The Activation of Aging Stereotypes in Younger and Older Adults

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The activation of ageism and aging stereotypes in younger and older adults was investigated by manipulating both the valence and the stereotypicality of trait stimuli. Participants completed a lexical decision task in which the stimulus onset asynchronies (SOAs) between the prime and target stimuli were varied to examine the effects of automatic and controlled processing (300 and 2,000 ms, respectively). Both younger and older adults demonstrated strong stereotype activation for elderly stereotypes but relatively weak activation for young stereotypes. Both younger and older adults also demonstrated a positive bias toward older people, which was not moderated by SOA. These findings suggest that younger and older adults do not differ in their accessibility to aging stereotypes or to their age-based biases, which appear to be positive toward elderly people.

I will not make age an issue of this campaign. I am not going to exploit for political purposes my opponent's youth and inexperience.

—Ronald Reagan,
1984 presidential debate against Walter Mondale

WHEN we think about age, we often do so in terms of how we feel toward older adults. As Ronald Reagan demonstrated so adroitly, however, age is a two-way street. When we investigate people's age-related attitudes, it is important to examine attitudes toward both young and old. Although younger adults' attitudes toward older people have received considerable attention, less is known about older adults' attitudes toward young people. The present study addresses this gap by examining both younger and older adults' accessibility of attitudes toward and stereotypes of both age groups.

Most studies of age-related attitudes and stereotyping have relied on self-report questionnaires, often referred to as *explicit measures* (for recent reviews, see Crockett & Hummert, 1987; Hummert, 1999; Hummert, Shaner, & Garstka, 1995; Kite & Johnson, 1988). In general, this research has suggested that people's perceptions of elderly adults are mixed. People associate both positive and negative traits with older people as a group, although there tend to be more negative trait associations than positive ones (Hummert et al., 1995). Research on the cognitive organization of traits has shown there are multiple stereotypes or subcategories of elderly people, some positive and some negative (Brewer, Dull, & Lui, 1981; Hummert, Garstka, Shaner, & Strahm, 1994; Schmidt & Boland, 1986). Finally, Hummert and colleagues (1994) found a fair degree of overlap in the organization of the subcategories across young, middle-aged, and older adults, although elderly people had the most complex representations of older people, followed by middle-aged and young adults. Thus, research using explicit measures has shown that aging stereotypes are complex, with both positive and negative traits and subtypes being associated with elderly people.

As for attitudes toward older people, the literature has suggested that perceptions of elderly individuals *as a group* are more negative compared with perceptions of young or middle-aged adults, although ratings of older people rarely fall at the negative end of most scales (Crockett & Hummert, 1987; Lutsky, 1980). Perceptions of elderly individuals, however, tend to be as positive as perceptions of younger adults, and when age differences are observed those differences have been inconsistent in favoring either age group (Hummert et al., 1995). Hummert and her colleagues (Crockett & Hummert, 1987; Hummert et al., 1995) contended that this inconsistency between attitudes toward elderly individuals versus older people as a group might be due to the multiple stereotypes of older adults that people hold. Compatible with this assumption, research on ambivalent stereotypes suggests that attitudes toward elderly people may be marked by both positive and negative perceptions (Fiske, Cuddy, Glick, & Xu, 2002). Fiske and colleagues proposed that people's attitudes toward different groups are driven by their perceptions of a group's competence and warmth. These perceptions lead people to place most groups into one of two categories: (a) groups they respect for their competence but dislike for their lack of warmth or (b) groups they disrespect for their incompetence but like and patronize for their warmth. It is this second category of groups under which elderly people fall. Fiske and associates found that groups that were similar in terms of perceived frailty (e.g., disabled people, elderly people) were clustered together with regard to perceived incompetence and warmth. In combination, these lines of research suggest that when people think of the concept *old*, positive associations might be just as likely to come to mind as negative associations.

As with other domains of stereotyping (e.g., race, gender), using explicit measures of age-based attitudes and stereotyping can pose problems because participants may be unaware of their beliefs and sentiments or reluctant to reveal any negativity they might feel (Fazio, Jackson, Dunton, & Williams, 1995; Greenwald, McGhee, & Schwartz, 1998).

To avoid these difficulties, researchers in social cognition have begun using implicit measures of attitudes and stereotypes in order to assess people's mental representations of various groups, as well as people's feelings toward those groups (e.g., Kawakami, Dion, & Dovidio, 1998; Wittenbrink, Judd, & Park, 1997). Implicit measures usually involve priming paradigms in which participants are first exposed to stimuli that activate the target group and then respond either to adjectives or to traits. Either the primes are presented at a subthreshold rate, such that participants are unaware of the presence of the primes, or a short stimulus onset asynchrony (SOA) is chosen to prevent participants from controlling their initial responses when they are aware of the primes.

