



2009

Expectations about Memory Change Across the Life Span Are Impacted By Aging Stereotypes.

Tara T. Lineweaver
Butler University, tlinwea@butler.edu

Andrea K. Berger

Christopher Hertzog

Follow this and additional works at: https://digitalcommons.butler.edu/facsch_papers



Part of the [Cognitive Psychology Commons](#), and the [Experimental Analysis of Behavior Commons](#)

Recommended Citation

Lineweaver, Tara T.; Berger, Andrea K.; and Hertzog, Christopher, "Expectations about Memory Change Across the Life Span Are Impacted By Aging Stereotypes." *Psychology and Aging* / (2009): 169-176. Available at https://digitalcommons.butler.edu/facsch_papers/432

This Article is brought to you for free and open access by the College of Liberal Arts & Sciences at Digital Commons @ Butler University. It has been accepted for inclusion in Scholarship and Professional Work - LAS by an authorized administrator of Digital Commons @ Butler University. For more information, please contact digitalscholarship@butler.edu.



Published in final edited form as:

Psychol Aging. 2009 March ; 24(1): 169–176. doi:10.1037/a0013577.

Expectations about Memory Change Across the Life Span Are Impacted By Aging Stereotypes

Tara T. Lineweaver,

Department of Psychology, Butler University, 4600 Sunset Avenue, Indianapolis, IN 46208

Andrea K. Berger, and

Department of Psychology, Butler University, 4600 Sunset Avenue, Indianapolis, IN 46208

Christopher Hertzog

School of Psychology, Georgia Institute of Technology, Atlanta, GA, 30332-0170

Abstract

This study examined whether expectations about memory change with age vary for different personality types. Four adjectives from each of Hummert's age-stereotype trait sets were selected to create 11 adjective clusters varying in both valence (positive versus negative) and relevance to memory functioning. Three hundred and seventy three participants in three age groups rated the memory abilities of target adults, defined by the adjective clusters, across the adult life span. Consistent with past studies, participants believed in age-related memory decline. However, participants rated target adults with positive personality traits as having better memory ability and less age-related memory decline than target adults with negative personality traits. This effect was larger when the traits were relevant to memory than when they were not. Finally, older participants were more strongly influenced by both the valence and the relevance of the personality descriptions than younger participants.

Keywords

Memory Beliefs; Aging Stereotypes; Age Differences

Numerous studies have reported that individuals in Western societies tend to have pessimistic views about the effects of aging on many psychological constructs, including intelligence, memory, and other cognitive abilities (Camp & Pignatiello, 1988; Heckhausen, Dixon, & Baltes, 1989; Hendrick, Knox, Gekoski, & Dyne, 1988; Ryan, 1992). Research investigating beliefs about memory and aging suggests that adults of all ages associate poor memory with old age (Hummert, 1990; Hummert, Gartaska, O'Brien, Greenwald & Mellott, 2002; Kite & Johnson, 1988) and attribute memory failures by older adults to the negative effects of aging rather than to contextual or temporary causes (Erber, 1989; Erber, Szuchman, & Prager, 1997; Erber, Szuchman, & Rothberg, 1990). Ryan and colleagues (Ryan, 1992; Ryan & Kwong See, 1993) demonstrated that adults of all ages expect memory to decline from young to older adulthood regardless of whether they consider memory changes in others or within themselves.

Publisher's Disclaimer: The following manuscript is the final accepted manuscript. It has not been subjected to the final copyediting, fact-checking, and proofreading required for formal publication. It is not the definitive, publisher-authenticated version. The American Psychological Association and its Council of Editors disclaim any responsibility or liabilities for errors or omissions of this manuscript version, any version derived from this manuscript by NIH, or other third parties. The published version is available at <http://www.apa.org/journals/pag/>

Lineweaver and Hertzog (1998) created the General Beliefs About Memory Instrument (GBMI) to measure individuals' beliefs about the impact of aging on memory in the general population. Respondents used visual analog scales to rate the memory ability of adults at different ages in their lives (from age 20 through 90). Lineweaver and Hertzog (1998) replicated the findings of previous studies that adults of all ages expect memory to decline with age. However, these expectations also differed as a function of the type of memory being considered. For example, memory ratings for recent events showed a larger magnitude of decline with age than memory ratings for more remote experiences. In addition, the anticipated timing and rate of memory decline varied depending on the age of the respondent. Older adults on average expected memory decline to begin later (after age 40) and to progress at a slower rate through mid-life relative to younger adults. These results indicated that beliefs in age-related memory decline are pervasive but that variables such as type of memory impact the expected pattern of this decline.

Whereas Lineweaver and Hertzog (1998) asked respondents to rate an average adult without specifying any individual characteristics of such a person, the present study evaluated whether personal attributes or traits influence anticipated changes in memory with age. Although each aging person is unique, adults typically characterize elderly individuals according to a common set of stereotypes. Early research into these aging stereotypes suggested that they were largely negative (e.g., Arnhoff, Leon & Lorge, 1964), but more recent studies have revealed that people hold both positive and negative stereotypes about older adults (Brewer, Dull & Lui, 1981; Hummert, 1993; Hummert, Garstka, Shaner & Strahm, 1994, 1995; Schmidt & Boland, 1986). Hummert and colleagues (1994) asked young, middle-aged, and older adults to sort traits into groups according to which characteristics would likely coexist in the same elderly individual. They discovered approximately ten different aging stereotypes, including positive ones like the "Golden Ager" who leads an active and engaged life style. Although many stereotypes are held in common by people of all ages, aging stereotypes tend to become increasingly differentiated as people grow older (Brewer et al., 1981; Hummert, 1993; Hummert et al., 1994). Attitudes about one's own aging (Chasteen, 2000) and amount of contact with elderly individuals (Hale, 1998) also influence how someone views older adults.

