MEMORY-RELATED POSSIBLE SELVES: EXPLORING AGE-RELATED DIFFERENCES

By

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by

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Thoughts about the self in the future are an important component of the
current identity of any individual. Although we all have future-oriented thoughts,
we each have our own unique map of avenues we wish to travel and dead ends
we plan to avoid. Markus and Nurius refer to such thoughts about our selves in
the future as possible selves. Age-related changes and differences in possible
selves have been documented, as have age-related differences and changes in
beliefs about memory. The current study extended research in both of these
areas. This investigation sought to determine if memory-related possible selves
exist, to examine the nature of these selves as hoped-for or feared, and to
understand how the existence of these memory-related selves may differ with
age. The study also examined the relationship between memory-related possible
selves and a wide range of memory beliefs that have been shown to be affected
by the aging process. This study also examined whether younger adults who
were primed to think about memory and aging might be more likely to spontaneously generate memory-related selves. In general, the results of the current study show that older adults do have memory-related possible selves, whereas younger adults do not. Further, when these selves appear in an older individual’s repertoire, they are primarily feared selves like becoming senile or losing one’s mind. Primed younger adults were no more likely to report a memory-related self than unprimed younger adults. The relationship between the memory-related selves and memory beliefs reported by older adults approached significance and warrants additional investigation in the future.
CHAPTER 1
INTRODUCTION

We all think about the future. We have dreams and we have nightmares about the myriad of possibilities that await us somewhere off in the distance. Can we achieve our goals? Will we fail to make our dreams reality? What will happen to us? What will we be like in ten years, twenty years, or fifty years? Thoughts about the self in the future have become an interesting topic in recent years and are considered to be an important component of the current identity of any individual (Markus & Nurius, 1986). Although we all share these types of future-oriented thoughts, we each have our own unique map of avenues we wish to travel and of dead ends we plan to avoid. Markus and Nurius (1986) have called these thoughts about our selves in the future, possible selves. These include the hoped-for selves we are striving toward and the feared selves we wish to escape. Age-related changes and differences in possible selves have been documented (Cross & Markus, 1991; Hooker, 1992; Hooker, Fiese, Jenkins, Morfei, & Schwagler, 1996; Hooker & Kaus, 1992; Hooker & Kaus, 1994; Ryff, 1991), as have age-related differences and changes in memory performance (Dixon & Hultsch, 1999; Schaie, 1994) and in beliefs about memory (Berry, West, & Dennehey, 1989; Hultsch, Hertzog, & Dixon, 1987; Lachman, Bandura, Weaver, & Elloitt, 1995). The current study extends research in these areas. First, this research will focus on memory-related possible selves to determine whether or not older and younger adults have possible selves in the
memory domain. Second, this study will determine whether or not these selves are primarily hoped-for or feared. Third, this study will investigate the relationship between aging, beliefs about memory, and memory-related possible selves. Fourth, the impact of priming will be examined. The following review discusses what possible selves are and why they are of interest, age-related differences and changes in possible selves and memory beliefs, and how the study of possible selves may contribute to our understanding of memory and aging.

**The Nature and Relevance of Possible Selves**

Markus and Nurius defined (1986) possible selves as elements of the self-concept that represent what an individual could become, would like to become, or is afraid of becoming. A possible self is an idea we have created that represents what we might be like in the future. These ideas are part of the self-concept. These ideas or selves can be positive, negative, or neutral. They can be concrete and realistic and they can be vague and improbable. They can be relatively close in the future or quite distant, and they can contrast and complement other possible selves. Although each individual has certain selves that are central to his or her identity, the meanings of these selves may change over time (Cross & Markus, 1991).

Possible selves are not set in stone. Possible selves change as each individual changes: as some selves are achieved, new selves will take their place, whereas other selves will be revised or dropped altogether. Which selves will be dominant depends on the individual and the context he or she experiences at any given point in time (Markus & Wurf, 1987). This online
shifting set of selves is what Markus and Nurius (1986) call the working self-concept. On-line selves will be selected from an individual’s entire repertoire of possible selves, according to environmental demands. Thus, possible selves are sensitive to the environment and to the individual. These personally tailored, environmentally responsive selves motivate and guide actions and emotions in personally meaningful ways (Markus & Nurius, 1986).

Possible selves guide behavior in several ways. Shifts in possible selves create shifts in information processing (Kato & Markus, 1993), allowing information that is related or relevant to a particular self to be processed more quickly and efficiently (Cross & Markus, 1994; Ruvolo & Markus, 1992). Changes in possible selves result in changes in levels of motivation and feelings of self-efficacy (Cameron, 1999; Cross & Markus, 1991; Hooker, 1992). Possible selves have also been related to psychological well-being and life satisfaction (Cross & Markus, 1991; Ryff, 1991; Smith & Freund, 2002). Further, changes in possible selves have been shown to result in changes in length of persistence and amount of effort expended on specific tasks (Ruvolo & Markus, 1992).

**Current Research on Possible Selves**

This section briefly reviews current research on possible selves. First, the selected studies emphasize the influence of possible selves on information processing, including the effects possible selves exert on levels of persistence and effort. Lastly, the effects of context on possible selves are highlighted, in particular, how life course and age may affect our repertoire of possible selves.
Information Processing and Behavior

Ruvolo and Markus (1992) completed a series of three studies to determine if possible self manipulations affected persistence and effort on tasks, and accessibility of possible selves. In the first study, participants were exposed to one of three imagery manipulations: success, failure, or positive affect. Participants in the first two conditions were asked to imagine and write about themselves in the future, experiencing either success or failure as a direct consequence of their own actions, whereas participants in the positive affect condition read a neutral passage and received candy. Persistence was measured as the amount of time a participant spent copying numbers with his or her non-dominant hand. Effort was measured as a participant’s accuracy on a circling e’s task. The success group persisted most, followed by the positive affect and failure groups respectively. The success group also put forth more effort than the positive affect and failure groups.

In the second study, participants were exposed to one of four imagery manipulations: success, failure, positive affect and other’s success. Three of the four manipulations were the same as in study one. The new group was asked to imagine another person being successful, to determine if thoughts of success in general might be responsible for the results of the prior study. Immediately after the imagery manipulation, participants completed a computerized self-description task in which they answered possible for me or not possible for me for a selection of words and phrases, and response latencies were measured.

Although the groups exhibited no differences in the types of words they selected as possible or not possible, their response latencies did differ indicating
that “categories of possible selves were differentially accessible” (Ruvolo & Markus, 1992, p. 108) for all four groups. Participants in the success condition exhibited faster endorsements of positive items and faster rejections of negative items. Those in the other’s success group were quick to endorse positive items; however they did not differ from the failure group in response latencies for negative items. Those in the positive affect group revealed response latencies similar to the failure response latencies for both positive and negative items. No differences were found between the four groups on response latencies for control items.

In the third and final study, participants were exposed to one of four imagery manipulations: success work, success luck, failure work, and failure luck. Again, participants completed a computerized self-description task and in addition to this, they completed an achievement value questionnaire. Participants also completed performance tasks measuring effort and persistence. Effort was measured by performance on a mental arithmetic test and persistence was measured as time spent copying numbers with a non-dominant hand. No differences were found on the achievement scale, suggesting that all participants valued achievement to the same degree. On the effort task, the success work group answered a higher percentage of problems correctly compared to the other three groups, but this difference was not significant. The success work group persisted longest on the task, followed by the two luck conditions and the failure-work condition, respectively. Again, no differences were found in the types of words endorsed as possible or not possible among the four groups. Participants
in the success work group did endorse positive and reject negative words more quickly than the other three groups, whereas the failure work group was the slowest to respond to both positive and negative items. The two luck conditions fell between the success work and failure work conditions.

These results indicate that our online set of possible selves can be manipulated. Further, changes in an individual’s online set of selves affect behavior in meaningful ways. Specifically, changes in information processing occur in response to changes in an individual’s online set of possible selves. These changes can also affect the level of persistence and effort an individual is willing to put forth.

Kato and Markus (1993) presented college students with negative and positive adjectives and phrases that were encoded on one of four conditions: semantic, ability, actual self or possible self. In the semantic condition, participants determined whether adjacent items were similar in meaning. In the ability condition, participants provided a synonym for each target item. In the actual-self condition, participants answered whether each item was descriptive of their current self. In the possible-self condition, participants answered whether each item would be descriptive of a future self. Possible-self orientation was established by asking each participant to think about an important hoped-for self that they often thought about attaining. After the encoding activity, participants completed a surprise recall test of the items. Those in the actual and possible selves conditions recalled more items than those in the semantic and ability
conditions. Participants also recalled more positive items than negative items across all four conditions.

These results suggest that items related to an individual’s self-concept are more likely to be remembered by that individual. Thus, items relevant to a possible self, especially a hoped-for self, are more likely to be attended to and remembered.

Cross and Markus (1994) investigated the effects of an individual’s schematicity on performance and feedback. Self-schemas are identities that are central to an individual. These schemas are core self-representations that define who we are. Such schemas would be an important influence on the possible selves that an individual might endorse, especially those that are spontaneously mentioned. For both studies, a pre-selection questionnaire identified individuals that were either aschematic or schematic for logical problem solving abilities. A schematic individual has an organized and potentially automated way of perceiving and responding to a particular stimulus or situation, in this case, logical problem solving. In this study, schematic individuals indicated that they perceived themselves as competent problem solvers and that this ability was important to them. Aschematic individuals did not indicate that they had any exceptional problem solving abilities, nor did they report that this ability was particularly important to them. Participants also completed a logic activity, after which they answered questions about the test and indicated their perceptions about the difficulty of the logic test.
In the first study, both schematic and aschematic participants reported similar levels of self-esteem and optimism, and both performed equally well on the logic test. Schematic adults reported enjoying the logic test more than aschematic adults. They also indicated that the activity was easier and that they felt more control over their results on the activity. Further, schematic individuals endorsed more positive logic-related items as possible for me than did aschematic individuals. Aschematic individuals were also significantly faster to respond possible for me for the negative logic-related items. No other significant differences in response latencies were discovered.

The second study investigated the effect of feedback on subsequent performance for schematic and aschematic individuals. Again, no differences were found in initial problem solving abilities. This study consisted of the same measures in the first study; however, feedback was given after the first logic test. Participants either received failure feedback or no feedback at all. Schematic individuals in the feedback condition responded possible for me more quickly for the positive logic-related terms than any other group. Aschematic individuals in the feedback condition responded possible for me significantly faster for the negative logic-related terms. No other significant differences in response latencies were discovered.

Following the first test, a second logic test was given. Aschematic individuals in the no feedback condition performed significantly worse on the second logic test than did those individuals in the other three groups. Aschematic individuals in the failure feedback condition performed similarly to the
schematic individuals in both conditions. Cross and Markus (1994) suggested that feedback acted as an external incentive for aschematic individuals to redeem and prove themselves capable. Without feedback, aschematic individuals lost interest. Therefore, this external push was necessary to compensate for the lack of positive logic-related self-conceptions and consequent lack of motivation these individuals face within the domain of logic. Conversely, schematic individuals relied on positive logic-related self-conceptions to cope with or discount negative feedback and maintain performance.

In this situation, schematic individuals can be thought of as having a positive logic-related possible self. The existence of this positive logic-related self affected information processing, and behavior. This self allowed schematic individuals confronted with failure to shift their attention away from negative, toward more positive self-descriptors. Further, the existence of this possible self acted as a goal, motivating schematic individuals to persist during difficulty and maintain a higher level of effort.

Although possible selves can influence information processing and behavior, possible selves can also be influenced by external circumstances or conditions. External influences include specific situations and broader contextual factors, such as life stage or age. These contextual factors call certain selves to action and fine tune existing repertoires of selves.

**Contextual Effects on Possible Selves**

Hooker et al. (1996) measured parenting possible selves between two different groups of parents in different stages of parenthood. The two groups of
parents each completed an open-ended possible selves questionnaire. The parent-infant group consisted of individuals between the ages of 18 and 43 years old, whose first child was 12 months old or younger. The parent-preschool group consisted of individuals between the ages of 24 and 45 years old, whose oldest child was between 2 and 5 years of age.

