitly examined the extent to which age identity links to engagement in leisure activities and other routine daily activities that may be less associated with specific social roles.

### **Motive Related Self-Perceptions**

Theories of motivation provide additional understanding to the associations between aging-related self-perceptions and activity engagement. Each of the three motivational theories discussed below describes developmental changes in motivation and behavior associated with changing self-perceptions. Together, these theories offer a framework through which age-related identities and activity patterns may be understood.

**Selection, optimization, and compensation.** As we become increasingly aware of our own age-related gains and losses, we shift our interactions with the surrounding world in ways that make the most of our resources. Baltes and Baltes' (1990) theory of Selection, Optimization, and Compensation (SOC) accounts for this process of adaptation. According to the SOC theory, as we become older we engage in a process of *selection*, in which we concentrate our time, energy, and resources on a few select activities. By selecting only the few most important activities or domains of functioning, we can then focus on *optimization*, through focused practice and harnessing of age-related gains in knowledge and life experience. When we reach a point that the demands of an activity outweigh our potential capacity or our cognitive or physical

resources, we engage in *compensation*, by employing alternative means of achieving our goal. Defined by P.B. Baltes (1997) as a *metatheory of development*, SOC can be applied across the life span, and across various domains of functioning. M.M. Baltes and Carstensen (1991) describe how processes of SOC are further explained by the concept of possible selves (introduced by Markus and Nurius, 1986), and how both SOC and the concept of possible selves are compatible with Socioemotional Selectivity Theory (Carstensen, 1987, 1991).

**Possible selves.** The concept of possible selves, introduced by Markus and Nurius (1986), considers how we think about our potential and our future. Possible selves involve our thoughts and ideas about desired selves we would like to become as well as undesired selves that we are afraid of becoming. Conceptualized as cognitive manifestations of goals, aspirations, fears, and threats, possible selves are inherently linked to motivation. Importantly, Markus and Nurius (1986) argued that possible selves serve as incentives for future behavior and provide a context for current self-views. As M.M. Baltes and Carstensen (1991) discuss, possible selves align with processes of SOC. We *select* behaviors in order to approach desired future selves (e.g., the healthy self, the successful self) or avoid feared future selves (e.g., the unhealthy self, the incompetent self), and as we become older, the number and range of possible selves is reduced (Cross & Markus, 1991). We *optimize* the use of our knowledge and skills by focusing on certain selves over others. Finally, we *compensate* for selves that need to be abandoned because of changes in interests, priorities, or capabilities.

Individuals actively construct their own development by directing their decisions, behaviors, and activities in accordance with these representations of their future selves. For example, research has shown that, among older adults, possible selves in the health domain are stronger predictors of health-related behaviors than are global health values (Hooker & Kaus,

1992). Both health-related and social-related possible selves are related to higher probabilities of engaging in daily activities in each of those domains (Hoppman, Gerstorf, Smith, & Klumb, 2007; Ko, Mejia, & Hooker, 2014). By using future self-views to direct subsequent activities and behavior, individuals prepare for anticipated age-related changes to potentially protect themselves against undesired outcomes (Kornadt, Voss, & Rothermund, 2015). The motivational role of hoped for and feared possible selves in guiding approach and avoidance behavior continues to function into very old age (Smith & Freund, 2002).

**Socioemotional selectivity theory.** Our subjective experiences of aging, and their associated behavioral outcomes, are not only shaped by images, expectations, and assumptions that we hold about the aging process, but also by our internal sense of passing and remaining time. Thus, an additional theory that informs my approach is Carstensen's (1991) Socioemotional Selectivity Theory (SST). As a theory of motivation and goal-directed behavior, SST suggests that when we perceive time to be expansive, we pursue long-term goals related to knowledge acquisition, but when we perceive time to be limited, we focus on present-oriented goals that maximize emotional satisfaction. Carstensen, Isaacowitz, and Charles (1999) argue that behavioral changes that occur with age are not simply a reflection of coping with loss, but may, instead, be indicative of active adaptation to one's current circumstances that are motivated by perceptions of remaining time. The concept of future time perspective is a major component of SST. Whereas many conceptualizations of subjective aging often anchor the current aging self in relation to past experience, time lived, and prior expectations, measures of future time perspective anchor the current self in relation to a perceived future limit or endpoint in one's own lifetime. This lens on one's aging process bears somewhat different patterns of association with motivational, emotional, and behavioral outcomes when compared with other measures of

subjective aging. For example, one might expect that having a relatively older age identity would be associated with having a relatively limited future time perspective. However, older age identity is considered to be detrimental to well-being (e.g, Westerhof & Barrett, 2005), while limited future time perspective is often associated with an increased attention to meaningful aspects of life, and consequently, an enhancement in well-being (Carstensen, 2006).

The tenets of SST also include processes of *selection*, *optimization*, and *compensation* and consider the role of possible selves in social and emotional decision-making (M.M. Baltes & Carstensen, 1991). For example, whereas individuals who perceive time to be expansive may focus on defining a range of possible selves and therefore prioritize information-seeking in social interactions, individuals who perceive time to be limited may focus on enhancing a few select possible selves and therefore prioritize a few important and emotionally meaningful social interactions. Optimization of social knowledge acquired throughout life allows individuals to avoid negative social environments in order to compensate for biological and physiological vulnerabilities that occur in later life (Charles & Carstensen, 2010). Together, these theories of motive-related self-perceptions work in tandem to inform our understanding of how subjective appraisals of aging shape goals and behaviors across the life span.

### **Age Stereotype Embodiment Theory**

Because attitudes and beliefs about age are not developed in isolation, but rather as part of the complex environments in which we live, I also consider Levy's (2009) theory of Age Stereotype Embodiment, which explains the process by which socially constructed views of aging become incorporated into individuals' sense of self as they age, and subsequently influence functioning and health. Age Stereotype Embodiment Theory is comprised of four components.



The first component of Levy's (2009) theory proposes that age stereotypes are internalized across the life span from childhood to old age. In support of this component, Levy (2003) highlights research illustrating very young children's endorsement of cultural old-age stereotypes and expectation that they, themselves, will not enjoy old age and would prefer not to become old. This component is further supported by research that demonstrates that cultural aging stereotypes prevail even when people encounter contradictory evidence. For example, Levy and Banaji (2002) discussed how personal experience with, and images of, older people who do not fit common cultural stereotypes of old age become classified as exceptions. Levy (2009) emphasizes a unique feature of this lifetime internalization process which is that, unlike stereotypes held about other out-groups, the aged is a group that everyone will eventually join, if they live long enough. She argues that because individuals encounter societal age stereotypes long before they become a member of the stereotyped group, they have little need to utilize coping strategies (e.g., cognitive reframing, discounting) to defend themselves against such stereotypes (Levy, 2009).

The second component of Levy's (2009) theory argues that age stereotypes can operate unconsciously. Levy and Banaji (2002) reviewed a large body of research examining implicit age stereotyping. Additionally, Levy (2000) and Levy, Ashman, and Dror (2000) demonstrated differences in unconscious behavior (handwriting) and state of mind (will to live) depending on subliminal exposure to either positive or negative age-stereotypes.

The third component of Levy's (2009) theory explains how age stereotypes become increasingly more salient as we perceive them to be self-relevant, that is, as we begin to see ourselves as part of the stereotyped group. Social role transitions and other socially-constructed markers of the passage into late life (e.g., becoming a grandparent, being offered senior-citizen

discounts, retiring from the workforce) provide cues that may contribute to individuals' feeling that they are now considered to be “old.” Levy (2009) proposes that this subjective transition into old age increases the salience of old-age stereotypes that individuals encounter because they now hold personal resonance. Support for this proposal comes from experimental research showing that effects of stereotype priming on behavior are stronger for older participants than younger participants (e.g., Levy, 1996; Levy, Ashman, & Dror, 2000).

The fourth component of Levy's (2009) theory asserts that age stereotypes influence functioning and health through three pathways: psychological, behavioral, and physiological. The psychological pathway involves expectations about old age, which, Levy (2009) argues, can become self-fulfilling prophecies. This pathway is best exemplified by the finding of a “stereotype-matching effect” by Levy and Leifheit-Limson (2009), in which the effect of positive and negative age stereotypes on performance outcomes was greatest when the content of the age stereotypes corresponded to the domains of the outcomes. The behavioral pathway through which age stereotypes influence functioning and health involves health-related behaviors and practices. For example, Levy and Myers (2004) found that individuals with more positive aging perceptions were more likely to engage in healthy behaviors compared to those with more negative aging perceptions. They concluded that negative age stereotypes, which often equate aging with inevitable disease and ill health, hinder self-efficacy and lead to a belief that healthy practices are futile. The physiological pathway through which age stereotypes exert their influence involves stress responses in the autonomic nervous system. This process was exemplified by experimental research showing that exposure to negative age stereotypes increased participants' cardiovascular response to stress, whereas exposure to positive age

stereotypes reduced participants' cardiovascular response to stress (Levy, Hausdorff, Hencke, & Wei, 2000).

### **Implications of These Theories for How We Interact with the World**

The particular focus of my work will be to expand upon existing evidence for the behavioral pathway of Levy's (2009) Age Stereotype Embodiment Theory by examining linkages between positive and negative self-perceptions of aging and activity engagement. In an effort to best understand the various motivational and emotional processes at play between self-perceptions of aging and activity engagement, I consider key concepts from the discussed motive-related frameworks: SOC, possible selves, and SST. Levy's theory focuses predominantly on stereotypes and behaviors in the domain of health. However, additional old age images may shape individuals' desired and feared possible selves and associated motivation to engage in or disengage from various activities. For example, age stereotypes surrounding productivity, independence, or active community involvement of older members of society may activate representations of corresponding productive vs. useless, independent vs. dependent, or involved and connected vs. alone and disconnected possible selves, which then motivate initiation of activities that support desired selves and withdrawal from activities that undermine desired selves.

### **Subjective Appraisals of Aging and Activity Engagement**

The importance of activity engagement as we become older has long been emphasized across a number of theories of aging well (e.g., Lemon, Bengtson, & Peterson, 1972; Atchley, 1989; Rowe & Kahn, 1997). An ongoing body of research across multiple disciplines recognizes activity patterns as major determinants of health and well-being in late life, demonstrating cognitive, physical, and affective outcomes related to involvement in various productive and

leisure activities (e.g., working, volunteering, reading, socializing, exercising). Both the frequency of activity participation and range of activities in which individuals participate have been explored. A vast consensus is that involvement in stimulating activities in mid and late life is associated with higher levels of psychological well-being (Herzog, Franks, Markus, & Holmberg, 1998; Menec, 2003), better physical health (Morrow-Howell, Putnam, Lee, Greenfield, Inoue, & Chen, 2014) and fewer declines in cognitive functioning (Gow, Pattie, & Deary, 2016).

Research in this area has also highlighted the importance of the degree of personal *engagement* that individuals experience while participating in certain activities. Kahn (1990) conceptualizes personal *engagement* as a deep physical, cognitive, and emotional presence that allows one to feel a meaningful connection with a role. Personal *engagement* is contrasted with *disengagement*, which Kahn (1990) described as passive participation, lacking physical, cognitive, and emotional connection, in which the self is detached from the role. Level of personal engagement during activity participation plays an especially important role in the extent to which certain productive activities (e.g., work, volunteering) are associated with positive outcomes in middle and later life (Matz-Costa, Besen, James, & Pitt-Catsouphes, 2012).

Activity theory of aging (Lemon et al., 1972) discusses the idea that activity patterns in late life reflect adaptations to social role changes in effort to maintain one's self-concept. As discussed earlier in this chapter, motive related theories of SOC, possible selves, and SST align with this view of adaptive development and highlight the links between self-perceptions and activity patterns. As we perceive our own age-related physical, cognitive, and social changes we select activities that are most important, optimizing our strengths in knowledge or experience, and compensating for losses and vulnerabilities related to age. Through this process, we can

focus our energy on a select set of possible selves, which motivate us toward activities that support our desired selves, and away from activities that could lead to feared selves.

Additionally, perceiving that our time is limited serves as an incentive to maximize our remaining time by focusing on meaningful activities and social interactions that enhance emotional well-being.

### **Health Related Activities**

Health related activities can include both health promoting and protecting behaviors (e.g., engaging in physical exercise, visiting the doctor for routine screenings and vaccinations) and health management activities (e.g., administering or undergoing treatments for chronic or acute conditions). As a main component of Levy's Age Stereotype Embodiment Theory emphasizes a behavioral pathway through which our thoughts and beliefs about aging link to health, a growing body of literature has examined associations between self-perceptions of aging and health-related activities. In support of the theory, positive self-perceptions of aging have been linked to increased likelihood of practicing preventive health behaviors (e.g., tobacco avoidance, healthy eating, physical activity, medication compliance; Levy & Myers, 2004) increased likelihood of using preventive health services (e.g., cholesterol tests, mammograms, prostate exams; Kim, Moored, Giasson, & Smith, 2014), decreased likelihood of delaying healthcare (Sun & Smith, 2017).

### **Social, Productive, or Leisure Activities**

Relatively less work has explicitly examined associations between self-perceptions of aging and other types of social, productive, or leisure activities. As the activity engagement literature has emphasized, patterns of community participation, intellectual pursuits, and even caregiving have implications for well-being in mid and late life. People spend their time doing

much more than just visiting the doctor, taking medications, and engaging in physical exercise. A wide array of social, productive, and leisure activities fill individuals' days, including spending time with friends and family, watching TV, participating in religious practices, working, volunteering, caregiving, and travelling (Jopp & Hertzog, 2010).

The few studies that have explored links to non-health-related activities highlight important questions about the direction of associations between self-perceptions of aging and activity engagement. For example, one recent experimental study found that older individuals who took part in University Programs for Older Adults (which offer continuing education, training, and opportunities for lifelong learning) showed significant improvements in their self-perceptions of aging compared to a control group that did not take part in the programs (Fernández-Ballesteros et al., 2013). This work suggests that the activities in which we engage may, in part, shape our self-perceptions of aging.

More work is needed to determine whether and how engagement in other types of social, productive, and leisure activities link to self-perceptions of aging. Activity engagement and subjective appraisals of one's own aging process are likely to influence each other over time. For example, having to reduce or cease participation in a favorite leisure activity because of physical changes that occur with age may make us feel less positive, or more negative, about our own aging process. At the same time, as emphasized by SOC, we may adapt to perceived age-related changes by choosing to participate in new leisure activities that optimize our current abilities, or take on a new role (becoming a coach, mentor, or instructor) in order to continue engagement in long-held leisure activity that is central to our self-concept (Markus & Herzog, 1991). In turn, a successful optimization of strengths and compensation for losses through our leisure activity adaptations may contribute to a sense of satisfaction with our own aging process. Similarly,

transitioning out of formal productive roles (retirement), or taking on new social roles (becoming a grandparent) may involve changes in daily activity patterns (e.g., reduced socialization with colleagues, increased time spent with family) that could lead to positive or negative evaluations of our own aging. We may consider these current evaluations of our own aging in the development of hoped for and feared possible selves, which, in turn, motivate our activity choices moving forward. The retiree who feels positive about her current health status but perceives a sense of social loss with aging because she misses interacting with her former colleagues, may be motivated to approach a socially-active self and avoid a feared lonely self by engaging in volunteer activities in her community. By making the most of her current free time and good health her new community activities allow her to embrace the ways in which she felt positive about her aging, and minimize the aspects of aging that she found negative.

### **Antecedents, Correlates, and Outcomes related to Subjective Appraisals of Aging**

#### **Developmental Patterns**

Developmental patterns of subjective appraisals of aging further highlight the fact that these constructs capture something beyond chronological age. For example, the majority of teens and young adults under the age of 25 report feeling older than their chronological age, but shortly after age 25 there is a shift toward feeling younger than one's chronological age (Montepare & Lachman, 1989; Galambos, Turner, & Tilton-Weaver, 2005; Rubin & Berntsen, 2006). Additionally, the discrepancy between subjective age (or age identity) and chronological age actually increases as individuals become older, with most individuals over 40 feeling about 20% younger than their chronological age (Rubin & Berntsen, 2006). Montepare (2009) suggested that subjective age involves a process of anchoring and adjusting personal age perceptions in light of proximal reference points that make age salient (e.g., birthdays, weddings,

reunions, anniversaries, birth of a grandchild, retirement, health events, etc.), as well as distal reference points (internal models of and expectations about the path of development across adulthood).

However, this trend of perceived relative youthfulness in older adulthood does not necessarily continue to increase indefinitely. In very late life, with increasing age, and, more specifically, with increasing closeness to death, subjective age actually begins to increase, and self-perceptions of aging become less positive (Kotter-Grühn, Kleinspehn-Ammerlahn, Gerstorf, & Smith, 2009). Additionally, close examinations of patterns of decline in attitudes toward one's own aging (ATOA) suggest that there may be age-group differences in the extent of inter-individual variability in such trajectories. For example, Miche, Elsasser, Schilling, and Wahl (2015) found that among their sample of young-old adults (born between 1930-1932) there was very little between-person variation in the steady downward trajectory of ATOA over 12 years, but among their sample of middle-aged adults (born 1950-1952) there was pronounced between-person variation in the pattern of ATOA change over time. Such age-group differences may highlight greater sensitivity of ATOA to the influence of personal health and sociodemographic factors in midlife, as Miche and colleagues suggest (2015), or they may reflect unique cohort differences in ATOA patterns of change over time.

### **Individual Antecedents**

Apart from chronological age, other individual factors may contribute to between-person differences in perceptions of aging. For example, although perceptions about aging as a time of increasing wisdom and decreasing physical abilities exist across multiple cultures, perceptions about late-life socioemotional functioning and about general societal views of aging differ by cultural context (Lockenhoff et al., 2009). Additionally, within cultures, individuals' own self-



perceptions of aging may also vary depending on personality. Bryant, Gilson, Komiti, Jackson, and Judd (2016) found associations between certain personality characteristics and older individuals' attitudes toward their own aging across various domains. Specifically, and in accordance with similar findings by Moor, Zimprich, Schmitt, and Kliegel (2006), higher levels of neuroticism were associated with less positive attitudes toward old age as a sign of psychological growth (Bryant et al., 2016). Extraversion and agreeableness were both found to predict less negative attitudes toward aging as a time of psychosocial loss, and openness was found to predict more positive attitudes about age-related physical change (Bryant et al., 2016).

### **Health and Well-Being Correlates and Outcomes**

The importance of understanding processes related to the development of attitudes and beliefs about aging is emphasized by the large body of literature that links aging attitudes with health and well-being outcomes in later life. Perhaps most striking is the finding that the way we think about aging can have implications for our future health long before we reach old age. For example, Levy, Zonderman, Slade, and Ferrucci (2009) found that endorsement of negative age stereotypes in early adulthood predicted cardiovascular events (e.g., heart attack, stroke, congestive heart failure) later in life. Similar associations were found between negative age stereotype endorsement in early adulthood and the development of Alzheimer's disease biomarkers (hippocampal volume loss, accumulation of neurofibrillary tangles and amyloid plaques; Levy, Ferrucci, Zonderman, Slade, Troncoso, & Resnick, 2016). Importantly, for both of these studies, associations between age stereotype endorsement and health outcomes remained even after controlling for relevant covariates. Promisingly, positive age stereotype endorsement is associated with better functional health (Levy, Slade, Kasl, 2002; Levy, Pilver, Chung, & Slade, 2014), faster recovery from cardiovascular events (Levy, Hausdorff, Hencke, & Wei,

2000) and faster recovery from disability (Levy, Slade, Murphy, & Gill, 2012). As Levy's (2009) theory emphasizes, age stereotype endorsement links to health, in part, by influencing how we think about our own aging process. Levy and colleagues' (2014) findings support this proposed pathway by demonstrating improvements in physical functioning as a result of positive self-perceptions of aging, which had been strengthened in response to a positive age stereotype intervention. As such, changes in the way we think about our own aging predict changes in our functional health over time (Sargent-Cox, Anstey, Luszcz, 2012; 2014), and ultimately predict longevity and survival (Westerhof et al., 2014).

The way we think about our own aging process also has implications for our emotional well-being. Self-perceptions of aging predict life satisfaction, positive and negative affect, and depressive symptoms (e.g., Montepare & Lachman, 1989; Steverink, Westerhof, Bode, & Dittmann-Kohli, 2001; Mock & Eibach, 2011; Bryant, Bei, Gilson, Komiti, Jackson, & Judd, 2012; Han & Richardson, 2015). However, findings regarding the role of overall ideas and expectations about old age in these associations are mixed. For example, while some research suggests that positive expectations about aging predict greater happiness as one becomes older (Holahan, Holahan, Velasquez, & North, 2008), there is also evidence to suggest that it is beneficial to hold more negative expectations about ones' future aging self (e.g., Cheng, Fung, & Chan, 2009; Lang, Weiss, Gerstorf, & Wagner, 2013). Whereas the former supports the idea that our beliefs about aging can become self-fulfilling prophecies (as suggested by Levy, 2009), the latter suggests a possible protective or adaptive role of preparing oneself for the worst (e.g., Gomez, Grob, & Orth, 2013; Kornadt, Voss, & Rothermund, 2015). Opposing findings in this area may result from differences in personality or culture. Trends in self-esteem and self-enhancement, including the process by which individuals interpret their own age-related changes

and incorporate positive and negative changes into their current self-views, have been found to vary by culture (Westerhof, Whitbourne, & Freeman, 2012).

Similarly, findings surrounding the link between perceived future time and well-being are also mixed. Whereas SST posits that sensing that one's future is limited can shift motivation and attention toward meaningful and positive experiences that improve well-being (Carstensen, 2006), many factors associated with having limited time left (e.g., health-related challenges and physical limitations) prevent individuals from realizing their social and emotional goals. As such, some have found that sensing a more limited future (especially when perceiving negative age-related changes) is associated with decreased psychological well-being (Kotter-Grühn & Smith, 2011; Brothers, Gabrian, Wahl, Diehl, 2016).

### **Measuring Subjective Appraisals of Aging**

Self-perceptions of aging (SPA) assess individuals' attitudes toward, evaluations of, and degree of satisfaction with their own aging process. A substantial body of research that examines SPA uses variations of a brief five-item unidimensional measure that comprises the "Attitudes Toward Own Aging" (ATOA) dimension of the Philadelphia Geriatric Center (PGC) Morale Scale (Lawton, 1972, 1975; Liang & Bollen, 1983). Items from the ATOA measure capture individuals' global evaluations about positive and negative aspects of their own aging process (items displayed in Table 1.1). Liang and Bollen (1983) determined that, when negative items are reverse-scored, the five items load onto a single unidirectional factor in which higher scores indicate more positive attitudes toward one's own aging. The original response format consisted of dichotomous yes/no options. However, some have used a multiple-point response scale in which participants can indicate the degree to which they endorse each of the items (e.g., Kotter-Grühn et al., 2009; Kim et al., 2014).