The current study had two primary objectives. The first goal was to investigate whether expectations about age-related memory change vary when applied to different types of adults. Using Hummert's (1994) stereotype classification, we evaluated two potential mediating factors: (a) whether the traits of a target individual fit a positive or negative stereotype and (b) whether the traits included characteristics directly relevant to memory decline with age. We hypothesized that both of these factors would influence memory ratings across the life span. Specifically, we expected participants to rate less memory decline in individuals described as fitting positive stereotypes than in those described as fitting negative stereotypes, and for this effect to be exaggerated when the traits were relevant to memory than when they were not.

The second goal was to determine how expectations about memory change in different types of older adults vary based on the age of the person making the judgment. Prior studies have demonstrated that older adults hold more complex views of the elderly than younger adults do and are less likely to view stereotypes as typical of others their age (Hummert, 1993; Hummert et al., 1994; Hummert, Gartaska, Shaner & Strahm, 1995). Similarly, Hale (1998) found that the amount of positive contact individuals have with the elderly predicts the likelihood that they will apply aging stereotypes to others. In his study, increased positive contact with the elderly correlated with less extensive stereotyping. Because older participants have more direct personal experience with the aging process and likely have a higher number of positive interactions with other aging adults than younger participants, we expected our older adults to be less affected by stereotypes generally (specifically, the positive versus negative nature of the stereotypes) when forming judgments about memory than either middle-aged or younger

adults. At the same time, their increased experience with their own aging and that of others in their cohort might increase their knowledge of the traits that truly influence memory functioning. In that case, valence effects might emerge in ratings made by older adults, but only when the adjective clusters are relevant.

The beliefs people hold about how aging influences cognitive functioning have implications not only for how they act towards older adults, but also for how they view themselves as they age. For example, young adults tend to simplify their speech to older adults based on assumptions about the older adult's cognitive capacity (Hummert, Gartaska & Shaner, 1995; Kemper, Ferrell, Harden, Finter-Urczyk & Billington, 1998; Kemper, Finter-Urczyk, Ferrell, Harden & Billington, 1998). Similarly, people who believe that aging negatively impacts memory in others also expect their own memory abilities and control over memory to decline with age (Lineweaver & Hertzog, 1998). In turn, self-beliefs about aging influence actual cognitive functioning (e.g., Lachman & Andreoletti, 2006). Thus, factors that influence general beliefs reach well beyond issues surrounding stereotypes of aging and may indirectly or directly affect adults' cognition across the life span.

Method

Participants

A total of 373 adults (144 young, 137 middle-aged, and 92 older) participated in this study. We recruited participants from Butler University and the surrounding community in Indianapolis through classes, newspaper advertisements, and fliers. We recruited additional older adults from a list of research volunteers at the Georgia Institute of Technology. We divided the sample into three age groups comprised of young (ages 18 to 39: $M = 21.77$, $SD = 5.20$), middle-aged (ages 40 to 64: $M = 51.96$, $SD = 6.74$), and older (ages 65 to 87: $M = 72.24$, $SD = 4.46$) adults. Young adults were mostly students enrolled in psychology classes who received extra credit for their participation. The community-dwelling adults were volunteers who received \$20 in compensation for their time and travel.

Table 1 reports the available descriptive information on the sample. Demographic data was missing for 10 of the older adults due to an administration error at the time of data collection. The three age groups did not differ in their gender distribution ($\chi^2(2, N = 363) = 2.01$, *ns*). On average, the older and middle-aged groups were relatively well educated (about 15 years of formal education) and were better educated than the young group (about 13 years of formal education). The group differences were an artifact of the fact that participants in the young age group were mostly university students who had not yet completed their education. The sample was largely Caucasian (81%), with a small percentage of participants identifying themselves as African-American (12%), Hispanic (<1%), Asian (<1%) and "Other" (<1%). The percentage of non-Caucasian participants was significantly different across age groups ($\chi^2(2, N = 363) = 8.94$, $p < .05$), with a significantly higher percentage in the middle age group than the young age group ($\chi^2(1, N = 289) = 12.21$, $p < .001$). To ensure that this did not influence the study results, all analyses were repeated excluding data from non-Caucasian participants. The results ($n = 291$) remained unchanged, so all reported analyses are based on data from the full sample.

Procedure

Participants completed a single testing session lasting between 20 and 30 minutes. Sessions included approximately 5 to 20 participants and varied in the extent to which they involved participants of mixed versus similar ages. We obtained and documented informed consent from each participant prior to administering two unique self-report measures designed specifically for the purposes of this study: a demographic questionnaire and a computerized assessment of expectations of memory change across the life span for various types of older adults.

Materials

General Beliefs About Memory Instrument—Stereotypes Version (GBMI-SV)—

The General Beliefs About Memory Instrument—Stereotypes Version quantified expectations of memory change across the life span. This computerized questionnaire, based on the GBMI (Lineweaver & Hertzog, 1998), asked participants to imagine 11 different 65 year-old target adults and then to rate these target adults' memory across each decade of the life span from age 20 to age 90 (producing eight ratings for each target). Participants registered their ratings on a vertical continuous scale using the computer mouse that controlled an icon that moved up or down the scale. Possible responses ranged from 0 ("Very Poor") to 80 ("Very Good") and were measured in continuous intervals (to the fifth decimal place). See Figure 1 for an example question.

The descriptions of each of the 11 target adults involved four adjectives selected from larger trait sets that Hummert and colleagues (1994) identified as corresponding to different stereotypes of older adults. Ten stereotypes were used, with one (i.e., Golden Ager) represented twice because it had so many traits associated with it. We designed the adjective sets to capture the essence and breadth of each stereotype while minimizing the redundancy of adjectives within a cluster. Table 2 provides the complete set of trait adjectives.