Both groups of parents listed occupational and parenting selves most frequently, in fact, two-thirds of all participants listed a parenting self as one of their most important selves. The parent-infant group was more likely to have hoped-for parenting selves than the parent-preschool group, while the parent-preschool group was more likely to have feared parenting selves than the parent-infant group, suggesting that the different life stages of the children created a context in which parents saw their future selves.

A study by Hooker and Kaus (1994) investigated the possible selves of young and middle-aged adults to determine if health-related selves existed for these age groups. Young adults were between the ages of 24 and 39 years old, while middle-aged adults were between 40 and 59 years old. Both young and middle-aged adults completed an open-ended possible selves questionnaire followed by efficacy and goal activity questions. After the possible selves questionnaire, each group completed a health behavior measure (e.g., yearly physical examinations, exercise) and a health value questionnaire (e.g., If you don’t have your health you don’t have anything).

Middle-aged adults reported significantly more health-related selves than young adults. Both groups were more likely to have a feared health-related self
than a hoped-for one. For participants with a health-related self selected as most important, health value, perceived self-efficacy, and number of goal oriented activities (taken to avoid a feared health-related self) were all significant predictors of health behaviors. Perceived self-efficacy and number of goal-oriented activities were the strongest predictors of health behavior scores.

Hooker (1992) also investigated the possible selves of younger and older adults to determine if health-related selves existed for these age groups. Young adults were between the ages of 18 and 23 years old, while older adults were between 55 and 89 years old. Both younger and older adults completed an open-ended possible selves questionnaire, followed by efficacy and goal activity questions. After the possible selves questionnaire, each group completed a perceived health and health value questionnaire.

Initially, Hooker reported that 71% of younger adults listed a health-related self, and 17% selected a health-related self as most important. However, these percentages included weight-related selves. For younger adults, weight-related selves are probably more associated with concerns about appearance than with concerns for health. When weight-related selves were removed, 64% of younger adults reported no health-related self at all. On the other hand, 86% of older adults reported a health-related self. Of these, 73% selected a health-related self as one of their most important selves. In general, participants with health-related selves scored higher on the health value measure; consequently, older adults scored higher on health value than young adults. Lastly, younger adults generated more hoped-for and feared selves than older adults.
Again, life stage plays an important role in the differences and changes that occur in any persons’ set of possible selves. These shifting sets of selves will ultimately affect behavior in meaningful ways, prioritizing selves, ultimately motivating the current self into action.

**Differences and Changes in Possible Selves with Age**

Given the fluid nature of possible selves, recent studies have started to examine age-related differences and changes in possible selves, and several age-related differences have been found. Differences exist not only in the types of selves reported by age, but in the number of selves reported. Older adults consistently report fewer possible selves than younger adults (Cross & Markus, 1991; Hooker, 1992). This was true for the number of hoped-for and the number of feared selves. Older adults also report more specific, more realistic possible selves than younger adults (Cross & Markus, 1991; Hooker, 1992). In general, the possible selves older adults report are more in line with their current selves. They typically involve the continuation or maintenance of current activities and relationships, but also include room for continued learning and growth (Cross & Markus, 1991; Frazier, Hooker, Johnson, & Kaus, 2000; Hooker, 1992).

Age differences in specific domains have also been found. Hooker and Kaus (1994) found that health-related selves begin to increase in frequency in middle age. Older adults spontaneously generated more health-related selves than middle-aged adults, whereas younger adults reported fewer health-related selves than both middle-aged and older adults (Hooker, 1992; Hooker & Kaus, 1992; Hooker & Kaus, 1994). Thus, the frequency of health-related selves may increase with age as health becomes more salient during later life.
Later, in a longitudinal study by Frazier et al. (2000) patterns of change and stability in the possible selves of men and women between the ages of 55 and 89 were identified. The participants initially reported possible selves in a study by Hooker (1992). Then the same participants were contacted again five years later to determine whether their possible selves would remain stable over time. Although continuity was found in most domains, physical and health-related selves were mentioned more frequently over time. Age-related changes in possible selves do occur, and these shifts in possible selves may be important components of successful aging (Markus & Herzog, 1992), providing “blueprints for personal change and growth across the life span” (Cross & Markus, 1991, p. 232).

**Changes in Memory Beliefs**

Just as the aging process influences views of the self in relation to health, it also influences views of the self in relation to memory. Age-related changes and differences in memory abilities have been widely established. As a consequence, we all learn to expect memory decline as a part of life, specifically as a part of growing old. Our expectations and beliefs about memory are composed of general beliefs and personal beliefs (Hertzog & Dixon, 1994). General beliefs about memory include expectations we have about how memory will change over time for general population. On the other hand, personal beliefs are opinions we have about our own memory abilities. Personal beliefs are affected by general beliefs but they need not mirror one another. This review discusses general and personal memory beliefs, why they are important, and some of the current research findings regarding these beliefs.
General Beliefs About Memory

General beliefs about memory are common beliefs about the process of aging that relate to memory (Hertzog, Lineweaver, & McGuire, 1999). These beliefs broadly apply to all people. General beliefs about memory include beliefs about the expected developmental trajectory of memory performance, stereotypes about memory and aging, and perspectives on memory failure.

Heckhausen, Dixon, and Baltes (1989) investigated age differences in the perceived trajectory of development throughout adulthood. Young, middle-aged and older adults, between the ages of 20 to 85, rated adjectives in terms of expected developmental increase, desirability, onset age, and closing age. All participants were instructed to think about people in general, rather than a specific target, during the entire exercise. Results indicated that all age groups expected a similar developmental path and this path was characterized by both gains and losses. However, the percentage of perceived losses increased across the lifespan. Gains actually outnumbered losses, with the oldest group endorsing more possible gains than the middle-aged and young adults, respectively. Older adults also used a greater range of onset and closing ages than younger adults, indicating a more flexible and gradual view of decline.

Lineweaver and Hertzog (1998) examined general beliefs about memory in both younger and older adults. Participants were between 18 and 93-years-old. Each participant completed a questionnaire designed to measure general beliefs about memory. In general, all participants believed that memory self-efficacy and memory control declined with age, with the greatest decline occurring after 50 years of age. Further, all participants believed memory ability declined with age;
however, older adults differed from both young and middle-aged adults regarding the onset and magnitude of memory decline. In comparison to the two younger groups, older adults believed memory declined later in life and more gradually (Lineweaver & Hertzog, 1998).

In addition, Hertzog et al. (1999) reviewed several studies investigating age-related changes in opinions and feelings about memory in older and younger adults. Again, older and younger adults believed that memory ability, memory self-efficacy, and control over memory all decline with age; however, the patterns of decline differ by age group. Younger adults reported earlier, steeper declines in memory control and memory self-efficacy, with memory decline beginning after age 30. Older adults reported peaks in performance around age 40, and more gradual declines in memory efficacy, control, and abilities.

Ryan (1992) also examined beliefs about the developmental trajectory of memory, by investigating age differences in memory beliefs. In her first study, adults between 18 and 74 years of age completed a questionnaire based on the Short Inventory of Memory Experiences. Each participant completed three versions of this questionnaire. They rated each question in terms of beliefs about themselves, beliefs about a typical 25-year-old, and beliefs about a typical 70-year-old. In general, memory ratings were more positive for the typical 25-year-old than for the typical 70-year-old, whereas self-ratings fell between the two. In the second study, participants completed the same questionnaire, rating each item for themselves and for a typical person of 25, 45, 65, or 85 years of age. The typical 25-year-old was rated more positively than all other age groups. The
typical 85-year-old was rated as having the poorest memory of all age groups. The typical 45-year-old and the typical 65-year-old fell between the youngest and oldest groups. Thus, memory decline was perceived to start during middle age and continue on until later life. In comparison to participants with positive self-ratings, participants with the poorest self-ratings expected all age groups to have poorer memories.

These results confirm that a socially accepted pattern of memory development exists. Again, memory abilities are expected to start declining in middle age and to continue declining through old age. The majority of individuals are believed to conform to this fixed pattern of development. Although these standardized expectations apply to all individuals, they are particularly relevant to older adults, as they often lead to social stereotypes about aging and memory.

Levy (1996) has examined the effects of age-related stereotypes. Her first study investigated the effect of age-related stereotypes on the memory performance of older adults between the ages of 60 and 90-years-old. Participants initially completed a series of memory tests. After completing the memory tests, participants completed a computerized priming task. The priming task exposed each participant to either positive or negative words, related to either wisdom or memory decline. The words flashed quickly on a computer screen, so the participants were not aware of having seen them. This task was designed to activate participants’ internal stereotypes about aging and memory.

Levy (1996) found that the priming activity was successful and influenced memory performance, attitudes toward aging, and beliefs about memory in older
adults. The older adults primed in the negative condition performed more poorly and reported more negative attitudes about aging and memory. The older adults primed in the wisdom condition, performed better and reported more positive attitudes toward aging and memory. The results indicate that older adults respond to stereotypes directly and without knowing that they are doing so. This has important implications regarding the effects cultural stereotypes about aging and memory have on older adults and the aging process they will expect and experience.

Expectations of memory decline and negative age-related social stereotypes reinforce one another. These beliefs affect the judgments we make about others in everyday life, and bias us to look for instances that verify these negative beliefs. Consequently, memory failures will become particularly salient, especially when experienced by an older individual. Such general beliefs and biases become particularly relevant as we interact with older adults, and as we, ourselves age.

Erber (1989) explored age differences in the assessment of memory failures. In the first study, participants between the ages of 18 and 29 were given a booklet containing 30 memory failure episodes. Half of the episodes were designed to show serious memory failures (e.g., forgetting the name of someone the protagonist has known for years) and half were designed as nonserious errors (e.g., forgetting the name of someone the protagonist just met). The subject in each episode was always a 30 year-old woman or a 70 year-old woman. Participants rated the seriousness of each episode on a 7-point Likert
scale, and consistently rated the memory failures of the 70 year-old woman as more serious than those same failures made by the 30 year-old woman (Erber, 1989).

In a second study, older adults between 62 and 82 years of age completed the same exercise. The older adults did not rate the seriousness of the memory failures any differently for the 30 year-old and the 70 year-old. In addition, older adults rated the serious failures less seriously than the younger adults had in the previous study. Thus, younger adults rate the memory failures of older adults more harshly than failures experienced by younger people. Further, older adults are more moderate in their opinions regarding the seriousness of a memory failure, regardless of age. This is most likely due to a greater acceptance of memory decline as normal and inevitable among older adults (Erber, 1989).

Thus, expectations of memory deterioration and negative age-related stereotypes do contribute to different perceptions of memory ability. Compared to older adults, younger adults believe that memory failure is more serious. Younger adults are also more concerned when memory failures occur among older individuals. This bias reflects a belief that memory failures may indicate early stages of serious cognitive impairment among older individuals. However, with increasing age, adults consider memory failure a less serious offense, because memory decline is an expected part of life. These general expectations and beliefs about memory affect each of us in important ways. Not only do they affect our perceptions of others, they influence our personal beliefs about our own memory.
Personal Beliefs About Memory

Personal beliefs about memory are self-referent beliefs or beliefs that refer or relate directly to the self. Self-referent beliefs about memory include memory self-efficacy beliefs, memory control beliefs, and perceived changes in individual memory abilities.

Self-efficacy is an individual’s personal judgment of his or her capability to perform a specific task or reach a specific goal. Self-efficacy beliefs are important for several reasons. First, self-efficacy beliefs affect performance. These beliefs guide which tasks and goals will be approached and which will be avoided (Berry & West, 1993). Second, self-efficacy beliefs influence the amount of effort and persistence an individual sustains once engaged in a task (Berry & West, 1993). Thus individuals with high levels of self-efficacy will be more motivated to continue working toward a related goal.

Self-efficacy beliefs are also domain specific (Berry & West, 1993). It is therefore reasonable to expect each individual to have different self-efficacy beliefs over multiple domains. Memory self-efficacy beliefs are specific judgments related to an individual’s capability to engage in and successfully complete memory tasks. Given the general beliefs we hold regarding memory decline, it is also reasonable to expect memory-related self-efficacy beliefs to decline with age.