Perdue and Gurtman (1990) reported one of the few studies that investigated the activation of age-related attitudes using implicit measures. In their experiment, young adult participants were presented with the subthreshold primes young and old, which were then followed by either a positive or a negative trait. Participants indicated whether each trait was good or bad for someone to possess. Perdue and Gurtman found that young adults made faster responses when positive traits were preceded by the young prime compared with the old prime. Conversely, participants made faster responses when negative traits were preceded by the old prime compared with the young prime. Perdue and Gurtman concluded from these results that there is an automatic ageism that influences the way people process trait information. Hence, subliminal presentation of the word *old* facilitated the processing of negative trait information, and subliminal presentation of the word *young* facilitated the processing of positive information. Perdue and Gurtman suggested that labeling a person as old could automatically activate primarily negative constructs that might then be applied in evaluating that individual.

Unfortunately, the interpretation of this study is hampered by Perdue and Gurtman's (1990) selection of personality traits. Intending to examine age-based prejudice, the authors selected extremely positive or negative traits from Anderson's (1968) list of trait valence ratings, but did not consider the issue of trait stereotypicality (i.e., trait descriptiveness). As a result, their stimulus set overrepresented positive traits that have been shown to be more descriptive of younger adults than older adults (e.g., studious, tolerant). Conversely, their set of negative traits overrepresented traits that have been shown to be more descriptive of older adults (e.g., stubborn, forgetful). Because of this confound of valence and stereotypicality, it is unclear whether Perdue and Gurtman's (1990) findings are due solely to age-based prejudice, to the differential stereotypicality of the selected positive (young) and negative (old) traits, or a mix of both influences. The present study addresses this ambiguity.

Since Perdue and Gurtman's (1990) study, it has become common practice to measure the separate effects of trait valence and stereotypicality in research on stereotype activation (typically addressing the domains of gender and race; e.g., Blair & Banaji, 1996; Kawakami et al., 1998; Wittenbrink et al., 1997). This research refers to *implicit stereotyping* to describe the automatic accessibility to mental representations of groups. Effects of implicit stereotyping are usually seen in the form of faster responses to traits that are descriptive of a group when those traits are preceded by the group label (e.g., old followed by wise or frail). These stereotype facilitation effects are independent of trait valence. *Implicit prejudice*, however, describes facilitation effects that depend on valence and not on trait descriptiveness. Because of the above confound of valence and stereotypicality, Perdue and Gurtman's findings may reflect either, or both, of these phenomena. The present study addresses this issue with a stimulus set that permits examination of *both* implicit prejudice and implicit stereotyping for the domain of age and extends previous research by examining the activation of aging stereotypes and attitudes in both younger and older people.

The purpose of the present study was to address four basic questions. First, do younger and older adults hold the same stereotypes about the young and old? Although Perdue and Gurtman (1990) examined young adults' age-based prejudices, no study has addressed whether the accessibility of aging stereotypes differs in younger and older adults. Evidence suggesting that both age groups hold the same stereotypes would be in the form of finding no age differences in responses when a group label matches the descriptiveness of the trait.

Second, are people more positive about their own age group than another age group? Research on intergroup relations suggests that people will favor their own group over another (Tajfel, 1981), and some research using explicit measures of age-related attitudes has found age differences in how younger and older people feel about one another (e.g., Celejewski & Dion, 1998). However, to date, the accessibility of age-related attitudes has not been assessed in both younger and older adults. In the present study, intergroup biases would be evident if each age group responded faster when their own group label was paired with positive traits and the other group label was paired with negative traits.

Third, who is prejudiced against whom? It may be that only one age group holds negative attitudes toward the other age group. Some research has suggested that only young adults hold negative attitudes toward older adults and that older adults have positive attitudes toward the young (Speas & Obenshain, 1995). It is also possible that older adults not only feel favorably toward younger adults but also share young people's negative views of older people. That is, older adults might also feel positively toward the young and negatively toward their own age group. We sought to determine which of these patterns of age-based prejudice most accurately describes younger and older adults' views of one another.

Fourth, do people "correct" their automatic response when they have a chance to do so? To address this issue, we examined whether younger and older adults would attempt to inhibit their age-related associations if given the chance. By manipulating SOA, we sought to determine whether younger and older adults form different age-related associations if they are permitted more control over their responses.

METHODS

Overview

The present study examined the activation of age-based stereotypes and prejudice in younger and older adults.

Participants completed a lexical decision task in which the primes young, old, or XXXX were presented, followed by a target word or nonword. To examine stereotyping and prejudice, both the valence and the stereotypicality of the target words were varied. To see whether participants would show different response patterns under conditions of automatic and controlled processing, the SOA was varied (300 ms or 2,000 ms).