The adjective clusters represented six positive and five negative stereotypes. They also differed in the extent to which they contained traits relevant to memory change across the life span. Expert ratings were used to determine trait relevance. Six memory researchers (graduate and postdoctoral students) who were unaware of the purpose of this study rated each of the 44 individual adjectives (presented in a randomly ordered list) on a 5 point scale from 1 ("not at all relevant") to 5 ("highly relevant"). Relevant trait sets ($n = 5$) included at least one adjective that earned an average rating of 2.5 or higher. Irrelevant trait sets ($n = 6$) contained no adjectives rated a 2.5 or higher.

Results

We analyzed the data with a 2 (valence: positive versus negative) \times 2 (relevance: relevant versus irrelevant) \times 8 (target age: 20 through 90) \times 3 (participant age group: young, middle-aged, older) mixed model analysis of variance. To maximize statistical power and the interpretability of the results, we focused on only the linear and quadratic trends in the target age factor, which we previously found capture the majority of the variance in participant responses to this type of item (Lineweaver & Hertzog, 1998). In the current analyses, we included all 8 levels of the target age variable, and then examined only two, single degree of freedom components that summarize the pattern of responses across all decades of the target life span. Results for the linear trend indicate the extent to which participants view memory as declining steadily from age 20 to 90, whereas results for the quadratic trend reflect the extent to which participants expect a curvilinear pattern of memory decline, typically with little decline early in the life span and accelerating decline with advancing age. We will present the results in two phases corresponding to each of the primary research questions.

Relationships Between Aging Stereotypes and Memory Expectations

In the 2 (valence) \times 2 (relevance) \times 8 (target age) \times 3 (participant age group) ANOVA, we found a significant three way interaction between valence, relevance, and the linear trend associated with target age ($F(1, 370) = 71.73, p < .001, \eta_p^2 = .16$). This result indicates that expectations about the pattern of memory change across the life span vary when applied to individuals who fit different stereotypes of aging. See Figure 2. Participants believed that target adults who fit positive personality stereotypes have better memories overall and demonstrate less decline across the life span than targets who fit negative personality stereotypes. In

addition, memory ratings differed depending on whether or not the stereotype descriptions included relevant traits. More specifically, relevance exaggerated the effect of valence. The differences in ratings of memory ability and memory decline for positively-described versus negatively-described target adults were significantly greater when the traits were relevant to memory than when they were not.

Taken together, participants expected target adults who fit positive stereotypes with relevant traits to perform best and decline least (target age: $F(7, 366) = 111.98, p < .001, \eta_p^2 = .68$), followed by target adults who fit positive stereotypes with irrelevant traits ($F(7, 366) = 134.67, p < .001, \eta_p^2 = .72$), target adults who fit negative stereotypes with irrelevant traits ($F(7, 366) = 214.98, p < .001, \eta_p^2 = .80$), and finally target adults who fit negative stereotypes with relevant traits ($F(7, 366) = 230.25, p < .001, \eta_p^2 = .82$). Thus, our first hypothesis, that participants would expect the memory of target adults fitting positive stereotypes to decline less than that of target adults fitting negative stereotypes was supported. Also consistent with expectations, participants were sensitive to the relevance of the traits, although this factor had a less robust effect on patterns of memory ratings across the life span (relevance by target age: $F(7, 364) = 1.98, p = .057, \eta_p^2 = .04$) than the positive or negative nature of the stereotypes (valence by target age: $F(7, 364) = 73.30, p < .001, \eta_p^2 = .59$).

Age Group Differences in the Relationships Between Aging Stereotypes and Memory Expectations

We also found a significant four way interaction in the 2 (valence) \times 2 (relevance) \times 8 (target age) \times 3 (participant age group) ANOVA. This interaction involved the quadratic trend for target age and indicates that the impact of aging stereotypes on memory expectations differed somewhat depending on the age of the respondent ($F(2, 370) = 5.04, p < .01$), although this was not a strong effect ($\eta_p^2 = .03$). See Figure 3. In particular, older adult respondents demonstrated a larger difference in the degree of curvature in their expected patterns of change based on the valence and relevance of the stereotype descriptors (Valence \times Relevance \times Target Age quadratic trend: $F(1, 91) = 5.15, p < .05, \eta_p^2 = .05$) than either middle-aged ($F(1, 136) = 3.30, p = .071, \eta_p^2 = .02$) or young adults ($F(1, 143) < 1, \eta_p^2 = .01$). Contrary to expectations, the valence of the stereotypes had a larger effect on the ratings of older adults (Valence \times Target Age: $F(7, 85) = 22.36, p < .001, \eta_p^2 = .65$) than those of middle-aged ($F(7, 130) = 27.64, p < .001, \eta_p^2 = .60$) or younger ($F(7, 137) = 21.56, p < .001, \eta_p^2 = .52$) adults. Older adults expected memory decline to begin later, progress slowly early in the life span, and accelerate later in the life span for positive targets but to be more linear (beginning earlier and progressing at a more steady rate across the life span) for negative targets. In contrast, young participants expected fairly linear decline beginning early in the life span (between the ages of 20 and 30) for both positive and negative targets, although the rate of expected decline was greater for negative than positive targets. Ratings of the middle-aged group were between the older and young groups. Consistent with expectations, older adults' ratings were also more strongly influenced by the relevance of the traits (Relevance \times Target Age: $F(7, 85) = 1.87, p = .085, \eta_p^2 = .13$) than those of either the middle-aged ($F(7, 130) = 1.52, p < .17, \eta_p^2 = .08$) or the younger ($F(7, 137) = 2.11, p < .05, \eta_p^2 = .10$) groups. Despite these differences, all three age groups showed a significant three way interaction between valence, relevance, and target age (young $F(7, 137) = 4.18, p < .001, \eta_p^2 = .18$); middle-aged $F(7, 130) = 6.13, p < .001, \eta_p^2 = .25$); older $F(7, 85) = 3.86, p = .001, \eta_p^2 = .24$), indicating that all three groups were sensitive to both of these factors when rating the memory of target adults.