Berry et al. (1989) developed a measure to assess memory self-efficacy beliefs in older and younger adults. Participants were between 18 and 80 years of age. Each participant completed the Memory Self-efficacy Questionnaire and eight memory tasks. Memory tasks were divided among familiar, everyday
memory activities like remembering phone numbers and less familiar, laboratory
tasks such as recalling word lists. These tasks were used to estimate the
accuracy of memory self-efficacy judgments. In general, younger adults had
higher self-efficacy scores on all memory tasks. Further, older adults efficacy
ratings were more accurate for everyday tasks than laboratory tasks. Thus, the
authors concluded that task familiarity is an important factor in accurate
estimates of self-efficacy (Berry et al., 1989).

In addition to memory self-efficacy beliefs, memory control beliefs are also
important, as both types of beliefs affect behavior. Memory control beliefs are
internal or external attributions regarding memory loss. If a person believes
memory loss is inevitable, it is viewed as completely out of one's control. If, on
the other hand, one believes memory loss is preventable or controllable, loss can
be minimized through individual efforts to maintain and improve upon one's
abilities. Control beliefs and self-efficacy beliefs are related, however they are
not the same. Self-efficacy beliefs are personal judgments about one's ability to
complete a task or goal. An individual may believe he or she is able to complete
a memory task, but may still feel that memory loss is an inevitable part of aging
(Hertzog et al., 1999).

Lachman et al. (1995) developed a measure to assess beliefs about
memory control and memory ability. They also examined how these beliefs
relate to actual memory performance in older and younger adults. Participants
were between 20 and 90 years of age. Each participant completed the Memory
Controllability Inventory and several different memory tasks. Participants who
felt secure about their current memory ability also felt they had more control over their memory ability. These participants indicated that they believed making an effort could improve their memory, and reported that they could find strategies to do so. Participants who agreed with the inevitability of memory loss with age felt less secure about their current memory ability and less able to make improvements. With increasing age, people became more likely to report that memory deterioration is inevitable and also became more likely to doubt their own memory ability (Lachman et al., 1995).

Participants who predicted they could handle their daily memory tasks independently, without depending on others, also rated their current memory ability more positively. These individuals believed in their ability to improve their memory, endorsed the use of effort, and did not believe that memory loss was inevitable. In contrast, participants who were worried about developing Alzheimer’s disease rated their current memory ability less positively. These individuals also believed in the inevitability of memory loss with age (Lachman et al., 1995).

Interestingly, control beliefs were related to actual memory performance. Beliefs in inevitable memory loss were associated with poorer performance on the memory tasks. Positive beliefs about current memory ability and the ability to improve memory were associated with better performance on the memory tasks. Clearly, believing one has control over the maintenance of memory ability affects behavior.
In addition to differences in memory self-efficacy and memory control beliefs, older and younger adults have different perceptions regarding when and how they will experience changes in their memory abilities. The personal changes that older and younger adults report, generally coincide with the generic expectations we have for the population, however, individual variation does occur.

McDonald-Miszczak, Hertzog, and Hultsch (1995), conducted two longitudinal studies in an attempt to uncover age-related changes in memory beliefs and abilities. The first study looked at 231 adults between 22 and 78 years of age, over a period of two years. Participants completed several metamemory questionnaires (Metamemory in Adulthood, Memory Functioning Questionnaire, Memory Self-efficacy Questionnaire). In addition, participants completed questions regarding perceived changes in memory ability and several recall tasks. This study found considerable stability over the two-year period; however, memory was reported as getting worse over time (McDonald-Miszczak et al., 1995).

The second study looked at adults between 55 and 86 years of age, at three points in time over a period of six years. At the end of the 6-year period, 234 of the initial 477 participants remained. Participants completed similar measures as in the first study. Memory ability and self-efficacy both declined over time, whereas anxiety about memory increased, as did reliance on external aids and memory strategies (McDonald-Miszczak et al., 1995).
Hultsch et al. (1987) also explored age differences in beliefs about memory change in two different communities. Participants were between 20 and 78 years old, and each completed the Metamemory in Adulthood Scale and the Memory Functioning Questionnaire. In general, when compared to younger adults, older adults perceived themselves as having less memory capacity. Older adults also reported that their memory had declined over time; further, they believed they could do very little to improve their current memory abilities or to prevent memory decline in the future.

Lastly, Lineweaver and Hertzog (1998) examined general beliefs about memory and personal beliefs about memory in both younger and older adults, to determine if personal beliefs and general beliefs differ, and if adults of different ages have different beliefs. Participants were between 18 and 93-years-old. Each participant completed two questionnaires; each designed to measure either general or personal beliefs about memory.

Personally, older adults reported lower memory self-efficacy, and less control over memory than both middle-aged and younger adults. Participants also reported on perceived memory change. When comparing current memory ability to past memory ability, younger adults reported improvement, middle-aged adults reported little change, and older adults reported significant memory loss. Participants also reported anticipated change between current and future memory ability. In the future, younger adults anticipated improvement for themselves, but not for the general population. Middle-aged adults anticipated
small declines, and older adults expected substantial decline (Lineweaver & Hertzog, 1998).

Thus, general beliefs and personal beliefs are related, but not identical. Personal beliefs appear responsive to life experience. Although older adults report declines in memory ability, memory control, and memory self-efficacy, they also report a later and more gradual decline than younger adults. Presumably this is due to the effects of personal experience on general beliefs.

In conclusion, the results reviewed here confirm that memory decline is seen as an inevitable and normative developmental process by adults of all ages (Heckhausen et al., 1989; Lineweaver & Hertzog, 1998; Ryan, 1992). This general belief results in age-related stereotypes and biases regarding memory and memory failure. Older adults internalize these general beliefs and stereotypes. Consequently, they learn to anticipate memory deterioration as a normal part of the aging process (Levy, 1996). As a result, older adults tend to downplay instances of memory failure as a normal part of life, whereas younger adults tend to magnify instances of memory failure among older adults (Erber, 1989). Further, younger adults may use memory failure as a signal of potential cognitive impairment among older adults.

Given the general beliefs we hold, it is not surprising that older adults also report lower levels of self-efficacy than younger adults (Berry et al., 1989; Hultsch et al., 1987), and less control over memory than younger adults (Hultsch et al., 1987; Lachman et al., 1995).
Older adults also report experiencing declines in memory ability (Erber, 1989; Hultsch et al., 1987; Lachman et al., 1995; Ryan, 1992). However, the decline for older adults occurs later in life and is more gradual than the decline expected by younger adults. This indicates that personal experience can influence personal beliefs, resulting in slight deviations from the generic path of memory loss.

Thus, for older adults, memory beliefs become of notable significance, or more salient, as they experience normative age-related declines and respond to social stereotypes (Hultsch et al., 1987; Cavanaugh, Feldman, & Hertzog, 1998). As a consequence, these age-related opinions and beliefs about memory should be reflected in the possible selves of older adults.

**Memory-related Possible Selves**

Possible selves and memory beliefs fit together well. Sehulster (1981ab) proposed a self-theory of memory, in which beliefs about personal memory ability, and memory in general, are considered part of the beliefs we have about our selves. Our memory-related beliefs and experiences create a memory self-schema or identity. Further, these beliefs and experiences play a role not only in our current identity, but also in how we view the trajectory of our future memory abilities. More specifically, our current memory self-schema outlines a future memory self. Like health, memory is believed to become more salient with age (Berry & West, 1993; Cavanaugh et al., 1998; Hultsch, et al., 1987); consequently, memory-related possible selves should become more apparent in an older adults repertoire of possible selves. These memory-related selves and
beliefs should also affect behavior, such as persistence, effort, goal setting, and strategy use on memory tasks (West & Berry, 1994).

**Methods Used to Measure Possible Selves**

Several methods have been used to measure possible selves. Initially possible selves were measured by using lists of nouns and adjectives. Participants indicated whether each item from the list of possibilities was self-descriptive. Markus and Nurius (1986) gave participants a list of 150 possibilities. For each item, participants indicated if the item described them currently, or had described them in the past. Participants were also asked if they had ever considered the item as a possible self, and if so, how probable the self was and how much they would like the self to be true for them. This approach has several advantages and disadvantages. It may be possible to determine if particular selves in specific domains are consistently endorsed or not; however, individuals may have important selves that are not included, and consequently not discovered.

Possible selves have also been measured by open-ended questionnaires (Cameron, 1999; Cross & Markus, 1991; Frazier et al., 2000; Hooker, 1992; Hooker & Kaus, 1992; Hooker & Kaus, 1994; Ruvolo & Markus, 1992). In these studies, participants were asked to spontaneously list all of the possible selves they would like to achieve, and all those that they would like to avoid. Participants selected the two or three most important feared and most important hoped-for selves and then explained why each was important. They also rated the likelihood of attaining or avoiding these selves, and listed any steps actively taken to achieve or avoid these selves. Although this method allows each
individual to share their unique set of selves, it may be more time consuming and
difficult for participants to understand (Hooker, 1992; Hooker, 1999).

Ryff (1991) asked participants to answer several questions from various
psychological well-being measures. The questions were answered multiple
times, in terms of each participant’s current self, ideal self, past self, and future
self. Possible selves were not directly assessed in this study, but were used as a
manipulation “to determine perceptions of improved or worsened functioning over
time” (Ryff, 1991, p. 287).

Possible selves have also been assessed using latency response
measures (Cross & Markus 1994, Ruvolo & Markus, 1992). These measures
indicate which selves are most active in an individual’s working self-concept after
some experimental manipulation. Ruvolo and Markus (1992) asked participants
to imagine themselves in the future. Participants were then instructed to imagine
their own success or failure as a direct outcome of their own actions and write
about what it would be like. After this imagery manipulation, participants
completed a self-description task, rating positive, negative, and control words as
either possible for me or not possible for me. Response latencies for each word
indicated whether or not a corresponding self was active or accessible in an
individual’s working self-concept.

The current study plans to investigate a specific domain of possible selves.
An open-ended format can provide a glimpse into the most salient selves of each
individual (Hooker et al., 1996); however, a closed format allows participants to
endorse memory-related responses that are not prominent enough to lead to
spontaneous mention. The combination of both methods in this investigation allowed us to fully tap the possibilities existing within each individual.
CHAPTER 2
STUDY 1 INTRODUCTION

Memory-related possible selves were examined in the current study by administering both open-ended and closed-ended possible selves questionnaires to younger and older adults. Within the older adult group, two age groups were created: a young-old group with participants between 50 and 69 years of age, and an old-old group with participants 70 years of age and older. This was done to examine possible differences and similarities between the types of selves generated by older adults at different points in life. In addition to the possible selves measures, all participants completed several questionnaires assessing their beliefs about memory to examine the relationship between age, possible selves, and a number of memory beliefs, including locus of control, anxiety, and beliefs about recent memory performance. Lastly, each participant completed a health survey and a participant information form to provide basic demographic information.

Pilot data had indicated the younger adults were unlikely to spontaneously mention memory-related selves. Therefore, the current study also examined whether younger adults might be more likely to spontaneously generate memory-related selves when exposed to specific memory activities prior to completing the possible selves questionnaires. Research by Levy (1996) suggested that exposure to social stereotypes about aging and memory can affect memory beliefs and memory performance of older adults on subsequent memory tasks.
Further, Rahhal, Hasher, and Colcombe (2001) have demonstrated that instructions can activate the different self-schemas older adults have related to aging and memory. The current study planned to examine if the working self-concepts of younger adults could be influenced in a similar manner, by exposing primed individuals to a memory task and several memory beliefs measures before the possible selves questionnaires.