Table 1.1

*Items of the Attitudes Toward Own Aging Subscale of the PGC Morale Scale*

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Things keep getting worse as I get older

I have as much pep as I had last year

As you get older you are less useful

As I get older, things are better/worse than I thought\*

I am as happy now as when I was younger

---

Note: Items from PGC Morale Scale (Lawton, 1972, 1975; Liang & Bollen, 1983)

\*Instead of yes/no participants select either *better* or *worse* for this item. Multiple-point response scales measure degree of endorsement with the statement: *things are better than I thought*

Several multidimensional and domain-specific SPA measures have also been developed to capture perceptions related to physical and social loss as well as emotional and interpersonal growth (Keller, Leventhal, & Larson, 1989; Steverink, Westerhof, Bode, & Dittmann-Kohli, 2001; Laidlaw, Power, & Schmidt, WHOQOL-OLD Group, 2007; Wurm et al., 2007; 2008, 2010, 2013, 2014; see Table 1.2). These measures gather more detail about how an individual feels toward different aspects of their aging process (e.g., physical functioning, cognitive functioning, interpersonal relations, social-emotional functioning, lifestyle and engagement), and, therefore, allow for endorsement of both positive and negative change.

For example, Steverink and colleagues (2001) conceptualized “*the personal aging experience*” using a 12-item, three-factor, multidimensional measure consisting of positive and negative statements about physical decline (e.g., “aging means to me...being less energetic and fit”), continuous growth (e.g., “aging means to me...becoming more and more competent”), and social loss (e.g., “aging means to me...that others don’t need me as much anymore”) to which individuals respond indicating whether each statement is “completely true,” “mostly true,” “mostly not true,” or “completely not true.” Variations on this measure have been referred to in

the literature as the “Personal Experiences of Aging Scale” (Westerhof et al., 2014) or the “Age-related Cognitions Scales” (Wurm et al., 2007), with the four positively-worded items from the measure being used to capture “Positive Views on Ageing” (PVA; Wurm et al., 2008; 2010) and the four negatively-worded items from this measure being used as “Negative Self-Perceptions of Aging” (Negative SPA; Wurm et al., 2013; 2014). Laidlaw and colleagues (2007) developed a cross-cultural, 24-item, three-factor, “Attitudes to Ageing Questionnaire” (AAQ) encompassing psychological growth (e.g., “I am more accepting of myself as I have grown older”), psychosocial loss (e.g., “I feel excluded from things because of my age”), and physical change (“I have more energy now than I expected for my age”).

Similarly, Awareness of Age Related Change (AARC), a recently proposed multidimensional construct, aims to capture “experiences that make a person aware that his or her behavior, level of performance, or ways of experiencing his or her life have changed as a consequence of having grown older” (Diehl & Wahl, 2010; p. 340). The 50-item, multidimensional AARC measure captures perceived age-related positive changes (AARC-Gains; e.g., “With my increasing age, I notice that I have a better sense of what is important to me”) and negative changes (AARC-Losses; e.g., “With my increasing age, I notice that my physical ability is not what it used to be”) across five behavioral domains (health and physical functioning, cognitive functioning, interpersonal relations, social-emotional/social-cognitive functioning, lifestyle and engagement) using a five-point response scale ranging from “not at all” to “very much” (Brothers et al., 2016).

Table 1.2

*Characteristics of Common Measures of Subjective Appraisals of Aging*

Measure	Citation(s)	Characteristics
Attitudes Toward Own Aging (ATOA)	Lawton (1972) Liang & Bollen (1983)	5-items Unidirectional General (single-factor)
Personal Experiences of Aging Scale (PEAS)	Steverink et al. (2001) Wurm et al. (2007, 2008, 2010, 2013, 2014)	12-items Multidirectional Multidimensional (3-factors)
Attitudes to Aging Questionnaire (AAQ)	Laidlaw et al. (2007)	24-items Multidirectional Multidimensional (3-factors)
Awareness of Age Related Change (AARC)	Brothers et al. (2016)	50-items Multidirectional Multidimensional (2-factors)

This dissertation examines subjective appraisals of aging using an eight-item extension of the ATOA subscale of PGC Morale Scale. Three additional items (“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,” and “Getting older has brought with it many things that I do not like”) are included with the original five items of the scale such that the eight items include four positive statements and four negative statements to which participants indicate their level of agreement on a six-point response scale ranging from “strongly disagree” to “strongly agree.” Throughout this dissertation, I will use the terms “Positive Self-Perceptions of Aging” (Positive SPA) and “Negative Self-Perceptions of Aging” (Negative SPA) to refer to the constructs captured by these eight items.

## Dissertation Overview

The large body of existing research surrounding subjective aging antecedents, processes, and outcomes emphasizes the importance of the way we think about aging, and opens the door for new questions about how our thoughts and beliefs about aging shape our everyday experiences and engagement in activities. This dissertation focuses on three overarching research questions.

### Dissertation Questions and Hypotheses

**Can the eight-item SPA measure in the Health and Retirement Study be used to assess separate positive and negative dimensions of aging perceptions? And do the positive and negative dimensions of SPA show differential associations with psychosocial correlates and differential patterns across age groups?** My first research question surrounds whether a brief eight-item measure of SPA that is used in the Health and Retirement Study can be separated into distinct positive and negative dimensions, and whether these distinct dimensions show differential associations with psychosocial correlates and differential patterns across different age groups. Miche and colleagues (2014) found age-group differences in trajectories of change in the widely-used unidimensional Lawton (1972) measure of ATOA. However, as recent reviews of literature in this area have emphasized, subjective appraisals of aging are complex and multidimensional in nature (e.g., Diehl et al., 2014). Although multidimensional measures have been established to capture perceived positive and negative age-related changes across multiple domains, little work has investigated the extent to which positive and negative dimensions of subjective aging operate similarly among different age groups over age 50.

Based on previous research and theoretical expectations about change in self-perceptions of aging with age (Kliensphen-Ammerlahn, Kotter-Grühn, & Smith, 2008), I expected to find

age group differences in the endorsement of the positive and negative dimensions. Additionally, given the independence of positive and negative dimensions of subjective aging suggested in the literature (e.g., Wurm et al., 2007; 2008; 2010; 2013) I also expected these two dimensions of self-perceptions of aging to show independent associations with extant psychological constructs of positive and negative functioning (i.e., measures of well-being, control beliefs, and life orientation).

**Are positive and negative dimensions of SPA differentially related to activity participation and activity-related well-being within a day?** My second research question examines whether positive and negative dimensions of SPA differentially relate to everyday activities. Much of the existing research has established links between subjective appraisals of aging and short and long-term health outcomes and broad quality-of-life outcomes (global measures of well-being) but relatively few studies have investigated whether individuals' attitudes about their own aging process relate to how they spend their time in a day and to how engaged they are in the activities they do within a day. As reviewed earlier in this chapter, aging attitudes predict participation in activities related to health-promotion, preventive care, and future-planning (e.g., physical exercise, healthcare screenings, saving money), supporting Levy's (2009) theory surrounding behavioral mechanisms through which SPA relate to health outcomes. However, little is known about whether SPA relate to participation in other types of "routine" leisure and productive activities within a day (e.g., watching TV, doing household chores, running errands, socializing, etc.), and, more specifically, how individuals feel during particular activities.

Given the demonstrated linkages between SPA and various preventive and health-related behaviors, I expected that positive SPA would be positively associated with participation in



exercise within a day. Additionally, given the importance of social goals in later life, as suggested by Socioemotional Selectivity Theory (Carstensen, 1991; 1992), I hypothesized that positive SPA would be positively associated with participation in social activities with family and friends within a day. I expected to find the opposite pattern for negative SPA. Additionally, given findings of the unique contribution of positive and negative SPA to measures of psychosocial functioning in my first dissertation study, I expected that my second dissertation study would reveal differential associations between positive and negative SPA and activity-related affect.

**Do positive and negative dimensions of SPA differentially relate to motivational processes involved in activity engagement within a day?** My third research question concerns whether positive and negative dimensions of SPA differentially relate to motivational processes involved in activity engagement within a day. Changes in social and emotional goals that accompany shifting time horizons are often discussed in terms of implications for how individuals may prioritize their time. Additionally, behavioral patterns associated with exposure to age stereotypes and self-perceptions of aging are interpreted in terms of processes surrounding self-efficacy (especially with regard to health-related behaviors). However, relatively little research has investigated associations between self-perceptions of aging and individuals' self-reported reasons for why they spend their time the way they do. For example, whereas some behaviors may be consciously linked to how individuals feel about their own aging (e.g., engaging in exercise to maintain physical fitness) and about their time left (e.g., prioritizing visits with grandchildren), other behaviors or activities may be perceived to be simply habit (e.g., watching TV) or outside of ones' own control (e.g., caring for someone).

I hypothesized that positive and negative SPA would be associated with reasons that individuals provide for participation in activities within a day. Specifically, as suggested by theories of possible selves (Markus & Nurius, 1989), Strength and Vulnerability Integration (Charles, 2010), and activity *engagement* (e.g., Kahn, 1990), I expected that positive SPA would be associated with self-directed, and self-enhancing reasons for participating in an activity (e.g., *because I wanted to, to be productive, to be useful*), and that negative SPA would be associated with self-distanced, or disengaged reasons for participating in an activity (e.g., *because I had to, because someone else wanted me to*).

### **Preview of Specific Studies**

The first study aims to address the first open question surrounding whether positive and negative items in the HRS SPA measure capture distinct positive and negative dimensions of SPA, and whether positive and negative dimensions show differential associations with psychosocial correlates and differential patterns across middle-aged, young-old, and oldest-old age groups. Understanding trajectories of positive and negative dimensions of SPA, and their associated outcomes for different age groups provides conceptual and methodological background for how I address the second and third open questions. As such, my second study makes use of the best fitting factor structure identified in the first study to investigate the relative contributions of positive and negative SPA to participation in various activities within a day. This study also considers patterns found in the first study regarding psychosocial correlates by following-up with examinations of a more proximal measure of experienced well-being during activities. The third study also makes use of the best fitting factor structure identified in the first study in an examination of the relative contributions of positive and negative SPA to self-reported motivational and emotional aspects of activity engagement. This study builds upon

findings from the second study regarding activity participation and activity-related well-being by taking a closer look at whether positive and negative SPA are associated with the reasons individuals provide for participation in various activities within a day, and their overall activity-related affective experiences.

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## **CHAPTER II**

### **Complexity of the Aging Experience:**

### **Identifying Two Dimensions of Self-Perceptions of Aging**

(Adapted from an original manuscript, co-authored with Shannon Mejia, Richard Gonzalez, and Jacqui Smith, submitted for review 2016)

#### **Introduction**

Feelings about one's own aging process have important implications for health and well-being, especially in middle and late adulthood. Over the past few decades, subjective experiences of aging have been widely researched. Individuals' self-perceptions of aging (SPA), have been linked to a number of health and well-being outcomes, including functional health (Levy, Slade, & Kasl, 2002; Sargent-Cox, Anstey, & Luszcz, 2012), longevity (Levy, Slade, Kunkel, & Kasl, 2002; Kotter-Grühn, Kleinspehn-Ammerlahn, Gerstorf, & Smith, 2009; Sargent-Cox, Anstey, & Luszcz, 2014), and preventive health behaviors (Levy & Myers, 2004; Wurm, Tomasik, & Tesch-Römer, 2010; Kim, Moored, Giasson, & Smith, 2014). Although a host of related subjective aging constructs and measures have emerged (see Diehl, Wahl, Barrett, Brothers, Miche, Montepare, Westerhof, & Wurm, 2014), a substantial body of research that examines SPA uses a brief five-item unidimensional measure that comprises the "Attitudes Toward Own Aging" (ATOA) dimension of the Philadelphia Geriatric Center (PGC) Morale Scale (Lawton, 1972, 1975; Liang & Bollen, 1983).



Recent discussions advocate for the use of multidimensional measures that can capture attitudes about positive and negative aspects of the aging process separately (see Diehl et al. 2014). However, comprehensive multidimensional measures are often quite lengthy to administer and not feasible to include in large multidisciplinary panel studies (e.g., Steverink, Westerhof, Bode, & Dittmann-Kohli, 2001; Laidlaw, Power, Schmidt, & the WHOQOL-OLD Group, 2007). The Health and Retirement Study (HRS) includes the ATOA-PGC Morale Scale together with three additional items about satisfaction with aging in its biennial panel data collection (Smith, Fisher, Ryan, Clarke, House, & Weir, 2013). To date, it is not known if these eight items form a multidimensional, rather than unidimensional, scale. Several studies of outcomes related to SPA using HRS data thus far have used only the five items of the ATOA-PGC Morale Scale (e.g., Kim et al. 2014; Kwak, Ingersoll-Dayton, & Burgard, 2014) or have scored the eight items as a continuous, unidimensional measure (e.g., Ayalon, 2015). The purpose of this study is to examine if this modified HRS survey measure of SPA can be used to assess positive and negative dimensions of subjective aging experiences.

### **Distinguishing Between Positive and Negative Dimensions of SPA**

The rationale for examining this slightly extended scale extends beyond the potential methodological applications. Our aim is to contribute to the general conceptual understanding of SPA. Items of this scale are worded both positively and negatively, such that half of the items are reverse-coded if researchers calculate a sum-score for SPA. This assumes that the negatively worded items are the conceptual opposite of the positively worded items, and that all items exist along a unidimensional continuum of aging satisfaction on which individuals are either high or low. Such an approach does not allow for the possibility that negative and positive experiences of aging can coexist (e.g., feeling a sense of both gains/growth in some aspects of life, and

losses/declines in others; Lawton, 1975). Indeed, research that employs longer measures of self-related aging attitudes repeatedly demonstrates that individuals' attitudes are multidimensional and multidirectional in nature (Steverink et al., 2001; Laidlaw et al., 2007; Wurm et al., 2010; Wurm, Warner, Ziegelmann, Wolff, & Shüz, 2013).

The benefit of considering multiple dimensions of individuals' attitudes about their own aging process is evident in work that establishes links between unique dimensions and important health and well-being outcomes. Wurm and colleagues (2010) found that a positive view of aging (PVA; the view that aging is a time of personal growth and development), operationalized by the specific PVA dimension within Steverink and colleagues' (2001) multidimensional SPA measure, contributed to higher levels of physical exercise among middle aged and older adults. Additionally, Wurm and colleagues (2013) found that negative SPA (e.g., the perception that one's own aging is strongly associated with physical losses), operationalized by the specific negative SPA dimension within Steverink and colleagues' (2001) measure, were related to lower use of important self-regulation strategies of selection, optimization, and compensation among older adults who had experienced a serious health event. The close examination of these unique and specific dimensions of individuals' self-related attitudes about their aging sheds light on the possible mechanisms by which SPA relate to health and well-being.

Furthermore, an extensive body of research beyond the literature on aging has demonstrated the benefit of capturing multiple facets of psychological experiences. For instance, despite the colloquial trend of characterizing positive affect (e.g., happiness, joy) as the polar opposite of negative affect (e.g., sadness, anger), a large body of research on emotional well-being demonstrates that the relationship between the two constructs is much more complex (Bradburn, 1969; Diener & Emmons, 1984; Diener & Iran-Nejad, 1986; Grossmann, Huynh, &

Ellsworth, 2015). This independent operationalization of positive and negative affect has allowed researchers to establish a more nuanced understanding of changes in emotional well-being across the life span (e.g., Mroczek & Kolarz, 1998; Ong & Bergeman, 2004) and provided a pivotal stepping stone for important theoretical advances (e.g., Carstensen, 1995; Charles, 2010). Additionally, this detailed understanding of unique dimensions that comprise the human emotional experience has allowed researchers to explore more targeted interventions for optimizing well-being (e.g., Lyubomirsky & Layous, 2013). Similar examples include work on the independence of optimism and pessimism (Marshall, Wortman, Kusulas, Hervig, & Vickers, 1992) and the multidimensionality of control beliefs (Lachman, 1986; Lachman, Neupert, & Agrigoroaei, 2011), which have also contributed greatly to the conceptual understanding of widely researched experiential constructs and the enhanced application of science to practice. These examples offer a theoretical framework for examining the dimensional structure of a widely used measure of SPA.

### **The Present Study**

Our goal was to determine if the eight-item SPA measure in HRS could be used to assess positive and negative experiences of aging. Specifically, we examined: (a) the structure of an existing eight-item measure of SPA in a nationally representative sample of adults over 50; (b) the replicative consistency of the SPA structure, age patterns, and correlates across cross-sectional random subsample of HRS; (c) the independent contributions of the dimensions of SPA to other widely used indicators of positive and negative well-being and self-related beliefs in adults over 50; and (d) cross-sectional patterns of SPA across different age subgroups. Based on the early insightful comments of Lawton (1975), we expected that the modifications to the wording of the original scale together with three items added in HRS would be sufficient to

reveal a positive and negative dimension. Furthermore, we expected these two dimensions of SPA to show independent associations with extant psychological constructs of positive and negative functioning. Based on previous research and theoretical expectations about average change in SPA with age (Klienspehn-Ammerlahn, Kotter-Grühn, & Smith, 2008), we expected to find age group differences in the endorsement of the positive and negative dimensions.

### **Method**

We used cross-sectional data from the 2010 and 2012 waves of the Health and Retirement Study (HRS; Sonnega, Faul, Ofstedal, Langa, Phillips, & Weir, 2014). HRS is an ongoing nationally representative biennial panel study of U.S. adults over the age of 50 sponsored by the National Institute on Aging (U01AG009740) and conducted by the University of Michigan. Details of the HRS longitudinal panel design, sampling, and all questionnaires are available on the HRS website (<http://hrsonline.isr.umich.edu/>). In each biennial wave, a rotating random 50% of the HRS longitudinal panel is assigned to an enhanced face-to-face (EFTF) interview. At the end of the interview, participants receive a paper self-administered Psychosocial and Lifestyle Questionnaire to complete on their own time and return by mail (see Smith et al., 2013). The SPA items and other psychological measures reported in this study are all included in this questionnaire. Participants are compensated for the interview and for returning the self-administered questionnaire. The remaining 50% of the panel are assigned for the EFTF interview in the following wave. We utilized this HRS design in the current study.

### **Participants**

Respondents in the 2010 EFTF interview served as our initial sample for a confirmatory factor analysis (Sample 1:  $N = 7,190$ ), and those who completed the EFTF interview in 2012 were used for purposes of cross-sectional comparison and verification (Sample 2:  $N = 5,963$ ).

Table 2.1 provides descriptive and demographic information about each sample. Logistic regressions combining both samples showed that respondents who were older, female, married, white, college educated, and who reported fewer functional limitations were more likely to self-complete the Psychosocial and Lifestyle Questionnaire in their assigned interview wave.

## Measures

**Self-perceptions of aging.** SPA were measured using eight items modified from Attitudes Toward Own Aging subscale of the Philadelphia Geriatric Center Morale Scale (Lawton, 1975; Liang & Bollen, 1983) and the Berlin Aging Study (Baltes & Mayer, 2001). Items tap into participants' overall ratings of their own aging experiences, and included four positively stated items (e.g., "*I am as happy now as I was when I was younger*") as well as four negatively stated items (e.g., "*The older I get, the more useless I feel*"). All items are listed in Table 2.3. Participants indicate the extent to which they agree or disagree with each statement on a scale from 1 = *Strongly disagree* to 6 = *Strongly agree* (see Smith et al., 2013).

**Related psychological constructs.** Widely-used measures of different domains of psychological functioning were used to examine associations of the two SPA dimensions with related psychological constructs. Measures of psychological well-being included hedonic, evaluative, and eudemonic well-being. Hedonic well-being was assessed using the Positive and Negative Affect Schedule – Expanded Form (25-items, PANAS-X; Watson & Clark, 1994). Thirteen items measure Positive Affect (PA): *determined, enthusiastic, active, proud, interested, happy, attentive, content, inspired, hopeful, alert, calm, and excited* (alpha = .92). Twelve items measure Negative Affect (NA): *afraid, upset, guilty, scared, frustrated, bored, hostile, jittery, ashamed, nervous, sad, and distressed* (alpha = .90). Evaluative well-being was measured using Diener's Satisfaction With Life Scale (SWLS, 5-items; Diener, Eammons, Larsen, & Griffin,

1985). Items ask participants to indicate the extent to which they agree or disagree with statements about how satisfied they are with their life, as a whole ( $\alpha = .89$ ). Eudemonic well-being was measured using the Purpose in Life dimension from the Ryff Measures of Psychological Well-Being (7-items; Ryff & Keyes, 1995). Items ask participants to indicate the extent to which they agree or disagree with statements such as “*I enjoy making plans for the future and working to make them a reality*” ( $\alpha = .78$ ).

Associations with measures of control and life orientation were also examined. Sense of Control was measured using 10 items from MIDUS (Lachman & Weaver, 1998a; Pearlin & Schooler, 1978). Five items measure Perceived Constraints on Personal Control (e.g., *Other people determine most of what I can and cannot do*;  $\alpha = .87$ ) and five items measure Perceived Mastery (e.g., *I can do just about anything I really set my mind to*;  $\alpha = .90$ ). Domain Specific Control for Health was measured using a single item that asks participants to rate the amount of control they feel they have over their health on a scale from 0 “*no control at all*” to 10 “*very much control*” (Lachman & Weaver, 1998b). Life Orientation was measured using items designed to assess dispositional optimism and pessimism (Scheier, Carver, & Bridges, 1994). Three items measured optimism, (e.g., *In uncertain times, I usually expect the best*;  $\alpha = .80$ ) and three items measured pessimism (e.g., *I hardly ever expect things to go my way*;  $\alpha = .78$ ).

### **Analytic Plan**

The fit of positive and negative dimensions of SPA was examined through confirmatory factor analysis (CFA) in Sample 1, which was replicated using Sample 2. These analytic samples included respondents with complete data for all items. CFA was also run to include respondents with partial data (using the maximum likelihood estimator) and results were consistent with the

findings presented below. Tests of measurement and structural invariance were used to examine the stability of the factors across the two samples and middle-aged, young-old, and oldest old groups. Sum scores for the positive and negative SPA dimensions were calculated to examine their independent contributions to other related widely-used measures of psychological functioning across the samples and age-groups. During CFA, modification indices of model fit were reviewed, and modifications were applied when appropriate. Model fit was assessed using the chi-square test of model fit, confirmatory fit index (CFI), and root mean square error approximation (RMSEA). The CFI represents the proportional improvement of fit compared to the baseline model. A CFI of .90 is acceptable, whereas a value of .95 or more is indicative of good model fit. RMSEA provides a measure of discrepancy of the model from the population covariance matrix. Values less than .05 indicate good fit, and less than .08 indicate reasonable fit. Confirmatory factor analysis was conducted using MPLUS 7.4.

## **Results**

Preliminary analysis of Sample 1 showed the eight items to be generally more strongly correlated within than they were across their hypothesized positive and negative dimensions (range  $r$  within positive: .34 - .64; range  $r$  within negative: .39 - .54; range  $r$  across positive and negative: .20 - .36). Internal consistency within the four-item positive and negative scales was also good, with each having a Cronbach's alpha of .77.

