

Implicit Ageism

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In a chapter entitled "Age and Human Society" in the 1935 *Handbook of Social Psychology*, Walter Miles chronicled everything a social scientist would want to know about the topic. Yet this all-encompassing treatise, beginning with the insight that "Men are not all equal partly for the reason that they cannot all be born at the same time" (p. 596), had nothing to say about the inequality that old age elicits through the two central psychological processes of attitude and belief: negative feelings and thoughts toward those who are so marked. Even at the time of Miles's writing, equivalent treatments of other social groups, such as women, African Americans, and Jews, included a discussion of the content of the prejudices and stereotypes of the day, the processes by which they operate, and their consequences (Dollard 1937; Lasker 1930; Plewa 1936). Fifty years later, Roger Brown's textbook *Social Psychology* included an extended discussion of stereotypes and prejudice as they related to race, gender, nationality, and sexual orientation. Again, age prejudice was absent from the presentation. It appears that the recognition, even among social scientists, that age can serve as a potent attribute from which psychological and social benefit or harm can radiate has been slow in coming. However, as this book and others over the past decade attest, the notion that age is a social category worthy of attention for the study of stereotypes and prejudice is recently but firmly in place now (for reviews see Hummert 1999; Palmore 1998).

Beliefs about the elderly as unable to contribute to society, and hence as dispensable members of a community, and attitudes toward them of dislike and distancing are prevalent (Kite and Johnson 1988). Social scientists have focused on the effects of negative beliefs and attitudes to examine discrimination toward the aged in a variety of spheres, including everyday conversations (Hummert and Ryan 1996; Williams and Giles 1998), politics (Sigelman and Sigelman 1982) and the workplace (Butler

1980; Finkelstein, Burke, and Raju 1995). To take just one example of discriminatory treatment, many older Americans do not receive necessary care for common and treatable medical conditions, including heart disease (Asch et al. 2000; Bowling 1999; Guigliano et al. 1998; Hillerbrand and Shaw 1990). Although poverty, insofar as its effects are magnified in old age, is obviously involved, the reason for discrimination does not appear to be solely financial, because the vast majority of treatments are covered by Medicare (Asch et al. 2000). Instead, some believe that "ageism in clinical medicine and health policy reflects the ageism evident in wider society" (Bowling 1999, p. 1353). As health maintenance organizations and medical centers place pressure on physicians to spend increasingly less time with each patient, discrimination against the elderly is likely to increase. In time-pressured situations in which attention is called to a number of tasks at once, individuals may be more likely to engage in stereotyping (Gilbert and Hixon 1991; Blair and Banaji 1996; Jamieson and Zanna 1989; Pratto and Bargh 1991).

In this chapter, we make two claims regarding ageism, which we define as an alteration in feeling, belief, or behavior in response to an individual's or group's perceived chronological age. First, one of the most insidious aspects of ageism is that it can operate without conscious awareness, control, or intention to harm. Although the idea of the implicit nature of stereotyping and prejudice is not new to social science research (Katz and Braly 1935; Crosby, Bromley, and Saxe 1980; Devine 1989), the idea of implicit ageism is unique in at least one way. There are no hate groups that target the elderly as there are hate groups that target members of religious and racial and ethnic groups. Even gender prejudice has produced the recognition that there are those who have explicit antipathy toward one or the other group (e.g., misogynists, male chauvinists, man haters). In contrast, social sanctions against expressions of negative attitudes and beliefs about the elderly are almost completely absent. In fact, the widespread occurrence of socially acceptable expressions of negativity toward the elderly has been well documented (Williams and Giles 1998). This state of affairs stands in contrast to other social groups, where, at least in public discourse, there has been a notable change in recognition of social disadvantage and the need for action to ameliorate its consequences.

In this context of a lack of strong, explicit hatred toward the elderly, on the one hand, and a wide acceptance of negative feelings and beliefs about them, on the other, the role of implicit attitudes and knowledge about age becomes especially important. Such an analysis can reveal the extent to which the roots of prejudice can be found at levels that are unnoticed or uncontrollable.

In the early decades of research on ageism (the 1970s and 1980s), when self-report measures were almost exclusively used to measure prejudice and stereotypes, it was assumed that such prejudice was to be found in some but not in others (Kogan 2000). The second claim of this chapter is that all humans, to varying degrees, are implicated in the practice of implicit ageism. The mental processes and behaviors that show sensitivity to age as an attribute are automatically produced in the everyday thoughts and feelings, judgments and decisions, of ordinary folk, such as the writers of this chapter. Yet there are also large individual differences in such attitudes, and the emerging research findings on implicit age stereotypes and prejudice usher in new implications for policies intended to guard and protect equal treatment that otherwise erodes with age.