**Hypotheses**

As health becomes more important later in life, this is reflected in the self-conceptions of older adults (Hooker, 1992). Older adults reliably report health-related possible selves, whereas younger adults rarely report selves in this domain (Frazier et al., 2000; Hooker, 1992; Hooker & Kaus, 1992; Hooker & Kaus, 1994). Memory is also believed to increase in importance with age, as age-related declines in performance must be managed, and social stereotypes come to affect self-conceptions. As a consequence, we expected that older adults would generate memory-related possible selves, especially feared memory selves, and that the number of reported memory-related selves would increase with age. Further, we expected these selves to be interrelated with a constellation of memory beliefs.

1. Older adults would report a greater number of memory-related selves than younger adults.

2. In particular, the old-old would report a greater number of memory-related selves than the young-old.

3. Given the pattern of age-related changes in memory beliefs, older adults are expected to primarily generate feared memory-related selves.
4. In keeping with the experimental evidence on possible selves, we expected to successfully manipulate the relevance of memory selves through priming. Younger adults were expected to be more likely to report memory-related possible selves when primed to do so.

5. Lastly, beliefs about memory (control, anxiety, achievement, memory value, fear of Alzheimer’s disease and memory self-evaluation) would be related to whether a person reported a memory-related possible self, and the content of that self as hoped-for or feared.
Participants

Participants included both younger adults and older adults. Forty-five younger adults, ages 18 to 22 (M= 18.84, SD= .852) were recruited from the University of Florida's research participant pool. Eighty-five older adults between the ages of 52 and 88 (M= 71.69, SD= 7.52) were recruited from local communities. Older adults were split into two groups, a young-old and an old-old group. The young-old group included 36 individuals between the ages of 50 and 70 years old (M= 64.94, SD= 5.06). The old-old group included 49 individuals between the ages of 70 and 88 years of age (M= 76.65, SD= 4.59). Two older adults were excluded from the study. One older adult was excluded for depression, and another was excluded for failing to answer the questionnaire in a consistent manner. Education and health were examined as a function of age. The young-old group had significantly more years of education than both the old-old group and the younger adults, $F (2, 129) = 8.43, p < .000, \eta^2 = .117$. No significant differences were found in self-rated health between any of the three age groups, $F (2, 123) < 1, p > .25$. See Table 3.1.
Measures

Possible Selves

To thoroughly examine possible selves, both closed and open-ended measures were used. Initially, participants completed the open-ended questionnaire developed by Cross and Markus (1991). This questionnaire was designed to spontaneously elicit both hoped-for and feared possible selves. Participants were first asked to list all of their hoped-for selves. Once they completed this list, they were then asked to list their most important, hoped-for self. Next participants answered two questions to assess self-efficacy and perceived control over attaining their most important hoped-for self, and listed any goal-oriented activities they had undertaken to accomplish this hoped-for self.

Next, participants were asked to list all of their feared selves. After completing this list, they were asked to list their most dreaded, feared self. Participants then answered two questions to assess self-efficacy and perceived control over avoiding their most dreaded self, and listed any goal-oriented activities they had undertaken to avoid this feared self.

The open-ended questionnaire was followed by an adaptation of the closed-ended questionnaire developed by Markus and Nurius (1986). The closed-ended questionnaire consisted of 73 specific descriptors, considered to be negative (unpopular, paralyzed), or positive (long-lived, admired). The majority of the items used in this study were taken directly from the original questionnaire; however, 14 memory-specific descriptors were added. The memory-specific descriptors included negative items such as “Alzheimer’s patient” and “unable to
remember,” and positive items such as “mentally alert all my life” and “sound mind.” The memory-related items were selected as either positive or negative based on pilot data. Each participant was asked to complete four versions of this questionnaire, endorsing each item as either descriptive or not descriptive of their current self, their past self, their future hoped-for self, and their future feared self. The current study focused solely on the future hoped-for and feared selves. The current and past selves were included to help participants think about themselves in relation to a personal timeline.

**Memory Beliefs**

The Metamemory in Adulthood scale developed by Dixon, Hultsch, and Hertzog (1988), was used to assess beliefs about memory ability. This measure was selected because it is a standard measure of memory beliefs that has shown consistent validity and reliability. The following three subscales were used: achievement, anxiety, and locus of control. These scales were selected because of their expected relationship to hoped or feared memory selves. For instance, a participant listing a feared memory-related self may also report greater anxiety over memory-related tasks and less control over their memory ability. These subscales included items like the following: “It is important to me to have a good memory,” “I get upset when I cannot remember something,” and “I have little control over my memory ability.” Each item was rated on a 5-point Likert scale (1 = agree strongly, 5 = disagree strongly). Achievement, anxiety and locus were calculated by averaging an individual’s responses within each subscale. Internal consistency reliability was good for the three scales: achievement (alpha = .77), anxiety (alpha = .86), and locus (alpha = .71).
Questions specifically related to Alzheimer’s disease were included from the Memory Controllability Inventory (MCI) developed by Lachman et al. (1995). The current study expected a greater number of feared memory-related selves among older adults, therefore, it was important to also assess the degree to which individuals feared the most common type of memory loss in late life. Typical items on this scale included: “When I forget something I am apt to think I have Alzheimer’s disease,” and “I think there’s a good chance I will get Alzheimer’s disease.” Each item was also rated on a 5-point Likert scale (1 = agree strongly, 5 = disagree strongly). The four responses were averaged to create a scale measuring fear of Alzheimer’s disease. This MCI scale had good internal consistency reliability (alpha = .81).

Four additional items assessed how each individual values memory. The memory value items were adapted from the Health Value questionnaire used by Hooker (1992), and developed by Lau, Hartman, and Ware (1986). These items were included to determine whether individuals reporting memory-related selves valued memory more than those who did not report future selves related to memory. Individuals responded on a 5-point Likert scale (1 = strongly agree, 5 = strongly disagree) to the following items: (1) “If you don’t have your memory you don’t have anything;” (2) “There are many things I care about more than my memory;” (3) “A good memory is of only minor importance in a happy life;” (4) “There is nothing more important than a good memory.” A memory value score was calculated by averaging an individual’s answers across these four questions. The memory value scale had good internal consistency reliability (alpha = .75).
Opinions about recent memory performance were assessed with four questions developed by West, Thorn, and Bagwell (2003). These questions were included to examine whether participants reporting memory-related selves rated their recent memory performance differently than those who did not. Participants were first primed to think about their everyday memory experience by answering this item: "How important has it been to you to perform well on memory activities in your everyday life?" (1 = not important at all, 7 = very important). This was followed by the three critical scale items on a 7-point Likert scale: "How have you performed on most memory tasks you have done recently?" (1 = very poor, 7 = very good); "How do you think your memory compares with most other people your age?" (1 = much worse, 7 = much better); "How satisfied are you with your recent memory performance?" (1 = very satisfied, 7 = very unsatisfied). The responses to these three questions were summed to create one memory evaluation scale. The memory self-evaluation scale had good internal consistency reliability (alpha = .88).

Lastly, the SF-36 short-form health survey developed by Ware and Sherbourne (1992) assessed the degree to which health and depression affected an individual’s participation in daily activities. This survey was used because it provides information on eight comprehensive subscales in a relatively short and simple format. The SF-36 is composed of these subscales: General Health, Physical Limitations, Physical Functioning, Bodily Pain, Vitality, Emotional Limitations, Social Functioning, and Mental Health. General Health included four questions rated on a 5-point Likert scale, such as "In general, would you say your
health is…” (1 = excellent, 5 = poor) and “I seem to get sick a little easier than other people” (1 = definitely true, 5 = definitely false). Physical limitations were examined by four yes-no questions, such as, “During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health: Accomplished less than you would like” (yes/no). Physical functioning was measured using ten questions rated on a 3-point Likert scale, such as “Does your health now limit you in climbing several flights of stairs?” (1 = yes, limited a lot, 3 = no, not limited at all). Bodily Pain was assessed by two questions rated on a 6-point Likert scale, such as “How much bodily pain have you had during the past 4 weeks?” (1 = none, 6 = very severe). Vitality was measured by four questions rated on a 6-point Likert scale, such as, “How much of the time during the past 4 weeks did you feel full of pep?” (1 = all of the time, 6 = none of the time). Emotional limitations were assessed using three yes/no questions, such as “During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious): Cut down the amount of time you spent on work or other activities?” (yes/no). Social functioning was measured by two questions rated on a 5-point Likert scale, such as “During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?” (1 = not at all, 5 = extremely). Last, mental health was assessed with five questions rated on a 6-point Likert scale, such as “How much of the time during the past 4 weeks have you been a nervous person?” (1 = all of
the time, 5 = none of the time). The responses within each scale were summed for each individual (Ware, 1993). Internal consistency reliability was good for each of the eight scales: general health (alpha = .83), physical limitations (alpha = .81), physical functioning (alpha = .91), bodily pain (alpha = .79), vitality (alpha = .83), emotional limitations (alpha = .85), social functioning (alpha = .74), and mental health (alpha = .82).

To examine the spontaneously-generated possible selves, four categories of selves were created: health, dependency, memory, and cognitive selves. Health-related selves included direct statements such as “maintaining or losing my health,” “avoiding illness,” and “remaining physically active.” Health-related selves also included more specific statements such as “becoming a cancer patient,” “having a stroke or heart attack,” and “losing the ability to see.” Dependency-related selves included general statements like “maintaining my independence” or “becoming dependent on another,” but also included such statements as becoming a “burden on my family” and “moving into a nursing home.” Memory-related selves included “becoming an Alzheimer’s patient,” “senile,” or “demented,” and also included positive items such as “improving my memory ability” and remembering specific items, like vocabulary and dance steps. Lastly, cognitive selves included statements such as “staying mentally alert or active,” or “losing my mind” and also included cognitive activities such as “learn to use a computer” or “learn to play an instrument.” Although many of these cognitive selves refer to the mind and to memory, selves that fit this
category were counted separately to ensure that memory-related selves would be defined as conservatively as possible.

The spontaneously-generated selves were scored into the four categories by two independent raters. The overall agreement between the two raters was 93%. Table 3.2 shows the percentage of agreement, by category of self, for hoped-for and feared selves.

**Procedure**

Interviews were conducted in groups of 3 to 20 individuals. Participants were instructed to complete the questionnaire packet, in order, without looking back at any of their previous answers. Experimenters were present at all times to answer any questions.

Each packet began with the open-ended portion of the possible selves questionnaire, followed by the closed portion of the possible selves questionnaire. Participants then completed the remaining items concerning memory beliefs. Last, participants completed a Participant Information form, in order to provide us with basic demographic information and the SF-36 health survey. Due to experimenter error, the majority of the older adults completed the SF-36 one week after completing the questionnaire packet.
Table 3-1. Mean Education and Health Ratings

<table>
<thead>
<tr>
<th>Age group</th>
<th>Mean education</th>
<th>Standard deviation</th>
<th>Mean health</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>13.22</td>
<td>.765</td>
<td>15.37</td>
<td>2.85</td>
</tr>
<tr>
<td>Young-old</td>
<td>14.75</td>
<td>2.99</td>
<td>16.06</td>
<td>3.14</td>
</tr>
<tr>
<td>Old-old</td>
<td>13.08</td>
<td>2.11</td>
<td>15.11</td>
<td>3.58</td>
</tr>
</tbody>
</table>
Table 3-2. Percentage of Agreement Between Independent Raters

<table>
<thead>
<tr>
<th>Type of selves</th>
<th>Percentage agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoped-for</td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>85.9%</td>
</tr>
<tr>
<td>Dependency</td>
<td>94.5%</td>
</tr>
<tr>
<td>Memory</td>
<td>100%</td>
</tr>
<tr>
<td>Cognitive</td>
<td>88.3%</td>
</tr>
<tr>
<td>Feared</td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>89%</td>
</tr>
<tr>
<td>Dependency</td>
<td>93.7%</td>
</tr>
<tr>
<td>Memory</td>
<td>99.2%</td>
</tr>
<tr>
<td>Cognitive</td>
<td>93.8%</td>
</tr>
</tbody>
</table>
CHAPTER 4
STUDY 1 RESULTS

Analyses of variance were conducted to examine spontaneous memory-related selves as a function of age group. In addition to the analyses of variance, cross tabs were also conducted because the actual number of individuals spontaneously reporting memory-related selves was low. These additional analyses examined whether the number of individuals listing these selves differed significantly by age group. Significant group differences were identified in each case by using Tukey’s post hoc tests at the .05 level.