Discussion

This study supports past research that indicates that adults of all ages expect memory to decline across the life span (Heckhausen et al., 1989; Lineweaver & Hertzog, 1998; Ryan, 1992; Ryan

& Kwong See, 1993). However, it also suggests that, although these beliefs are universal, they vary when applied to different types of individuals. Specifically, when adults consider others who fit positive stereotypes of aging (e.g., those who are self-accepting, fun-loving, sociable, and independent), they expect memory to be better overall and to decline less with age than when they think about others who fit negative stereotypes of aging (e.g., those who are afraid, miserly, wary, and emotionless). This is true regardless of whether the personality characteristics associated with the target adult are relevant to memory functioning or not. At the same time, adults are sensitive to the relevance of the traits; our participants judged targets with characteristics that were relevant to memory (e.g., active, healthy, happy, and future-oriented) more positively when the traits were positive and more negatively when the traits were negative than targets with personality traits that were not relevant to memory (e.g., kind, trustworthy, family-oriented, and supportive).

These results cannot be explained fully by a pervasive halo effect (Feeley, 2002; Murphy, Jako & Anhalt, 1993; Nisbett & Wilson, 1977). It is not simply that participants formed a globally positive impression of positive targets and a globally negative impression of negative targets. Participants expected older adults fitting positive stereotypes to demonstrate notable memory decline across the life span, just not to as great an extent as older adults fitting negative stereotypes. In addition, participants' sensitivity to the relevance of the traits suggests that they thought carefully about each set of traits, rather than responding based only on the positive or negative nature of the personality characteristics.

Participants' sensitivity to the relevance of the traits also reflects an inherent understanding of the factors that influence memory change across the life span. Participants believed that the relationships between personal traits and cognitive functioning vary depending on the particular traits being considered, and their beliefs corresponded to expert judgments. This result supports our previous finding that the general population recognizes that age-related memory decline does not occur equally in all contexts (Lineweaver & Hertzog, 1998). In our previous study, participants rated the degree of expected change in memory across the life span differently depending on the type of information being processed, and their judgments, again, aligned with the literature on memory and aging (e.g., memory for names showed more decline with age than memory for faces).

Together, these results indicate that the general population may have a rather sophisticated appreciation of the complex relationships between aging and memory rather than thinking about memory decline with age as a unidimensional construct. To date, we have demonstrated that people have different expectations for the onset and rate of memory decline based on the type of material being remembered, as well as based on the personal characteristics of the aging adult. These scaling techniques, which allow people to graphically depict their expectations of change across the entire adult life span, show promise for future studies examining the complexity and accuracy of beliefs about aging in the general population. They could be applied to further elucidating beliefs about memory specifically (e.g., how various behaviors or strategies might affect memory decline with age) or to investigating beliefs about age-related changes in other domains (e.g., intelligence, personality, mood).

Although we found many similarities in the expectations younger, middle-aged, and older adults had about memory change across the life span, participant age did influence general beliefs about memory and aging in the current study. Because older adults have more personal experience with aging in themselves and others, we hypothesized that older adults' expectations about memory decline with age would be less influenced by the positive versus negative nature of the stereotypes, but would be more influenced by the memory relevance of the traits than younger adults' expectations. These speculations were only supported in part. Although, as expected, older adults were more sensitive than their younger counterparts to the

relevance of the traits, they were also more, not less, influenced by the positive versus negative nature of the stereotypes, even when the traits were not relevant. In Hale's (1998) study, being older did not necessarily correspond to increased knowledge about aging or to high levels of positive contact with aging peers. Because we did not measure these variables directly in the current study, it is possible that our assumptions about our older adults on these counts are incorrect. Alternately, perhaps when required by the task to apply stereotypes to making judgments of others (participants in our study were only given general stereotypical, not individuating, information to distinguish between targets), older adults are more swayed by this type of information. If stereotypes represent a cognitive short cut to forming impressions of others (e.g., Ashmore & Del Boca, 1981), perhaps older adults are more likely than younger adults to apply stereotypes when they do not have other sources of information available to them. In support, Hess and colleagues have conducted a series of studies that suggest that older adults hold stronger beliefs in the stability of personality characteristics in others and place more emphasis on those traits when forming social impressions than younger adults do (Hess & Auman, 2001; Hess & Pullen, 1994). Because using trait information is an efficient way to draw conclusions about others, they argue that this tendency reflects enhanced social expertise in later life (Hess & Auman, 2001).

A third possible explanation for the unexpected greater influence of valence in older adults' ratings of memory across the life span could be a stronger ingroup / outgroup bias operating for older than younger participants. In one of the few studies that has examined intergroup biases in older versus younger adults, Chasteen (2005) found that older adults were less biased in favor of their own age group and against another (in this case, younger) age group than young adults were. She surmised that this might be due to older adults having been younger adults at an earlier point in the life span. In the current study, however, older participants likely identified more strongly than younger participants with the aging stereotype descriptions applied to the GBMI-SV targets. Because most older adults also likely view themselves positively, they consequently may have shown a greater differentiation in their beliefs and attitudes towards those they perceived as similar to themselves (the positively described target adults) versus those they perceived as different from themselves (the negatively described target adults). This effect would have been less robust for younger participants to the extent that they did not view the stereotype descriptions as being as directly pertinent to themselves. Whether the participants completed our study in a session of same age peers versus one including mixed age groups may have impacted the degree of ingroup / outgroup bias influencing their responses. We did not track the type of session each participant experienced, so we were not able to examine this empirically. Thus, future studies will be necessary to determine the extent to which these types of social biases, as well as the other possible explanations we have offered here, account for the age differences documented in the current study.