We define implicit age stereotypes (also called automatic or unconscious stereotypes) as thoughts about the attributes and behaviors of the elderly that exist and operate without conscious awareness, intention, or control. We define implicit age attitudes (also called automatic or unconscious prejudice) as feelings toward the elderly that exist and operate without conscious awareness, intention, or control. In this chapter we use the term *implicit ageism* to cover both implicit age stereotypes and prejudice. We realize that ageism can also apply to stereotypes and prejudice directed at the young, but our focus here remains on the negative attitudes and beliefs that have come to be associated with old age.

In contrast to implicit age stereotypes and prejudice, the conscious or controllable thoughts and feelings of explicit stereotypes and prejudice might be elicited by such questions as, "Do you prefer those who are young to those who are old?" The challenge for those interested in implicit social cognition has been to find ways to measure unconscious thoughts and feelings, for they cannot be easily assessed through verbal self-report. Alongside the many studies of implicit biases involving race and gender, a small but sufficient number of studies of implicit ageism is now available, making it possible to evaluate the trends and implications of the emerging findings. As we do so, we are aware of the disparity in the attention given in research settings to age as a social category compared with other groups. The far-less research attention accorded to age is yet another indicator of the ease with which this form of discrimination appears to be acceptable compared with others. Ageism, unlike racism, does not provoke shame. It may be a matter of some interest to track changes in the recognition of ageism as a form of discrimination worthy of study even in the community of social scientists working on the topic of prejudice.

In this chapter, we review the two methodologies that have been most extensively used to study implicit ageism: the Implicit Association Test

(IAT; Greenwald, McGhee, and Schwarz 1998) and priming. The age IAT studies have tended to explore individual and group differences in unconscious attitudes, stereotypes, and identity as they relate to age. The stereotype priming studies, on the other hand, have tended to examine the impact of implicit age stereotypes and attitudes on cognitive, behavioral, and affective outcomes. In this chapter, we review both the IAT and stereotype priming measures and their assumptions, then outline the major findings related to implicit ageism. We discuss research findings based on both young participants, who do not yet share group membership in the category, and older participants, for whom old age has relevance to self and identity. Finally, we speculate about how implicit ageism may develop and the cause of one of the more striking implicit ageism findings: implicit out-group favoritism expressed by older individuals. Throughout the chapter, we seek to show the commonalities between implicit ageism and biases involving other social categories as well as its seemingly unique properties.

Implicit Ageism: Background

Implicit social cognition is an umbrella term used to capture the idea that thoughts and feelings may operate outside the purview of conscious awareness, control, and intention; in contrast, explicit social cognition involves thought and deliberation (Greenwald and Banaji 1995). Numerous studies have demonstrated a disassociation between specific types of implicit and explicit processes of social cognition, such as stereotypes, attitudes, and identity. Race has been prominently studied, with research showing strong and clear negativity toward African Americans compared with European Americans on implicit or automatic measures of social cognition, even when it fails to be observed on more explicit measures (Dasgupta et al. Banaji, 2000; Devine 1989; Dovidio et al., Greenwald et al. 1998; Fazio et al. 1995; Nosek, Banaji, and Greenwald in press). Similar findings have been obtained regarding the automatic use of gender stereotypes (Banaji and Hardin 1996; Blair and Banaji 1996) and implicit age stereotypes (Levy 1996, Nosek, et al., in press).

During the past decade, methods have been developed to facilitate experimental demonstrations and explorations of unconscious processes whose existence was first identified more than a hundred years ago by Sigmund Freud and William James. Several recently developed techniques have specifically focused on assessing implicit attitudes and stereotypes. Their development has drawn on the availability of computers that can capture the speed of mental processes, as well as the numerous studies on

attitudes and stereotypes published over the past century. In addition, the research conducted on other mental processes (e.g., memory), where transitions from purely conscious to both conscious and unconscious measures were achieved earlier, have served as models for developing methods to examine implicit attitudes and stereotypes. To take the construct of implicit attitude as an example, one can work through definitions to show a clear developmental path (see Banaji, 2001). If attitude is "a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (Eagly and Chaiken 1998) and if implicit memory is "revealed when previous experiences facilitate performance on a task that does not require conscious or intentional recollection of these experiences" (Schacter 1987), then implicit attitudes can be "introspectively unidentified (or inaccurately identified) traces of past experience that mediate favorable or unfavorable feeling, thought, or action toward social objects" (Greenwald and Banaji 1995).