**Spontaneous Selves**

An analysis of variance was conducted to examine whether the three age groups (young, young-old, and old-old) differed by the total number of memory-related selves each group spontaneously listed. Memory-related selves included items such as: “improving or losing my memory,” and “becoming an Alzheimer’s patient.” In general, older adults spontaneously reported significantly more memory-related selves than younger adults, $F(2, 127) = 7.82, p < .000, \eta^2 = .110$, in the open-ended questionnaire, in support of Hypothesis 1. In fact, younger adults did not spontaneously report any memory-related selves. Contrary to the prediction in Hypothesis 2, no significant differences were found in the number of memory-related selves reported by the old-old and young-old.

To further explore the spontaneous reports of the older adult groups, older participants were divided into those who spontaneously mentioned a memory self
and those who did not. A cross-tabulation of the two older groups (young-old and old-old) listing spontaneous memory-related selves was not significant, Pearson $X^2 (N = 85, df = 1) = .17, p > .60$, further supporting the notion that these two older groups did not differ in their spontaneous report of memory selves. See Table 4.1.

Further, a closer look at the types of memory-related selves (none, hoped-for, or feared) reported by the young-old and the old-old groups revealed a significant difference in the types of memory-related selves reported by each age group, $F (2, 129) = 7.468, p < .001$, $\eta^2 = .105$, such that the old-old and young-old groups both reported a greater number of feared memory-related selves than hoped-for memory-related selves as predicted in Hypothesis 3. To further examine the types of memory-related selves reported by the older adults, participants were categorized into: those who primarily reported hoped-for memory-related selves, those who primarily reported feared memory-related selves, and those who did not report any memory-related selves. Because the majority of participants’ spontaneous memory selves represented fears, any participant who mentioned a hoped-for memory self was categorized as hoped-for. Those with feared selves and no hoped-for selves mentioned spontaneously were classified as feared. A cross-tabulation of the two older adult groups (young-old, old-old) by spontaneous self-categorization (none, hoped-for, feared) was not significant: Pearson $X^2 (N = 85, df = 2) = -.04, p > .70$. In the two older groups, there were about the same number of individuals reporting hoped-for and feared memory selves. See Table 4.2.
In addition to memory-related selves, participants also included items such as remaining mentally alert, improving mental capacity and losing mental faculties on the open-ended portion of the questionnaire. To be conservative about the memory category, these items were not initially coded as memory-related selves. These cognitive items were later combined with the memory-related selves above to form a general cognitive category. An analysis of variance was conducted examining the number of cognitive selves reported by the three age groups (young, young-old, and old-old). The younger adults reported fewer cognitive selves than both the young-old and the old-old, $F (2, 129) = 9.02, p < .000, \eta^2 = .045$. No significant differences were found between the number of cognitive selves reported by the young-old and old-old.

Individuals were divided into two categories, those who spontaneously mentioned a cognitive and/or memory-related self and those who did not. Again, a cross-tabulation of the three age groups (young, young-old, old-old) showed significant differences when including the spontaneously reported cognitive selves with the memory-related selves: Pearson $\chi^2 (N=130, df = 2) = 16.025, p< .000$. The younger adults were less likely to report cognitive selves than the two older adult groups. See Table 4.3.

**Selves Endorsed on Closed-ended Questionnaire**

A mixed analysis of variance was conducted to examine the total number and type of memory-related selves (hoped-for or feared) endorsed on the closed-ended questionnaire, by age group (young, young-old, and old-old). Age group was the between-subjects factor and type of memory self was the within-subjects factor. Overall, no significant age differences were revealed in the number of
selves endorsed on the closed-ended questionnaire by the three age groups, $F(1, 127) = 1.58$, $p > .20$. However, all three groups endorsed more feared than hoped-for memory-related selves on the closed-ended questionnaire, $F(1, 127) = 82.68$, $p < .000$, $\eta^2 = .394$. See Table 4.4.

An additional mixed analysis of variance was conducted to examine the total number and type of memory-related selves (hoped-for or feared) endorsed on the closed-ended questionnaire by age group (young-old and old-old) and by type of memory self spontaneously reported (none, hoped-for, or feared) on the open-ended portion of the questionnaire. The analysis confirmed a main effect for closed selves, $F(1, 79) = 30.19$, $p < .000$, $\eta^2 = .277$. Again, the young-old and old-old endorsed more feared selves than hoped-for selves on the closed portion of the questionnaire. No other significant differences were found.

Next both closed and open memory-related selves were examined together. Individuals were categorized into two groups: those with predominately hoped-for selves and those with predominately feared selves. This categorization utilized both the open and closed item responses. This involved a two-step process. Most individuals on the open and closed portions of the possible selves questionnaires tended to mention feared memory-related selves. Therefore, anyone reporting a spontaneous feared memory-related self, but no spontaneous hoped-for self, was categorized as “feared.” Next, individuals were categorized as “hoped-for” if they reported a spontaneous hoped-for memory-related self and endorsed an equal or greater number of hopes than fears about memory on the closed portion of the questionnaire. A cross-tabulation of the three age groups
(young, young-old, old-old) by self-categorization (hoped-for or feared) did not reveal any significant differences: Pearson’s $X^2 (N = 130, \text{df} = 1) = .13, p = .937$ (See Table 4.8).

The memory beliefs measures were highly related to each other, both theoretically and empirically as shown by the age-partialled correlations in Table 4.5. Previous research has shown that older and younger adults answer memory beliefs questions differently. Therefore, age was partialled out to ensure that the correlations reflected the relationships between the variables of interest independent of age. A multivariate analysis of variance was conducted to compare the three age groups (young, young-old, old-old) across the following dependent variables: achievement, locus, anxiety, memory value, MCI, and memory self-evaluation. Age differences were significant, $F (12, 230) = 4.77, p < .000, \text{eta}^2 = .199$, and this significant result was further explored in univariate tests.

Significant age differences were found for memory value, $F (2, 119) = 24.59, p < .000, \text{eta}^2 = .292$, due to the fact that older adults in both the old-old and young-old groups placed a greater value on memory than younger adults. The young-old and old-old did not significantly differ from one another, as shown in Table 8. Significant age differences were also found for the MCI scale which measured fear of Alzheimer’s disease, $F (2, 121) = 5.99, p < .003, \text{eta}^2 = .091$, with older adults in both groups reporting greater fear of Alzheimer’s disease than younger adults. The old-old also reported greater levels of anxiety in response to memory-related tasks than both the young-old and young adults, $F$
Next, significant age differences were found for achievement, $F(2, 121) = 3.57, p = .03, \eta^2 = .057$. For achievement, the old-old placed significantly greater importance on performing well on memory tasks than did younger adults. The young-old did not significantly differ from the old-old or the younger adults. No significant age differences were found for Locus, $F(2, 121) = 1.56, p > .20$, suggesting that participants in each age group believed they had similar amounts of control over their memory ability. Further, no significant age differences were found on the Memory Self-Evaluation scale, $F(2, 121) < 1, p > .50$. Thus young adults, the young-old and the old-old all reported similar levels of ability and satisfaction regarding their recent memory performance. See Table 4.6.

An additional multivariate analysis of variance examined the memory beliefs measures as a function of age and the type of memory-related selves primarily reported in the open-ended questionnaire, using the categorization described previously (none, hoped-for, feared), and including only the young-old and old-old (because the younger adults reported no memory selves on the open-ended questionnaire). The dependent variables were achievement, locus, anxiety, memory value, MCI, and memory self-evaluation. No significant age differences in memory beliefs were found between the young-old and old-old groups, $F(6, 66) = .77, p > .50$. Type of memory self spontaneously reported was close to significance, $F(12, 134) = 1.73, p > .06$, so univariate analyses were conducted. Significant differences were found for anxiety, $F(2, 76) = 5.54, p = .006, \eta^2 = .135$, due to the fact that participants who spontaneously listed
hoped-for memory-related selves also reported greater levels of anxiety when faced with memory-related activities than participants who did not list any memory-related selves. Individuals reporting feared memory selves did not significantly differ from those with hoped-for selves or with no memory selves at all. A significant difference was also found for the MCI scale, $F(2, 76) = 4.92$, $p = .01$, $\eta^2 = .122$. Participants spontaneously reporting hoped-for memory-related selves also reported a greater fear of Alzheimer’s disease than participants who reported no memory selves. Again, individuals reporting feared memory selves did not differ from those with hoped-for selves or with no memory selves. Last, a significant difference was observed for the memory self-evaluation scale, $F(2, 76) = 5.83$, $p = .003$, $\eta^2 = .141$. Participants reporting hoped-for memory-related selves evaluated their recent memory performance less favorably than participants with feared memory-related selves and those reporting none at all. All other memory beliefs measures showed no variation as a function of type of spontaneous memory self (See Table 4.7).

**Additional Analyses**

Several additional analyses were conducted to compare the current results with prior research on possible selves. Although this study focused on memory-related selves, participants were asked to generate as many future selves as they could think of, both hoped-for and feared. We compared the mean number of hoped-for and feared selves spontaneously generated by age group. Overall, the old-old spontaneously reported significantly fewer hoped-for selves than the younger adults, $F(2, 129) = 6.83$, $p < .002$, $\eta^2 = .097$. The young-old did not significantly differ from either the old-old or the younger adults in the number of
hoped-for selves they generated. The old-old also spontaneously reported significantly fewer feared selves than both the young-old and younger adults, \( F (2, 129) = 10.15, p < .000, \eta^2 = .14 \). See Table 4.9.

Participants were also asked to identify their most important hoped-for self from the list of possible selves they generated. Next they were asked to indicate how capable they felt of accomplishing this most important self, and how likely it is that this self would come true. We have compared these mean capability and likelihood ratings for the most important hoped-for self by age group. The old-old and young-old rated themselves as significantly less capable of accomplishing their most important hoped-for self than the younger adults, \( F (2, 125) = 11.85, p < .000, \eta^2 = .16 \). Further, the old-old and young-old rated their most important hoped-for self as significantly less likely to come true than the younger adults, \( F (2, 125) = 15.84, p < .000, \eta^2 = .21 \). See Table 4.10.

Participants were also asked to identify their most dreaded feared self from the list they generated. Again, they were asked to indicate how capable they felt of preventing this self and how likely it is that this self would come true. We have compared these mean capability and likelihood ratings for the most dreaded feared self by age group. The old-old and young-old rated themselves as significantly less capable of preventing their most dreaded feared self than the younger adults, \( F (2, 123) = 8.00, p < .001, \eta^2 = .12 \). The old-old and young-old also reported that their most dreaded feared self was more likely to come true than did the younger adults, \( F (2, 123) = 5.89, p < .004, \eta^2 = .09 \). See Table 4.11.
Last, participants were asked to list the number of goal-oriented activities recently undertaken to attain their most important hoped-for self and to avoid their most dreaded feared self. The old-old reported significantly fewer goal-oriented activities recently undertaken to attain their most important hoped-for self than both the young-old and younger adults, $F(2, 129) = 9.38, p < .000, \eta^2 = .13$. No significant differences were found between the three age groups for the number of goal-oriented activities undertaken to avoid their most dreaded feared self, $F(2, 129) = 2.96, p > .05$ (Table 4.12).