### **Structure of the HRS Self-Perceptions of Aging Scale**

Confirmatory factor analysis of the eight SPA items was estimated for both one- and two-factor models (see Table 2.2) using data from Sample 1. A two-factor representation of the SPA scale was a significantly better representation of the data than a single factor ( $\chi^2(1) = 3122.96, p < .001$ ). This model, with its two correlated factors, represented the positive and negative

dimensions of SPA as distinct but related, and achieved reasonable fit with the data ( $\chi^2(19) = 987.74$ , CFI = .95, RMSEA = .084). To further examine measurement error in the assessment of self-perceptions of aging, we continued by adjusting for measurement artifacts within the SPA scale items. The modification indices suggested some residuals from the positive and negative dimensions to share variance in ways that are unrelated to SPA. Positive items 1 (I have as much pep as I did last year) and 3 (As I get older, things are better than I thought they would be) share an immediate comparison component ( $r = -.27$ ). Similarly, the correlation of residuals for negative items 3 (The older I get, the more I have had to stop doing things that I liked) and 4 (Getting older has brought with it many things that I do not like) reflect shared components of liking and not liking ( $r = .29$ ). This final model with correlated factors and selective correlation of residuals achieved good model fit ( $\chi^2(17) = 397.88$ , CFI = .98, RMSEA = .056), and was used as the baseline for tests of measurement and structural invariance across samples and age.

The factor structure identified in Sample 1 was confirmed in Sample 2 and achieved good model fit ( $\chi(17) = 380.28$ , CFI = .98, RMSEA = .06). CFA for Samples 1 and 2 was then estimated simultaneously to examine invariance in the measurement and structure of SPA. The model where loadings, intercepts, and residual variances and covariances were constrained equal across Samples 1 and 2 achieved exceptional model fit ( $\chi^2(56) = 824.73$ , CFI = .98, RMSEA = .046). Holding factor variances, means, and covariances equal to test invariance in the factor structure of SPA across Samples 1 and 2 also achieved exceptional model fit ( $\chi^2(63) = 1,064.34$ , CFI = .97, RMSEA = .049).

### **Contributions to Other Measures**

Table 2.4 provides linear regressions of the positive and negative constructs of SPA with indicators of hedonic, evaluative, and eudemonic well-being as well as self-related beliefs about



control and life orientation. Mean scores were calculated for the two SPA dimensions and all other indicators. As shown in Table 2.4, each SPA dimension consistently explained unique variance in the other psychological constructs. The proportion of variance explained by the two dimensions was the greatest for positive affect ( $R^2 = .35$ ) and lowest for optimism ( $R^2 = .15$ ). Wald tests of equality showed positive and negative SPA to significantly differ in the absolute magnitude of their contributions to variation in the other psychological measures, where positive and negative dimension of SPA provided the strongest contributions to constructs that were matched in valence.

### **Self-Perceptions of Aging in Middle-Age, Young-Old, and Oldest-Old Adulthood**

We continued with an examination of variation in SPA across middle-age (51 – 64 years old), young-old (65 – 79 years old), and oldest-old (80+ years old) age groups. First, we tested metric and structural invariance of the positive and negative dimensions of SPA across the three age groups (see Table 2.5) to confirm validity in cross-age comparisons. To examine metric invariance, we constrained the factor loadings to be equal across age groups. Although model fit changed significantly ( $\chi^2(12) = 45.34, p < .001$ ), the fit indices remained strong ( $\chi^2(63) = 406.58, CFI = .98, RMSEA = .048$ ), suggesting consistent contributions of scale items to positive and negative SPA across age groups. We then tested scalar invariance by constraining intercepts to be equal across age groups. Model fit changed significantly ( $\chi^2(12) = 444.12, p < .001$ ), but the fit indices remained within criteria ( $\chi^2(75) = 850.70, CFI = .96, RMSEA = .066$ ). Scalar invariance suggests that age-group differences in positive and negative SPA reflect true group differences in the latent construct rather than differences in item response, and allows comparing factor means. The positive and negative dimensions of SPA were also found to be invariant in

the variance and covariance of item residuals, which shows consistency in item variation not related to positive and negative dimensions of SPA.

After demonstrating measurement invariance across age-groups, we continued with tests of structural invariance to examine age-group differences in the factor variances and means. Constraining factor variance and covariance to be equal across age-groups significantly changed the model, but did not further compromise model fit. The constraint of factor means across age groups did compromise model fit indices ( $\chi^2(107) = 1,507.82$ , CFI = .92, RMSEA = .074), which suggests true age differences in positive and negative SPA. Measurement and structural invariance was also examined and confirmed in Sample 2 (output available upon request). Together, our findings suggest validity in comparing positive and negative dimensions of SPA across middle-age, young-old, and oldest-old adults, and age-differences in sum scores are representative of true age-related variation in the SPA construct.

We continued by calculating sum scores for the five-item unidimensional ATOA scale, as well as our positive and negative SPA dimensions, to compare means across middle-age, young-old, and oldest-old age groups using data from Sample 1. As shown in Figure 2.1, comparison of means showed the five-item unidimensional ATOA scale to be significantly lower in each successive age group ( $F(2, 7,187) = 73.48, p < .001$ ). In contrast, as shown in Figure 2.2, minimal differences in positive SPA were found across the age groups ( $F(2, 7,187) = 19.29, p < .001$ ). Planned pairwise comparisons with a Bonferroni correction showed positive SPA among middle aged respondents ( $M = 4.05, SD = 1.24$ ) to not significantly differ from young-old respondents ( $4.11, SD = 1.19$ ),  $p = .07$ . Positive SPA was significantly lower among the oldest old ( $M = 3.83, SD = 1.20$ ) compared to the young-old,  $p < .001$ . Negative SPA, in contrast, differed both significantly and substantially across the three age groups. Compared to middle

aged respondents ( $M = 3.05$ ,  $SD = 1.24$ ), negative SPA was greater among the young-old ( $M = 3.38$ ,  $SD = 1.19$ ,  $p < .001$ ), and even greater among the oldest old ( $M = 3.89$ ,  $SD = 1.12$ ,  $p < .001$ ).

We repeated the analysis of age group differences using data from Sample 2 (also plotted in Figures 2.1 and 2.2). Age-related differences were consistent for both the five-item unidimensional ATOA scale as well as negative SPA. Among the young-old, positive SPA was lower in Sample 2 ( $M = 4.00$ ,  $SD = 1.25$ ,  $p = .001$ ). Even with these minor differences, the overall pattern of minimal age differences in positive SPA and successive age differences in negative SPA was consistent in the two samples.

### **Discussion**

As hypothesized, a two-dimensional structure of SPA was confirmed to be a better representation of the eight item HRS scale than a unidimensional structure. Prior research using the HRS eight-item measure has followed the practice in the literature of reverse-scoring negatively-worded items to average the original five items of the PGS-ATOA subscale as a unidimensional construct. To further test the emergence of the separate positive and negative dimensions of SPA, we replicated the two-dimensional structure in a second representative sample of adults over 50.

In addition to replication of the overall two-factor structure, we found that the positive and negative dimensions of SPA each independently predicted other indicators of psychological functioning. If the positive and negative dimensions of SPA had captured opposing ends of a unidimensional construct, we would expect overlap in the variance they explain. The unique associations of each dimension with each of the related measures we tested not only provide further evidence for a two-dimensional structure of SPA, but also serve to demonstrate the utility

of measuring the dimensions separately for the purposes of capturing a more nuanced understanding of the ways that SPA relates to psychological outcomes.

As a further evaluation of the feasibility of using a two-dimensional SPA scale in different age groups over age 50, we examined the variation in SPA across middle-age, young-old, and oldest-old age groups in HRS. In our examination of measurement invariance, two-factor model fit indices remained strong after constraining factor loadings, intercepts, and residuals to be equal across age groups. Our findings support the validity in comparing the positive and negative dimensions of SPA across age groups. The finding that the two-factor structure held across middle-age, young-old, and oldest-old age groups provides additional evidence for a two-dimensional conceptualization of SPA.

### **Implications of Two-Dimensional Conceptualization of SPA for Research on Aging**

In addition to allowing for a more nuanced understanding of the associations between SPA and related outcomes of psychological functioning, a two-dimensional conceptualization of SPA also has implications for research on aging and beliefs about aging across middle and late adulthood. We found that positive and negative SPA have distinct patterns of variation in mean level across age groups that are hidden when using the original five-item unidimensional ATOA component of the PGS-Morale Scale. In particular, when comparing age-group means on the unidimensional ATOA measure across middle-age, young-old, and oldest-old age groups, we find similar means across middle-age and young-old age groups, and significantly lower ATOA among the oldest-old age group. However, when looking at the two dimensions separately we find that whereas positive SPA remains relatively stable across middle-age, young-old, and oldest-old age groups, negative SPA increases between the middle-age and young-old age groups, and then increases again between the young-old and oldest-old age groups. This pattern

suggests a prominent role of the negative dimension, specifically, in driving the pattern of steep decrease in ATOA between young-old and old-old age groups displayed in the unidimensional scale. One assumption from only looking at the unidimensional measure might be that positive attitudes about one's own aging process are lowest among the oldest old. Instead, we see that positive attitudes are still quite high among this oldest old age group, even as the negative attitudes increase. Thus, like other multidimensional measures of psychological functioning (e.g., Mroczek & Kolarz, 1998; Lachman, 1986; Lachman et al., 2011), the two-dimensional conceptualization of SPA allows us to capture the possibility that individuals can endorse both positive and negative attitudes, and that the two are not mutually exclusive.

One possibility for the stability of positive attitudes in the presence of negative attitudes among the young-old and oldest-old age groups is that individuals may be considering different aspects of their aging experience when answering each item. For example, positive items like, "*I am as happy now as I was when I was younger*" capture aspects of psychological and emotional adaptation to change. On the other hand, negative items like, "*the older I get, the more I have had to stop doing things that I liked*" capture aspects of behavioral change or loss with less emphasis on how the individual actually feels about or has adapted to such change.

### **Limitations and New Opportunities for Research on Attitudes about Aging**

The present study is not without limitations. The cross-sectional nature of our age group comparisons makes it difficult to identify the extent to which differential patterns of the positive and negative dimensions of SPA reflect developmental changes versus distinct cohort effects. Our oldest-old age group is among the first, historically, to reach such advanced ages with such multitude. Thoughts and expectations about how advanced old age looks and feels may differ for future cohorts (Smith & Ryan, 2016). Future work is required to identify longitudinal and

developmental patterns of the unique dimensions in different cohorts and population subgroups (e.g., gender, race, education).

Another limitation to consider surrounds the referential generality of this brief SPA measure. A common tradeoff of the strength of brevity in a measure is a lack of specificity. Because items do not indicate specific areas of focus (i.e., physical health, cognitive function, financial security) individuals may consider different domains of their aging experiences when responding to questions. Although this allows for individuals to respond according to how they feel, in general, and to consider areas that are most relevant in their own lives, it also makes interpretations of the findings more challenging. For example, we do not know whether the endorsement of both positive and negative items reflects a simultaneous mixture of feelings about a single aspect of growing older, or a positive feeling about one aspect and a negative feeling about a different aspect.

Despite these few limitations, the two-dimensional structure of the HRS SPA scale identified in this study presents several new opportunities for future research on SPA. A large body of research has already established longitudinal links between individuals' positive attitudes about their own aging and multiple health and well-being outcomes (e.g., Levy et al. 2002; Sargent-Cox et al. 2012, 2014; Kotter-Grühn et al. 2009; Levy & Myers, 2004; Wurm et al. 2010; Kim et al. 2014). However, the unique associations revealed in this study, of positive and negative SPA with a set of psychological constructs, invite new questions about whether and how the two factors differ in their predictions of health and well-being over time.

Another question that follows from these findings surrounds potential areas for manipulation or intervention regarding SPA. Recent experimental work by Levy and colleagues has highlighted the possibility of manipulating self-perceptions of aging via exposure to positive

age stereotypes to encourage better health and well-being outcomes (e.g., Levy, Pilver, Chung, & Slade, 2014). This promising experimental work has, thus far, primarily utilized unidimensional measures of self-perceptions of aging. Our two-dimensional conceptualization of SPA offers a new opportunity for exploring whether positive and negative SPA are equally accessible for intervention. For example, future research may explore whether specific interventions operate differently for positive versus negative attitudes (e.g., individual-level focus on psychological outlook about age-related change vs. societal-level focus on general attitudes toward old age and opportunities for older people).

In addition, further exploration into whether and how positive and negative SPA differentially relate to contextual factors is warranted. For example, research may find that one dimension is more driven by aspects of an individual's internal emotional context (such as positive and negative affect) whereas the other dimension is more linked to aspects of the surrounding external interpersonal or social-contextual factors (such as how they are treated in interactions with others, how comfortable they feel in their physical environment, how their social status compares to others in society). Such findings would shed additional light on the important developmental processes that shape SPA across the life span.

## **Conclusions**

Given recent discussions regarding the need for measures that can account for multidimensional conceptualizations of attitudes toward aging (Diehl et al. 2014), this study confirms the two-dimensional structure of the HRS SPA scale, and highlights promising advantages of using a two-factor approach in research on SPA. As Diehl and colleagues (2014) emphasize, attitudes toward one's own aging can encompass both positive and negative aspects of the aging process. Acknowledgment of the possibility for individuals to endorse both positive

and negative attitudes about their own aging allows research in this area to continue to develop a deeper understanding of the mechanisms by which SPA link to health and well-being outcomes.



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Table 2.1  
*Sociodemographic Information for Samples 1 and 2*

	Sample 1 N = 7,190	Sample 2 N = 5,963
Age M (SD)	67.29 (10.5)	67.89 (10.4)
% Women	57	59
% White	79	78
% > High School Education	30	31
% Married	62	59
Number of Functional Limitations M (SD)	3.4 (2.8)	3.5 (2.9)
<b>Well-being M (SD)</b>		
Positive Affect	3.6 (0.8)	3.6 (0.8)
Negative Affect	1.8 (0.6)	1.8 (0.7)
Life Satisfaction	4.9 (1.6)	4.8 (1.6)
Purpose in Life	4.6 (1.0)	4.6 (1.0)
<b>Control M (SD)</b>		
Constraints	2.2 (1.2)	2.2 (1.2)
Mastery	4.7 (1.1)	4.7 (1.2)
Health	7.2 (2.4)	7.1 (2.4)
<b>Life Orientation M (SD)</b>		
Optimism	4.5 (1.2)	4.4 (1.2)
Pessimism	2.6 (1.3)	2.5 (1.3)

Note: Scale ranges as follows: PA, NA (1-5); Life Satisfaction (1-7); Purpose in Life, Constraints, Mastery, Optimism, Pessimism (1-6), Control over Health (0-10).

Table 2.2

*Confirmatory Factor Analysis: Indices of Model Fit (restricted to observations present on other well-being measures)*

	N Free parameters	-2*LL	$\chi^2$	df	RMSEA	CFI
1. Single factor	24	200,833.61	4,110.71	20	.169	.78
2. Two correlated factors	25	197,710.65	987.74	19	.084	.95
3. Two correlated factors with correlated residuals	27	197,120.79	397.88	17	.056	.98

*Note.* Confirmatory factor analysis estimated using Sample 1 ( $N = 7,190$ ).



Table 2.3

*Confirmatory Factor Analysis of the HRS Self-Perceptions of Aging Scale*

	Positive Dimension	Negative Dimension
p1. I have as much pep as I did last year	.53	
p2. I am as happy now as I was when I was younger	.68	
p3. As I get older, things are better than I thought they would be	.84	
p4. So far, I am satisfied with the way I am aging	.76	
n1. Things keep getting worse as I get older		.72
n2. The older I get, the more useless I feel		.69
n3. The older I get, the more I have had to stop doing things that I liked		.59
n4. Getting older has brought with it many things that I do not like		.62
Factor correlation		-.62
Correlated residuals	r(p1, p3) = -.27; r(n4, n3) = .29	

Note. CFA estimated using sample 1. Standardized factor loadings are presented.

Table 2.4

*Regressions of Positive and Negative Self-Perceptions of Aging with Other Indicators of Psychological Functioning in Sample 1*

	Positive SPA		Negative SPA		$R^2$	Equality $p$
	$b$	SE	$b$	SE		
Well-being						
Positive Affect	0.57***	(0.02)	-0.47***	(0.02)	.35	< .001
Negative Affect	-0.19***	(0.01)	0.09***	(0.01)	.23	< .001
Life	0.61***	(0.01)	-0.13***	(0.01)	.28	< .001
Satisfaction						
Purpose in Life	0.20***	(0.01)	-0.26***	(0.01)	.26	< .001
Control						
Constraints	-0.19***	(0.01)	0.38***	(0.01)	.26	< .001
Mastery	0.31***	(0.01)	-0.16***	(0.01)	.21	< .001
Health	0.57***	(0.02)	-0.47***	(0.02)	.22	< .001
Life Orientation						
Optimism	0.33***	(0.01)	-0.08***	(0.01)	.15	< .001
Pessimism	-0.13***	(0.01)	0.37***	(0.01)	.18	< .001

Note.  $N = 7,190$ . Positive SPA = positive dimension of Self-Perceptions of Aging. Negative SPA = negative dimension of Self-Perceptions of Aging. Constraints and mastery are the positive and negative dimensions of the global sense of control scale (Lachman, & Weaver, 1998a; 1998b); Optimism and pessimism are positive and negative dimensions of a revised Life Orientation Scale (Scheier, Carver, & Bridges, 1994); Positive affect and negative affect are positive and negative dimensions from a revised positive and negative affect schedule (Carstensen, et al., 2000; Watson & Clarke, 1994). All constructs are unit-weighted composite means.  $R^2$  = variance in psychological construct explained by positive and negative SPA. Wald tests of equality were used to examine equality in coefficients' absolute magnitude ( $H_0 = \text{abs}(\text{positive SPA} - \text{negative SPA}) = 0$ )

Table 2.5

*Assessment of Measurement Invariance Across Middle-Aged, Young-Old, and Oldest Old Age Groups in Sample 1*

	N free parameters	-2*LL	df	$\chi^2$	CFI	RMSEA
Configural Model	81	196,089.42	51	361.23	.98	.050
Metric Invariance (loadings equal)	69	196,134.76	63	406.58	.98	.048
Scalar Invariance (intercepts equal)	57	196,578.88	75	850.70	.96	.066
Residual Invariance (residuals equal)	41	196,646.35	91	918.17	.95	.062
Residual covariance invariance	37	196,664.84	95	936.66	.95	.061
Factor variance invariance	31	196,764.75	101	1036.57	.95	.062
Factor covariance invariance	29	196,770.68	103	1042.50	.95	.062
Factor mean invariance	25	197,236.00	107	1507.82	.92	.074

Note.  $N = 7,190$ . Configural model = all parameters are allowed to vary across age groups. Metric invariance = factor loadings are constrained to equal across age groups. Scalar invariance = measurement intercepts (means) are constrained to equal across age groups.

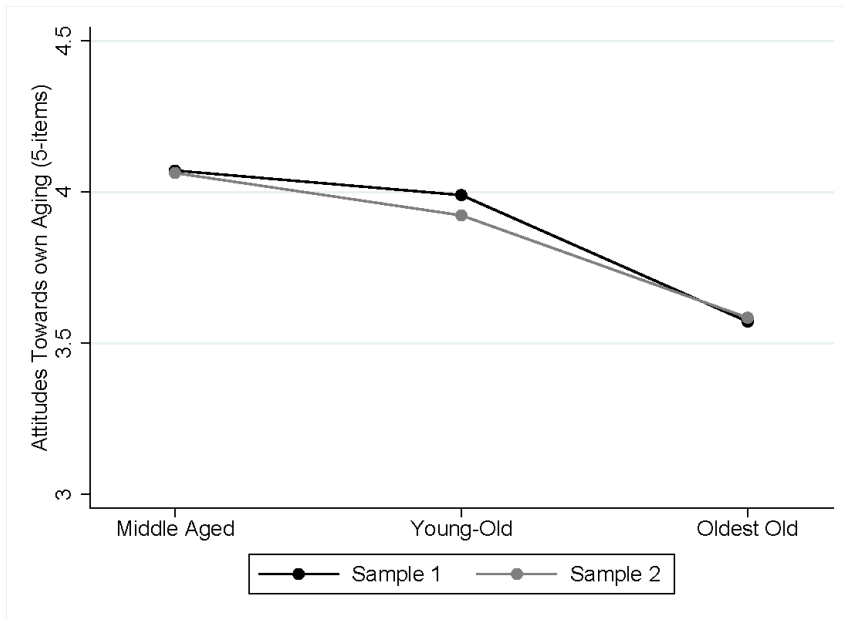


Figure 2.1. Mean comparisons of 5-item Attitudes Toward own Aging measure across middle-aged (ages 51-64), young-old (ages 65-79), and oldest-old (ages 80+) age groups

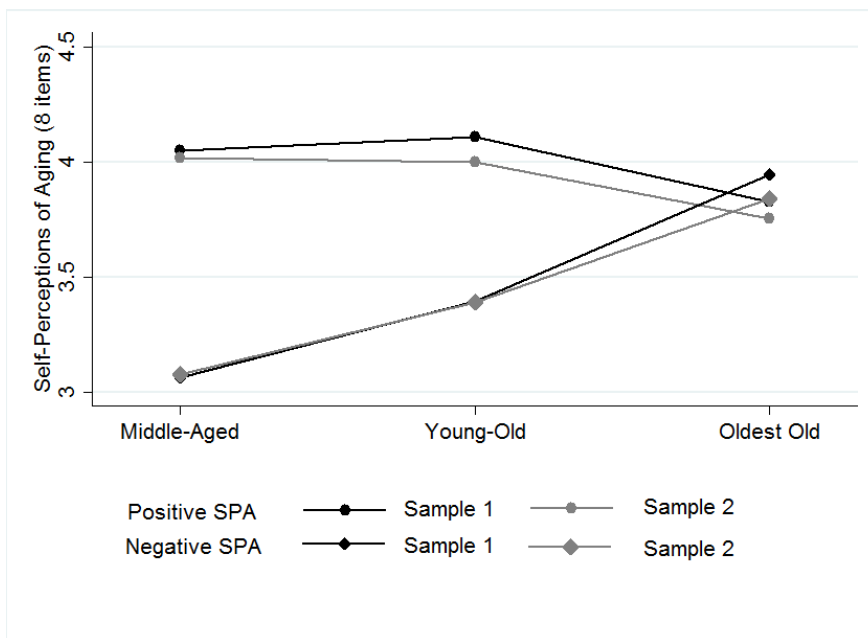


Figure 2.2. Mean comparisons of 4-item positive SPA and 4-item negative SPA across middle-aged (ages 51-64), young-old (ages 65-79), and oldest-old (ages 80+) age groups

## **CHAPTER III**

### **Activity Participation and Activity-Related Well-Being:**

#### **The Role of Self-Perceptions of Aging**

##### **Introduction**

Participation in cognitively and physically stimulating activities, such as socializing and exercising, has been linked to positive mental and physical health outcomes in later life (Everard, Lach, Fisher, & Baum, 2000; Hertzog, Kramer, Wilson, & Lindenberger, 2008). Passive activities, like TV watching, have been linked to negative health and well-being outcomes (Depp, Schkade, Thompson, & Jeste, 2010). Many age-related and social identity-related factors shape the activities that fill an individual's day (e.g., health status, socioeconomic status, personal goals). However, relatively little is known about the association between self-perceptions of aging and activity engagement. Self-perceptions of aging (SPA) involve individuals' attitudes about and degree of satisfaction with their own aging process (e.g., Levy, 2003; Kleinspehn-Ammerlahn, Kotter-Grühn, & Smith, 2008). Both SPA and activities change in later life as individuals experience changes in social roles (Barrett, 2005; Lemon, Bengtson, & Peterson, 1972) and functional health (Sargent-Cox, Anstey, & Luszcz, 2012a; 2012b; Janke, Davey, & Kleiber, 2006).