The primary limitation of our study is the very specific question it addresses and its inability to answer several additional questions that it raises. First, we were unable to examine whether or not ethnicity and cultural background impact individuals' beliefs about aging. Our sample was not selected with the intent to address this issue, and the representation of participants across ethnicities was not only extremely limited, but also unbalanced across other important factors like age. Second, our results may or may not generalize to other methods of identifying and describing personality characteristics. We have no way to judge whether our results are specific to Hummert's stereotype traits or apply more generally to other ways of characterizing older adults. Finally, the role that self-perceptions may play in mediating the effects documented in this study remains unknown. Previous research suggests that self-views influence ratings of traits in other individuals who view themselves as fitting a given description (e.g., dominant or non-dominant) associate more positive characteristics with the self-relevant than the opposite description (Dunning & McElwee, 1995). Chasteen (2000) demonstrated that

this may also apply to issues of aging. She showed that individuals who feel more positively about their own aging judge target older adults more positively than those who feel more negatively about aging. Although we queried our participants about their self-views as part of the current study, limitations to our methodology prevented us from adequately addressing this issue.

In summary, our results expand the previous literature on beliefs about aging and memory by demonstrating that expectations about age-related memory change vary when applied to different types of individuals. Personality characteristics of aging adults may impact how others view their cognitive functioning. This is particularly true when at least some of the personality characteristics are relevant to memory functioning. These results may have implications for understanding the effects of self-stereotyping in memory performance contexts (Hummert, 2003; O'Brien & Hummert, 2006). Activating negative stereotypes about memory and aging, such as through subliminal priming (Hess, Hinson, & Statham, 2004; Levy, 1996, 2003), is associated with degraded memory performance in middle-aged and older adults (but see Stein, Blanchard-Fields, & Hertzog, 2002). The present study suggests that explicitly accessed beliefs about memory and aging vary according to the content of age stereotypes. This raises the possibility that self-stereotyping effects in cognitive tasks could be differentially influenced by the content of the specific stereotype activated, as well as by whether individuals strongly identify with one type of age stereotype or another (Hummert, 2003). For example, drawing older adults' attention to the fact that they belong to a positive memory-relevant aging stereotype category may improve their memory self-efficacy, which may, in turn, positively impact their actual memory abilities. We are currently conducting an experimental study to examine this possibility.

References

- Arnhoff FN, Leon HV, Lorge I. Cross-cultural acceptance of stereotypes towards aging. *Journal of Social Psychology* 1964;63:41–58. [PubMed: 14143106]
- Ashmore, RD.; Del Boca, FK. Conceptual approaches to stereotypes and stereotyping. In: Hamilton, DL., editor. *Cognitive Processes in Stereotyping and Intergroup Behavior*. Hillsdale, NJ: Lawrence Erlbaum; 1981. p. 1-35.
- Brewer MB, Dull V, Lui L. Perceptions of the elderly: Stereotypes as prototypes. *Journal of Personality and Social Psychology* 1981;41:656–670.
- Camp CJ, Pignatiello MF. Beliefs about fact retrieval and inferential reasoning across the adult lifespan. *Experimental Aging Research* 1988;14:89–97. [PubMed: 3234458]
- Chasteen AL. The role of age and age-related attitudes in perceptions of elderly individuals. *Basic and Applied Social Psychology* 2000;22:147–156.
- Chasteen AL. Seeing eye-to-eye: Do intergroup biases operate similarly for younger and older adults? *International Journal of Aging and Human Development* 2005;61:123–139. [PubMed: 16161289]
- Dunning D, McElwee RO. Idiosyncratic trait definitions: Implications for self-description and social judgment. *Journal of Personality and Social Psychology* 1995;68:936–946. [PubMed: 7776189]
- Erber JT. Young and older adults' appraisal of memory failures in young and older adult target persons. *Journals of Gerontology* 1989;44:P170–P175. [PubMed: 2809109]
- Erber JT, Szuchman LT, Prager IG. Forgetful but forgiven: How age and life style affect perceptions of memory failure. *Journals of Gerontology* 1997;52:P303–P307. [PubMed: 9403519]
- Erber JT, Szuchman LT, Rothberg ST. Everyday memory failure: Age differences in appraisal and attribution. *Psychology and Aging* 1990;5:236–241. [PubMed: 2378688]
- Feeley TH. Comment on halo effects in rating and evaluation research. *Human Communication Research* 2002;28:578–586.
- Hale NM. Effects of age and interpersonal contact on stereotyping of the elderly. *Current Psychology: Developmental, Learning, Personality, Social* 1998;17:28–47.