These results are generally consistent with previous research on possible selves. In general, older adults report fewer possible selves than younger adults (Cross & Markus, 1991). Further, previous research has also shown that older adults feel less capable of attaining or avoiding their most important or most dreaded selves than younger adults (Cross & Markus, 1991). The current results are not consistent with previous research showing that older adults report undertaking a greater number of goal-oriented activities to attain or avoid their most important or most dreaded selves than younger adults (Cross & Markus, 1991).
Table 4-1. Percentage of Spontaneous Memory Selves Reported by Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>No memory self</th>
<th>Yes memory self</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>Young-old</td>
<td>69.4%</td>
<td>30.6%</td>
</tr>
<tr>
<td>Old-old</td>
<td>73.5%</td>
<td>26.5%</td>
</tr>
</tbody>
</table>
Table 4-2. Type of Spontaneous Memory Selves by Age Group

<table>
<thead>
<tr>
<th>Age group</th>
<th>Hoped-for</th>
<th>Feared</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young-old</td>
<td>11.1%</td>
<td>19.5%</td>
<td>69.4%</td>
</tr>
<tr>
<td>Old-old</td>
<td>10.2%</td>
<td>16.3%</td>
<td>73.5%</td>
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</tbody>
</table>
Table 4-3. Spontaneous Cognitive Selves by Age Group

<table>
<thead>
<tr>
<th>Age group</th>
<th>No cognitive self</th>
<th>Yes cognitive self</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>71.1%</td>
<td>28.9%</td>
</tr>
<tr>
<td>Young-old</td>
<td>27.8%</td>
<td>72.2%</td>
</tr>
<tr>
<td>Old-old</td>
<td>42.9%</td>
<td>57.1%</td>
</tr>
</tbody>
</table>
Table 4-4. Mean Number of Memory Selves Endorsed on Closed Questionnaire

<table>
<thead>
<tr>
<th>Age group</th>
<th>Mean feared</th>
<th>Standard deviation</th>
<th>Mean hoped-for</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>6.71</td>
<td>1.14</td>
<td>5.04</td>
<td>1.69</td>
</tr>
<tr>
<td>Young-old</td>
<td>6.97</td>
<td>.91</td>
<td>5.69</td>
<td>1.14</td>
</tr>
<tr>
<td>Old-old</td>
<td>6.67</td>
<td>1.94</td>
<td>5.24</td>
<td>1.70</td>
</tr>
<tr>
<td></td>
<td>ANXIETY</td>
<td>ACHIEVE</td>
<td>LOCUS</td>
<td>MCI</td>
</tr>
<tr>
<td>---------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>--------</td>
</tr>
<tr>
<td>ANXIETY</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>ACHIEVE</td>
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<td></td>
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<tr>
<td></td>
<td>(176)</td>
<td></td>
<td>(177)</td>
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</tr>
<tr>
<td></td>
<td>P = .00</td>
<td></td>
<td>P = .001</td>
<td></td>
</tr>
<tr>
<td>LOCUS</td>
<td>-.1006</td>
<td>.2415</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(176)</td>
<td>(177)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P = .18</td>
<td>P = .001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCI</td>
<td>.4386</td>
<td>.1757</td>
<td>-.2875</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>(176)</td>
<td>(177)</td>
<td>(177)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P = .00</td>
<td>P = .02</td>
<td>P = .00</td>
<td></td>
</tr>
<tr>
<td>VALUE</td>
<td>.1106</td>
<td>.3542</td>
<td>.2058</td>
<td>.0491</td>
</tr>
<tr>
<td></td>
<td>(176)</td>
<td>(177)</td>
<td>(177)</td>
<td>(177)</td>
</tr>
<tr>
<td></td>
<td>P = .14</td>
<td>P = .00</td>
<td>P = .006</td>
<td>P = .51</td>
</tr>
<tr>
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<td>-.1459</td>
<td>.0724</td>
<td>-.3915</td>
</tr>
<tr>
<td></td>
<td>(175)</td>
<td>(176)</td>
<td>(176)</td>
<td>(176)</td>
</tr>
<tr>
<td></td>
<td>P = .00</td>
<td>P = .05</td>
<td>P = .34</td>
<td>P = .00</td>
</tr>
</tbody>
</table>

Note: These partial correlations have age variance removed.
Table 4-6. Mean Memory Belief Ratings by Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Anxiety dev</th>
<th>Locus dev</th>
<th>Achievement dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>2.92</td>
<td>3.53</td>
<td>3.80</td>
</tr>
<tr>
<td>Young-old</td>
<td>2.90</td>
<td>3.69</td>
<td>3.92</td>
</tr>
<tr>
<td>Old-old</td>
<td>3.30</td>
<td>3.70</td>
<td>4.03</td>
</tr>
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</table>

Mean Memory Belief Ratings by Age Group (continued)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Fear of Alzheimer’s dev</th>
<th>Memory value dev</th>
<th>Self evaluation dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>1.87</td>
<td>2.42</td>
<td>14.40</td>
</tr>
<tr>
<td>Young-old</td>
<td>2.22</td>
<td>3.33</td>
<td>14.57</td>
</tr>
<tr>
<td>Old-old</td>
<td>2.45</td>
<td>3.48</td>
<td>14.31</td>
</tr>
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Table 4-7. Analysis of Variance for Dependent Subscales by Type of Memory Self Spontaneously Reported

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>p</th>
<th>eta²</th>
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</thead>
<tbody>
<tr>
<td>Age Group (Young-old, Old-old)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>1</td>
<td>0.38</td>
<td>0.54</td>
<td>0.005</td>
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<tr>
<td>Achievement</td>
<td>1</td>
<td>0.81</td>
<td>0.37</td>
<td>0.011</td>
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<tr>
<td>Locus</td>
<td>1</td>
<td>1.80</td>
<td>0.19</td>
<td>0.025</td>
</tr>
<tr>
<td>MCI</td>
<td>1</td>
<td>0.68</td>
<td>0.41</td>
<td>0.010</td>
</tr>
<tr>
<td>Value</td>
<td>1</td>
<td>0.98</td>
<td>0.33</td>
<td>0.014</td>
</tr>
<tr>
<td>Eval</td>
<td>1</td>
<td>0.09</td>
<td>0.76</td>
<td>0.001</td>
</tr>
<tr>
<td>Source</td>
<td>df</td>
<td>F</td>
<td>p</td>
<td>eta^2</td>
</tr>
<tr>
<td>------------------------</td>
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<td>-------</td>
</tr>
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<td>Anxiety</td>
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<td>0.14</td>
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<td>Achievement</td>
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<td>0.58</td>
<td>0.56</td>
<td>0.02</td>
</tr>
<tr>
<td>Locus</td>
<td>2</td>
<td>0.94</td>
<td>0.40</td>
<td>0.03</td>
</tr>
<tr>
<td>MCI</td>
<td>2</td>
<td>4.92</td>
<td>0.01</td>
<td>0.12</td>
</tr>
<tr>
<td>Value</td>
<td>2</td>
<td>0.46</td>
<td>0.64</td>
<td>0.01</td>
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<tr>
<td>Eval</td>
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<td>5.83</td>
<td>.005</td>
<td>0.14</td>
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Table 4-8. Type of Memory Selves Reported By Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Feared selves</th>
<th>Hoped-for selves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>35.7%</td>
<td>32.6%</td>
</tr>
<tr>
<td>Young-old</td>
<td>27.4%</td>
<td>28.3%</td>
</tr>
<tr>
<td>Old-old</td>
<td>36.9%</td>
<td>39.1%</td>
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</tbody>
</table>
Table 4-9. Mean Number of Selves by Age Group

<table>
<thead>
<tr>
<th>Age group</th>
<th>Hoped-for</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>6.13</td>
<td>2.75</td>
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<tr>
<td>Young-old</td>
<td>5.47</td>
<td>2.77</td>
<td></td>
</tr>
<tr>
<td>Old-old</td>
<td>4.29</td>
<td>1.85</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Age group</th>
<th>Feared</th>
<th>Mean</th>
<th>Standard deviation</th>
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<tbody>
<tr>
<td>Young</td>
<td>4.29</td>
<td>1.66</td>
<td></td>
</tr>
<tr>
<td>Young-old</td>
<td>3.92</td>
<td>2.10</td>
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<tr>
<td>Old-old</td>
<td>2.76</td>
<td>1.44</td>
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Table 4-10. Mean Capability and Likelihood Ratings: Feared

<table>
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<tr>
<th>Age group</th>
<th>Mean capability</th>
<th>Standard deviation</th>
<th>Mean likelihood</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>5.73</td>
<td>1.19</td>
<td>2.93</td>
<td>1.51</td>
</tr>
<tr>
<td>Young-old</td>
<td>4.54</td>
<td>1.80</td>
<td>4.09</td>
<td>1.56</td>
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<tr>
<td>Old-old</td>
<td>4.61</td>
<td>1.63</td>
<td>3.91</td>
<td>1.87</td>
</tr>
</tbody>
</table>
Table 4-11. Mean Capability and Likelihood Ratings: Hoped-for

<table>
<thead>
<tr>
<th>Age group</th>
<th>Mean capability</th>
<th>Standard deviation</th>
<th>Mean likelihood</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>6.22</td>
<td>.82</td>
<td>6.31</td>
<td>.76</td>
</tr>
<tr>
<td>Young-old</td>
<td>5.60</td>
<td>.98</td>
<td>5.00</td>
<td>1.35</td>
</tr>
<tr>
<td>Old-old</td>
<td>5.04</td>
<td>1.50</td>
<td>4.93</td>
<td>1.61</td>
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</table>
Table 4-12. Mean Number of Goal Activities

<table>
<thead>
<tr>
<th>Age group</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoped-for</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young</td>
<td>2.09</td>
<td>1.38</td>
</tr>
<tr>
<td>Young-old</td>
<td>1.06</td>
<td>.90</td>
</tr>
<tr>
<td>Old-old</td>
<td>2.03</td>
<td>1.56</td>
</tr>
<tr>
<td>Feared</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young</td>
<td>1.98</td>
<td>.21</td>
</tr>
<tr>
<td>Young-old</td>
<td>2.31</td>
<td>.24</td>
</tr>
<tr>
<td>Old-old</td>
<td>1.55</td>
<td>.21</td>
</tr>
</tbody>
</table>
The current study also sought to examine whether younger adults could be primed to spontaneously list memory-related possible selves. In Study 1, younger adults did not spontaneously report any memory-related possible selves, either hoped-for or feared. These initial results suggested that memory, and memory loss specifically, was not salient to younger adults. This study examined whether or not memory could be brought into focus for younger adults, thus prompting them to spontaneously report memory-related selves. Prior research suggests that specific testing conditions can serve as primes to activate belief schemas during memory testing. Levy (1996) examined the effects of age-related stereotypes in a series of two studies. In the first study a priming task exposed each participant to either positive or negative words, related to either wisdom or memory decline, after a series of memory tests. The words flashed quickly on a computer screen, so the participants were not aware of having seen them. This task was designed to activate participants’ internal stereotypes about aging and memory. After the priming task, a third of the participants immediately completed a second series of memory tests and questionnaires. Levy (1996) found that the priming activity was successful and influenced memory performance, attitudes toward aging, and beliefs about memory in older adults. The older adults primed in the negative condition performed more poorly and reported more negative attitudes about aging and memory. In contrast, the older
adults primed in the wisdom condition, performed better and reported more positive attitudes toward aging and memory. The results indicated that priming was effective in accessing the different beliefs older adults hold toward memory and aging.

Rahhal et al. (2001) also manipulated beliefs in relation to memory testing. They examined the effects of instructional manipulations (memory-emphasis and memory-neutral instructions). In the memory-emphasis condition, participants were told that the activity was a memory test, and the need to remember information was stressed. The memory-neutral condition focused on the participant’s ability to learn new facts and did not mention memory or remembering. In each condition, participants were presented with 60 trivia questions labeled with no answer or labeled as true or false. During the recall phase, 12 new items were mixed in with the original 60 questions. Participants identified each statement as new or old and as true, false, or blank. For both studies, the authors found that when instructions emphasized memory and remembering facts, older adults performed worse than younger adults on the recall task. However, when the instructions did not emphasize memory, and instead focused on learning new information, no significant age differences were obtained in recall. These studies suggest that the type of instruction presented to older adults can influence their performance by reinforcing age-related beliefs and stereotypes about memory and memory performance (Rahhal et al., 2001).