For several decades, researchers have examined patterns, determinants, and outcomes of activity participation and engagement in later life. Ongoing conceptualizations of late life activity engagement emphasize links between activity and well-being, and highlight activity

engagement as a central component of successful aging (e.g., Havighurst, 1961; Maddox, 1963; Lemon et al., 1972; Rowe & Kahn, 1997). In the gerontological literature, the initial outline of an Activity Theory of aging began with a focus on the importance of maintaining participation in social and leisure activities as long as possible beyond middle age (Havighurst, 1961). Further discussions of Activity Theory distinguished the unique benefits of social activities for adapting to social role changes and maintaining a positive self-concept as one becomes older (Lemon et al., 1972). Attention to the importance of remaining actively engaged with life continued as Rowe and Kahn (1997) proposed engagement in social and productive activities as one of the three major components in their framework of Successful Aging.

### **Defining Activity Engagement**

The recognized importance of activities for aging well has led to a vast, ongoing, and multidisciplinary body of literature surrounding activities in late life. Researchers across many sub-fields of gerontology have examined patterns related to total number of activities and different types of activities (leisure vs. productive, social vs. solitary, formal/organized vs. unstructured, physical, cognitive), and have even identified profiles of activities or activity levels, resulting in a broad collection of approaches for measuring and defining activity engagement.

While some of the work in this area focuses on objective measures of activity participation, including frequency of involvement or time spent, others have considered the role of subjective aspects of activity involvement in shaping associated outcomes. For example, Matz-Costa, Besen, James, & Pitt-Catsouphes (2012) found differential well-being outcomes associated with work, volunteer, and caregiving activities depending on individuals' subjective experiences of the different activities. They defined low, medium, and high levels of engagement

in terms of subjective experiences of being connected to activity-related roles adapted from Kahn's (1990) conceptualization of personal *engagement*: a deep physical, cognitive, and emotional presence that allows one to feel a meaningful connection with a role. This conceptualization of personal *engagement* is contrasted with *disengagement*, which involves detached, passive participation, lacking physical, cognitive, and emotional connection (Kahn, 1990). Similarly, Newton, Pladevall-Guyer, Gonzalez, & Smith (2016) defined *engagement* using not only behavioral measures of participation in and time spent on activities, but also experiential reports of positive and negative affective experiences during activities. I adopt Newton and colleagues' (2016) approach to understanding both the behavioral and experiential components of activity engagement by examining participation in various activities, time spent on those activities, and activity-related positive and negative affect.

### **Self-Perceptions of Aging and Activity Engagement**

Much of the research on SPA examines linkages between these unique types of self-related perceptions and health and well-being outcomes. Longitudinal investigations suggest that associations between SPA and health may be bidirectional (Sargent-Cox et al., 2012a; 2012b). Health status contributes to how individuals feel about their own aging. But, how individuals feel about their own aging may also contribute to their future health. According to Levy's (2009) Age Stereotype Embodiment Theory, one of the mechanisms by which aging self-perceptions contribute to health outcomes is through health-related behaviors. For example, positive SPA are associated with increased likelihood of practicing preventive health behaviors (e.g., medication compliance, healthy eating; Levy & Meyers, 2004) and using preventive health services (e.g., cholesterol screenings, mammograms, prostate exams; Kim, Moored, Giasson, & Smith, 2014). How one feels about his or her own aging and one's expectations about aging are also associated

with participation in physical activity (Beyer, Wolff, Warner, Schuz, & Wurm, 2015; Sarkisian, Prohaska, Wong, Hirsch, & Mangione, 2005) and preparations for the future (Kornadt, Voss, & Rothermund, 2015).

Perceptions of one's own aging are also related to changes in social roles (Logan, Ward, Spitze, 1992; Barrett, 2005). Becoming a grandparent can be a prominent social role transition that can impact how individuals think about their own aging (Kaufman & Elder, 2003; Bordone & Arpino, 2016). Additionally, like the associations between SPA and health, links between SPA and social role identities can also be bidirectional. For example, the importance of an individual's retirement status to his or her self-definition may be associated with their attitude toward aging (Teuscher, 2010). Given the associations between SPA and non-health-related social roles, it is possible that SPA are also associated with non-health-related social, productive, and leisure activities. For example, Hicks and Siedlecki (2017) found that frequency of overall leisure activity engagement partially mediated the relationship between positive views on aging and health outcomes (subjective health and physical limitations). Additionally, negative SPA have been found to predict disengagement from social and cognitive activities in later life (Robertson & Kenny, 2016). Apart from these examples, there has been little investigation into the specific associations between positive and negative SPA and engagement in and affective experiences during different types of leisure and productive activities.

Several lifespan developmental theories describe the dynamic interplay between self-perceptions and behavior and offer a framework for considering how aging-related self-perceptions may link to activities. Baltes and Baltes' (1990) theory of Selective Optimization with Compensation (SOC) suggests that as individuals become older they select activities that are concordant with their beliefs about their current capabilities to optimize strengths and



compensate for limitations. Specific patterns of activity selection or withdrawal may align with individuals' internal representations of hoped for or feared future possible selves (Markus & Nurius, 1986). Additionally, Socioemotional Selectivity Theory (SST) suggests that older individuals may prioritize activities that are personally meaningful in order to maximize positive affect when time feels limited (Carstensen, 2006). Together these theoretical frameworks highlight the ways in which individuals' feelings about their own aging can link to specific activity choices and activity-related affective experiences.

### **The Present Study**

The present study investigates whether positive and negative self-perceptions of aging (SPA) relate to engagement in activities within a day. Following Kahn's (1990) framework of subjective aspects of personal engagement versus disengagement, I employ Newton and colleagues' (2016) conceptualization of engagement as encompassing both behavioral components (participation in and time spent on an activity within a day) and experiential components (activity-related positive and negative affect). Specifically, I use data from the 2014 wave of the Health and Retirement Study (HRS), a representative panel of the U.S. population over age 50, to examine 1) whether positive and negative SPA relate to participation in and time spent on various activities in a day and 2) whether positive and negative SPA relate to how individuals feel during the activities in which they participate.

The 2014 wave of HRS included a brief self-administered day reconstruction measure about eight everyday activities: watching TV, work/volunteering, exercise, health-related activities, travel/commuting, socializing, spending time alone, and running errands. Given the two-factor structure of SPA established in Chapter 2, I examine associations with positive and negative dimensions of SPA separately across the eight different activities. Based on prior

research showing associations between positive SPA and healthy behaviors, I hypothesized that higher positive SPA would be associated with greater engagement in exercise (increased likelihood of participation, greater time spent, higher positive affect, lower negative affect). Additionally, based on research suggesting that positive SPA may predict healthcare use (e.g., Kim et al., 2014; Sun & Smith, 2017), I also hypothesized that higher positive SPA would be associated with greater engagement in health-related activities. Because negative SPA have been found to be associated with disengagement from social and cognitive activities (Robertson & Kenny, 2016) and with reductions in the use of SOC strategies after serious health events (Wurm, Warner, Ziegelmann, Wolff, & Schüz, 2013), I hypothesized that higher negative SPA would be associated with a lower engagement in socializing and health-related activities.

### **Method**

Associations between individuals' activities within a day and their positive and negative SPA were examined using cross-sectional data from the 2014 wave of the Health and Retirement Study (HRS). Details of the HRS longitudinal panel design, sampling, and questionnaires are available on the HRS website (<http://hrsonline.isr.umich.edu>). In 2014, a random 50% subsample of the longitudinal HRS panel were assigned to an in-person, computer-assisted interview conducted by trained and certified interviewers in the contiguous United States. Health and social role covariates of this study derived from this in-person interview are functional limitations, depressive symptoms, work status, and marital status. At the end of the interview, participants received a self-administered psychosocial questionnaire to complete in their own time and return by mail (Smith et al., 2013; 2014). Participants were compensated for the interview and for returning the self-administered questionnaire (SAQ). In 2014, the SAQ

included the day reconstruction, self-perceptions of aging, and positive and negative affect measures described below.

## **Participants**

Of the 7,425 people who returned the 2014 SAQ, the potential sample of the present study was reduced to 6,870 age-eligible and nonproxy respondents. An additional 228 respondents did not have complete data for one or more covariates (0.01% of the sample had missing data for gender; race, 0.2%; work status, 0.1%; education, 0.4%; trait positive affect, 1.0%; trait negative affect, 0.9%; type of day, 1.8%; there were no missing data for age, marital status, functional limitations, and depressive symptoms). The final analytic sample with complete data consisted of 6,642 individuals. Sensitivity analyses were conducted for differences between those with complete or incomplete data on covariates. Although gender and race did not affect whether data were complete or not, older adults, married individuals, and those with functional limitations were less likely to have provided complete data, odds ratio [OR] = 0.98; 95% confidence interval [CI]: 0.97, 0.99,  $p = .002$ , OR = 0.62; 95% CI: 0.48, 0.81,  $p < .001$ , and OR = 0.94; 95% CI: 0.92, 0.97,  $p < .001$ , respectively.

Participants' ages ranged from 50 to 99 years ( $M = 68.52$ ;  $SD = 10.20$ ); of these, approximately 23% were in their 50s ( $M = 55.99$ ;  $SD = 2.28$ ), 32% were in their 60s ( $M = 64.09$ ;  $SD = 2.73$ ), 29% were in their 70s ( $M = 74.44$ ;  $SD = 2.75$ ), and 16% were aged 80+ ( $M = 84.73$ ;  $SD = 3.99$ ). Of the sample, 76% were White, 60% were women, 36% were working for pay, and 59% were married. Mean number of years of education was 13.04 ( $SD = 2.9$ ).

## **Measures**

**Activity engagement.** In accordance with Newton and colleagues (2016), three indicators were used to assess activity engagement (participation, time allocation, and activity-

related affect). Activity engagement data were collected as part of the day reconstruction measure included in the 2014 HRS psychosocial SAQ (Smith et al., 2013; 2014). The HRS short day reconstruction measure begins with the instruction: “Please think now about things you did yesterday. How did you spend your time and how did you feel?” This general thought-prompt is followed by specific questions about eight activities: watching TV; work or volunteering; walking or exercising; health-related activities (such as doctor visits, taking medication, or doing treatments); traveling or commuting (e.g., by car, train, bus); socializing with friends, neighbors, or family (not counting your spouse or partner); spending time at home by yourself (without your spouse or partner); and running errands (e.g., go shopping, get gas or supplies, pick up or deliver something).

**Participation.** For each activity, individuals were asked whether or not they had participated in the activity during the previous day (response options: “yes” or “no”). An indicator of overall activity participation was also created by summing the total number of activities to which participants responded “yes” ( $M = 3.36$ ;  $SD = 1.49$ ).

**Time allocation.** For each activity, participants were asked to estimate the total time that they spent on the activity (hours, minutes).

**Activity-related affective experiences.** For each activity, after reporting participation and time, participants were asked to indicate the extent to which they felt three positive (happy, interested, content) and three negative (frustrated, sad, bored) affective experiences during the activity on a scale ranging from 0 (*did not experience this feeling at all*) to 6 (*feeling was extremely strong*). Individual-level means for positive affect (mean of ratings for happy, interested, and content) and negative affect (mean of ratings for frustrated, sad, and bored) were calculated for each activity that the person reported. The three-item positive affect measure inter-

item consistencies ranged from  $\alpha = .81$  to  $\alpha = .90$  across activities, and the three-item negative affect inter-item consistencies ranged from  $\alpha = .71$  to  $\alpha = .83$  across activities.

**Self-perceptions of aging.** Positive and negative self-perceptions of aging (SPA) were measured using four positively-worded and four negatively-worded items adapted from the Attitudes Toward Own Aging subscale of the Philadelphia Geriatric Center Morale Scale (Lawton, 1972; Liang & Bollen, 1983) and the Berlin Aging Study (Baltes & Mayer, 2001) on a response scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Positively-worded items tap into participants' overall ratings of their own positive aging experiences ("*I am as happy now as I was when I was younger*," "*I have as much pep as I did last year*," "*As I get older things are better than I thought they would be*," "*So far, I am satisfied with the way I am aging*"), and negatively-worded items tap into participants' overall ratings of their own negative aging experiences ("*Things keep getting worse as I get older*," "*The older I get, the more useless I feel*," "*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*"). Using the two-factor conceptualization of this eight-item SPA measure established in Chapter 2, composite scores for positive SPA ( $M = 4.02$ ;  $SD = 1.22$ ) and negative SPA ( $M = 3.24$ ;  $SD = 1.21$ ) were comprised of mean ratings across the four positively-worded and four negatively-worded items, respectively. In this sample, the four-item positive SPA measure exhibited inter-item consistency of  $\alpha = .79$ , and the four-item negative SPA measure exhibited inter-item consistency of  $\alpha = .76$ . As expected, positive SPA and negative SPA are negatively correlated in the current study:  $r = -.47, p < .001$ .

**Covariates.** All analyses controlled for several confounding sociodemographic factors: age (continuous), gender (1 = *women*; 0 = *men*), race (1 = *White*; 0 = *Not White*), years of education (continuous), work status (1 = *working*; 0 = *not working*), marital status (1 = *married*;

0 = *not married*). Analyses also controlled for confounding health-related factors: depressive symptoms, functional limitations. Depressive symptoms were measured using eight items from the Center for Epidemiologic Studies Depression Scale (CES-D; Steffick, 2000). Six of the items asked whether respondents had felt depressed, alone, sad, that everything was an effort, that they could not get going, or if their sleep was restless over the preceding week (response options: 1 = *yes*; 0 = *no*). Two reverse-coded items asked about happiness and enjoyment in life. Responses were summed to create a total score, for which the maximum was eight ( $M = 4.28$ ;  $SD = 4.14$ ). Functional limitations were measured using items that asked respondents if they had difficulty with a list of activities of daily living, including walking one block, climbing stairs, picking up a dime, dressing, using a map, and bathing (response options: 1 = *yes*; 0 = *no*; Fonda & Herzog, 2004). Responses were summed to create a total score, for which the maximum was 23 ( $M = 1.39$ ;  $SD = 1.95$ ).

In addition to sociodemographic and health covariates, analyses also controlled for other covariates associated with activity engagement and activity-related affective experiences including the day of the week that participants referenced as “yesterday,” and trait positive and negative affect. Day of the week was asked as part of the day reconstruction measure in the SAQ, and was coded as 1 = *weekend*; 0 = *weekday* (27% responded about a weekend). Trait positive affect (PA) and trait negative affect (NA) were assessed using the Positive and Negative Affect Schedule – Expanded Form (25-items, PANAS-X; Watson & Clark, 1999), which asked participants to rate the degree to which they had experienced 13 positive feelings (*determined, enthusiastic, active, proud, interested, happy, attentive, content, inspired, hopeful, alert, calm, excited*;  $\alpha = .90$ ) and 12 negative feelings (*afraid, upset, guilty, scared, frustrated, bored, hostile, jittery, ashamed, nervous, sad, distressed*;  $\alpha = .90$ ) during the past 30 days. Response options

ranged from 1 (*not at all*) to 5 (*very much*). Mean scores were calculated across all positive feelings for trait positive affect ( $M = 3.55$ ;  $SD = 0.81$ ) and across all negative feelings for trait negative affect ( $M = 1.75$ ;  $SD = 0.63$ ).

### **Analytic Strategy**

First, descriptive information regarding the three indicators of activity engagement (participation, time allocation, and affective experience) was calculated for each activity. Separate binomial logistic regressions were used to examine the unique contributions of positive SPA and negative SPA to the likelihood of participation for each activity. Linear regressions were used to examine the associations between positive SPA and negative SPA and total number of activities, time spent on each activity, and activity-related positive and negative affective experiences. Sample sizes for the linear regressions varied depending on the rates of activity participation. All regressions controlled for main effects of the covariates described earlier: age, gender, race, education, work status, marital status, type of day, depressive symptoms, functional limitations, trait positive affect, and trait negative affect. Bonferroni corrections were applied both within regressions when interpreting covariates and across regressions when interpreting specific positive SPA and negative SPA coefficients. Finally, because positive SPA and negative SPA are correlated with one another, follow-up sensitivity analysis were conducted to examine whether effects of positive SPA still hold when controlling for negative SPA in addition to all of the other covariates, and whether effects of negative SPA still hold when controlling for positive SPA in addition to all of the other covariates.

### **Results**

Findings for the associations between each indicator of activity engagement (activity participation, time allocation, and activity-related affect) and the positive and negative

dimensions of SPA are reported separately in the sections that follow. Only associations significant under Bonferonni corrections are discussed. Table 3.1 provides descriptive information regarding activity participation, time allocation, and activity-related affect for the sample. Activity participation rates, time allocation, and activity-related affect in this 2014 HRS sample are similar to those reported by Newton and colleagues (2016) in their 2012 HRS sample.

### **Self-Perceptions of Aging and Activity Participation**

Tables 3.2a and 3.2b display the results of binomial logistic regression analyses testing the likelihood of participating in each of the activities by positive and negative SPA, respectively, with and without covariates. After adjusting for the covariates listed earlier, higher positive SPA were associated with a decreased likelihood of watching TV, OR = 0.86; 95% CI: 0.79, 0.93;  $p < .001$ , and an increased likelihood of exercising, OR = 1.15; 95% CI: 1.08, 1.22;  $p < .001$ . Higher negative SPA were associated with an increased likelihood of engaging in health-related activities (e.g., visiting a doctor, taking medications, doing treatments), OR = 1.10; 95% CI: 1.03, 1.18;  $p < .006$ .

Linear regression analyses testing the associations of SPA with total number of activities yesterday revealed that, after adjusting for covariates, neither positive SPA nor negative SPA were related to the total number of activities that individuals participated in yesterday (Tables 3.3a and 3.3b).

Some covariates also demonstrated associations with increased or decreased likelihood of participation in activities, in ways that are consistent with Newton and colleagues' (2016) findings. For example, people with more functional limitations were less likely to work/volunteer, exercise, travel/commute, or run errands, but they were more likely to do health-related activities. Additionally, on weekends people were less likely to watch TV,



work/volunteer, exercise, do health-related activities, travel/commute, spend time alone, or run errands, but they were more likely to socialize.

### **Self-Perceptions of Aging and Time Allocated to Each Activity**

As shown in Tables 3.4a and 3.4b, respectively, linear regression analyses testing the associations of SPA with time allocated to each activity revealed that, after controlling for all covariates, higher positive SPA were associated with fewer minutes spent watching TV (Table 3.4a), and higher negative SPA were associated with a greater number of minutes spent watching TV (Table 3.4b). Sample sizes for these analyses differed depending on the number of participants who actually spent time in each activity: watching TV ( $n = 5,462$ ), working/volunteering ( $n = 1,564$ ), exercising ( $n = 2,999$ ), doing health-related activities ( $n = 2,024$ ), travelling/commuting ( $n = 3,438$ ), socializing ( $n = 3,547$ ), spending time alone ( $n = 2,667$ ), and running errands ( $n = 2,527$ ).

### **Self-Perceptions of Aging and Activity-Related Positive and Negative Affective Experiences**

In terms of activity-related affect, after controlling for all covariates, higher positive SPA were associated with higher positive affect during all activities,  $\beta$ s ranged from .08 to .14, all  $ps < .001$  (Table 3.5a), but were not associated with activity-related negative affect (Table 3.5b). It is worth noting that these associations between positive SPA and activity-related affect are over and above the expected strong effects that were found for trait-level positive affect and trait-level negative affect. Higher negative SPA were associated with lower positive affect while spending time alone,  $\beta = -.07$ ,  $p < .001$  (Table 3.5c), and higher negative affect while watching TV, exercising, traveling, socializing, and spending time alone,  $\beta$ s ranged from .06 to .09, all  $ps < .004$  (Table 3.5d). Again, these associations between negative SPA and activity-related affect are

over and above expected strong associations between trait-level positive and negative affect and activity-related positive and negative affect.

All of the above significant associations between positive and negative SPA and likelihood of participation, time spent, and activity-related affect remained significant in follow-up sensitivity analyses in which both positive and negative SPA were included in the same model as covariates for one another.

### **Discussion**

This study provides a first look at the links between SPA and activity engagement within a day among individuals ages 50 and over. Results highlight important associations between how individuals spend their time and how they feel about their own aging process. SPA have previously been linked to global measures of health-related behavior and well-being; these findings take a closer look at associations between positive and negative self-related aging attitudes and how individuals spend their time within a single day, and how they feel during particular activities. By identifying links between SPA and emotional components of everyday activity engagement, this work sheds light on the potential unique roles of positive and negative aging attitudes in supporting or impeding benefits afforded by particular activities in later life.

Partially consistent with hypotheses regarding positive SPA and activity engagement, higher positive SPA were associated with an increased likelihood of exercising, and higher positive affect while exercising. However, positive SPA were not related to the amount of time spent exercising. These findings add to prior research showing associations between positive SPA and physical activity by highlighting how positive SPA link to the affective component of physical activity engagement. Not only is feeling more positively about one's own aging related to being more likely to exercise, but it is also related to experiencing more positive emotional

well-being during exercise. Because findings are cross-sectional, it may be that feeling positively about one's own aging contributes to a desire to exercise and enjoyment of exercising, or it may also be that positive exercise experiences contribute to positive attitudes about one's own aging process.

Contrary to hypotheses, higher positive SPA were not associated with an increased likelihood of participating in, nor greater time spent doing, health-related activities within a day. However, they were associated with higher positive affect during health-related activities within a day, as well as higher positive affect during all other activities. The lack of association between positive SPA and participation in and time spent doing health-related activities within a day may be due to the fact that those with higher positive SPA may be generally relatively healthier individuals and, thus, may not be as likely to need to visit a doctor or do medical treatments on a daily basis. Prior research showing associations between positive SPA and preventive healthcare use measured healthcare use on a global scale—to account for routine annual screenings. Associations with annual, preventive health-related activities may not be as likely to emerge when measuring participation in health-related activities within a day. For those who did report participation in health-related activities, the fact that positive SPA were associated with feeling more positively during such activities may also suggest that such activities were preventive, or wellness-related rather than disease-management or illness-related. Associations between positive SPA and positive affect during all other activities also suggests a general link between feeling positively about one's own aging and enjoyment of activities that one does within a day. Like the associations with exercise-related well-being, such associations may be bidirectional and highlight the unique relation between aging attitudes and everyday experiences, above and beyond trait-level affective tendencies.