Participants and Design

Participants were 72 younger adults (M_{age} = 18.86 years; M_{edu} = 13.43 years) and 59 older adults (M_{age} = 70.58 years; M_{edu} = 15.00 years). In the young adult sample, 68% of the participants were female, 79% were Caucasian, and the mean health rating was 4.37 (scale ranged from 1, very poor to 5, excellent). In the older adult sample, 67% were female, 97% were Caucasian, and the mean health rating was 3.98. The younger adults were recruited from the introductory psychology course at the University of Michigan and received course credit for their participation. The older adults were recruited from the greater Ann Arbor, Michigan area and were paid $10 for their participation. Data from 2 participants who did not follow instructions (1 young, 1 old) were excluded from the analyses.

A 2 (age: young or old) × 2 (SOA: 2,000 or 300 ms) × 3 (prime: young, old, or XXXX) × 2 (stereotypicality: young or old traits) × 2 (valence: positive or negative traits) factorial design was used. Age and SOA were between-subjects factors, and the rest were within-subject factors.

Stimuli

An initial pool of 60 traits was developed by selecting items from studies in which words describing young and/or elderly people had been pretested (Bargh, Chen, & Burrows, 1996; Hummert et al., 1994; Levy, 1996; Rothbaum, 1983; Schmidt & Boland, 1986). The 60 selected traits were pilot tested for valence and stereotypicality by having 10 older and 8 younger adults rate the traits on each dimension (e.g., 1 = characteristic of young adults to 5 = characteristic of older adults). Forty-four traits (11 per category; see Table 1) were selected on the basis of the mean ratings of stereotypicality and valence. The selected traits were approximately equal in word frequency (Kucera & Francis, 1967) and word length across the four conditions (ps > .12 and .68, respectively). Moreover, the young traits differed significantly from the old traits in stereotypicality, $t(17)$ = 11.95, p < .001, and the positive traits differed significantly from the negative traits when rated for valence, $t(17)$ = 10.19, p < .001.

A second pilot study ensured that the differences in stereotypicality ratings were not due to the use of a bipolar scale in which participants were forced to rate the words as either characteristically young or characteristically old. Ten young and 10 older adults rated the traits using a unipolar scale ranging from 1 (not at all characteristic) to 5 (very characteristic). Half of the participants rated the traits for their descriptiveness of young adults, and the other half rated them for their descriptiveness of older adults. Note that in the first pilot test we obtained the expected effect for stereotypicality, with young traits rated closer to the young end of

the scale and old traits rated closer to the old end of the scale. In the second study, because two versions of the scale were used (Young or Old scale), we expected to find a Scale Version × Stereotypicality interaction. Analyses revealed a main effect for scale version, $F(1,16)$ = 8.08, p < .05. Participants who used the Young scale rated the traits as more stereotypical (M = 3.17) than those who used the Old scale (M = 2.71). However, this main effect was moderated by the predicted Scale Version × Stereotypicality interaction, $F(1,16)$ = 124.42, p < .001. Participants receiving the Young scale rated the young traits as more typical of young adults than the old traits (Ms = 3.72 and 2.61, respectively, p < .001). Participants receiving the Old scale rated the old traits as more typical of older adults than the young traits (Ms = 3.16 and 2.26, respectively, p < .001). Also, old traits were rated as more typical in the old version than in the young version (Ms = 3.16 vs 2.61, p < .001), and young traits were rated as more typical in the young version than in the old version (Ms = 3.72 vs 2.26, p < .001). Participant age did not moderate the two-way interaction, $F(1,16)$ = 2.85, p > .11 (see Appendix, Note 1).

Procedure

After completing some cognitive tasks unrelated to the present study, participants completed a lexical decision task. The word stimuli included the four types of traits shown in Table 1, which were paired with three primes (young, old, or XXXX). The nonword stimuli were pronounceable nonwords (e.g., *garlant*, *fronge*) that were paired with the three primes.

The trial sequence was based on a procedure used by Kawakami and colleagues (1998). On each trial, a fixation point (+) appeared in the center of the screen for 300 ms and was followed by a blank screen for 500 ms. For participants in the short SOA condition (300 ms), the prime then appeared for 250 ms followed by a blank screen for 50 ms before the onset of the target word or nonword. For participants in the long SOA condition (2,000 ms), the prime appeared for 1,950 ms followed by a blank screen for 50 ms before the onset of the target. The target remained on the screen until participants made a key-press to indicate their lexical decision. Key-press responses were counterbalanced across participants. Half of the participants were instructed to press the z key if the target was a word and to press the / key if the target was a nonword, and the other half were instructed to do the opposite.

Participants completed a total of 176 trials, which were divided into four blocks of 44 trials each. There were 44 traits (11 per trait type; see Table 1) that were paired with each of the three primes, yielding a total of 132 word trials. The word and nonword trials were presented randomly across the four blocks.