The previous studies suggest that memory testing under particular instructional conditions can prime beliefs and stereotypes in older adults. There
is also considerable literature showing that beliefs and feelings can be altered in
memory studies with younger adults as well. Bower and colleagues (e.g., Bower,
1994) have repeatedly shown that mood can be manipulated in college students,
with a subsequent effect of memory. Further, such manipulations affect the
types of past memories recalled, judgments of personal competence, and
judgments about the likelihood of future events (Bower, 1994). Taken together,
the studies above suggest that memory testing under certain circumstances can
affect thoughts about the self in relation to memory. That is the effect we expect
here. The current study planned to use memory tasks and questionnaires in a
similar fashion as the studies described above. Exposing younger adults to a
challenging memory task should access their memory-related beliefs, making it
more likely that younger adults might spontaneously mention a memory-related
possible self.

In the current study, priming was accomplished in two ways. First,
participants in the primed condition completed a challenging memory activity.
Second, they completed several memory beliefs questionnaires. Both of those
activities preceded their completion of the open-ended and closed possible
selves questionnaires. By having the primed group complete the memory activity
and memory questionnaires before the possible selves questionnaires, memory
should be more salient to these individuals. Consequently, these younger adults
should be more likely to generate memory-related possible selves on the open-
ended questionnaire than the younger adults in the unprimed condition.
CHAPTER 6
STUDY 2 METHODS

Participants

Of 97 younger adults recruited from the University of Florida’s research participant pool, 52 were primed and 45 were unprimed. Age, health and education were examined as a function of priming condition. No significant differences in age, $F(1, 96) = 2.019, p > .10$; health, $F(1, 94) < 1, p > .25$; or education, $F(1, 94) < 1, p > .50$ were found between primed and unprimed young adults. See Table 6.1.

Procedure

Young adults in the primed condition received the same questionnaire packet used in Study 1, but in an altered order. First each participant studied a 15-item shopping list created by West, Welch, & Thorn (2001). Participants were given 1 minute to study the list and a maximum of 4 minutes to recall the list. Next, primed participants completed the memory belief measures, followed by the open-ended and closed possible selves questionnaires, respectively. Lastly, primed participants completed the participant information form and SF-36 health survey.
Table 6-1. Mean Demographic Information for Primed and Unprimed Young Adults

<table>
<thead>
<tr>
<th>Condition</th>
<th>Mean age</th>
<th>Standard deviation age</th>
<th>Mean health</th>
<th>Standard deviation health</th>
<th>Mean education</th>
<th>Standard deviation education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primed</td>
<td>19.15</td>
<td>1.23</td>
<td>2.13</td>
<td>.742</td>
<td>13.37</td>
<td>1.27</td>
</tr>
<tr>
<td>Unprimed</td>
<td>18.84</td>
<td>.852</td>
<td>2.28</td>
<td>.766</td>
<td>13.22</td>
<td>.765</td>
</tr>
</tbody>
</table>
CHAPTER 7
STUDY 2 RESULTS

The younger adults in the unprimed condition did not spontaneously report any memory-related possible selves as expected. Further, the majority of primed younger adults did not report memory-related selves (only two younger adults in the primed condition listed a memory-related self), therefore comparisons between the number of spontaneous memory-related selves generated by the primed and unprimed groups were not conducted.

An analysis of variance was conducted to examine the total number of memory-related selves (spontaneously generated plus those endorsed on the closed-ended questionnaire) by priming condition (primed and unprimed). No significant difference was observed in the number of memory-related selves endorsed by primed and unprimed younger adults, $F(1, 96) < 1, p > .50$, (primed, $M = 11.52, SD = 2.07$; unprimed, $M = 11.76, SD = 2.24$).
Memory-related possible selves are important for two main reasons. First, these selves identify what a person hopes to become or fears becoming. Cross and Markus (1994) stated that possible selves can help describe the direction of development an individual is anticipating. Thus the presence or absence of memory selves will provide a more complete picture of how individuals view their own cognitive development toward the latter half of the lifespan. Next, the presence or absence of these selves may ultimately affect behavior. Hooker has shown that the presence of health-related possible selves are related to health behaviors such as seeking preventative medical treatment and exercising. Specifically, individuals with a health-related self were more likely to report participating in health behaviors than were individuals that placed a high value on health alone (Hooker & Kaus, 1992). From this perspective, possible selves act as goals, and may help motivate individuals into action. These future selves provide a measure to which current selves can be compared and evaluated (Cross & Markus, 1991). When the discrepancy between the current self and a future hoped-for self becomes too great (or the distance between the current self and a future feared self becomes too close), something must be done.

From a developmental perspective, Cross and Markus (1991) have suggested that possible selves may actually become more motivating with age. Older adults experience less conflict among their competing future selves.
Further, their future selves are more closely tied to their current selves, and are therefore more specific, well defined, and personally meaningful. As such, the steps required to avoid or achieve a certain self may be more clearly defined and motivating, as one gets older.

This study was the first to look specifically at memory-related possible selves. The results confirmed that the types of possible selves spontaneously generated, that is, those selves that are most important or central to an individual’s self-concept, differ with age. Younger adults did not spontaneously report any memory-related possible selves. Even after cognitive and memory-related selves were combined, younger adults spontaneously reported fewer cognitive selves than older adults. From this we can conclude that younger adults are not concerned about their memory, nor are they particularly focused on their future cognitive abilities. The future hopes and fears of younger adults are focused elsewhere.

In contrast, older adults did report memory-related selves. Further, the memory selves reported by older adults were primarily feared selves, like dementia. Both older and younger adults expect memory decline to occur with age, and the greatest decline is expected to occur in the later years of life (Hertzog et al., 1999; Lachman et al., 1995; Lineweaver & Hertzog, 1998; Ryan, 1992). Older adults also face social expectations of memory decline. Episodes of forgetting among the elderly are rated more seriously than when the same episodes occur for a younger person (Erber, 1989). Further, when forgetting occurs among older adults, it is more likely to be viewed as indicative of a need
for medical attention or cognitive evaluation (Erber, 1989). These social
expectations and stereotypes contribute to the views older adults have about
themselves and their memory ability. On a personal level, older adults also
report lower levels of control over improving or maintaining their memory abilities
(Hultsch et al., 1987; Lachman et al., 1995) and feel less capable of completing
memory tasks (Berry et al., 1989; Hultsch et al., 1987). With personal and social
expectations of memory loss looming on the horizon, it is not surprising to find
that older adults have incorporated these beliefs and expectations into their self-
concepts.

Cavanaugh et al. (1998) have hypothesized that memory is schematic for
older adults. Individuals are said to be schematic for a particular domain or trait
when they consider it both highly important to and highly descriptive of
themselves (Cavanaugh et al., 1998; Cross & Markus, 1994). Thus, for older
adults, memory and memory loss have more personal importance (Cavanaugh et
al., 1998). The current results support this idea. If an individual spontaneously
generates a possible self in a specific domain, like health or memory, that
domain is of central importance to their self-concept. For these individuals,
memory or health are important in general but also define who they are in some
way. The older adult data in this research may reflect this kind of schematicity.
When memory and cognitive selves were combined, 63.5% of older adults
spontaneously listed at least one memory or cognitive-related self. This
suggests the prominence of cognition as a key element in the self-concept of the
older group.
As part of the self-concept, these memory-related selves may play an important role, guiding behavior in several ways. These selves may create shifts in information processing (Kato & Markus, 1993), allowing information related to a particular self to be processed more quickly and efficiently (Cross & Markus, 1994; Ruvolo & Markus, 1992). For instance, an episode of forgetting will be differentially attended to and may take on a different meaning for an individual with a memory-related possible self. Next, the existence of a memory self within the self-concept can also result in changes in levels of motivation and self-efficacy (Cameron, 1999; Cross & Markus, 1991; Hooker, 1992). For example, Hooker has shown that individuals with health-related selves were more likely to report engaging in health-related behaviors and felt more capable of attaining health-related goals than individuals who reported valuing health, but listed no health-related selves (Hooker & Kaus, 1992). Last, these selves may affect the level of effort and persistence an individual is willing to put forth on activities related to a specific self (Ruvolo & Markus, 1992). For instance, individuals with a memory-related self may be more likely to seek out challenging cognitive activities, further once engaged in a task, they may be more likely to stick with it.

Interestingly, the three age groups did not significantly differ in the number of memory-related selves endorsed on the closed portion of the questionnaire. Thus, when presented with positive and negative future memory outcomes, both groups identified and endorsed similar items. However, all three groups endorsed a greater number of feared items than hoped-for items on the closed portion of the questionnaire. When asked about future selves they would like to
avoid, both groups were likely to circle memory-related items like “Alzheimer’s patient” or “senile.” However, when asked about future selves they would like to attain, they were less likely to circle the positive memory-related items such as “mentally alert all my life” or “sound mind.” There may be several reasons for these differences. First, negative memory outcomes may be more salient to both groups. Previous research has shown that younger and older adults expect memory decline to occur as they age (Hertzog et al., 1999; Lachman et al., 1995; Lineweaver & Hertzog, 1998; Ryan, 1992). The current results appear to confirm a shared stereotype among older and younger adults regarding aging and memory. Second, we know what it means to have a poor memory, to become senile or demented. We have terms to describe and diagnose these problems in a very concrete way. It may be that these terms are simply easier to identify than the more general positive memory-related items.

The three age groups differed across several of the memory beliefs measures, verifying results from earlier research examining age differences in memory beliefs. In general, the results indicate that the old-old may be more concerned about their memory. The old-old reported a greater fear of Alzheimer’s disease than younger adults, however the young-old did not significantly differ from the old-old or the younger adults. Further, the old-old reported greater levels of anxiety in response to memory tasks than both the young-old and younger adults. Consequently the old-old may fear that participating in a memory activity might confirm expected memory loss. Again, these results are consistent with previous studies showing that older adults report
greater levels of anxiety and a greater fear of Alzheimer’s disease than younger adults (Lachman et al., 1995) and suggest that memory and memory loss are more salient to older adults than to younger adults.

Along these lines, the old-old and the young-old both valued memory more than the younger adults. Thus both the old-old and the young-old placed more importance on performing well on memory tasks than did younger adults. For older adults, performing well on a memory task might act as evidence that their memory is intact. It may also be that the older adults place a greater value on performing well in general, regardless of the task, because of heightened concerns about perceived age-related losses. The younger adults, in contrast, may accept their cognitive abilities as strong and stable. For them, memory performance may not be as important because it has less diagnostic value (Hess, Auman, Colcombe, & Rahhal, 2003).

Contrary to what may have been expected, individuals who reported only feared memory-related selves did not appear to differ from those with only a hoped-for memory self or those with no memory selves at all, on the memory self-evaluation scale. These individuals listed a memory-related fear, but still reported feeling confident about their recent memory ability. Further, individuals with a feared memory self or no memory self at all were less anxious and reported less fear of Alzheimer’s disease than individuals with a hoped-for memory self. Cross and Markus (1991) have discussed this phenomena in terms of defensive elaboration. Individuals spontaneously listing a memory-related fear may be experiencing declines in memory ability or increased episodes of
forgetting, resulting in the presence of a memory fear. However, these individuals may be able to feel content with their current memory ability by comparing current ability to a future that appears far worse (Cross & Markus, 1991). As a result they are less anxious and have less immediate fear because their current memory abilities appear intact when compared to the severe impairment expected in the future. This view has not been extensively examined in the literature, and may be a useful concept for future investigation.

Last, in Study 2, priming did not elicit any memory-related selves from younger adults. We expected that younger adults in the primed condition would be more likely than unprimed younger adults to generate memory-related possible selves. The memory task included in the priming activities may not have been sufficiently challenging to activate memory-related possible selves in younger adults. The primed younger adults correctly recalled approximately 11 out of 15 shopping list items (M = 11.17, SD = 1.72). A more difficult memory task might be more successful in eliciting these types of selves from younger adults in the future. On the other hand, it may be the case that memory is so low in salience for younger adults that they will not spontaneously generate memory-related selves, even after a taxing memory activity. A primed older adult group would be interesting to examine to determine whether more memory selves would be generated when older adults are confronted with a challenging memory task. Stereotype threat research suggests that older adults, for whom memory is self-defining, may react differently when faced with a memory task (Hess et al., 2003). Specifically, their performance may suffer as they anxiously strive to
debunk the negative stereotypes surrounding aging and memory (Hess et al., 2003). More importantly, after experiencing anxiety over a challenging memory task, thoughts and stereotypes about the self, aging, and memory become more accessible. If this is the case it should be apparent in the possible selves generated by these older adults after priming.