Contrary to hypotheses regarding negative SPA and activity engagement, higher negative SPA were not associated with a decreased likelihood of socializing nor with less time spent socializing, but they were associated with higher negative affect while socializing. Although the lack of association between negative SPA and likelihood of socializing and time spent socializing were surprising given Robertson and Kenny's (2016) finding that negative aging perceptions predicted disengagement from social activities, my finding that higher negative SPA predicted higher negative affect while socializing may shed light on a potential underlying affective component that may play a role in social disengagement over time. Additionally, according to Charles' (2010) strength and vulnerability integration model (SAVI), although older adults may prioritize positive and meaningful social connections to maximize emotional well-being, when older people are unable to avoid distressing social situations they may experience greater physiological consequences and poorer recovery from the distress than younger people (Charles & Luong, 2013). Although the present study only examined affective experiences during social activities within a day, it is possible that the negative social experiences captured by the day reconstruction measure were not isolated events. The physiological strain of negative social interactions over time may lead to more negative evaluations of one's own aging. On the other hand, it may also be that existing negative SPA cast a negative shadow over one's experiences of social interactions within a day. This latter possibility is particularly likely given that negative SPA were also related to negative affect while doing other activities within the day like watching TV, traveling, and exercising, and even while spending time alone, above and beyond trait level negative affect.

Also contrary to hypotheses, higher negative SPA were associated with an increased rather than decreased likelihood of doing health-related activities. Although Levy's (2009) Age

Stereotype Embodiment Theory and prior research suggest that individuals who feel more negatively about their own aging may believe that ill-health is inevitable in old age and therefore may be less likely to seek preventive healthcare or follow prescribed medical regimes, this contrary finding may suggest a different pattern of associations when looking within a day. It may be that the type of health-activities that emerge when looking within a day, such as managing chronic illness through daily treatments, or having to visit the doctor often because of frequent health concerns, take a toll on how individuals feel about their own aging. This may especially be the case if individuals face ageism in healthcare settings (Giasson et al., in press).

Although there were no a priori hypotheses regarding how positive and negative SPA would relate to engagement in TV watching, robust patterns emerged. Whereas higher positive SPA were associated with a lower likelihood of and fewer minutes spent watching TV, higher negative SPA were associated with a greater number of minutes spent watching TV. Among those who did watch TV, higher positive SPA were related to higher positive affect while watching TV, and higher negative SPA were related to higher negative affect while watching TV. Because TV watching is such a prevalent activity among older Americans (Depp et al., 2010), these findings highlight important patterns for future research in the area of aging perceptions to explore. For example, Depp and colleagues (2010) found that, in general, older adults watch more TV but enjoy it less than younger adults. My findings suggest that among older adults, the pattern of watching more TV but enjoying it less is associated with higher negative SPA, and the pattern of watching less TV and enjoying it more is associated with higher positive SPA. Future research should investigate the specific processes at play to determine whether positive and negative SPA act in self-fulfilling ways to influence constructive or destructive TV-watching habits, or whether TV-watching habits play into how individuals feel

about themselves as they age (e.g., because of self-judgement or self-stereotypes related to how time is spent, or because of exposure to ageist content in the media).

### **Limitations and Outlook**

Interpretations of findings in the current study are limited due to the cross-sectional design. Future longitudinal investigations are needed to tease apart processes and mechanisms underlying the potentially bidirectional associations between SPA and particular activity engagement over time. The SPA measure used in the current study only measures positive and negative attitudes about one's own aging in general. Use of domain-specific measures of aging attitudes (which tap into attitudes related to different physical, cognitive, social, and emotional changes that occur with age; e.g., Brothers, Gabrian, Wahl, & Diehl, 2016) may reveal more micro-level activity engagement associations. Additionally, the day reconstruction measure used in the present study allowed for the investigation of eight specific activities within a day. Future research would benefit from an investigation of additional social and leisure activities beyond these eight activity options. For example, experimental research has demonstrated that participation in continuing education programs may improve how individuals feel about their own aging (Fernández-Ballesteros et al., 2013). It would be interesting to follow-up on such work to determine whether improved aging self-perceptions, in turn, lead to increased likelihood of engaging in continuing education programs over time. The present study focused on participation, time allocation, and activity-related affect as measures of engagement in an activity. We still do not know why individuals did the activities they did. Future research should also consider how positive and negative SPA contribute to the specific motives behind individuals' decisions about how they spend their time.

Both SPA and activity engagement play important roles in maintenance of cognitive and physical health in later life. The present study is one of the first to examine associations between how individuals feel about their own aging and how they spend their time within a day, and how they feel during activities within a day. By shedding light on distinct patterns of association between positive SPA and activities, and between negative SPA and activities, this work opens the door for future research on potential ways to differentially harness positive perceptions and mitigate negative perceptions either through, or in support of, beneficial activity engagement in later life.

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Table 3.1

*Descriptive Information about Participation, Mean Hours (Standard Deviation) Spent in Activities, and Mean Overall Activity-Related Positive Affect (PA) and Negative Affect (NA) with Standard Deviations*

	<i>N</i> (%) participating in activity	Mean hours ( <i>SD</i> )	Mean Positive Affect ( <i>SD</i> )	Mean Negative Affect ( <i>SD</i> )
Watching TV	5707 (83)	3.8 (2.5)	3.4 (1.5)	0.8 (1.2)
Work/Volunteering	1624 (24)	6.3 (3.0)	4.1 (1.5)	0.7 (1.0)
Exercise	3142 (46)	1.6 (1.9)	3.8 (1.6)	0.6 (1.0)
Health-Related Activities	2121 (31)	1.1 (1.9)	2.7 (2.0)	0.7 (1.2)
Travel/Commute	3573 (52)	1.6 (1.8)	3.6 (1.7)	0.6 (1.1)
Socializing	3694 (54)	3.3 (2.9)	4.5 (1.4)	0.4 (0.9)
Spending Time Alone	2774 (40)	8.5 (7.0)	3.7 (1.7)	0.8 (1.3)
Errands	2620 (38)	1.7 (1.6)	3.7 (1.7)	0.5 (1.0)

Note. Total sample  $N = 6,524$  (HRS 2014 wave).

Maximum = 6 for both Positive Affect and Negative Affect.

Table 3.2a.

*Contribution of Positive Self-Perceptions of Aging and Covariates to the Likelihood of Engaging in Each Activity for Total Sample (Odds Ratios)*

Covariates	Activity							
	TV	Work/Vol	Exercise	Health	Travel	Socialize	Alone	Errands
Gender	0.80**	0.90	0.85**	1.09	1.03	1.44***	1.00	0.90
Race	1.02	1.14	1.10	1.12	1.07	1.08	1.28***	1.03
Age	1.00	0.99***	1.00	1.01	0.99***	1.00	1.00	0.99***
Years of Education	0.99	1.01	1.03***	1.09***	1.03**	1.01	1.09***	1.04***
Work Status	0.80	5.42***	0.87	0.81**	1.85***	0.94	1.04	0.94
Marital Status	1.20	1.02	0.92	1.00	1.07	0.82***	0.28***	0.99
Number of Depressive Symptoms	1.02	0.99	1.00	1.01	1.01	0.99	1.01	1.02
Number of Functional Limitations	0.99	0.95***	0.95***	1.05***	0.96***	0.98	1.00	0.94***
Type of Day	0.74***	0.37***	0.84**	0.64***	0.82***	1.33***	0.72***	0.73***
Trait Positive Affect	0.97	1.23***	1.25***	1.07	1.21***	1.34***	0.96	1.14**
Trait Negative Affect	0.84	1.05	1.10	1.13	0.98	0.92	1.08	1.06
Positive Self-Perceptions of Aging	0.86***	1.03	1.15***	1.00	0.97	0.99	0.99	1.03
Odds Ratios without Covariates	0.90***	1.27***	1.29***	0.92***	1.16***	1.17***	0.93*	1.16***

Note.  $N = 6,524$

\* $p < .006$ ; \*\* $p < .004$ ; \*\*\* $p < .001$ ;

(Bonferroni corrections require  $p < .004$  within regressions and  $p < .006$  across regressions)

Referents: Gender: 0 = men; Race: 1 = White; Work Status: 1 = working; Marital Status: 1 = married; Type of Day: 0 = weekday. All other variables are continuous. Maximum for each continuous covariate: 99 (Age); 17 (Years of Education); 8 (Number of Depressive Symptoms); 23 (Number of Functional Limitations); 5 (both Positive and Negative Affect).

Table 3.2b.

*Contribution of Negative Self-Perceptions of Aging and Covariates to the Likelihood of Engaging in Each Activity for Total Sample (Odds Ratios)*

Covariates	Activity							
	TV	Work/Vol	Exercise	Health	Travel	Socialize	Alone	Errands
Gender	0.79***	0.91	0.84***	1.11	1.03	1.46***	1.00	0.90
Race	1.05	1.12	1.07	1.09	1.08	1.07	1.26***	1.03
Age	1.00	0.99**	1.00	1.00	0.99***	1.00	1.00	0.99***
Years of Education	1.00	1.01	1.03**	1.10***	1.03***	1.02	1.09***	1.04***
Work Status	0.81	5.47***	0.88	0.81***	1.83***	0.94	1.03	0.95
Marital Status	1.16	1.01	0.92	1.00	1.05	0.82***	0.28***	0.97
Number of Depressive Symptoms	1.02	0.98	1.00	1.01	1.01	0.97	1.00	1.02
Number of Functional Limitations	0.99	0.95***	0.95***	1.04***	0.96***	0.99	0.99	0.94***
Type of Day	0.73***	0.37***	0.83**	0.64***	0.82***	1.34***	0.71***	0.74***
Trait Positive Affect	0.95	1.24***	1.31***	1.11	1.20***	1.32***	0.96	1.15***
Trait Negative Affect	0.86	1.05	1.04	1.11	0.99	0.93	1.08	1.03
Negative Self-Perceptions of Aging	1.11	1.00	0.96	1.10*	1.01	0.99	1.00	1.01
Odds Ratios without Covariates	1.10**	0.71***	0.81***	1.13***	0.80***	0.84***	1.01	0.84***

Note.  $N = 6,520$

\* $p < .006$ ; \*\* $p < .004$ ; \*\*\* $p < .001$ ;

(Bonferroni corrections require  $p < .004$  within regressions and  $p < .006$  across regressions)

Referents: Gender: 0 = men; Race: 1 = White; Work Status: 1 = working; Marital Status: 1 = married; Type of Day: 0 = weekday. All other variables are continuous. Maximum for each continuous covariate: 99 (Age); 17 (Years of Education); 8 (Number of Depressive Symptoms); 23 (Number of Functional Limitations); 5 (both Positive and Negative Affect).



Table 3.3a.

*Contribution of Positive Self-Perceptions of Aging to Total Number of Activities Yesterday*

Covariates	
Gender	-.00
Race	-.02
Age	-.04*
Years of Education	.07***
Work Status	.11***
Marital Status	-.01
Number of Depressive Symptoms	.02
Number of Functional Limitations	-.08***
Type of Day	-.11***
Trait Positive Affect	.13***
Trait Negative Affect	.01
Positive Self-Perceptions of Aging	.02
$\Delta R^2$	.000
Total $R^2$	.080***
Zero-order Correlations: Positive SPA	.12***

Note.  $N = 6,383$ ; Standardized coefficients presented.

$\Delta R^2$  represents the total amount of variance in total number of activities explained by individual differences in Positive SPA. This analysis includes all covariates (see below).

Total  $R^2$  represents the total amount of variance in total number of activities explained by the entire model.

\* $p < .006$ ; \*\* $p < .004$ ; \*\*\* $p < .001$ ;

(Bonferroni corrections require  $p < .004$  within regressions and  $p < .006$  across regressions)

Referents: Gender: 0 = men; Race: 0 = White; Work Status: 1 = working; Marital Status: 1 = married; Type of Day: 0 = weekday. All other variables are continuous. Maximum for each continuous covariate: 99 (Age); 17 (Years of Education); 8 (Number of Depressive Symptoms); 23 (Number of Functional Limitations); 5 (both Positive and Negative Affect).

Table 3.3b.

*Contribution of Negative Self-Perceptions of Aging to Total Number of Activities Yesterday*

Covariates	
Gender	.00
Race	-.02
Age	-.04**
Years of Education	.07***
Work Status	.11***
Marital Status	-.02
Number of Depressive Symptoms	.02
Number of Functional Limitations	-.09***
Type of Day	-.10***
Trait Positive Affect	.15***
Trait Negative Affect	.01
Negative Self-Perceptions of Aging	.02
$\Delta R^2$	.000
Total $R^2$	.080***
Zero-order Correlations: Negative SPA	-.13***

Note.  $N = 6,378$ ; Standardized coefficients presented.

$\Delta R^2$  represents the total amount of variance in total number of activities explained by individual differences in Negative SPA. This analysis includes all covariates (see below).

Total  $R^2$  represents the total amount of variance in total number of activities explained by the entire model.

\* $p < .006$ ; \*\* $p < .004$ ; \*\*\* $p < .001$ ;

(Bonferroni corrections require  $p < .004$  within regressions and  $p < .006$  across regressions)

Referents: Gender: 0 = men; Race: 0 = White; Work Status: 1 = working; Marital Status: 1 = married; Type of Day: 0 = weekday. All other variables are continuous. Maximum for each continuous covariate: 99 (Age); 17 (Years of Education); 8 (Number of Depressive Symptoms); 23 (Number of Functional Limitations); 5 (both Positive and Negative Affect).

Table 3.4a.

*Contribution of Positive Self-Perceptions of Aging to Minutes Spent in Each Activity*

	Time Spent in Activity							
	TV N = 5462	Work/Vol N = 1564	Exercise N = 2999	Health N = 2042	Travel N = 3438	Socialize N = 3547	Alone N = 2667	Errands N = 2527
Covariates								
Gender	-.06***	.00	-.11***	-.04	-.05**	.04	-.03	.06**
Race	.07***	-.01	.04	.11***	.08***	.02	-.02	.09***
Age	-.07***	-.21***	-.08***	.01	.02	-.07***	.00	.07**
Years of Education	-.03	-.06	-.09***	-.10***	-.07***	-.03	.01	-.07***
Work Status	-.16***	.32***	.03	.01	.01	-.03	-.11***	-.06
Marital Status	-.10***	-.02	-.03	-.03	.03	-.02	-.43***	-.02
Number of Depressive Symptoms	.03	.01	-.02	.03	.01	.01	.09***	.00
Number of Functional Limitations	.14***	.01	.04	.01	.00	.04	-.01	.02
Type of Day	.02	-.11***	.01	-.05	.03	.14***	.01	.01
Trait Positive Affect	-.08***	.04	.04	-.00	.01	.07***	-.06**	.03
Trait Negative Affect	-.02	-.02	.05	.09***	.03	.01	-.05	.05
Positive Self-Perceptions of Aging	-.04*	-.01	.02	.05	-.00	.03	-.06	.01
$\Delta R^2$	.001*	.000	.000	.002	.000	.001	.002**	.000
Total $R^2$	.117***	.213***	.033***	.044***	.017***	.034***	.255***	.036***
Zero-order Correlations: Positive SPA	-.16***	.03	.01	-.01	-.01	.04*	-.16***	-.01

Note. Standardized coefficients presented. *N*s vary depending on reported activity participation.

$\Delta R^2$  represents the total amount of variance in time spent in each activity explained by individual differences in Positive SPA. This analysis includes all covariates (see below).

Total  $R^2$  represents the total amount of variance in time spent in each activity explained by the entire model.

\* $p < .006$ ; \*\* $p < .004$ ; \*\*\* $p < .001$ ;

(Bonferroni corrections require  $p < .004$  within regressions and  $p < .006$  across regressions)

Referents: Gender: 0 = men; Race: 0 = White; Work Status: 1 = working; Marital Status: 1 = married; Type of Day: 0 = weekday. All other variables are continuous. Maximum for each continuous covariate: 99 (Age); 17 (Years of Education); 8 (Number of Depressive Symptoms); 23 (Number of Functional Limitations); 5 (both Positive and Negative Affect).

Table 3.4b.

*Contribution of Negative Self-Perceptions of Aging to Minutes Spent in Each Activity*

	Time Spent in Activity							
	TV N = 5455	Work/Vol N = 1566	Exercise N = 2999	Health N = 2048	Travel N = 3440	Socialize N = 3540	Alone N = 2665	Errands N = 2526
Covariates								
Gender	-.06***	.00	-.11***	-.03	-.05**	.04	-.03	.06**
Race	.07***	-.01	.04	.12***	.08***	.02	-.02	.09***
Age	-.08***	-.20***	-.08***	-.00	.02	-.06*	-.00	.07**
Years of Education	-.02	-.06	-.09***	-.11***	-.08***	-.03	-.00	-.07***
Work Status	-.16***	.32***	.03	-.00	.01	-.02	-.11***	-.06
Marital Status	-.10***	-.01	-.03	-.03	.03	-.02	-.44***	-.01
Number of Depressive Symptoms	.03	.02	-.02	.03	.01	.01	.10***	.00
Number of Functional Limitations	.14***	.02	.03	-.01	.00	.04	-.01	.01
Type of Day	.02	-.11***	.01	-.05	.03	.14***	.01	.01
Trait Positive Affect	-.08***	.03	.05	.02	-.01	.08***	-.07**	.03
Trait Negative Affect	-.02	-.01	.04	.08**	.02	.01	-.05	.04
Negative Self-Perceptions of Aging	.06***	-.04	.01	.02	-.01	-.01	.05	.02
$\Delta R^2$	.002***	.001	.000	.000	.000	.000	.002	.000
Total $R^2$	.118***	.212***	.031***	.046***	.018***	.032***	.256***	.035***
Zero-order Correlations: Negative SPA	.19***	-.11***	.00	.07***	.02	-.03	.18***	.06***

Note. Standardized coefficients presented. *N*s vary depending on reported activity participation.

$\Delta R^2$  represents the total amount of variance in time spent in each activity explained by individual differences in Negative SPA. This analysis includes all covariates (see below).

Total  $R^2$  represents the total amount of variance in time spent in each activity explained by the entire model.

\* $p < .006$ ; \*\* $p < .004$ ; \*\*\* $p < .001$ ;

(Bonferroni corrections require  $p < .004$  within regressions and  $p < .006$  across regressions)

Referents: Gender: 0 = men; Race: 0 = White; Work Status: 1 = working; Marital Status: 1 = married; Type of Day: 0 = weekday. All other variables are continuous. Maximum for each continuous covariate: 99 (Age); 17 (Years of Education); 8 (Number of Depressive Symptoms); 23 (Number of Functional Limitations); 5 (both Positive and Negative Affect).

Table 3.5a.

*Contribution of Positive Self-Perceptions of Aging to Activity-Related Positive Affect*

	Positive Affect during Activity							
	TV N = 5462	Work/Vol N = 1564	Exercise N = 2999	Health N = 2042	Travel N = 3438	Socialize N = 3547	Alone N = 2667	Errands N = 2527
Covariates								
Gender	-.00	.03	.01	-.04	.01	.09***	.06***	.02
Race	.01	.01	-.00	.09***	.03	-.03	-.02	.02
Age	-.06***	.05	-.07***	.01	.01	-.04	-.01	.00
Years of Education	.00	.02	.03	-.14***	-.04*	-.01	.01	-.04
Work Status	-.04	-.07**	-.03	-.04	-.05**	-.02	-.03	-.03
Marital Status	-.01	.00	-.01	-.04	-.01	.03	-.04	-.01
Number of Depressive Symptoms	-.02	-.00	-.03	.02	-.01	.00	-.06	-.02
Number of Functional Limitations	.03	-.00	-.05	-.02	.01	.04	-.02	-.01
Type of Day	.03	.04	.04	-.04	.08***	.05**	.02	.02
Trait Positive Affect	.34***	.40***	.37***	.31***	.41***	.35***	.42***	.41***
Trait Negative Affect	-.08***	-.08**	-.05	-.06	-.05	-.09***	-.09***	-.07**
Positive Self-Perceptions of Aging	.08***	.08**	.11***	.12***	.09***	.09***	.14***	.12***
$\Delta R^2$	.004***	.004**	.008***	.009***	.005***	.006***	.011***	.009***
Total $R^2$	.186***	.260***	.254***	.184***	.239***	.203***	.347***	.268***
Zero-order Correlations: Positive SPA	.29***	.32***	.34***	.29***	.31***	.29***	.42***	.34***

Note. Standardized coefficients presented. *N*s vary depending on reported activity participation.

$\Delta R^2$  represents the total amount of variance in Positive Affect during each activity explained by individual differences in Positive SPA. This analysis includes all covariates (see below).

Total  $R^2$  represents the total amount of variance in Positive Affect during each activity explained by the entire model.

\* $p < .006$ ; \*\* $p < .004$ ; \*\*\* $p < .001$ ;

(Bonferroni corrections require  $p < .004$  within regressions and  $p < .006$  across regressions)

Referents: Gender: 0 = men; Race: 0 = White; Work Status: 1 = working; Marital Status: 1 = married; Type of Day: 0 = weekday. All other variables are continuous. Maximum for each continuous covariate: 99 (Age); 17 (Years of Education); 8 (Number of Depressive Symptoms); 23 (Number of Functional Limitations); 5 (both Positive and Negative Affect).

Table 3.5b.

*Contribution of Positive Self-Perceptions of Aging to Activity-Related Negative Affect*

	Negative Affect during Activity							
	TV N = 5462	Work/Vol N = 1564	Exercise N = 2999	Health N = 2042	Travel N = 3438	Socialize N = 3547	Alone N = 2667	Errands N = 2527
Covariates								
Gender	-.07***	-.02	-.04	-.07**	-.04	-.05**	-.05**	-.04
Race	.03	.01	.04	.04	.00	.05*	.01	.01
Age	.05***	-.08**	-.03	-.08***	-.06**	.01	-.05**	-.04
Years of Education	-.01	-.00	-.03	-.03	-.01	-.00	-.01	-.02
Work Status	-.01	.05	-.04	-.03	.04	.02	-.01	.00
Marital Status	-.01	-.04	-.01	-.01	-.01	-.03	-.05*	-.01
Number of Depressive Symptoms	.05**	.05	.05	.05	.03	.02	.13***	.05
Number of Functional Limitations	.06***	-.01	.13***	.12***	.06**	.04	.08***	.09***
Type of Day	-.01	-.03	.02	-.04	-.04*	.00	.02	.01
Trait Positive Affect	-.09***	-.13***	-.10***	-.06	-.05	-.10***	-.09***	-.07**
Trait Negative Affect	.32***	.33***	.31***	.31***	.36***	.33***	.37***	.38***
Positive Self-Perceptions of Aging	.01	-.00	-.02	.01	-.01	.01	-.04	.02
$\Delta R^2$	.000	.000	.000	.000	.000	.000	.001	.000
Total $R^2$	.177***	.215***	.230***	.202***	.196***	.161***	.338***	.226***
Zero-order Correlations: Positive SPA	-.22***	-.22***	-.27***	-.22***	-.22***	-.19***	-.34***	-.22***

Note. Standardized coefficients presented. *N*s vary depending on reported activity participation.