Before beginning the task, participants were told that they would see a series of three things on the computer screen: a plus sign; the word *young*, *old*, or *XXXX*; and then a second word. They were instructed that their job was to decide whether the second word was a real word or a nonsense word and to press the yes key if it was a real word and the no key if it was not. Thus, although participants were not told specifically to ignore the prime, they were instructed to

Table 1. Experimental Trait Stimuli

	Stereotypically Old		Stereotypically Young	
	Positive	Negative	Positive	Negative
	Experienced	Senile	Energetic	Inexperienced
	Wise	Forgetful	Healthy	Reckless
	Sage	Fragile	Adventurous	Rebellious
	Sentimental	Feeble	Excited	Lazy
	Generous	Tired	Carefree	Wasteful
	Patient	Neglected	Curious	Greedy
	Cautious	Inflexible	Eager	Disrespectful
	Learned	Afraid	Vigorous	Vain
	Knowledgeable	Bitter	Ambitious	Loud
	Practical	Lonely	Optimistic	Irresponsible
	Mature	Helpless	Flexible	Impatient
Mean				
Typicality	3.88	4.12	2.06	2.10
Valence	4.10	2.08	4.07	1.74

Notes: Stereotypicality ratings ranged from 1 (characteristic of young adults) to 5 (characteristics of older adults). Valence ratings ranged from 1 (negative) to 5 (positive).

make a decision about the second word (Kawakami et al., 1998). Next, participants were given two examples and then completed 10 practice trials. At the end of the practice trials, the experimenter checked to see if there were any additional questions, and then participants began the main set of trials.

Following the lexical decision task, participants completed a demographic questionnaire and then two explicit measures of their attitudes toward older people. One was the five-item Fear of Old People subscale from the Anxiety About Aging scale (e.g., *I enjoy being around old people*; Lasher & Faulkender, 1993), which ranged from −2 (*strongly disagree*) to 2 (*strongly agree*). The other measure was a 5-item affective scale that assessed people's liking for older people (e.g., *I admire older people a great deal*) and ranged from −3 to 3. These two scales were highly correlated, $r(129) = .69, p < .001$. Scores on the two scales were transformed to z scores and then combined to form a composite aging attitude score for each participant (α for combined scale = .93), with higher scores indicating positive views of elderly people. Finally, participants were debriefed and compensated.

Results

Explicit Aging Attitude Measure

A 2 (age group: young or old) × 2 (SOA: short or long) analysis of variance (ANOVA) was conducted on participants' scores on the aging attitude scale. Only a marginal age group difference was found, $F(1,125) = 2.96, p = .09$. Young adults were slightly more negative than older adults (mean z scores = −.11 and .13, respectively). No other effects were significant.

Implicit Measure

Each participant's response times from the lexical decision task were checked for errors and outliers. We defined an outlier as a latency that was 2.5 standard deviations above the mean for that condition. All errors and outliers

were excluded from the analyses and treated as missing values. The mean error and outlier rates were 2.11% and 2.45%, respectively. All analyses were conducted on the log-transformed latencies, although the untransformed means are presented in the text and in the figures so that the presented metric is familiar to the reader. In line with other studies (Blair & Banaji, 1996; Kawakami et al., 1998), we used mean response latencies rather than facilitation scores in which the means from the young and old prime conditions were first subtracted from the baseline prime condition (for a methodological discussion, see Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Jonides & Mack, 1984).

A 2 (age: young or old) × 2 (SOA: short or long) × 2 (prime: young or old) × 2 (stereotypicality: young or old) × 2 (valence: positive or negative) repeated-measures ANOVA was conducted on the log-transformed latencies. Age and SOA were between-subjects factors and prime, stereotypicality, and valence were within-subject factors. The ANOVA revealed a significant main effect for age, $F(1,125) = 26.30$, $p < .001$, with the younger adults responding faster ($M = 714$ ms) than the older adults ($M = 867$ ms). In addition, participants in the short SOA condition made faster responses ($M = 727$ ms) than participants in the long SOA condition ($M = 855$ ms; $F(1,125) = 15.77, p < .001$). In the next two sections, we report the findings regarding age-based stereotyping and age-based prejudice that resulted from the repeated-measures ANOVA.