- Heckhausen J, Dixon RA, Baltes PB. Gains and losses in development throughout adulthood as perceived by different adult age groups. *Developmental Psychology* 1989;25:109–121.
- Hendrick JJ, Knox VJ, Gekoski WL, Dyne KJ. Perceived cognitive ability of young and old targets. *Canadian Journal on Aging* 1988;7:192–203.
- Hess TM, Auman C. Aging and social expertise: The impact of trait-diagnostic information on impressions of others. *Psychology and Aging* 2001;16:497–510. [PubMed: 11554526]
- Hess TM, Hinson JT, Statham JA. Explicit and implicit stereotype activation effects on memory: Do age and awareness moderate the impact of priming? *Psychology and Aging* 2004;19:495–505. [PubMed: 15382999]
- Hess TM, Pullen SM. Adult age differences in impression change processes. *Psychology and Aging* 1994;9:237–250. [PubMed: 8054172]
- Hummert ML. Multiple stereotypes of elderly and young adults: A comparison of structure and evaluations. *Psychology and Aging* 1990;5:182–193. [PubMed: 2378684]
- Hummert ML. Age and typicality judgments of stereotypes of the elderly: Perceptions of elderly vs. young adults. *International Journal on Aging and Human Development* 1993;37:217–226.
- Hummert ML. When is an aging stereotype an aging self-stereotype? A commentary. *Journal of Gerontology: Psychological Sciences* 2003;58B:P212–P216.
- Hummert ML, Garstka TA, O'Brien L, Greenwald AG, Mellott DS. Using the Implicit Association Test to measure age differences in implicit social perceptions. *Psychology and Aging* 2002;17:482–495. [PubMed: 12243389]
- Hummert ML, Garstka TA, Shaner JL. Beliefs about language performance: Adults perceptions about self and elderly targets. *Journal of Language and Social Psychology* 1995;14:235–259.
- Hummert ML, Garstka TA, Shaner JL, Strahm S. Stereotypes of the elderly held by young, middle-aged, and elderly adults. *Journals of Gerontology* 1994;49:P240–P249. [PubMed: 8056949]
- Hummert ML, Garstka TA, Shaner JL, Strahm S. Judgments about stereotypes of the elderly: Attitudes, age associations, and typicality ratings of young, middle-aged, and elderly adults. *Research on Aging* 1995;17:168–189.
- Kemper S, Ferrell P, Harden T, Finter-Urczyk A, Billington C. Use of elderspeak by young and older adults to impaired and unimpaired listeners. *Aging, Neuropsychology, and Cognition* 1998;5:43–55.
- Kemper S, Finter-Urczyk A, Ferrell P, Harden T, Billington C. Using elderspeak with older adults. *Discourse Processes* 1998;25:55–73.
- Kite ME, Johnson BT. Attitudes toward older and younger adults: A meta-analysis. *Psychology and Aging* 1988;3:233–244. [PubMed: 3268264]
- Lachman ME, Andreoletti C. Strategy use mediates the relationship between control beliefs and memory performance for middle-aged and older adults. *Journal of Gerontology: Psychological Sciences and Social Sciences* 2006;61B:P88–P94.
- Levy B. Improving memory in old age through implicit self-stereotyping. *Journal of Personality and Social Psychology* 1996;71:1092–1107. [PubMed: 8979380]
- Levy BR. Mind matters: Cognitive and physical effects of aging self-stereotypes. *Journal of Gerontology: Series B: Psychological Sciences and Social Sciences* 2003;58B:P203–P211.
- Lineweaver TT, Hertzog C. Adults' efficacy and control beliefs regarding memory and aging: Separating general from personal beliefs. *Aging, Neuropsychology, and Cognition* 1998;5:264–296.
- Murphy KR, Jako RA, Anhalt RL. Nature and consequences of halo error: A critical analysis. *Journal of Applied Psychology* 1993;78:218–225.
- Nisbett RE, Wilson TD. The halo effect: Evidence for uncounscious alteration of judgments. *Journal of Personality and Social Psychology* 1977;35:250–256.
- O'Brien LT, Hummert ML. Memory performance of late middle-aged adults: Contrasting self-stereotyping and stereotype threat accounts of assimilation to age stereotypes. *Social Cognition* 2006;24:338–358.
- Ryan EB. Beliefs about memory changes across the adult life span. *Journals of Gerontology* 1992;47:P41–P46. [PubMed: 1730858]
- Ryan EB, Kwong See S. Age-based beliefs about memory changes for self and others across adulthood. *Journals of Gerontology* 1993;48:P199–P201. [PubMed: 8315236]

- Schmidt DF, Boland SM. The structure of impressions of older adults: Evidence for multiple stereotypes. *Psychology and Aging* 1986;1:255–260. [PubMed: 3267406]
- Stein R, Blanchard-Fields F, Hertzog C. The effects of age-stereotype priming on the memory performance of older adults. *Experimental Aging Research* 2002;28:169–181. [PubMed: 11928527]

Acknowledgements

This research was supported in part by a Holcolm Faculty Research Grant from Butler University to T. Lineweaver and a grant to C. Hertzog from the National Institute on Aging, one of the National Institutes of Health (R37-AG13148). We thank Dawn Smith Meacham, Jenny Vought, and Nikki Marsh at Butler and Stephanie MacLavery at Georgia Tech for assistance in collecting these data. We also thank members of the Hertzog Adult Cognition Lab for providing expert ratings on the relevance of trait adjectives to memory. E-mail concerning this paper can be addressed to the first author: tlinewa@butler.edu.