$\Delta R^2$  represents the total amount of variance in Negative Affect during each activity explained by individual differences in Positive SPA. This analysis includes all covariates (see below).

Total  $R^2$  represents the total amount of variance in Negative Affect during each activity explained by the entire model.

\* $p < .006$ ; \*\* $p < .004$ ; \*\*\* $p < .001$ ;

(Bonferroni corrections require  $p < .004$  within regressions and  $p < .006$  across regressions)

Referents: Gender: 0 = men; Race: 0 = White; Work Status: 1 = working; Marital Status: 1 = married; Type of Day: 0 = weekday. All other variables are continuous. Maximum for each continuous covariate: 99 (Age); 17 (Years of Education); 8 (Number of Depressive Symptoms); 23 (Number of Functional Limitations); 5 (both Positive and Negative Affect).

Table 3.5c.

*Contribution of Negative Self-Perceptions of Aging to Activity-Related Positive Affect*

	Positive Affect during Activity							
	TV N = 5455	Work/Vol N = 1566	Exercise N = 2999	Health N = 2048	Travel N = 3440	Socialize N = 3540	Alone N = 2665	Errands N = 2526
Covariates								
Gender	-.00	.04	.01	-.03	.01	.08***	.06***	.02
Race	.02	.01	.01	.10***	.04	-.02	-.01	.02
Age	-.06***	.06	-.06*	.01	.00	-.04	.01	.00
Years of Education	-.00	.01	.01	-.14***	-.04*	-.01	.00	-.05
Work Status	-.04	-.07**	-.03	-.05	-.05**	-.03	-.03	-.03
Marital Status	-.01	.00	-.00	-.04	-.01	.03	-.03	-.01
Number of Depressive Symptoms	-.03	-.01	-.03	.01	-.01	-.01	-.07**	-.02
Number of Functional Limitations	.02	.00	-.07***	-.04	-.01	.03	-.03	-.02
Type of Day	.03	.04	.04	-.04	.08***	.05***	.02	.02
Trait Positive Affect	.35***	.41***	.39***	.35***	.44***	.37***	.44***	.44***
Trait Negative Affect	-.09***	-.09**	-.06**	-.08**	-.07***	-.10***	-.10***	-.09***
Negative Self-Perceptions of Aging	-.03	-.07	-.05	-.01	.01	-.03	-.07***	-.02
$\Delta R^2$	.001	.003	.002	.000	.000	.001	.003***	.000
Total $R^2$	.184***	.258***	.249***	.179***	.235***	.196***	.340***	.262***
Zero-order Correlations: Negative SPA	-.24***	-.26***	-.30***	-.19***	-.20***	-.23***	-.35***	-.25***

Note. Standardized coefficients presented. *N*s vary depending on reported activity participation.

$\Delta R^2$  represents the total amount of variance in Positive Affect during each activity explained by individual differences in Negative SPA. This analysis includes all covariates (see below).

Total  $R^2$  represents the total amount of variance in Positive Affect during each activity explained by the entire model.

\* $p < .006$ ; \*\* $p < .004$ ; \*\*\* $p < .001$ ;

(Bonferroni corrections require  $p < .004$  within regressions and  $p < .006$  across regressions)

Referents: Gender: 0 = men; Race: 0 = White; Work Status: 1 = working; Marital Status: 1 = married; Type of Day: 0 = weekday. All other variables are continuous. Maximum for each continuous covariate: 99 (Age); 17 (Years of Education); 8 (Number of Depressive Symptoms); 23 (Number of Functional Limitations); 5 (both Positive and Negative Affect).

Table 3.5d.

*Contribution of Negative Self-Perceptions of Aging to Activity-Related Negative Affect*

	Negative Affect during Activity							
	TV N = 5455	Work/Vol N = 1566	Exercise N = 2999	Health N = 2048	Travel N = 3440	Socialize N = 3540	Alone N = 2665	Errands N = 2526
Covariates								
Gender	-.07***	-.03	-.04	-.06**	-.04	-.05**	-.05**	-.03
Race	.03	.00	.03	.04	.00	.05*	.01	.01
Age	.04	-.10***	-.05	-.09***	-.07***	-.01	-.07***	-.04
Years of Education	.00	.00	-.01	-.03	-.01	-.00	-.01	-.02
Work Status	-.01	.05	-.04	-.03	.04	.01	-.01	-.00
Marital Status	-.02	-.05	-.02	-.01	-.01	-.03	-.05*	-.01
Number of Depressive Symptoms	.05**	.06	.05	.05	.03	.01	.13***	.04
Number of Functional Limitations	.03	-.02	.11***	.09***	.05	.02	.06**	.08***
Type of Day	-.01	-.03	.02	-.03	-.04*	.01	.02	.01
Trait Positive Affect	-.06***	-.10***	-.09***	-.04	-.04	-.08***	-.09***	-.05
Trait Negative Affect	.30***	.33***	.29***	.30***	.35***	.32***	.36***	.38***
Negative Self-Perceptions of Aging	.09***	.06	.09***	.06	.07***	.06**	.08***	.03
$\Delta R^2$	.005***	.002	.005***	.003	.003***	.003**	.004***	.000
Total $R^2$	.183***	.220***	.235***	.203***	.197***	.164***	.340***	.224***
Zero-order Correlations: Negative SPA	.26***	.20***	.29***	.24***	.22***	.21***	.32***	.22***

Note. Standardized coefficients presented. *N*s vary depending on reported activity participation.

$\Delta R^2$  represents the total amount of variance in Negative Affect During each activity explained by individual differences in Negative SPA. This analysis includes all covariates (see below).

Total  $R^2$  represents the total amount of variance in Negative Affect During each activity explained by the entire model.

\* $p < .006$ ; \*\* $p < .004$ ; \*\*\* $p < .001$ ;

(Bonferroni corrections require  $p < .004$  within regressions and  $p < .006$  across regressions)

Referents: Gender: 0 = men; Race: 0 = White; Work Status: 1 = working; Marital Status: 1 = married; Type of Day: 0 = weekday. All other variables are continuous. Maximum for each continuous covariate: 99 (Age); 17 (Years of Education); 8 (Number of Depressive Symptoms); 23 (Number of Functional Limitations); 5 (both Positive and Negative Affect).



## **CHAPTER IV**

### **Why We Spend Our Time the Way We Do: Associations between Self-Reported Reasons for Activity Engagement and Self-Perceptions of Aging**

#### **Introduction**

Motivational theories of lifespan development suggest that changes in social and emotional goals that accompany shifts in perceived future time have implications for how individuals may prioritize their current activities (e.g., Carstensen, 2006). Additionally, associations between behavioral patterns and self-perceptions of aging (SPA) are often interpreted in terms of processes surrounding self-efficacy (especially with regard to health-related behaviors; e.g., Levy, 2009). Despite these strong theoretical explanations for how subjective aspects of aging link to late-life behavioral and activity patterns, relatively little research has explicitly investigated associations between self-perceptions of aging and individuals' self-reported reasons for why they spend their time the way they do. For example, whereas some behaviors may be consciously linked to how individuals feel about their own aging (e.g., engaging in exercise to maintain physical fitness over time) and about their time left (e.g., prioritizing visits with grandchildren when time feels finite), other behaviors or activities may be perceived to be simply habit (e.g., watching TV) or outside of ones' own control (e.g., caring for someone). The present study takes a first step toward understanding linkages between SPA and activity-related motivational processes by examining whether positive and negative SPA are associated with the reasons individuals do the activities they do within a day.

## **Understanding the “Why” of Activity Engagement**

In the previous chapter, I discussed the importance of considering experiential components of daily activities beyond the measurement of participation versus non-participation. As Everard (1999) highlighted, an overwhelming focus on the importance of remaining active in later life that concentrates solely on type, number, or frequency of activities while ignoring other qualitative aspects of activity experiences may overlook important components of older adult activity engagement that relate to well-being. In other words, the notion of benefits associated with simply “keeping busy” in late life may be missing something. By examining not only what people did within a day, but also how they were feeling while they participated in various activities, my previous study was able to gather nuanced information about the associations between positive and negative self-perceptions of aging and activity engagement at a more proximal level. With a similar aim, Everard (1999) demonstrated that people’s reasons for participating in activities may also be important to consider. Specifically, she found that whereas activities engaged in for social reasons were positively related to well-being, activities engaged in to pass the time were negatively related to well-being. Her findings emphasized that simply participating in more activities was not more beneficial than participating in fewer activities when the reasons for activities were taken into account (Everard, 1999).

A number of internal and external factors contribute to the activities that make up a person’s day. In the previous chapter, I demonstrated links between how individuals feel about their own aging and how they spend their time within a day. In considering the possible bidirectional influences between individuals’ SPA and activity engagement, an unanswered question surrounds the extent to which individuals felt that they wanted to do the activities they did within the reported day. Early research by Csikszentmihalyi and Graef (1980) found that,

among working adults ages 19-65, “obligatory” activities (those activities perceived to be the least voluntary) accounted for over half of the waking hours in peoples’ days. In this young adult and middle-aged sample, work was considered to be the least voluntary of all of the activities reported. Likewise, they also found that the proportion of activities that people reported that they did because they “wanted to” increased above 50% after 4pm on weekdays, and remained over 50% on weekends (Csikszentmihalyi & Graef, 1980). As such, perceived freedom to pursue more voluntary activities of personal interest may increase upon retirement from the workforce (e.g., Stephan, Fouquereau, & Fernandez, 2008). Perceived freedom of choice in one’s daily activities and behaviors has been associated with greater motivation, higher self-esteem, and better physical and psychological health (Deci & Ryan, 1987).

### **Perceived Personal Control and Motivation across the Life Span**

Although feeling a sense of freedom to direct one’s own activities and behavior is considered central to the quality of everyday life at any age, research on older adult populations has emphasized the unique importance of perceived personal control and agency in late life. As people experience age-related physical and social losses, gains in emotion regulation and other self-regulatory skills become increasingly important (Baltes & Baltes, 1990; Bolkan & Hooker, 2012). Prompted by Langer and Rodin’s (1976) findings of improved health among nursing home residents who were given increased opportunities and encouragement to make their own decisions about how they spent their time each day and increased responsibility for caring for a plant, a large body of research has established the importance of personal choice, responsibility, and control for late life health and well-being outcomes (for review, see Mallers, Claver & Lares, 2014). Accordingly, the concepts of perceived control and personal agency are central to a number of theories of late life well-being and successful aging (e.g., Ryff, 1989; Baltes & Baltes,

1990; Vallerand, O'Connor, & Hamel, 1995; Heckhausen & Schulz, 1995; Heckhausen, Wrosch, & Schulz, 2010; Lachman, Neupert, & Agrigoroaei, 2011).

Many of these successful aging frameworks build upon general perspectives of individual control and well-being by conceptualizing key concepts within a lifespan context. For example, Ryff (1989) highlighted components of autonomy (i.e., self-determination, regulation of behavior from within), environmental mastery (i.e., the ability to choose or create environments in line with psychological needs), and purpose in life (i.e., sense of directedness, intentionality) among the key dimensions of positive functioning in late life, along with self-acceptance, positive relations with others, and personal growth. Likewise, Vallerand and colleagues (1995), apply Deci and Ryan's (1987) self-determination theory to the understanding of how perceptions of self-initiation and self-regulation of one's own activities contributes to motivation and well-being among older adults.

### **Perceptions of Personal Choice/Control and Perceptions of Personal Aging**

Negative images and stereotypes of old age often depict late life as a time of disengagement and loss of control. As people become older, such portrayals of helplessness and dependency in old age can become increasingly self-relevant and have implications for individuals' expectations and attitudes about their own aging (Levy, 2009). Furthermore, negative old age stereotypes may bias others' expectations and assumptions about older individuals' capacity to make their own decisions and direct their own behavior, and could, in turn, lead to a self-perpetuating feedback cycle of interpersonal interactions that undermine older individuals' sense of personal agency and motivation (e.g., Rodin & Langer, 1980; M. Baltes, 1995). As discussed in the previous chapters, individuals' attitudes about aging are predictive of their likelihood of practicing healthy lifestyle behaviors (Levy & Myers, 2004), and this

association may, in part, be explained by links between SPA and general perceived control and self-efficacy (Levy, Slade, & Kasl, 2002; Tovel, Carmel, & Raveis, 2017).

Although holding negative beliefs about the inevitability of age-related declines can take a toll on individuals' perceptions of personal control as they age (e.g. Lachman, 2006; Lachman et al., 2011), in general, awareness of one's own aging is often associated with adaptive shifts in one's tendency to re-focus goals and re-direct behaviors (Baltes & Baltes, 1990; Carstensen, 2006; Heckhausen et al., 2010; Bolkan & Hooker, 2012). Such developmental shifts in motivational orientation may, in turn, contribute to an individual's perceptions of themselves as they age. For example, Ryff (1989) pointed out that one aspect of autonomy includes the self-determination to resist social pressures to think, act, and evaluate oneself in ways that might be influenced by youth-oriented societies. In other words, SPA may both contribute to and be shaped by one's sense of personal control in later life.

### **Present Study**

The present study aims to examine 1) associations between positive and negative SPA and individuals' self-reported reasons for doing the activities they do within a day and 2) whether SPA and reasons for activity participation relate to overall activity-related positive and negative affect across the day. Integrating the frameworks of perceived control, motivation, and successful aging discussed above, and the motivational distinctions set forth by self-determination theory (Deci & Ryan, 1987), I grouped reasons conceptually according to aspects of personal choice (e.g., "I wanted to") vs. obligation (e.g., "I had to") to investigate whether positive and negative SPA each relate to the proportion of individuals' activities in the day that were perceived to be self-determined (self-driven), or to the proportion of individuals' activities in the day that were perceived to be externally-determined (externally-driven). Based on the

previous research suggesting associations between positive SPA and greater perceived control and self-efficacy (Levy et al., 2002; Tovel et al., 2017) and the linkages between self-determined motivations for behaviors and overall self-esteem and well-being (Deci & Ryan, 1987) I hypothesized that higher positive SPA would be associated with having a higher proportion of self-driven activities in a day, and a lower proportion of externally-driven activities in a day. Likewise, I also hypothesized that higher negative SPA would be associated with having a lower proportion of self-driven activities in a day, and a higher proportion of externally-driven activities in a day.

Because some activities may be motivated by a mixture of both self-driven and externally-driven reasons (e.g., caring for someone because you want to, but also feeling somewhat obligated to do so), I also sought to examine associations between positive and negative SPA and the proportion of mixed-reason-motivated activities within a day. Based on Csikszentmihalyi and Graef's (1980) finding that, among younger and middle-aged working adults, when individuals were involved in "obligatory" activities (e.g., working, traveling) they rated their skills as being much higher than during voluntary activities, and based on Langer and Rodin's (1976) finding that increased sense of responsibility (e.g., being given the task of taking care of a plant) led to improved health and well-being among older individuals, I expected that, in the present sample of older adults, mixed-reason-motivated activities may be suggestive of adaptive motivational shifts toward wanting to do activities that allow one to feel a sense of competence and purpose (e.g., wanting to feel needed). Thus, I hypothesized that higher positive SPA would be related to a higher proportion of mixed-reason activities in a day, and higher negative SPA would be related to a lower proportion of mixed-reason activities in a day.

In addition to examining linkages between positive and negative SPA and self-reported reasons for activity participation, I also sought to examine whether SPA and the proportion of activities of each reason type relate to overall activity-related positive and negative affect within a day. Based on my prior study's findings of associations between positive SPA and positive affect during activities and between negative SPA and negative affect during activities presented in the previous chapter, I expected that higher positive SPA would be associated with higher overall activity-related positive affect across the day and that higher negative SPA would be associated with higher overall activity-related negative affect across the day. Based on prior literature suggesting associations between self-determined activities and well-being (Deci & Ryan, 1987), I also hypothesized that higher proportions of self-driven activities would be associated with higher overall activity-related positive affect, and lower overall activity-related negative affect across the day. Likewise, I hypothesized that higher proportions of externally-driven activities would be associated with lower overall activity-related positive affect, and higher overall activity-related negative affect across the day.

## **Method**

### **Participants and Procedure**

A local sample of 123 adults ages 50 to 89 ( $M = 63.6$ ,  $SD = 9.8$ ) participated in a brief computer-assisted telephone interview and internet survey called the MI DAY (Motivations and Interests During Activities Yesterday) Study. Participants were recruited through the University of Michigan Clinical Studies website, and by posting fliers at local libraries, senior centers, and independent living facilities. To be eligible, interested individuals had to be aged 50 or above, and needed to have an email address. To ensure roughly comparable participation among individuals under and over the age of 70, additional fliers and ads were distributed to specifically

invite participation among people aged 70 and above. Table 4.1 displays participant characteristics for the study. Among those who completed the telephone interview and online survey, approximately 42% were in their 50s, 31% were in their 60s, 19% were in their 70s, and 9% were in their 80s. A majority of the participants were white (91%), and a majority had obtained a college degree or higher (73%). Just over half of the participants were women (62%), and 57% were married. The sample had roughly similar proportions of only working (43%) and only retired (40%) individuals, and about 5% of the sample identified as retired but also working. The completion rate for the two components of the study (telephone interview and online survey) was 98%.

The initial computer-assisted telephone interviews were conducted by five trained interviewers at the University of Michigan Institute for Social Research. Participants' responses to telephone interview questions about their date of birth, racial and ethnic identification, education, work status, household, marital status, children, friends, neighbors, and pets were recorded by interviewers using Qualtrics Survey Software. This initial computer-assisted telephone interview also included brief cognitive tasks (immediate and delayed recall) and questions about depressive symptoms. After completing the initial telephone interview, participants received an email with a link to the MI DAY internet survey in Qualtrics, which they completed at home on their own time. The internet survey included questions about activity participation, activity-related affect, reasons for participation and non-participation in activities, impressions regarding what types of things they considered to "count" as particular activities (e.g., would they consider helping out a neighbor to be "volunteering"), central interests and hobbies, retirement expectations and social norms, personality characteristics, self-rated health, subjective social status, and self-perceptions of aging. The link to the questionnaire was sent to



participants on a Tuesday, and participants were instructed to try to complete the survey by Saturday of that week, in effort to ensure that activity responses pertained to a weekday, as opposed to a weekend (98% of participants completed the questionnaire about a weekday). Participants were compensated \$20 for their time. The present study focuses on the questions regarding activity-related affect, reasons for activity participation, and self-perceptions of aging.

## **Measures**

**Activity engagement.** Participants were given a day reconstruction task that began with a short instruction: *Please pause briefly to think about things you did yesterday, from the time you woke up until the time you went to sleep at the end of the day. Think about where you were, what you were doing, who you were with, and how you felt.* Participants were then asked to report the time they awoke and the time they went to sleep the previous day, before answering questions about the activities in their day. To measure activity participation, participants were provided with a list of 15 activities that people often do in a day (watch TV/movies, work, volunteer, care for someone, walk for 20 minutes or more, exercise or do sports, do health-related activities other than exercise or walking like visiting the doctor, travel, commute, socialize, run errands, read, putter around, use a computer, do household chores) and were asked to check “yes” (coded as 1) next to activities that they had participated in the previous day and “no” (coded as 0) next to activities that they had not participated in the previous day.

Similar to the Health and Retirement Study (HRS) day reconstruction measure described in the previous chapter, for each activity participants reported doing the previous day, a set of follow-up questions asked how much time they had spent doing the activity yesterday and how they felt while they were doing the activity. Participants indicated the extent to which they felt frustrated, interested, content, bored, happy, indifferent, preoccupied, regretful, and satisfied on a

five-point response scale from *not at all* (coded as 0) to *very* (coded as 4). For each activity, activity-related positive affect (PA) was calculated using the mean of ratings for interested, content, happy, and satisfied. Activity-related negative affect (NA) was calculated using the mean of ratings for frustrated, bored, and indifferent. Finally, overall mean PA across all activities was calculated by taking the grand mean of the activity-related PA scores for all activities that were reported. Likewise, overall mean NA across all activities was calculated by taking the grand mean of the activity-related NA scores for all activities that were reported.

The list of activities, and activity-related feelings, were developed based on the day reconstruction measure that was included in the HRS Psychosocial Self-Administered Questionnaire (Smith et al., 2013; 2014). In the MI DAY Study, some activities from the HRS measure were separated into separate items (working and volunteering, walking and exercising, travelling and commuting) to identify more nuanced experiences among these different activities. Additional activities (caring for someone, reading, putting around, using the computer, doing chores) and additional feelings (indifferent, preoccupied, regretful, satisfied) were added (and feeling sad was removed) based on prior research on activity engagement within a day (Queen, Stawski, Ryan, & Smith, 2014), and qualitative data collected via focus groups during the pilot-phase of the present study.

**Reasons for participation.** Participants also received follow-up questions about their reasons for doing the activities they did. The instructions began with the statement, “People do things for different reasons. In the next section, we are interested in understanding more about the things you did yesterday.” For each activity that participants reported doing they responded to a prompt, for example, “Yesterday, I volunteered...” which was followed by eleven listed reasons (*because I wanted to, because someone else wanted me to, because I had to, to relax, to*

*avoid something else, to spend time with others, to be useful, to be productive, to cheer myself up, because it is part of my routine, for another reason*). Individuals could select “yes,” (coded as 1) “no,” (coded as 0) or “not relevant” (coded as 0) for each of the listed reasons (this allowed participants the option of saying “yes” to multiple reasons).

Three mutually exclusive reason composites were then created to examine endorsement of three theory-driven “types” of reasons for participation. Following Deci & Ryan’s (1987) distinction between an internal perceived locus of causality (the experience of an action as being one’s own and being freely undertaken) and an external perceived locus of causality (the experience of having to do something, or of being compelled by external forces), endorsement of only self-driven reasons (*because I wanted to, to relax, to spend time with others, to be useful, to be productive, to cheer myself up*) were grouped together into one category and endorsement of only externally-driven reasons (*because someone else wanted me to, because I had to*) were grouped together into a second category. To fall into the self-driven category participants had to have responded “yes” to at least one of the six self-driven reasons listed above and “no” to both of the externally-driven reasons listed above. To fall into the externally-driven category participants had to have responded “yes” to at least one of the two externally-driven reasons listed above, and “no” to all six of the self-driven reasons listed above. A third category included those who endorsed a mixture of both self-driven reasons and externally-driven reasons. Because a large majority of participants responded “yes” to “*because it is part of my routine*” for most of their activities, responses for this item did not affect category placement. Likewise, because a large number of participants also selected “yes” to “*for another reason*” in order provide their own open-ended responses with additional detail about the context of their reasons for participation, responses for this item also did not affect category placement. The proportion of

activities for which individuals fell into each reason category was calculated for each individual by dividing the sum of activities they had for each reason category by the total number of activities they did in the day.