Age-Based Stereotyping

One objective of this study was to assess the influence of old and young primes on the identification of stereotypically old or young traits, independent of the valence of these traits. Theoretically, the observation that participants respond faster to Trait X when it is preceded by the old prime rather than the young prime would indicate that Trait X is part of a well-defined aging stereotype. Figure 1 shows the respective latencies.
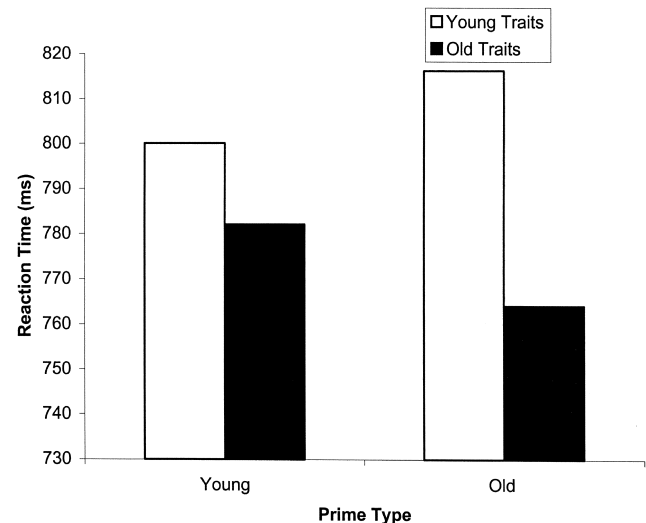

Figure 1. Mean response latency as a function of prime type and trait stereotypicality.

Table 2. Mean Reaction Times (in Milliseconds) as a Function of Age Group and Prime Type for Trait Stereotypicality and Trait Valence

Prime	Trait Stereotypicality		Trait Valence	
	Young	Old	Positive	Negative
Young Adults				
Young	716	712	710	718
Old	742	693	703	731
Older Adults				
Young	887	855	868	874
Old	894	839	850	884

Overall, participants responded faster to traits descriptive of older people ($M = 773$ ms) than to traits descriptive of younger people ($M = 808$ ms), independent of the preceding prime, $F(1,125) = 29.02, p < .001$, for the main effect of trait stereotypicality. More important, the ANOVA revealed a significant Prime $\times$ Stereotypicality interaction, $F(1,125) = 8.07, p < .01$. Comparisons within each trait type indicate that participants responded faster to stereotypically old traits when they were preceded by the old prime ($M = 764$ ms) rather than the young prime ($M = 782$ ms; $p < .05$). Conversely, they responded faster to the young traits when these were preceded by the young prime ($M = 800$ ms) rather than the old prime ($M = 816$ ms; $p < .06$). Comparisons within each prime type further indicated that participants responded faster to stereotypically old traits than to stereotypically young traits after the old prime (Ms $= 764$ and 816 ms, respectively, $p < .001$). Surprisingly, however, this facilitation effect did not hold for the young prime. Following the young prime, participants were faster to respond to the stereotypically old traits than to the stereotypically young traits (Ms $= 782$ and 800 ms, respectively, $p < .05$).

If older and younger respondents differ in the stereotypes they hold about these age groups, the above patterns should be qualified by participants' age. Empirically, this was not the case, and the above Prime $\times$ Stereotypicality interaction was not moderated by participants' age ($F < 1$ for the three-way interaction). As shown in Table 2, younger and older adults had similar patterns of reaction times, which suggests that older and younger respondents share the same stereotypes, particularly with regard to elderly people.

Finally, the Prime $\times$ Stereotypicality interaction was not moderated by SOA ($F < 1$ for the three-way interaction). Theoretically, participants' responses under short SOA conditions are based on automatic processes, whereas long SOAs allow for deliberate corrections before to the overt response, which may be motivated by social desirability concerns. The absence of an interaction with SOA therefore suggests that participants did not edit their responses even under conditions where this would have been possible.

Age-Based Prejudice

A second objective of our study was to examine the influence of old and young primes on the identification of posi-

tive and negative traits, independent of the stereotypicality of these traits. Theoretically, the observation that participants respond faster to a negative trait when it is preceded by the old prime rather than the young prime, for example, would indicate implicit prejudice.

Overall, participants produced faster responses to positive traits ($M = 781$ ms) than to negative traits ($M = 800$ ms), $F(1,125) = 13.52, p < .001$, for the main effect of trait valence. The Prime $\times$ Valence interaction was not significant, $F(1,125) = 2.66, p > .10$. To examine whether Perdue and Gurtman's (1990) results replicate with a stimulus set that eliminates the previous confound of stereotypicality and valence, we conducted planned comparisons (see Figure 2; all tests were one tailed). These analyses revealed a pattern of responses that was *opposite* to the one found by Perdue and Gurtman, with both younger and older participants showing more positive attitudes toward elderly people than toward young people. For example, Perdue and Gurtman observed faster responses to positive traits after the young prime rather than the old prime; however, a marginally significant pattern ($p < .08$) that was opposite in direction was found in the present data (Ms $= 787$ ms and 775 ms for the young and old primes, respectively). Perdue and Gurtman also found faster responses to negative traits when they were preceded by the old prime rather than young prime, but there was no difference between those means in the present study (Ms $= 806$ ms and 794 ms for old and young primes, respectively, $p > .17$). In short, Perdue and Gurtman's pattern did not hold up when the effects of trait valence were separated from the effects of trait typicality.