Implicit Association Test

A popular measure of implicit social cognition, the IAT (Greenwald, McGhee, and Schwartz 1998; see Banaji 2001 for a review of criticisms), has been largely used to measure automatic attitudes, stereotypes, and identity in a variety of domains including age (see Greenwald and Nosek in press). The IAT relies on a response latency indicator obtained in the process of pairing the attitude object (say, a social group such as *old-young*) with an evaluative dimension (*good-bad*) or knowledge attributes (such as *self-other*, *home-career*, *science-arts*). In the computerized version, the pairing is achieved by using the keyboard (say, a left key) to be pressed in response to items from the two paired categories, *old+bad*, while another key (say, a right key) is used for the other pair, *young+good*. The speed at which this pairing is completed compared to the opposite one is interpreted as a measure of the strength of an implicit evaluation (attitude). Similarly, the strength of association between concept and attribute (that is, *old-young* with *home-career*) is interpreted as a measure of the strength of implicit knowledge (stereotype). The IAT effect is based on a difference score reflecting both the valence of implicit attitude (positive versus negative) and the magnitude of the attitude (larger numbers reflecting larger differences between pairings in milliseconds). (To sample the IAT, visit www.yale.edu/implicit.)

The use of the IAT involves several assumptions that are best listed explicitly: (1) the strength of evaluative (e.g., favorable-unfavorable) and

other attributes (e.g., strong-weak) elicited by a social object can be measured; (2) associations between object and attribute are revealed in the ease with which they are mentally paired; (3) one measure of the strength of such associations is the mental speed involved in making object+attribute pairs; and (4) the mental strength of object+attribute pairs is a rough index of automatic knowledge, attitude, or identity. For instance, the strength of the *elderly+good* pairing is taken as an indicator of automatic attitude, the strength of *elderly+frail* pairing is taken as a measure of that automatic stereotype, and the strength of the *elderly+me* pairing is taken as a measure of that automatic identity between self and elderly.

Of the basic findings regarding implicit ageism we have to date, the following summary may be offered. Nosek, Banaji, and Greenwald (in press) measured the speed of *old+good/young+bad* pairings and compared them to the opposite pairings of *old+bad/young+good* at a demonstration web site (for a description of e-research, see Nosek, Banaji and Greenwald, in press). Based on 68,144 tests that included those along a wide spectrum of ages, we present three findings of general interest. Among the first and most striking aspects of the results plotted in figure 3.1 is the magnitude of the effect. It remains, in our experience with the effects obtained using this task, among the largest negative implicit attitudes we have observed

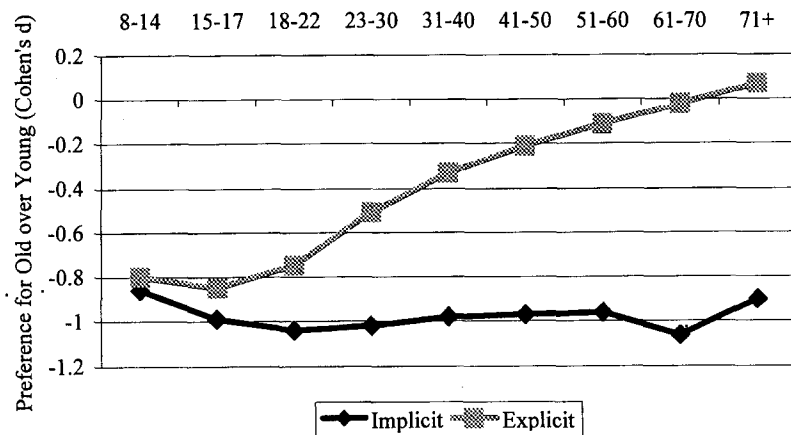


Figure 3.1

Implicit and explicit age attitudes by age group. This figure is adapted from one appearing in Nosek, B. A., Banaji, M. R., and Greenwald, A. G. (in press). Harvesting intergroup attitudes and stereotype data from the Implicit Association Test website. *Group Dynamics*. (c) 2001 by the American Psychological Association. Adapted with permission.