**Self-perceptions of aging.** Positive and negative self-perceptions of aging (SPA) were measured using the same measure that appears in the Health and Retirement Study Psychosocial Questionnaire (Smith et al., 2013; 2014). As explained in Chapter 3, this measure includes four positively-worded and four negatively-worded items adapted from the Attitudes Toward Own Aging subscale of the Philadelphia Geriatric Center Morale Scale (Lawton, 1972; Liang & Bollen, 1983) and the Berlin Aging Study (Baltes & Mayer, 2001) on a response scale ranging from 1 (strongly disagree) to 6 (strongly agree). Positively-worded items tap into participants' overall ratings of their own positive aging experiences ("I am as happy now as I was when I was younger," "I have as much pep as I did last year," "As I get older things are better than I thought they would be," "So far, I am satisfied with the way I am aging"), and negatively-worded items tap into participants' overall ratings of their own negative aging experiences ("Things keep getting worse as I get older," "The older I get, the more useless I feel," "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"). Using the two-factor conceptualization of this eight-item SPA measure established in Chapter 2, composite scores for positive SPA ( $M = 4.2$ ;  $SD = 1.2$ ) and negative SPA ( $M = 2.8$ ;  $SD = 1.7$ ) were comprised of mean ratings across the four positively-worded and four negatively-worded items, respectively. In this sample, the four-item positive SPA measure exhibited inter-item consistency of  $\alpha = .74$ , and the four-item negative SPA measure exhibited inter-item consistency of  $\alpha = .71$ . Consistent with the HRS samples in Chapters 2 and 3, positive SPA and negative SPA are also negatively correlated in the current study:  $r = -.59$ ,  $p < .001$ .

**Covariates.** Based on research suggesting that working may be considered to be a less voluntary and more obligatory activity (Csikszentmihalyi & Graef, 1980), work status was included as a covariate in analyses predicting reasons for activity engagement. Furthermore, because externally-driven responses (e.g., “because someone else wanted me to”) may differ between those who are partnered and those who live alone, marital status was also included as a covariate in analyses predicting reasons for activity engagement. Information about participants’ work status and marital status was collected as part of the initial telephone interview. To obtain information about work status, the interviewer asked: *Are you working now, temporarily laid off, unemployed, looking for work, disabled and unable to work, retired, or a homemaker?* The participant could provide multiple responses to the question, and the interviewer checked all responses that the participant provided. For the present study, participants were categorized as “working and not retired” if they endorsed working now, and did not endorse being retired (coded as 1 = working and not retired, 0 = not working, or retired but also working). Participants were categorized as “retired and not working” if they endorsed being retired, and did not endorse working now (coded as 1 = retired and not working, 0 = not retired, or retired but also working). Participants who endorsed both working now and being retired were categorized as “retired and working” (coded as 1 = both retired and working, 0 = not both retired and working). Endorsement of other work status options did not affect these categorizations.

To obtain information about marital status, the interviewer asked: *Are you married or partnered?* If participants said yes, that they were married or partnered, the interviewer checked “yes” (coded as 1), if participants responded that they were not, or offered another response (e.g., widowed, divorced), the interviewer checked “no” (coded as 0).

## **Analytic Strategy**

First, descriptive information regarding activity participation, activity-related affect, and reasons for participation was calculated for each activity. Theoretically and conceptually-driven reason composites, described in the previous section, were created for each activity. As described above, the proportion of activities of each reason-type was calculated by dividing the sum of activities that a person had of each reason-type by the total number of activities that the person did. These three reason-type proportion scores (proportion of only self-driven activities, proportion of only externally-driven activities, and proportion of mixed-reason activities) were the outcome variables for the first set of analyses. Separate linear regressions were used to examine the associations between positive SPA and the proportion of activities for which only self-driven reasons for participation were endorsed, the proportion of activities for which only externally-driven reasons for participation were endorsed, and the proportion of activities for which both types of reasons were endorsed. Separate linear regressions were used to examine the associations between negative SPA and each of these reason-type proportions as well. All of these analyses also controlled for work status and marital status.

To address the second research question regarding whether SPA and reasons for participation relate to overall activity-related affect, a second set of linear regression analyses were conducted. Separate linear regressions tested the contributions of positive SPA (Model 1) and then positive SPA with the proportion of self-driven activities (Model 2) to overall activity-related PA, and to overall activity-related NA. Each Model 2 (for both PA and for NA) was repeated replacing the proportion of self-driven activities with the proportion of externally-driven activities, and again with the proportion of mixed-reason activities.

## Results

Table 4.2 displays the percent of the sample that indicated that they had participated in each activity the previous day, the mean number of hours spent on each activity, and the mean activity-related PA and NA for each activity. Activity participation rates and time allocation in this small local sample are mostly comparable to those reported in the previous chapter using the 2014 HRS sample, and to those reported by Newton, Pladevall-Guyer, Gonzalez, and Smith (2016) for their 2012 HRS sample. However, this local sample, on average, watched about one less hour of TV than the HRS samples. Although the response scale for activity-related affect used in the current study differed from that of the measure used in HRS, and although the specific feelings adjectives in the current study also differed slightly from those included in the HRS measure, the rank ordering from highest to lowest of activities in terms of mean activity-related PA and in terms of mean activity-related NA in this local sample were roughly comparable to those of the HRS 2012 and 2014 samples, with socializing at the top of the list, and health activities at the bottom of the list in terms of mean activity-related PA, and with TV at the top of the list and socializing at the bottom of the list in terms of activity-related NA.

Findings for the associations between each reason-type proportion (proportion of only self-driven activities, proportion of only externally-driven activities, and proportion of mixed-reason activities) and the positive and negative dimensions of SPA are reported separately in the sections that follow. Figure 4.1 displays the percentage of activity participants endorsing each reason-type for each activity. Overall, across all activities, people endorsed only-self-driven reasons for an average of about 3.4 activities (about 41% of their activities in the day). Endorsement of only-externally-driven reasons across all activities, on the other hand, occurred

for on average, about 0.4 activities (about 5% of activities in the day). Mixed reason-types occurred for, on average, about 3.8 activities (about 44% of activities in the day).

### **Self-Perceptions of Aging and Proportion of Only Self-Driven Activities in a Day**

Contrary to hypotheses, linear regression analyses testing the associations of SPA with the proportion of only self-driven activities in a day revealed that neither positive SPA nor negative SPA were significantly associated with the proportion of activities with this reason type. As displayed in Table 4.3, although the contributions of positive and negative SPA were not significant in the unadjusted model nor in the model adjusted for work status and marital status, being currently working (and not retired) was associated with a lower proportion of activities that were only self-driven in both the positive SPA and negative SPA models ( $\beta = -.32, p = .001$  and  $\beta = -.33, p = .001$ , respectively). Marital status was not associated with the proportion of activities that were only self-driven.

### **Self-Perceptions of Aging and Proportion of Only Externally-Driven Activities in a Day**

Consistent with hypotheses, linear regression analyses testing the associations of SPA with the proportion of only externally-driven activities in a day revealed that higher positive SPA were associated with a lower proportion of externally-driven activities in a day,  $\beta = -.18, p = .05$ , and higher negative SPA were associated with a higher proportion of externally-driven activities in a day,  $\beta = .21, p = .02$ , even after adjusting for work status and marital status. Interestingly, work status was not associated with the proportion of externally-driven activities in a day. However, as displayed in Table 4.4, being married was associated with a lower proportion of externally-driven activities in a day in both the positive SPA and negative SPA models, ( $\beta = -.22, p = .015$  and  $\beta = -.23, p = .011$ , respectively)



### **Self-Perceptions of Aging and Proportion of Mixed-Reason Activities in a Day**

Contrary to hypotheses, linear regression analyses testing the associations of SPA with the proportion of mixed-reason activities in a day revealed that neither positive SPA nor negative SPA were significantly associated with the proportion of activities with this reason type. As displayed in Table 4.5, although the contributions of positive and negative SPA were not significant in the unadjusted model nor in the model adjusted for work status and marital status, being currently working (and not retired) was associated with a higher proportion of activities that were motivated by a mixture of in both self-driven and externally-driven reasons ( $\beta = .27, p = .003$ ). Marital status was not associated with the proportion of activities that were motivated by a mixture of self-driven and externally-driven reasons.

### **Self-Perceptions of Aging, Reasons for Activities, and Overall Activity-Related Affect**

My second research aim was to examine whether positive and negative SPA and reasons for activities are associated with overall activity-related positive and negative affect within a day. Table 4.6 displays results from regression analyses predicting overall activity-related affect within a day. Consistent with hypotheses, higher positive SPA were associated with higher overall activity-related PA,  $\beta = .49, p < .001$ , and they were also associated with lower overall activity-related NA,  $\beta = -.45, p < .001$ . Also consistent with hypotheses, higher negative SPA were associated with higher overall activity-related NA,  $\beta = .38, p < .001$ , and they were also associated with lower overall activity-related PA,  $\beta = -.35, p < .001$ . As expected, having a higher proportion of only self-driven activities was also associated with higher overall activity-related PA, when included as a predictor with positive SPA,  $\beta = .21, p = .009$ , and when included as a predictor with negative SPA,  $\beta = .17, p = .040$ . However, it was not associated with overall activity-related NA when included in the models with SPA. Similarly, having a higher

proportion of only externally-driven activities was associated with lower overall activity-related PA, when included as a predictor with positive SPA,  $\beta = -.21, p = .010$ , and when included as a predictor with negative SPA,  $\beta = -.23, p = .008$ , but was not associated with overall activity-related NA. Having a higher proportion of mixed-reason motivated activities was not associated with activity-related PA. However, when included as a predictor with positive SPA, a higher proportion of mixed-reason motivated activities was significantly associated with higher activity-related NA,  $\beta = .16, p = .046$ . Nevertheless, the association between mixed-reason motivated activities and activity-related NA was not significant in the model that included negative SPA as a predictor.

In a set of follow-up analyses, work status and marital status were included as a third step in each of the models predicting overall activity-related PA and NA, to test whether associations remain significant when controlling for these factors. The addition of work status and marital status did not change associations between positive and negative SPA and overall activity-related PA and NA in any of the models. There were, however, slight changes in associations between reasons for activity engagement and overall activity-related affect in two of the models. Specifically, the proportion of only self-driven activities was no longer a significant predictor of overall activity-related PA when included in the model with negative SPA once work status and marital status were also included in the model ( $\beta = .17, p = .069$ ), even though neither work status nor marital status were significant predictors of overall activity-related PA in this model ( $\beta = -.04, p = .675$  and  $\beta = .04, p = .644$ , respectively). Additionally, the proportion of only self-driven activities became a significant predictor of overall activity-related NA when included in the model with positive SPA once work status and marital status were also included in the model ( $\beta = -.19, p = .026$ ), even though neither work status nor marital status were significant

predictors of overall activity-related NA in this model ( $\beta = -.13, p = .146$  and  $\beta = .07, p = .418$ , respectively).

## **Discussion**

This study takes a first step toward understanding linkages between SPA and activity-related motivational processes by examining whether positive and negative SPA are associated with the reasons individuals do the activities they do within a day. In the previous chapter, I identified links between how people feel about their own aging and how they spend their time within a day, and drew attention to the unique importance of positive and negative SPA for individuals' activity-related positive and negative affective experiences. In order to better understand the potential bidirectional influences at play between SPA and activity engagement, and to work toward identifying potential areas for health and well-being intervention, the present study sought to address open questions surrounding why people do the activities they do within a day, and whether positive and negative SPA are associated with such proximal motivational determinants. Many prominent lifespan developmental theories emphasize associations between people's awareness of their own aging and broader motivational and goal-directed processes (e.g., Baltes & Baltes, 1990; Carstensen, 2006; Heckhausen et al., 2010) and prior research has identified links between SPA and general perceived control and self-efficacy as a pathway to late life functional health (Levy et al., 2002; Tovel et al., 2017), but relatively little work has explicitly examined whether peoples' positive and negative perceptions of their own aging relate to the specific reasons they do the activities they do within a day. By approaching this question in a proximal within-a-day context, I sought to identify unique nuances that broader studies of general perceived control or overall motivational style may overlook.

## **Self-Perceptions of Aging and Reasons for Activity Engagement**

Although positive and negative SPA were not found to be associated with the proportion of activities in a day that were self-driven, higher positive SPA were associated with having a lower proportion of externally-driven activities in a day, and higher negative SPA were associated with having a higher proportion of externally-driven activities in a day. This pattern of associations between positive and negative SPA and externally-driven activities was consistent with hypotheses based on prior literature suggesting that personal agency and perceived control are important components of individuals' sense of self as they age (Bolkan & Hooker, 2012). The pattern also makes sense given the types of activities that tended to have the highest endorsement of externally-driven reasons (e.g., health-related activities like going to the doctor). A possible interpretation may be that spending a higher proportion of one's daily activities doing obligatory activities (like going to a doctor) may lead individuals to feel less positive and more negative about their own aging because the obligatory activities are taking away from their ability to pursue other personally meaningful activities (i.e., the obligatory activities are interfering with adaptive selection and optimization processes). Alternatively, it may also be that individuals' positive and negative feelings about their own aging play a role in the degree to which they feel that they have to (or are being required by someone else to) do the activities they do. The fact that, across all activities, the majority of participants still endorsed either self-driven or mixed reasons for participation suggests that it is not simply the types of activities (e.g., going to the doctor), in and of themselves, that relate to SPA, but rather the extent to which individuals felt externally-driven to do them.

The lack of association between SPA and the proportion of self-driven activities in a day was contrary to expectations. One possible explanation for the lack of association could be that

feeling positively about one's own aging and feeling negatively about one's own aging could each result in tendencies to pursue self-driven activities. As the previous chapter demonstrated, feeling positively about one's own aging may be related to pursuing exercise, and feeling negatively about one's own aging may be related to watching TV, in both cases the individual may report that they wanted to do the activity. Another possible explanation could be that spending a greater proportion of one's time doing activities that one wants to do, although a seemingly optimal arrangement as one reflects on how they feel about becoming older, may also have some downsides in terms of SPA for individuals that prefer to feel a sense of structure in their daily activities. For example, O'Connor and Vallerand (1994) found, in their sample of nursing home residents, that individuals with more self-determined motivational styles adjusted better in environments that provided opportunities for freedom and choice, but individuals with less self-determined motivational styles adjusted better in environments with a higher level of constraints. This interpretation suggests that perhaps a feeling mixture of self-driven and externally-driven reasons for participation may be a more optimal situation for some individuals.

Although positive and negative SPA were not found to be related to the proportion of mixed-reason activities in a day, like the lack of association between SPA and self-driven reasons, this lack of association also raises questions about the possibility of individual differences in preferred motivational styles. It is possible that feeling more positive (or less negative) about one's own aging relates to the pursuit (and perception) of activities that are both personally meaningful but also necessary only for individuals for whom external constraints are appreciated. Future research should examine the role of individuals' preferred motivational styles when considering possible bidirectional influences between SPA and reasons for activity participation.

Work status (being currently working and not retired) was associated with having a lower proportion of only self-driven activities, and with having a higher proportion of mixed-reason activities. This association was expected, given prior research suggesting that work is among the least voluntary, and most time-consuming activities (Csikszentmihalyi & Graef, 1980). Interestingly, being married was associated with having a lower proportion of only externally-driven activities. This finding was surprising, given the assumption that being partnered may result in more opportunities for activities to be done “because someone else wanted me to” than being alone. Nevertheless, it may be that being married allows for shared financial and household burdens, allowing married individuals to perceive more freedom from doing the types of activities that “have to be done” (e.g., household chores) compared to single individuals. Future research should investigate how different couple dynamics (sharing of responsibilities) play into motivational components of activity engagement within a day.

### **Activity-Related Affect**

The second aim of the present study was to examine how SPA and reasons for activity participation play into overall activity-related well-being. Consistent with findings from the prior study presented in the previous chapter, in this small local sample positive and negative SPA were each found to be associated with activity-related affect within a day. Specifically, higher positive SPA were associated with higher activity-related PA and lower activity-related NA, and higher negative SPA were associated with lower activity-related PA and higher activity-related NA, even when controlling for reasons for activity engagement, work status, and marital status. These findings provide further support for the idea that, in addition to being related to global measures of well-being, individuals positive and negative perceptions of their own aging play a role in these more proximal experiential components of activity engagement within a day.

In addition to SPA, the present analyses revealed that certain types of reasons for activity engagement also play a role in activity-related emotional experiences. Specifically, over and above the effect of SPA, whereas having a higher proportion of self-driven activities in a day was associated with higher overall activity-related PA, having a higher proportion of externally-driven activities in a day was associated with lower overall activity-related PA. These findings align with and add to prior research on the associations between self-determined motivations for behavior and overall well-being (Deci & Ryan, 1987) by highlighting linkages between motivational determinants and emotional experiences in the context of activity engagement within a day.

### **Limitations and Outlook**

The relatively small and sociodemographically homogeneous sample of the present study may have limited the possibility of detecting associations between SPA and reasons for activity participation within a day. This predominantly white, well-educated sample of local volunteers comprise a self-selected group of individuals that, in general, feel quite positive about their own aging and quite free in their pursuit of daily activities. Future research with larger, more diverse samples that display greater variation in both SPA and self-reported reasons for activity participation may offer better detection of possible associations between how people feel about their aging and why they do the activities they do within a day.

The relatively small sample size and relatively low endorsement of some activities (e.g., caring for someone) compared to other activities (e.g., using a computer) also restricted the possibility of examining potential within-activity associations between SPA and reasons for participation. As discussed above, some activities (e.g., going to the doctor) may be more likely to be externally-driven than others. Understanding how SPA relates to the endorsement of self-

driven reasons vs. externally-driven reasons within an activity could be especially illuminating in terms of understanding individual differences in processes of selection, optimization, and compensation or adaptive goal regulation.

Additionally, the cross-sectional design of this study limits the interpretation of the findings. As discussed previously, associations between positive and negative SPA and proportion of externally-driven activities in a day may be bidirectional. Future longitudinal research examining how changes in positive and negative SPA relate to changes in the proportion of externally-driven activities in a day would shed more light on the nature of this association.

Despite these limitations, the present study offers potential conceptual considerations for future research on SPA and activity engagement. Associations between individuals' positive and negative evaluations of their own aging and the proportion of their activities that are externally-driven highlights the importance of considering the proximal associations between self-related attitudes and beliefs and the day-to-day motivational processes behind activity engagement in later life. Because both SPA and activity engagement have implications for health and well-being as people become older, understanding experiential and motivational factors behind these perceptual and behavioral characteristics offers insight into potential avenues for positive development in late life.



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Table 4.1

*Participant Characteristics*

Mean Age (SD)	63.6 (9.8)
% Women	62%
% White	91%
% College grad or higher	73%
% Working (and not retired)	43%
% Retired (and not working)	40%
% Retired & Working	5%
% Married	57%
Mean Positive SPA (SD) [1-6 Scale]	4.2 (1.2)
Mean Negative SPA (SD) [1-6 Scale]	2.8 (1.7)
Mean Number of Activities Yesterday (SD)	8.5 (2.2)

Note: *N* = 123

Table 4.2  
*Participation in Activities Yesterday*

Activity	% Participated	Hours Spent M (SD)	Positive Affect M (SD)	Negative Affect M (SD)
Watched television, movies, etc. (on TV, computer, tablet, etc.)	83%	2.65 (1.7)	2.51 (0.78)	0.53 (0.56)
Worked	48%	6.22 (2.9)	2.44 (0.95)	0.58 (0.65)
Volunteered	16%	3.17 (2.9)	2.91 (0.86)	0.38 (0.65)
Cared for someone (e.g., grandchildren, sick/disabled adult)	16%	3.65 (2.9)	2.81 (1.02)	0.46 (0.60)
Walked for 20 minutes or more	67%	1.26 (1.4)	2.59 (0.93)	0.35 (0.64)
Exercised or did sports	39%	1.31 (0.9)	2.87 (0.93)	0.26 (0.60)
Did health-related activities other than exercise or walking (e.g., visited a doctor, took medication, had treatments, PT exercises)	47%	0.84 (1.0)	1.71 (1.05)	0.47 (0.51)
Traveled (e.g., take daytrips or go for a drive)	29%	2.92 (3.0)	2.45 (1.04)	0.37 (0.52)
Commuted (e.g., travel to appointments or work)	51%	1.36 (1.4)	1.83 (1.09)	0.75 (0.72)
Socialized with friends, neighbors, or family	76%	2.91 (2.6)	3.00 (0.85)	0.19 (0.44)
Ran errands	63%	1.10 (0.6)	2.27 (0.85)	0.40 (0.51)
Read books, magazines, or newspapers	74%	1.70 (1.2)	2.93 (0.77)	0.20 (0.41)
Puttered around	59%	0.52 (0.8)	2.35 (0.91)	0.38 (0.58)
Used a computer	93%	3.00 (2.4)	2.43 (0.87)	0.50 (0.58)
Did household chores	85%	1.20 (1.2)	1.93 (0.92)	0.49 (0.62)

Note: Mean Positive Affect = mean ratings [scale 0 - 4] for interested, content, happy, and satisfied; Mean Negative Affect = mean ratings [scale 0 - 4] for frustrated, bored, and indifferent; Maximum = 4 for both Positive Affect and Negative Affect.

Table 4.3

*Summary of Regression Analyses Predicting Proportion of Only Self-Driven Activities within a Day*

	Model 1				Model 2			
	B	SE(B)	$\beta$	p value	B	SE(B)	$\beta$	p value
(Constant)	.400	.072		.000	.453	.072		.000
Positive SPA	.004	.016	.021	.232	.010	.016	.057	.521
Working					-.141	.039	-.320	.000
Married					-.032	.039	-.073	.412
$\Delta R^2$			.000				.105**	
Total $R^2$							.105**	
(Constant)	.468	.052		.000	.567	.059		.000
Negative SPA	-.018	.017	-.095	.298	-.025	.016	-.136	.124
Working					-.142	.038	-.325	.000
Married					-.028	.038	-.063	.470
$\Delta R^2$			.009				.107**	
Total $R^2$							.116**	

Note: Positive SPA ( $N = 120$ ) and Negative SPA ( $N = 121$ ) included in separate analyses. Working coded as (1 = working now and not retired, 0 = not working now, or retired but also working). Married coded as (1 = married, 0 = not married).  $R^2$  significance levels: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Table 4.4

*Summary of Regression Analyses Predicting Proportion of Only Externally-Driven Activities within a Day*

	Model 1				Model 2			
	B	SE(B)	$\beta$	p value	B	SE(B)	$\beta$	p value
(Constant)	.107	.030		.000	.119	.030		.000
Positive SPA	-.014	.007	-.179	.051	-.013	.007	-.176	.050
Working					.023	.017	.121	.175
Married					-.041	.017	-.218	.015
$\Delta R^2$			.032				.064*	
Total $R^2$							.096*	
(Constant)	.009	.022		.693	.018	.025		.485
Negative SPA	.015	.007	.188	.039	.016	.007	.206	.021
Working					.025	.016	.134	.131
Married					-.042	.016	-.227	.011
$\Delta R^2$			.035*				.071*	
Total $R^2$							.106*	

Note: Positive SPA ( $N = 120$ ) and Negative SPA ( $N = 121$ ) included in separate analyses. Working coded as (1 = working now and not retired, 0 = not working now, or retired but also working). Married coded as (1 = married, 0 = not married).  $R^2$  significance levels: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .