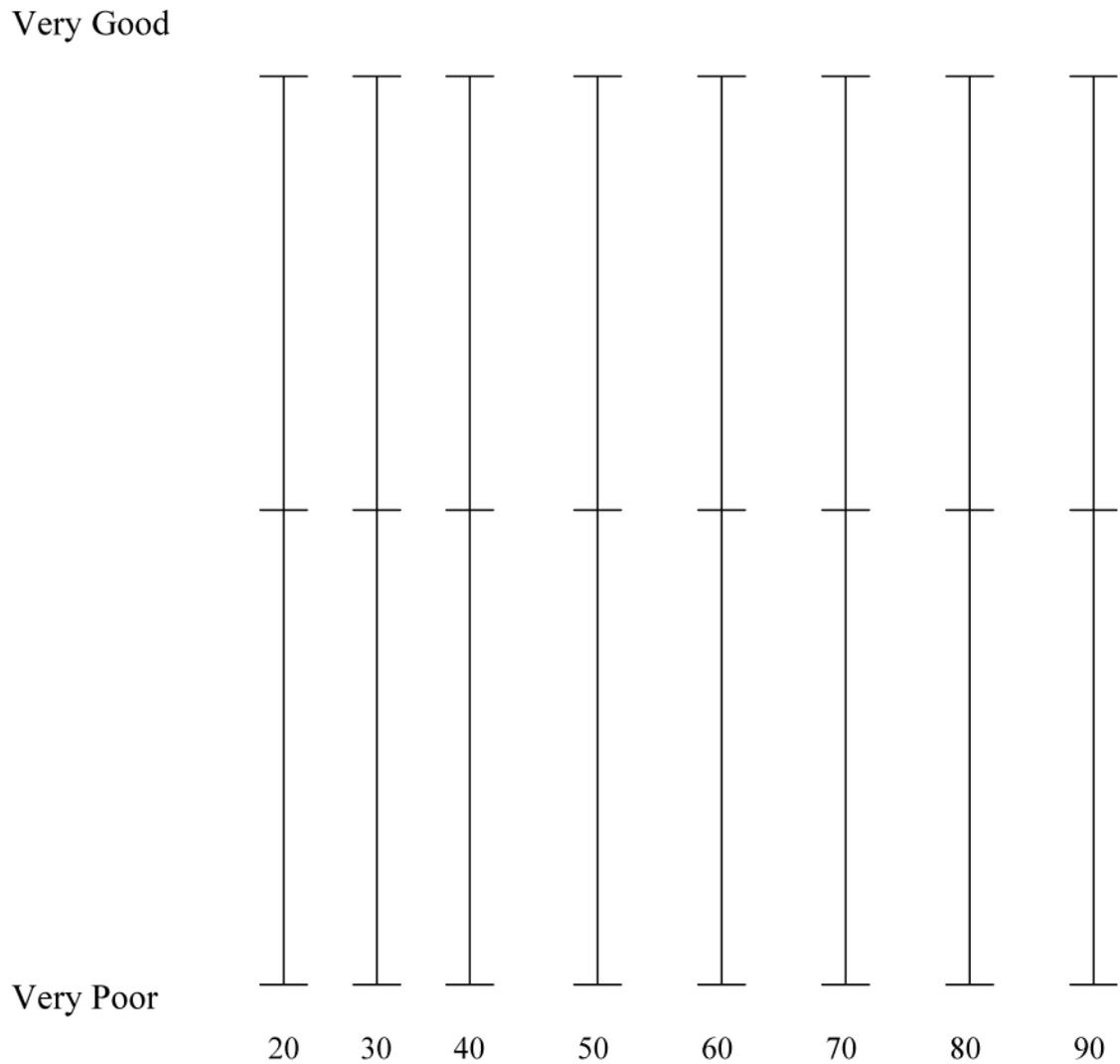


Figure 1.
 Example Item from the General Beliefs about Memory Instrument-Stereotypes Version
 Imagine a 65 year-old who is self-accepting, fun-loving, sociable, and independent.
 Now show how good you think the memory of this type of individual was at age 20, 30, 40,
 50, and 60 and how good you think the memory of this type of individual will be at age 70,
 80, and 90. Mark your answers by clicking at the corresponding point on each of the rating
 lines below.

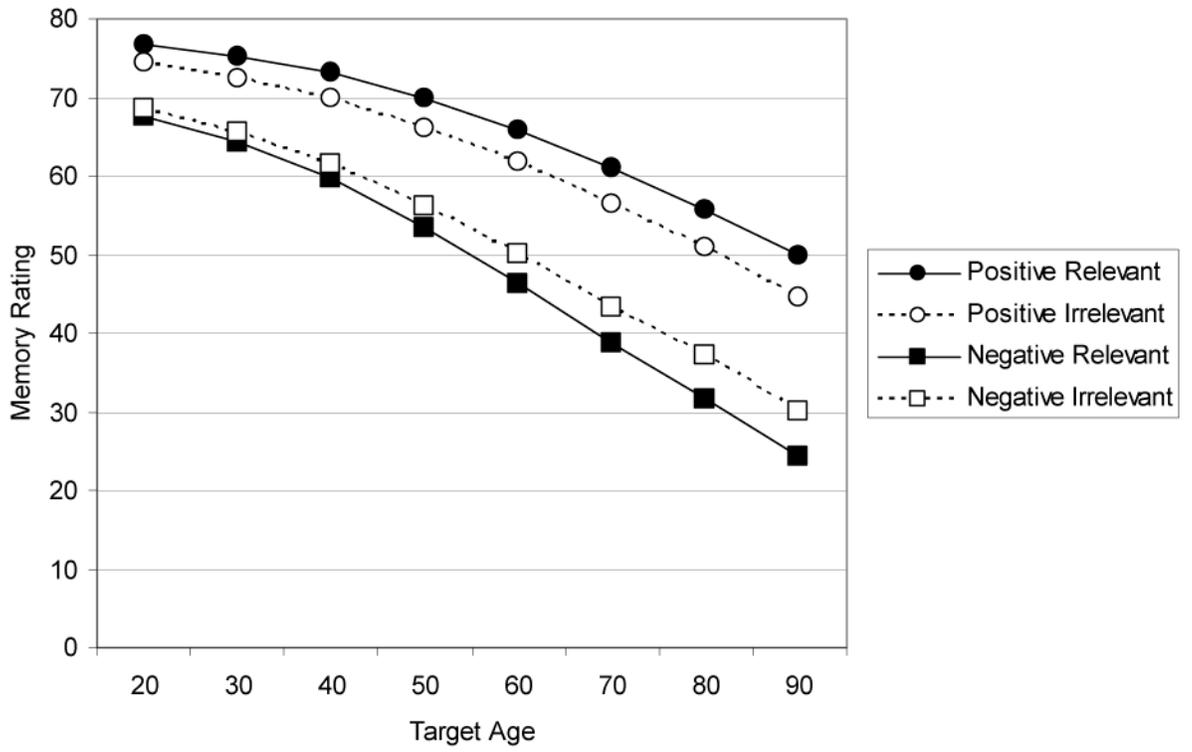
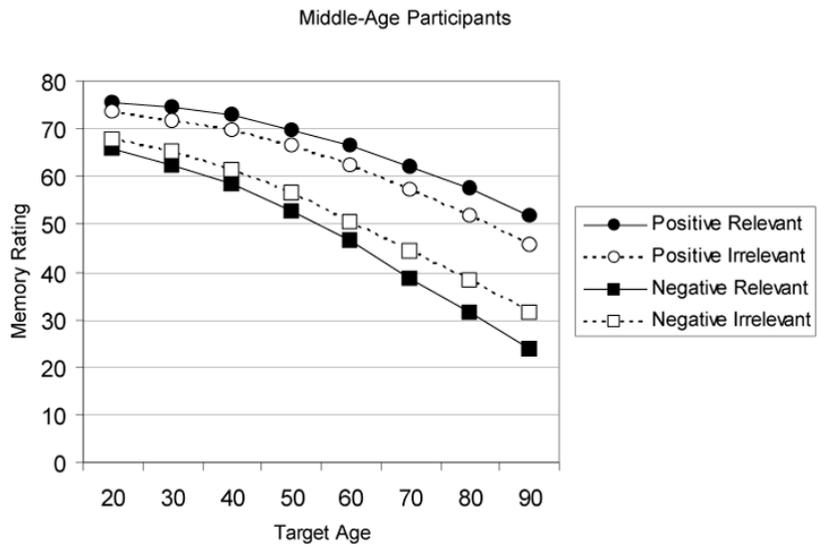
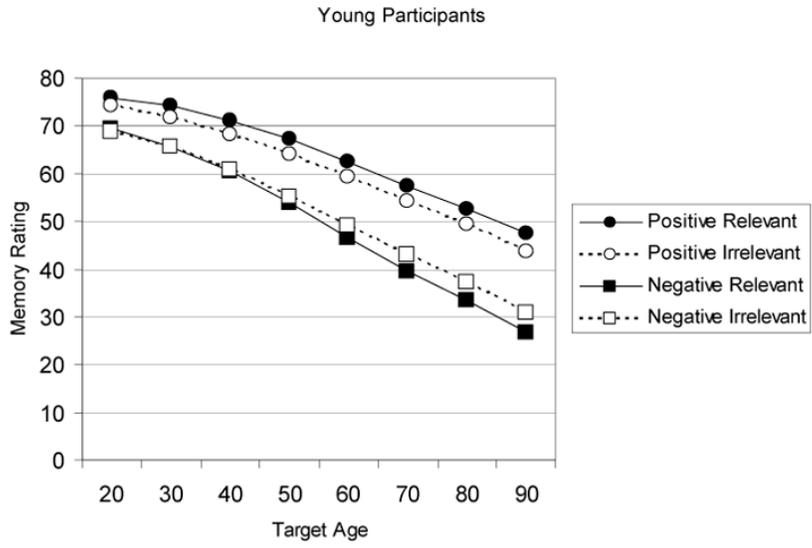