Comparisons within each prime type further indicated that participants made faster responses to positive traits ($M = 775$ ms) than to negative traits ($M = 806$ ms) when they were preceded by the old prime ($p < .001$). Note that this finding indicates that positive traits are more closely associated with elderly people than are negative traits, in contrast to what the implicit prejudice hypothesis would predict. These results again differ from those of Perdue and Gurtman (1990), who found no difference for this comparison with a stimulus set that confounded valence
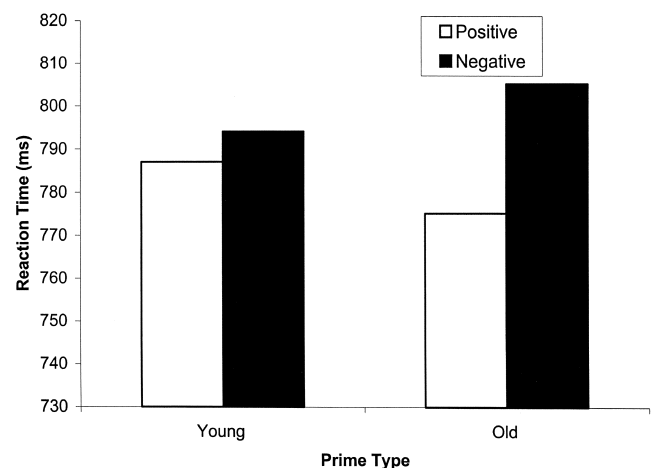

Figure 2. Mean response latency as a function of prime type and trait valence.

and stereotypicality. Finally, the present data did replicate Perdue and Gurtman's finding of faster responses to positive than to negative traits that followed the young prime, although the difference was less pronounced (Ms = 787 and 794 ms for positive and negative traits, respectively, p < .05) compared with that for the old prime.

As in the preceding stereotyping analysis, participants' age did not moderate the prejudice effects (F < 1 for the Age × Prime × Trait Valence interaction). This suggests that the younger and older adults shared similar attitudes toward elderly adults (see Table 2). Moreover, those attitudes are positive rather than negative, in contrast to what an implicit prejudice hypothesis would suggest. In addition, SOA did not qualify these effects (F < 1 for the three-way interaction), again suggesting that participants felt no need to modify their responses. Finally, none of the other three-way interactions, nor any higher order interactions, were significant, with participant age and SOA only producing main effects and qualifying no interactions.

DISCUSSION

The present study examined the activation of age prejudice and aging stereotypes in younger and older adults. The small amount of research that has been conducted in this area has suggested that younger adults associate negative traits with the concept *old* and positive traits with the concept *young* (Chasteen & Pratt, 1999; Perdue & Gurtman, 1990). Unfortunately, however, previous studies did not separate the contributions of trait valence and trait stereotypicality. It is therefore unclear whether their results reflected the activation of stereotypes or of attitudes (Blair & Banaji, 1996; Wittenbrink et al., 1997). The current research addressed this ambiguity by manipulating trait valence and trait stereotypicality independently, thus permitting an examination of the activation of aging stereotypes and age-based prejudice in younger and older people. The results provided compelling evidence for automatic stereotyping, but not for automatic prejudice.

Automatic Stereotyping

With regard to automatic stereotyping, we found that younger and older adults shared the same stereotypes of younger and older people. Age did not moderate the significant Prime × Stereotypicality interaction. Moreover, the data indicated that all participants had stronger stereotypes of older people than of younger people. This was evident in the strong patterns of facilitation regarding the old traits: (a) Participants responded faster to old traits when they followed the old versus the young prime and (b) participants responded faster to old traits than to young traits when they followed the old prime. In contrast, there was only weak evidence supporting the notion of activation of a young stereotype: (a) Participants did respond faster to young traits when those traits followed the young versus the old prime, but (b) participants responded faster to the old traits rather than to the young traits that followed the young prime.

Besides the evidence demonstrating a weaker association between the concept of young and young traits, the present data also raise the possibility of differential patterns of dissociation. Responses to young traits following the old prime

were the slowest of all pairings, reflecting the greatest degree of dissociation. Perhaps it is the case that young traits are viewed as more atypical of the concept *old* than old traits are of the concept *young*. This notion is consistent with the data from the second pilot study, in which there was a greater difference in typicality ratings for young traits across the two scale versions (M = 1.46) compared with old traits (M = 0.55). Thus, the slower response times in response to the old prime–young trait pairing might reflect some sort of inhibitory response resulting from greater dissociation.