(effect sizes invariably larger than 1)—consistently larger than the anti-black attitude among white Americans.

Second, as can be seen in figure 3.1, the implicit age attitudes stand in contrast to explicit attitudes, with the explicit attitude showing less negativity toward the elderly than the implicit association measure reveals. The explicit age attitudes for all age groups, except those over the age of 70, are negative. The implicit age attitudes are far more negative overall. Although this dissociation between implicit and explicit attitudes is consistent with that observed in other domains, it is not as large as has been found with race, for example, where the positivity of explicit attitudes outperforms the implicit effects by a wider margin. For now, we simply note the dissociation in mean values between implicit and explicit attitudes, which has come to be a signature finding of experiments that compare conscious versus unconscious social group cognition.

Third, we point to a peculiar feature of implicit age effects that distinguishes it from other group attitudes: implicit age bias does not appear to vary as a function of the respondent's age. As can be observed in figure 3.1, older participants, like younger participants, tend to have negative implicit attitudes toward the elderly and positive implicit attitudes toward the young (Greenwald et al. 2000; Nosek, Banaji, and Greenwald in press). This lack of an effect of group membership stands in contrast to the explicit attitude that becomes more positive toward the elderly as the age of the respondent increases. The lack of an effect of group membership also stands in contrast to other implicit attitudes—religion (Jews, Christians), race (black, white Americans), gender (female, male)—where group membership plays a role, and sometimes a strong role, in the implicit attitudes that are revealed. For example, groups often show preference for the in-group over the out-group (e.g., Korean and Japanese participants each showed preference for their own group over the other group, Greenwald, McGhee, and Schwartz 1998). Even when they do not, as when African Americans show on average no preference one way or the other, members of all groups tested to date—other than the aged—invariably show more positive implicit attitudes toward their own group compared to nongroup members.

This finding may be understood in the context of the psychologically permeable nature of the boundary between age groups, which perhaps allows oneself to be dissociated from the group, thereby allowing none of the typical benefit of group membership (i.e., positive implicit attitudes toward the in-group) observed in many other cases. Yet the rise in positivity of explicit attitudes as chronological age rises is in contrast to the

unbending nature of the implicit attitude and suggests that conscious attitudes are more sensitive to group membership than are unconscious attitudes. In this regard, the implicit-explicit divergence in attitude bears similarity to that of African Americans, who show exceptionally strong, positive explicit attitudes toward the group—far stronger than seen in samples of white Americans—and in contrast to their own neutral implicit attitude toward their group (African Americans). We speculate on this implicit out-group favoritism finding in the last part of the chapter.

To our knowledge, no similar large-scale analyses of age stereotypes (as opposed to attitude) using the IAT are available. Based on other work, we would not be surprised to find similar effects across the life span, indicating the presence of stereotypes linking weak, frail, and passive with the elderly, and perhaps even that they are relatively constant with age. Such assessments nevertheless need to await further evidence.

Most recently the IAT has been used to measure age identity and age attitudes. (Greenwald, Banaji, Rudman, Farnham, Nosek, and Mellot, in press) Greenwald and his colleagues (in press) found that unlike most other groups, older individuals tend to identify implicitly with the category young as strongly as did young individuals. The researchers compared elderly and young participants on an in-group-identity IAT (association of self with old) and a self-esteem IAT (association of self with good). Before conducting their research, the authors expected that higher self-esteem elders would have a positive attitude toward old age and would have a stronger age identity “presumably reflecting psychological comfort with their identity as old” (Greenwald, et al. in press, p. 41). Instead, they found the opposite: “the higher the self-esteem of elders the more they both implicitly preferred youth to old age and implicitly identified as young rather than old” (Greenwald et al. in press, p. 42). We provide a possible interpretation for this set of findings at the end of the chapter in the section entitled, “Implicit Outgroup Favoritism.”

Stereotype Priming

Another recently developed method of measuring implicit age stereotypes is through implicit priming of age stereotypes, or activating a pre-existing schema. This method allows researchers to examine the impact that age stereotypes and attitudes may have on thinking, behavior, and decisions without awareness.