Figure 2.
Influence of Aging Stereotypes on Expectations about Memory Change Across the Life Span



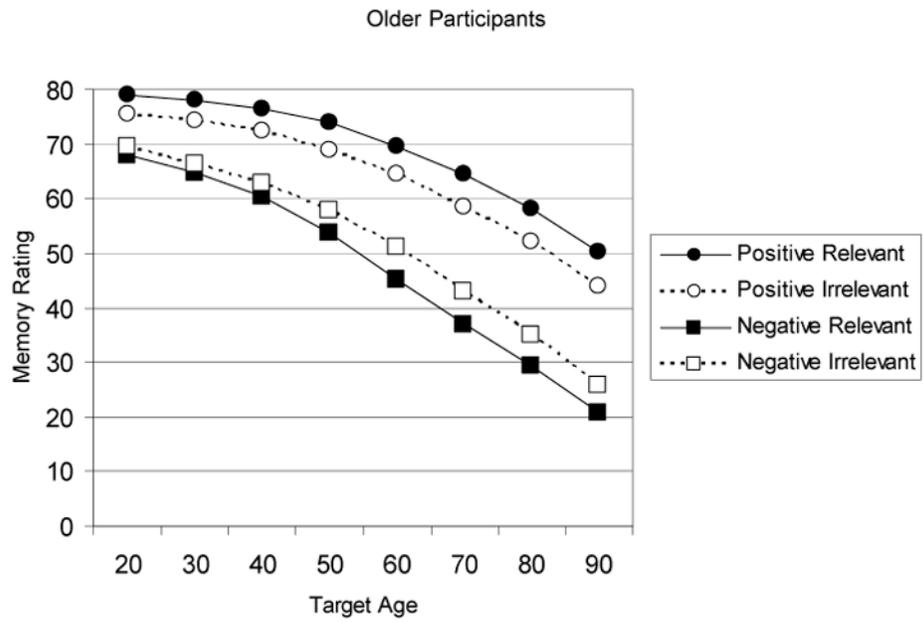


Figure 3. Influence of Aging Stereotypes on (a) Young Adults', (b) Middle-Aged Adults', and (c) Older Adults' Expectations about Memory Change Across the Life Span

Table 1

Participants

| | Young Adults | Middle-Aged Adults | Older Adults |
|---------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| N | 144 | 137 | 92 |
| Age ** | 21.8 ^a (5.20) [18–39] | 52.0 ^b (6.74) [40–64] | 72.2 ^c (4.46) [65–87] |
| Education ** | 13.3 ^a (1.81) | 15.4 ^b (2.86) | 15.0 ^b (2.22) |
| Percent Female | 71.5% | 64.2% | 64.6% |
| Percent Caucasian * | 87.4% ^a | 73.3% ^b | 81.7% ^{a,b} |

* Groups differ: $p < .01$

** Groups differ: $p < .001$.

Note: Groups with different superscript differ from one another in follow up tests.

Table 2
 Adjective Clusters Describing the 11 Target Adults on the GBMI-SV

| Positive | |
|---|--|
| Relevant | Irrelevant |
| Active, Healthy, Happy, Future-Oriented | Kind, Trustworthy, Family-Oriented, Supportive |
| Self-Accepting, Fun-Loving, Sociable, Independent | Proud, Conservative, Religious, Patriotic |
| Political, Sexual, Health Conscious, Liberal | Frugal, Quiet, Old-Fashioned, Emotional |
| Negative | |
| Relevant | Irrelevant |
| Sad, Hopeless, Neglected, Lonely | Prejudiced, Demanding, Snobbish, Naive |
| Tired, Fragile, Slow-Moving, Dependent | Afraid, Miserly, Wary, Emotionless |
| | Complaining, Ill-Tempered, Stubborn, Selfish |