Although the lack of a strong association between the young prime and young traits was unexpected, it is unlikely that it reflects problems with the trait selection. One potential problem might have been that the traits were unequal in their frequency or length. Yet, we found no differences in word frequency and length across the four types of words. Another potential problem might have been that we selected young words that were not as strongly associated with the young stereotype as the old words were associated with the old stereotype. The results from the second trait rating study, however, show that the young traits were rated as characteristic of young people (M = 3.72) as the old traits were of old people (M = 3.16). Thus, we believe the weak activation pattern we observed for the young stereotype was not due to our selection of traits. Rather, we believe it is more likely that people hold better defined stereotypes of older adults and that these stereotypes are more frequently activated than the stereotypes people have of young adults. When the two types of stereotypes are pitted against one another, as they were in the present study, the elderly stereotypes are more accessible and thus show a stronger pattern of activation than the young stereotypes.

Our finding of the same response patterns in young and old participants suggests that aging stereotypes do not change as people grow older and that both age groups have similar mental representations of each other and of their own age group. As seen in Table 2, younger and older adults showed similar patterns of stereotype activation. Further, SOA did not moderate the Prime × Stereotypicality interaction, suggesting that this pattern of age-based stereotyping exists under conditions of either automatic or controlled processing.

Automatic Prejudice

Whereas our findings make a compelling case for age-based stereotyping of elderly people, they provide only weak support for the presence of age-based prejudice. First, the Prime × Valence interaction was not significant. Second, planned comparisons revealed that the only pattern of means that was consistent with the results of Perdue and Gurtman (1990) was the finding that participants responded faster to positive traits than to negative traits that followed the young prime. However, this same pattern was observed for the old prime, and the effect was even stronger. Taken together, the results from the planned comparisons suggest that perceptions of elderly individuals are relatively favorable. Moreover, the lack of a significant Age × Prime × Valence interaction supports the notion that younger and older adults view each other similarly (see Table 2). As with the Prime × Stereotypicality interaction, SOA did not moderate

this pattern of results, indicating that people showed the same pattern of responses whether they were under automatic or controlled processing conditions.

The results regarding age-based prejudice suggest that both younger and older adults have positive associations for the concept *old* and do not show signs of automatic ageism. This finding is consistent with many others that have shown people can access multiple stereotypes of elderly individuals, including positive stereotypes (Brewer et al., 1981; Brewer & Lui, 1984; Hummert, 1990; Hummert et al., 1994; Schmidt & Boland, 1986). Moreover, these findings are also in line with work on ambivalent stereotypes, which suggests that groups like elderly individuals might be disrespected but are also regarded with relative warmth (Fiske et al., 2002). Our findings are incompatible, however, with Perdue and Gurtman's (1990) conclusion of automatic ageism. We propose that their findings can be traced to the confounding of trait valence and trait stereotypicality in their stimulus set. From this perspective, their findings indicate automatic stereotyping, as observed in the present study, rather than automatic prejudice.

In light of participants' positive perceptions of elderly people, the absence of effects for SOA is not surprising. The fact that participants in the long SOA condition did not respond differently suggests that they might not have been motivated to show a different attitude even though they had more control over their responses (see Appendix, Note 2). Indeed, our own explicit measure of aging attitudes revealed only a marginal age difference, suggesting that younger and older people do not differ strongly in their views of elderly individuals and actually hold moderately favorable attitudes toward older people (see Appendix, Note 3). These results are consistent with some of the previous aging attitude research that has found positive or mixed attitudes toward older people (Crockett & Hummert, 1987; Hummert et al., 1995).

In conclusion, the present study contributed to research on aging stereotypes by examining younger and older adults' accessibility to stereotypic and nonstereotypic traits under automatic and controlled processing situations. Our findings indicate that younger and older adults share similar mental representations or stereotypes of younger and older people. In addition, the present data show that ageism is not automatic in younger or older people, and in fact both age groups access their positive aging attitudes faster than their negative ones. Future research will need to address the conditions under which the accessibility of the concept *old* affects people's subsequent behavior toward older adults in daily life.

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REFERENCES

Anderson, N. H. (1968). Likeableness ratings of 555 personality-trait words. *Journal of Personality and Social Psychology, 9*, 272–279.

Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action. *Journal of Personality and Social Psychology, 71*, 230–244.

Blair, I., & Banaji, M. (1996). Automatic and controlled processes in stereotype priming. *Journal of Personality and Social Psychology, 70*, 1142–1163.

Brewer, M. B., Dull, V., & Lui, L. (1981). Perceptions of the elderly: Stereotypes as prototypes. *Journal of Personality and Social Psychology, 41*, 656–670.

Brewer, M. B., & Lui, L. (1984). Categorization of the elderly by the elderly: Effects of perceiver's category membership. *Personality and Social Psychology Bulletin, 10*, 585–595.