Table 4.5

*Summary of Regression Analyses Predicting Proportion of Mixed-Reason Activities within a Day*

	Model 1				Model 2			
	B	SE(B)	$\beta$	p value	B	SE(B)	$\beta$	p value
(Constant)	.386	.075		.000	.323	.075		.000
Positive SPA	.014	.017	.075	.417	.007	.017	.040	.657
Working					.122	.041	.266	.003
Married					.068	.041	.148	.098
$\Delta R^2$			.006				.089**	
Total $R^2$							.094**	
(Constant)	.437	.055		.000	.328	.062		.000
Negative SPA	.002	.018	.012	.898	.009	.017	.045	.615
Working					.123	.041	.286	.003
Married					.066	.040	.144	.106
$\Delta R^2$			.000				.089**	
Total $R^2$							.089**	

Note: Positive SPA ( $N = 120$ ) and Negative SPA ( $N = 121$ ) included in separate analyses. Working coded as (1 = working now and not retired, 0 = not working now, or retired but also working). Married coded as (1 = married, 0 = not married).  $R^2$  significance levels: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Table 4.6

*Summary of Regression Analyses Predicting Overall Activity-Related Affect within a Day*

	Positive Affect				Negative Affect			
	B	SE(B)	$\beta$	p value	B	SE(B)	$\beta$	p value
(Constant)	1.11	.204		.000	1.05	.114		.000
Positive SPA	.257	.042	.484	.000	-.128	.023	-.448	.000
Self-Driven	.618	.233	.207	.009	-.251	.130	-.157	.055
$\Delta R^2$			.043**				.025	
Total R <sup>2</sup>			.282***				.229***	
(Constant)	2.75	.189		.000	.190	.099		.058
Negative SPA	-.189	.048	-.333	.000	.110	.025	.369	.000
Self-Driven	.534	.257	.177	.040	-.210	.135	-.132	.122
$\Delta R^2$			.031*				.017	
Total R <sup>2</sup>			.154***				.162***	
(Constant)	1.52	.192		.000	.936	.108		.000
Positive SPA	.240	.042	.452	.000	-.127	.024	-.444	.000
Externally-Driven	-1.46	.560	-.208	.010	.162	.315	.043	.608
$\Delta R^2$			.042**				.002	
Total R <sup>2</sup>			.281***				.206***	
(Constant)	3.01	.144		.000	.090	.078		.246
Negative SPA	-.174	.048	-.307	.000	.111	.026	.371	.000
Externally-Driven	-1.65	.606	-.232	.008	.197	.326	.052	.546
$\Delta R^2$			.052**				.003	
Total R <sup>2</sup>			.174***				.148***	
(Constant)	1.52	.204		.000	.858	.111		.000
Positive SPA	.266	.042	.500	.000	-.132	.023	-.464	.000
Mixed-Reason	-.428	.226	-.151	.060	.249	.123	.164	.046
$\Delta R^2$			.023				.027*	
Total R <sup>2</sup>			.261***				.231***	
(Constant)	3.12	.182		.000	.012	.095		.896
Negative SPA	-.198	.049	-.349	.000	.114	.025	.379	.000
Mixed-Reason	-.280	.246	-.098	.257	.185	.128	.122	.152
$\Delta R^2$			.010				.015	
Total R <sup>2</sup>			.132***				.160***	

Note: Positive SPA ( $N = 120$ ) and Negative SPA ( $N = 121$ ) included in separate analyses, with each of the three reason types.  $\Delta R^2$  indicates change in  $R^2$  after reason-type is included in the model with SPA.

Reason types: Self-Driven = proportion of only self-driven activities out of total number of activities reported; Externally-Driven = proportion of only externally-driven activities out of total number of activities reported; Mixed-Reason = proportion of mixed-reason activities (both self-driven and externally-driven reasons endorsed) out of total number of activities reported.

$R^2$  significance levels: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

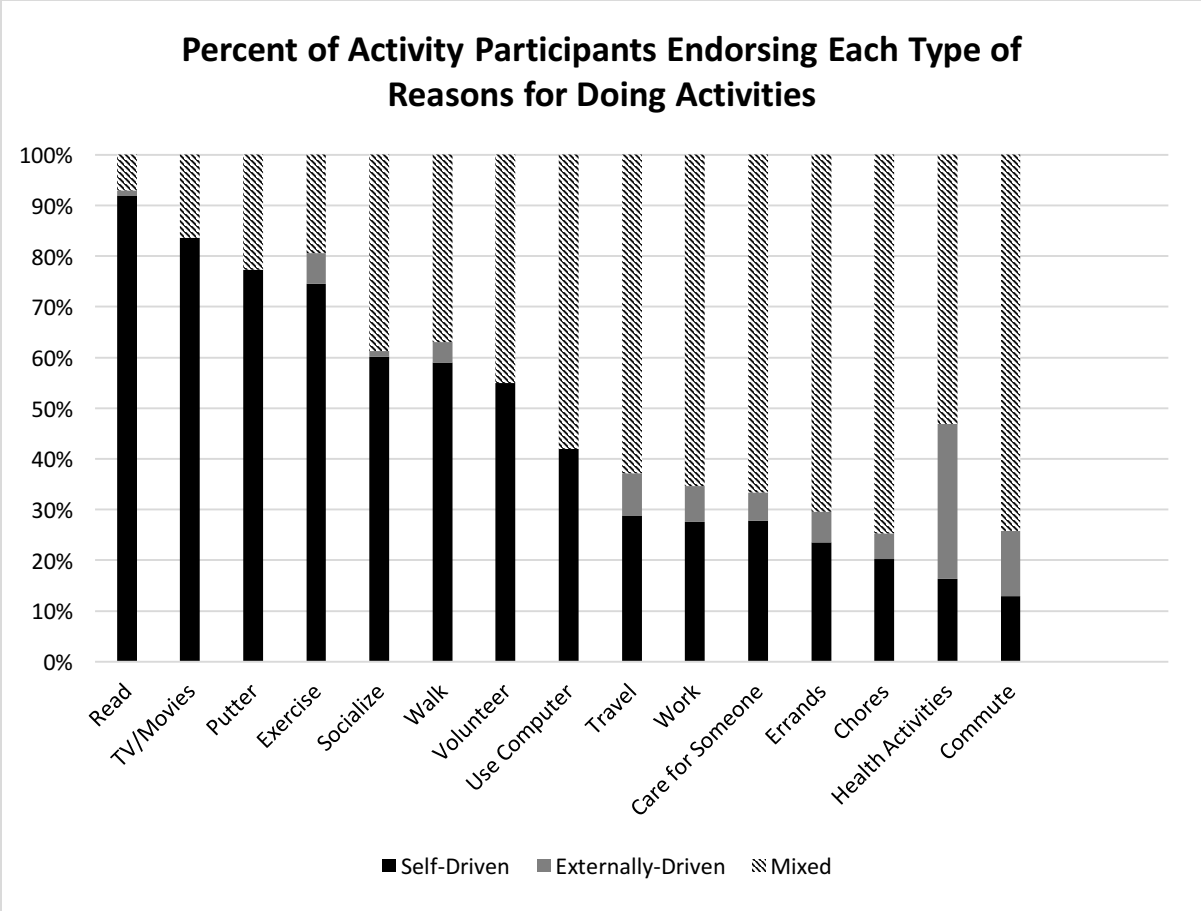


Figure 4.1. Percent of activity participants endorsing each type of reasons for doing activities.  
 Note: Only Self-Driven reasons included: because I wanted to, to relax, to spend time with others, to be useful, to be productive, to cheer myself up. Only Externally-Driven reasons included: because someone else wanted me to, because I had to. Mixed included a mixture of any reasons from both Self-Driven and Externally-Driven categories.

## **CHAPTER V**

### **Conclusion**

A number of internal and external factors play into how we experience, think about, and feel about becoming older. The various activities that fill our daily lives shift as we transition across childhood, adolescence, early adulthood, midlife, and late adulthood, and may be linked to our perceptions of self with regard to age. The overarching objective of this dissertation was to address some of the open questions surrounding how self-perceptions of aging, as complex and multidimensional components of our identity, both shape and are shaped by our interactions with the surrounding world through our everyday activity engagement. In my first chapter, I presented a conceptual model (Figure 1.1) that draws from the large body of literature on subjective appraisals of aging and the associated correlates and outcomes, and provides a framework for my dissertation. With this framework, I conceptualize linkages among self-perceptions of aging, activity engagement, and health as part of a dynamic system of complex and bidirectional influences, which also includes contextual factors. The key components of the model that are specifically addressed in this dissertation include the ideas that self-perceptions of aging are comprised of both positive and negative dimensions, and that each of these dimensions may link to not only the types of activities that people do, but also the experiential aspects of activity-related affect and motivation. By identifying nuanced associations among positive and negative SPA and activity-related affective and motivational experiences, this dissertation adds to our understanding of the behavioral pathways through which SPA link to health and well-being (e.g., Levy, 2009).

Each of my three dissertation studies focused on different aspects of my overall conceptual model: 1) the two-dimensional structure of SPA, 2) associations among positive and negative SPA and activity participation and activity-related feelings within a day, and 3) associations among positive and negative SPA and motivational determinants of activities within a day. My first study, presented in the second chapter of this dissertation, established the two-dimensional structure of SPA, demonstrating that positive SPA and negative SPA capture correlated but distinct dimensions of SPA that differentially relate to other psychosocial correlates and that show differential patterns across age groups. This initial study provided necessary groundwork for conceptualizing the multidimensional nature of subjective aging experiences in each of my studies that followed. My second study, presented in the third chapter of this dissertation, identified associations among positive and negative SPA and activity participation and activity-related affect within a day. This second study emphasized linkages between SPA and experiential components of activity engagement, and brought forth questions regarding the motivational determinants behind activity patterns within a day. My third study, presented in the fourth chapter of this dissertation, sought to take a closer look at associations between positive and negative SPA and motivational aspects of activity engagement. This third study shed new light on some of the complex and nuanced linkages between how people feel about their own aging, the reasons they do the activities they do, and how they feel during the activities that make up their day.

I begin this final chapter with brief summaries of the overall findings from each of my three dissertation studies. I will follow up with an integration of the linkages between my findings and the guiding theoretical perspectives that I introduced in my opening chapter, and a discussion of the contributions of these findings to the literature on SPA, late life activity

engagement, and successful aging. I will then discuss future directions and potential new research avenues that stem from this work. I conclude with final thoughts about our current understanding of aging perceptions within the field.

### **Self-Perceptions of Aging and Activity Engagement**

#### **Two-Dimensional Structure of SPA**

Recent discussions in the subjective aging literature advocate for multidimensional conceptualizations of SPA that can capture attitudes about positive and negative aspects of the aging experience separately (see Diehl, Wahl, Barrett, Brothers, Miche, Montepare, Westerhof, & Wurm, 2014). My first dissertation study sought to address the question of whether positive and negative dimensions of the brief Health and Retirement Study (HRS) SPA measure show differential associations with psychosocial correlates and differential patterns across different age groups over 50. Using confirmatory factor analysis, I confirmed that a two-dimensional structure of SPA (with separate positive and negative items) was a better representation of the eight-item HRS SPA measure than a unidimensional structure. To emphasize the empirical utility of this two-dimensional conceptualization, I demonstrated that the positive and negative dimensions of SPA each independently predicted other indicators of psychological functioning (positive affect, negative affect, life satisfaction, purpose in life, perceived control, optimism, and pessimism). Additionally, I found that positive and negative SPA show distinct patterns of variation in mean levels across middle-age, young-old, and oldest-old age groups that are hidden when examining SPA as a unidimensional construct. These findings highlight the notion that, like other multidimensional measures of psychological functioning (e.g., Mroczek & Kolarz, 1998; Lachman, 1986; Lachman, Neupert, & Agrigoroaei, 2011), a two-dimensional conceptualization

of SPA allows us to capture the possibility that individuals can endorse both positive and negative attitudes, and that the two are not mutually exclusive.

### **SPA and Activity Participation and Activity Related Affect within a Day**

Aging attitudes have been found to predict general participation in activities related to health-promotion, preventive care, and future planning (e.g., medication adherence, preventive healthcare screenings, saving money), but there has been relatively little examination of how SPA relate to participation in other types of routine leisure and productive activities within a day (e.g., watching TV, running errands, socializing, etc.), or to how individuals feel during particular activities within a day. My second dissertation study sought to address the question of whether positive and negative dimensions of SPA differentially relate to activity participation and activity-related affect within a day, above and beyond sociodemographic, health, and trait level affect covariates. Findings from this study, which involved a nationally representative cross-sectional sample of individuals ages 50 and over from HRS, revealed that higher positive SPA were associated with a higher likelihood of exercising, and with a lower likelihood of watching TV. Higher positive SPA were also associated with higher activity-related positive affect (PA) for each of the eight activities that were measured (watching TV, working/volunteering, walking/exercising, doing health-related activities, travelling/commuting, socializing, spending time alone, and running errands). In terms of negative SPA, higher negative SPA were associated with a higher likelihood of engaging in health-related activities, and with lower PA while spending time alone and with higher negative affect (NA) while watching TV, walking/exercising, travelling/commuting, socializing, and spending time alone. These findings bring attention to the linkages between people's positive and negative feelings about their own aging and proximal experiential components of activity engagement within a

day. Furthermore, the fact that findings were still robust upon inclusion of the opposite valence dimension of SPA in follow-up sensitivity analyses adds weight to the proposals about the importance of considering the differential roles of positive and negative SPA.

### **SPA and Motivational Determinants of Activity Engagement within a Day**

In considering potential underlying processes that may play into some of the linkages between how people feel about their own aging and how they spend their time within a day, a key question surrounds why people are doing the activities they do. Are people doing those activities because they want to? Because they have to? Because someone else wants them to? Given prior literature on links between perceived personal agency and successful aging (e.g., Lachman, Neupert, & Agrigoroaei, 2011), my third dissertation study sought to address the question of whether positive and negative SPA relate to individuals self-reported reasons for doing the activities they do within a day.

Findings from this study, which involved a small cross-sectional sample of local participants ages 50 and over, revealed that higher positive SPA were associated with having a lower proportion of externally-driven activities (i.e., *because I had to, because someone else wanted me to*) in a day, and higher negative SPA were associated with having a higher proportion of externally-driven activities in a day. Additionally, consistent with findings from my second dissertation study, findings from this study also revealed that higher positive SPA were associated with higher overall activity-related PA and lower overall activity-related NA, and higher negative SPA were associated with lower overall activity-related PA and higher overall activity-related NA, even after controlling for reasons for activity participation and two sociodemographic factors (work and marital status). In addition to SPA, certain types of reasons for activity engagement also contributed to activity-related emotional experiences. Specifically,



having a higher proportion of activities in a day that were self-driven (e.g., *because I wanted to*) was associated with higher overall activity-related PA, and having a higher proportion of activities in a day that were externally-driven was associated with lower overall activity-related PA, above and beyond the effects of SPA.

### **Integration of Findings and Contributions to the Literature**

As discussed in my opening chapter, theories of selection, optimization, and compensation (SOC; Baltes & Baltes, 1990), possible selves (Markus & Nurius, 1986), and socioemotional selectivity (Carstensen, 1991) bring attention to the ways that individuals actively construct their own development in accordance with their personal perceptions of their own strengths and limitations, their past, present, and future self-concepts, and their internal sense of passing and remaining time. Understanding the dynamic and multidimensional nature of self-perceptions of aging in the context of activity engagement within a day provides additional understanding to the nuanced ways that positive and negative attitudes about one's own aging, which separately encompass facets of perceived strengths and limitations, hoped for and feared selves, and the bitter-sweet awareness that time is precious, each play a distinct role in shaping our interactions with the world. Taken together, my three dissertation studies emphasize the unique information that can be captured by examining positive and negative components separately, and illuminate how each of these components of SPA relate to patterns of behavioral, motivational, and emotional experiences within the context of a day.

Levy's (2009) Age Stereotype Embodiment Theory proposes that one of the key pathways through which aging attitudes influence health is through lifestyle behaviors. Patterns of association between positive SPA and more exercise and less TV watching and between negative SPA and more TV watching are consistent with this perspective, and offer further

support for the notion of a behavioral pathway linking SPA to health. However, my findings regarding associations among SPA, motivational determinants, and activity-related affect expand upon the nature of this behavioral pathway by highlighting experiential components that may further support patterns of healthy behavior (perceiving personal agency and experiencing positive feelings while exercising) or may exacerbate the negative health and well-being consequences of unhealthy behavior (experiencing negative feelings while watching TV, but continuing to spend many hours of the day watching TV anyway). Thus, in addition to the potential direct health implications associated with tendencies to engage in more physically active or more sedentary activities within a day, there may also be additive effects of the motivational and emotional implications associated with these activities that vary with positive and negative SPA. Not only does this notion align with Levy's (2009) idea of aging self-stereotypes becoming self-fulfilling prophecies, but it also highlights the link between the behavioral and psychological pathways proposed in her framework.

In addition to providing further support for and expansion of each of the guiding theoretical perspectives discussed above, findings from my dissertation studies offer new insights to the literature on SPA, activity engagement, and successful aging that I hope will encourage future integration of these three, multidisciplinary, and often separate bodies of work. For example, much of the literature on SPA has focused on health behaviors and long-term health outcomes, with relatively little attention to other types of daily activities, or more proximal well-being outcomes. Meanwhile, a vast body of literature on activity engagement has examined a broad range of individual and contextual factors that shape late life activity patterns, but relatively less attention has been given to how such patterns relate to the way people feel about their aging. By offering a first look at nuanced associations among positive and negative SPA

and activity-related affect and motivations within a day, my studies highlight the importance of considering how these global evaluations of one's own aging process may shape one's day to day experience and interactions with the world through activities. Such considerations offer a bridge between the ongoing and growing discussions of the health and well-being implications of SPA and of late life activity engagement.

### **Future Research Directions**

Overall, findings from my dissertation demonstrate that there are insights to gain from examining linkages between SPA and everyday activity-related processes, which, upon further investigation, could identify potential avenues for intervention to enhance health and well-being in late life. For example, continued research into the bidirectional processes that underlie these associations could shed light on the extent to which intervention efforts should focus on shifting the way we think about aging (in order to encourage adaptive activity engagement) or on providing opportunities for engagement in certain activities (in order to support aging satisfaction). Accordingly, one specific question for future research to examine surrounds how changes in aging attitudes predict changes in everyday activity engagement over time. Levy, Pilver, Chung, and Slade (2014) have found evidence for the use of positive age stereotypes as an intervention for strengthening positive SPA and improving physical functioning. Determining whether using such age stereotype interventions to shift people's positive or negative SPA can lead to shifts in their day-to-day activity patterns would help to identify new avenues for public health programs to explore. Campaigns to encourage activity engagement (exercise, volunteerism, community involvement) among older adults may choose to carefully consider the types of age-related messages that their programs support. For example, activity promotion outreach efforts that focus on harnessing the strengths and opportunities of late life (using

positive images of aging as inspiration) may be found to be more effective and beneficial than those that focus on avoiding late life decline and deterioration (using negative images of aging as a scare tactic).

Another specific question for future research to examine involves whether specific activities themselves can be used as interventions to improve people's SPA. Fernández-Ballesteros and colleagues (2013) found promising experimental evidence that showed that participation in University Programs for Older Adults (e.g., Life-Long Learning programs) may help to improve individuals' SPA. Because positive and negative age stereotype exposure may be considered a societal-level issue, further research on the effects of different types of activity engagement (continuing education, volunteering, becoming involved in church or community organizations, joining social or special interest related groups, etc.) on individuals' positive and negative SPA could offer a potential individual-level approach to improving how people feel about their own aging.

My findings regarding SPA and motivational determinants of activity engagement may imply that a combination of attention to both initial levels of SPA and support for activity engagement may be key. For example, if individuals feel obligated to take part in activities that are recommended as part of an intervention program the activities may have different implications for SPA outcomes than if individuals have an opportunity to feel that they can select activities of their own preference. However, if having higher positive SPA enhances ones' self-efficacy and motivation to engage in particular activities in the first place (or buffers against feelings of disengagement when participating in activities), employing positive images of aging as part of an activity program may help to inspire a shift in aging attitudes that will support initial activity engagement, which in turn may lead to further improvements in SPA, and further

motivation to engage over time. Future research may work to tease apart these potential bidirectional and dynamic influences by examining longitudinal changes in associations between SPA and activity engagement as a result of each kind of interventional focus.

My findings regarding SPA and activity-related affect suggest that additional attention to the potential to employ SPA as a tool for optimizing activity-related well-being even in situations in which activities are relatively limited is also warranted. For example, older adults who, because of severe health complications or physical disabilities, are extremely limited in their options for activity participation may benefit from interventions that can enhance their experiences of the everyday activities in which they can take part. Findings from my studies suggested that people with higher positive SPA may experience more positive feelings even when doing health activities (like taking medications), watching TV, and spending time alone. A question that remains is whether people with more positive SPA feel more positively while doing these types of activities because these activities are not the only activities that they are able to do, or whether there is something unique about SPA that colors the activity experience. In other words, might helping someone to feel more positively about their aging and less negatively about their aging help to improve their emotional experiences during activities, even in the absence of a change in activity participation? Future work that identifies ways to foster positive aging attitudes and reduce negative aging attitudes among older individuals who may be limited in their activity options could shed light on the potential of SPA to serve as highly accessible tools to improve day-to-day experienced well-being among people of varying activity levels.

The age group variations in patterns of positive and negative SPA identified in my first study suggest that future research may also need to investigate whether associations between positive and negative SPA and activity engagement differ by age group. For example, although

my second and third studies included age and age-related factors (e.g., work status) as covariates, future attention to specific linkages between positive and negative SPA and activity-related affective and motivational experiences within middle aged, young-old, and oldest old age groups may reveal distinct patterns of association unique to each age group. By distinguishing whether the relative importance of positive SPA or negative SPA for activity engagement differs by age groups, such examinations could help to inform unique age-group-specific efforts to enhance activity engagement in later life.

### **Final Thoughts**

The importance of both SPA and activity engagement for late life health and well-being are well documented in the gerontological literature. Attention to the associations between SPA and activity engagement expands our understanding of how these internal attitudinal and external behavioral processes may interact with one another to shape late life experiences and outcomes. Because attitudes and perceptions about aging and old age develop across the life span, recognizing and celebrating potential strengths and opportunities for engagement that arise in the later part of adulthood may help to instill a more optimistic and encouraging aging outlook among individuals of all ages, and in turn support cultural norms of both positive aging attitudes and late life activity engagement long before individuals reach later adulthood.

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