We must be cautious when interpreting these results due to the fact that only 28 percent of the older participants spontaneously reported memory-related hopes and fears. In particular, we must point out that the group of individuals who reported a hoped-for memory self was small. Further, half of these individuals endorsed both a hoped-for and a feared memory self. Although memory may be particularly salient for these individuals with both a memory-related hope and fear, further investigation is warranted before any conclusion can be made.

The cross-sectional nature of the current study also limits the conclusions we can currently draw. From the current data, we cannot conclude that memory-related selves increase with age, however the current results warrant further exploration. A longitudinal study of memory-related possible selves will be a necessary and exciting endeavor, and will help us explore when memory selves begin to appear, and if the nature of these selves as hoped-for or feared change over time. Along the same lines, the current study did not recruit a middle-aged sample. It will be important to examine this age group in the future, to understand when memory-related possible selves begin to appear in the selves spontaneously generated by older adults. Greater cultural diversity would also
extend this research, and help determine whether memory selves are equally apparent across different racial and cultural backgrounds.

A baseline test of memory ability was not included in the current study. Although the memory evaluation scale showed that younger and older adults in the current sample reported similar levels of performance and satisfaction regarding their recent memory performance, a direct measure of actual ability may be useful. A direct measure of memory performance would allow us to examine how individuals with hoped-for or feared memory-related selves actually performed in comparison to individuals not reporting a memory-related self. It might be the case, for instance, that feared selves are more strongly related to actual performance than to other beliefs about memory.

Last, group testing may have limited the amount of data collected on the open-ended portion of the possible selves questionnaire. Most of the previous research on possible selves has been conducted using individual interview sessions. This was done because the questionnaire could potentially be confusing to older adults (Hooker, 1992; Hooker & Kaus, 1992; Hooker, 1999). However, our results are consistent with those obtained from individual interviews, suggesting that this methodological change was not problematic. On average, 86% of the older participants in these prior studies reported health-related selves, which included both physical and cognitive-related selves such as having a heart attack or becoming an Alzheimer’s patient. Consistent with these previous results, in the current sample, 83.5% of our participants reported a health-related self when health and memory-related selves were combined.
Although it is true that we may have elicited richer descriptions of possible selves in a one-on-one setting, participants in the current study reported a diverse and rich array of future selves in a group setting. The groups were small and an interviewer was always present to answer any questions.

The relationship between memory-related possible selves and subsequent behavior is not clear. Stereotypes about aging and memory create a culture in which memory decline is an expected part of growing old. In such an environment, instances of forgetting may become more salient to older adults, acting as proof of inevitable decline. As a consequence, older adults may feel less capable of and less control over maintaining or improving their memory abilities. These expectations and experiences may be of even greater importance for older adults who place a high value on memory ability (Hess et al., 2003). Individuals who place a high value on memory ability may be more likely to have a memory-related possible self. Further, an individual who has a memory self as a central feature of their self-concept may be more likely to actively pursue or avoid this self than someone for whom memory is less schematic. When stereotypes, decreased feelings of efficacy and control, and actual age-related declines in memory performance are combined with the knowledge that the causes of Alzheimer’s disease are largely unknown, attempting to take the necessary actions to avoid a feared memory-related possible self may be seen as futile for aschematic individuals.

This has been the first study to examine memory-related possible selves. Although memory beliefs have been examined extensively, the relationship
between these beliefs and an individual’s self-concept, especially in terms of possible selves, is not well understood. Older adults are more likely to incorporate a memory-related self into their self-concept. Further these memory-related selves are more often feared selves, not hoped-for. The ultimate goal of future investigations is to determine how these selves affect older adults, by exploring how the presence of these memory-related hopes and fears motivate or debilitate behavior.
APPENDIX A
CLOSED-ENDED POSSIBLE SELVES MEASURES

Circle all the items that describe you now:

Happy
Senile
Confident
Depressed
Intelligent
Good-looking
Sound mind
Blind
Rich
Not able to fit in
Successful
Important
Alzheimer’s patient
Competent
In good shape
Have lots of friends
Owner of a business
Paralyzed
Make own decisions
Manipulate people
Trusted
Unimportant
Remember what I need to

Offensive
Welfare recipient
Sexy
Brain dead
Spouse or child abuser
Athletic
Wrinkled
Active social life
Being health conscious
Remember every detail
Good friend
Not in control
Likely to die young
Admired
Mentally alert all my life
Unwanted
A good parent
Alone
Interesting
Adjusted
Underachiever
Incurable memory loss
Optimistic
Circle all the items that describe you now:

<table>
<thead>
<tr>
<th>Alcohol dependent</th>
<th>Long-lived</th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to fix things</td>
<td>Nonaggressive</td>
</tr>
<tr>
<td>Secure</td>
<td>A failure</td>
</tr>
<tr>
<td>Reasonably alert</td>
<td>Have a heart attack</td>
</tr>
<tr>
<td>Able to influence people</td>
<td>Not mentally impaired</td>
</tr>
<tr>
<td>Unable to remember</td>
<td>Win high honors</td>
</tr>
<tr>
<td>Knowledgeable about art</td>
<td>Artistic</td>
</tr>
<tr>
<td>Failing memory</td>
<td>Stupid</td>
</tr>
<tr>
<td>Being appreciated</td>
<td>Attractive</td>
</tr>
<tr>
<td>Loved</td>
<td>Keen memory</td>
</tr>
<tr>
<td>Unpopular</td>
<td>Independent</td>
</tr>
<tr>
<td>Able to cook well</td>
<td>Have a nervous breakdown</td>
</tr>
<tr>
<td>Respected</td>
<td>Fuzzy memory</td>
</tr>
<tr>
<td>A cancer victim</td>
<td></td>
</tr>
</tbody>
</table>

Circle all the items that described you in the past:

Happy
Senile
Confident
Depressed
Intelligent
Good-looking
Sound mind
Blind
Rich
Not able to fit in
Successful
Important
Alzheimer’s patient
Competent
In good shape
Have lots of friends
Owner of a business
Paralyzed
Make own decisions
Manipulate people
Trusted
Unimportant
Remember what I need to

Offensive
Welfare recipient
Sexy
Brain dead
Spouse or child abuser
Athletic
Wrinkled
Active social life
Being health conscious
Remember every detail
Good friend
Not in control
Likely to die young
Admired
Mentally alert all my life
Unwanted
A good parent
Alone
Interesting
Adjusted
Underachiever
Incurable memory loss
Optimistic
Circle all the items that described you in the past:

<table>
<thead>
<tr>
<th>Item</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol dependent</td>
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</tr>
<tr>
<td>A cancer victim</td>
<td></td>
</tr>
</tbody>
</table>
Circle all the items that describe a future self that you would like to be:

<table>
<thead>
<tr>
<th>Happy</th>
<th>Offensive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senile</td>
<td>Welfare recipient</td>
</tr>
<tr>
<td>Confident</td>
<td>Sexy</td>
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<td>Rich</td>
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<td>Paralyzed</td>
<td>Alone</td>
</tr>
<tr>
<td>Make own decisions</td>
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</tr>
<tr>
<td>Manipulate people</td>
<td>Adjusted</td>
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<td>Underachiever</td>
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<tr>
<td>Unimportant</td>
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<tr>
<td>Remember what I need to</td>
<td>Optimistic</td>
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<td>A cancer victim</td>
<td></td>
</tr>
</tbody>
</table>
Circle all the items that describe a future self that you would NOT like to be:

<table>
<thead>
<tr>
<th>Happy</th>
<th>Offensive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senile</td>
<td>Welfare recipient</td>
</tr>
<tr>
<td>Confident</td>
<td>Sexy</td>
</tr>
<tr>
<td>Depressed</td>
<td>Brain dead</td>
</tr>
<tr>
<td>Intelligent</td>
<td>Spouse or child abuser</td>
</tr>
<tr>
<td>Good-looking</td>
<td>Athletic</td>
</tr>
<tr>
<td>Sound mind</td>
<td>Wrinkled</td>
</tr>
<tr>
<td>Blind</td>
<td>Active social life</td>
</tr>
<tr>
<td>Rich</td>
<td>Being health conscious</td>
</tr>
<tr>
<td>Not able to fit in</td>
<td>Remember every detail</td>
</tr>
<tr>
<td>Successful</td>
<td>Good friend</td>
</tr>
<tr>
<td>Important</td>
<td>Not in control</td>
</tr>
<tr>
<td>Alzheimer’s patient</td>
<td>Likely to die young</td>
</tr>
<tr>
<td>Competent</td>
<td>Admired</td>
</tr>
<tr>
<td>In good shape</td>
<td>Mentally alert all my life</td>
</tr>
<tr>
<td>Have lots of friends</td>
<td>Unwanted</td>
</tr>
<tr>
<td>Owner of a business</td>
<td>A good parent</td>
</tr>
<tr>
<td>Paralyzed</td>
<td>Alone</td>
</tr>
<tr>
<td>Make own decisions</td>
<td>Interesting</td>
</tr>
<tr>
<td>Manipulate people</td>
<td>Adjusted</td>
</tr>
<tr>
<td>Trusted</td>
<td>Underachiever</td>
</tr>
<tr>
<td>Unimportant</td>
<td>Incurable memory loss</td>
</tr>
<tr>
<td>Remember what I need to</td>
<td>Optimistic</td>
</tr>
</tbody>
</table>
Circle all the items that describe a future self that you would NOT like to be:

<table>
<thead>
<tr>
<th>Alcohol dependent</th>
<th>Long-lived</th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to fix things</td>
<td>Nonaggressive</td>
</tr>
<tr>
<td>Secure</td>
<td>A failure</td>
</tr>
<tr>
<td>Reasonably alert</td>
<td>Have a heart attack</td>
</tr>
<tr>
<td>Able to influence people</td>
<td>Not mentally impaired</td>
</tr>
<tr>
<td>Unable to remember</td>
<td>Win high honors</td>
</tr>
<tr>
<td>Knowledgeable about art</td>
<td>Artistic</td>
</tr>
<tr>
<td>Failing memory</td>
<td>Stupid</td>
</tr>
<tr>
<td>Being appreciated</td>
<td>Attractive</td>
</tr>
<tr>
<td>Loved</td>
<td>Keen memory</td>
</tr>
<tr>
<td>Unpopular</td>
<td>Independent</td>
</tr>
<tr>
<td>Able to cook well</td>
<td>Have a nervous breakdown</td>
</tr>
<tr>
<td>Respected</td>
<td>Fuzzy memory</td>
</tr>
<tr>
<td>A cancer victim</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX B
MEMORY VALUE QUESTIONNAIRE

MEMORY VALUE
On this page, there are some questions asking for your opinions. To answer each question, you should circle the number that best indicates your opinion. Please read each question carefully before you decide how to answer. There are no right or wrong answers on these questions.

Please circle the number that best represents your opinion.

1. If you don’t have your memory you don’t have anything.
   1              2             3             4             5              6              7
     Strongly        Strongly
disagree           agree

2. There are many things I care about more than my memory.
   1              2             3             4             5              6              7
     Strongly        Strongly
disagree           agree

3. A good memory is of only minor importance in a happy life.
   1              2             3             4             5              6              7
     Strongly        Strongly
disagree           agree

4. There is nothing more important than a good memory.
   1              2             3             4             5              6              7
     Strongly        Strongly
disagree           agree
LIST OF REFERENCES


BIOGRAPHICAL SKETCH

Alissa Dark-Freudeman was born in Akron, Ohio, on December 13th, 1975. She attended Saint Thomas Aquinas High School in Ft. Lauderdale, Florida. She went on to attend the University of Florida and received a Bachelor of Arts in linguistics with a minor in business administration in 1998. She graduated with highest honors after completing a senior honors thesis on sexism and violence in children’s literature. After taking some time off to work and experience the “real” world, she returned to the University of Florida as a graduate student in developmental psychology in 2001.