Celejewski, I., & Dion, K. K. (1998). Self-perception and perception of age groups as a function of the perceiver's category membership. *International Journal of Aging and Human Development, 47*, 205–216.

Chasteen, A. L., & Pratt, J. (1999). The effect of age-related stereotypes on response initiation and execution. *Journal of General Psychology, 126*, 17–36.

Crockett, W. H., & Hummert, M. L. (1987). Perceptions of aging and the elderly. In K. W. Schaie & C. Eisdorfer (Eds.), *Annual review of gerontology and geriatrics* (Vol. 7, pp. 217–241). New York: Springer.

Fazio, R. H., Jackson, J. R., Dunton, B. C., & Williams, C. J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline? *Journal of Personality and Social Psychology, 69*, 1013–1027.

Fazio, R. H., Sanbonmatsu, D., Powell, M., & Kardes, F. (1986). On the automatic activation of attitudes. *Journal of Personality and Social Psychology, 50*, 229–238.

Fiske, S. T., Cuddy, A. C., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology, 82*, 878–902.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology, 74*, 1464–1480.

Hummert, M. L. (1990). Multiple stereotypes of elderly and young adults: A comparison of structure and evaluations. *Psychology and Aging, 5*, 182–193.

Hummert, M. L. (1999). A social cognitive perspective on age stereotypes. In T. M. Hess & F. Blanchard-Fields (Eds.), *Social cognition and aging* (pp. 175–196). San Diego, CA: Academic Press.

Hummert, M. L., Garstka, T. A., Shaner, J. L., & Strahm, S. (1994). Stereotypes of the elderly held by young, middle-aged, and elderly adults. *Journal of Gerontology: Psychological Sciences, 49*, P240–P249.

Hummert, M. L., Shaner, J. L., & Garstka, T. A. (1995). Cognitive processes affecting communication with older adults: The case for stereotypes, attitudes, and beliefs about communication. In J. F. Nussbaum & J. Coupland (Eds.), *The handbook of communication and aging research* (pp. 105–132). Mahwah, NJ: Erlbaum.

Jonides, J., & Mack, R. (1984). On the cost and benefit of cost and benefit. *Psychological Bulletin, 96*, 29–44.

Kawakami, K., Dion, K. L., & Dovidio, J. F. (1998). Racial prejudice and stereotype activation. *Personality and Social Psychology Bulletin, 24*, 407–416.

Kite, M. E., & Johnson, B. T. (1988). Attitudes toward older and younger adults: A meta-analysis. *Psychology and Aging, 3*, 233–244.

Kucera, H., & Francis, W. N. (1967). *Computational analysis of present day American English*. Providence, RI: Brown University Press.

Lasher, K. P., & Faulkender, P. J. (1993). Measurement of aging anxiety: Development of the anxiety about aging scale. *International Journal of Aging and Human Development, 37*, 247–259.

Levy, B. (1996). Improving memory in old age through implicit self-stereotyping. *Journal of Personality and Social Psychology, 71*, 1092–1107.

Lutsky, N. (1980). Attitudes toward old age elderly persons. In C. Eisdorfer (Ed.), *Annual review of gerontology and geriatrics* (Vol. 1, pp. 287–336). New York: Sprnger.

Perdue, C. W., & Gurtman, M. B. (1990). Evidence for the automaticity of ageism. *Journal of Experimental Social Psychology, 26*, 199–216.

Rothbaum, F. (1983). Aging and age stereotypes. *Social Cognition, 2*, 171–184.

Schmidt, D. F., & Boland, S. M. (1986). Structure of perceptions of older adults: Evidence for multiple stereotypes. *Psychology and Aging, 1*, 255–260.

Speas, K., & Obenshain, B. (1995). *Images of aging in America*. Washington, DC: American Association of Retired Persons.

Tajfel, H. (1981). *Human groups and social categories: Studies in social psychology*. Cambridge, England: University Press.

Wittenbrink, B., Judd, C. M., & Park, B. (1997). Evidence for racial prejudice at the implicit level and its relationship with questionnaire measures. *Journal of Personality and Social Psychology, 72*, 262–274.

Appendix

Notes

1. Additional results pertaining to the valence of the traits, which was not of concern in this analysis, can be obtained from Alison L. Chasteen.

2. It should be noted that if we had found that both younger and older adults had demonstrated age prejudice, SOA also might not have had an effect. At present it is unclear whether individuals feel the same societal pressure to mask prejudiced feelings toward elderly people as they do for other groups (e.g., visible minorities, women). If that were the case, then no differences between SOA conditions might have been observed for that pattern of results.

3. An examination of the raw means for each subscale revealed the ratings were well over the neutral point of the two scales (Anxiety About Aging subscale, $M = .89$; Liking scale, $M = 1.91$).