In the first research that implicitly primed the construct of age, Perdue and Gurtman (1990) conducted a two-part study to examine whether

ageism, which they defined as “differential association of negative traits with the aged” (p. 199), occurred automatically in young adults. In the first part, they randomly presented twenty positive (e.g., “cheerful”) and twenty negative (e.g., “rude”) traits on a computer screen. After each trait appeared, participants were randomly asked one of several questions that included, “Is this a term that would describe an old person?” and “Is this a term that would describe a young person?” Participants responded by pressing keys labeled “yes” or “no.” Then, in an unexpected free-recall task, participants were asked to list all the traits they had read on the computer. Perdue and Gurtman found that significantly more negative than positive traits were recalled when they were paired with the question about an elderly person. In contrast, significantly more positive traits than negative traits were recalled when they were paired with the question about a young person. From these results Perdue and Gurtman concluded that an unintentional age bias probably exists. To test more directly if the bias operates outside conscious control, they conducted a second study.

In the second experiment, thirty college students sat in front of a computer and the word *old* or *young* randomly appeared on the screen for 55 ms, a speed selected to avoid conscious recognition. Following the subliminal age primes, one of eighteen positive or eighteen negative traits randomly appeared on the screen. Afterward, participants were asked to decide if the trait is a good or bad quality for a person to possess. They found that the negative traits were judged more quickly after exposure to the “old” prime as opposed to the “young” prime. In contrast, the positive traits were judged more quickly when they followed the “young” prime as opposed to the “old” prime. From these results, the authors concluded that “cognitively categorizing a person as ‘old’ may create a subset of predominantly negative constructs which are more accessible and more likely to be employed in evaluating that person—and this will tend to perpetuate ageism from the beginning of the social perception process” (p. 213).

The Impact of Implicit Age Stereotypes on the Elderly

In 1994, Levy and Langer conducted a study in China and the United States that found stereotypes of aging correlated with memory performance among older individuals. Levy (1996) undertook a follow-up study in order to examine whether more positive stereotypes of aging lead to better memory performance (rather than the other way around) and whether activating negative stereotypes of aging might worsen memory performance.

To create the implicit age stereotype intervention, Levy (1996) created two priming tasks: one that subliminally activated positive and one that subliminally activated negative stereotypes of aging. To ensure that the positive and negative age stereotype primes reflected the meaning of stereotypes used in everyday life, Levy surveyed a number of people of different ages and asked them to generate behaviors and traits that reflected senility or wisdom. Then she asked another intergenerational panel to rate these words on how characteristic of old age and how positive or negative they seemed. The words selected for the negative age stereotype intervention included *incompetent*, *decrepit*, and *diseased*. The words selected for the positive age stereotype intervention included *guidance*, *sage*, and *accomplished*. These sets of words, with a predominance of positive or negative stereotypes in each, were flashed on a computer screen at a speed designed to prevent conscious recognition. Individuals, who sat in front of the computer, were told to try to identify whether a flash appeared above or below a bull's-eye by pressing one of two arrow keys. (For a complete description of the stereotype intervention, see Levy 1996).

Previous explicit interventions carried out by other researchers that tried to alter individuals' views of aging or their assumptions about memory performance in old age had not been successful (e.g., Lachman et al. 1992). Levy's premise was that to shift individuals' stereotypes of aging from the predominantly negative ones to the less common positive ones in the United States, the most likely approach would be an intervention that draws on the unconscious so that it can bypass the negative stereotypes that are repetitively internalized throughout older individuals' lifetimes.

Before and after participants were randomly assigned to the age stereotype intervention, they took five memory tests and were asked questions about how well they thought they would perform. Levy (1996) found that older participants exposed to the positive age stereotype primes performed significantly better on the memory test than those older participants exposed to the negative age stereotype primes. Although all four visual memory tasks showed this pattern, the auditory memory task did not. This may indicate that self-stereotypes of aging evoke visual imagery and processes rather than verbal descriptions and processes. In addition, those older individuals exposed to the positive age stereotypes reported higher memory self-efficacy than those exposed to the negative age stereotype, suggesting that older individuals' expectations may mediate the performance effect.

A secondary finding of the Levy (1996) study was that older individuals' perceptions can be affected by implicit self-stereotypes. This was il-

lustrated by the interpretations of a story about a 73-year-old woman named Margaret that included details designed to prompt contrasting interpretations (Levy 1996). For example, Margaret spends the night at her daughter's house. Older individuals in the positive age-stereotype condition tended to interpret her as a key member of the family who could provide valuable services, whereas those in the negative age-stereotype condition tended to see her as dependent and drawing on the daughter's resources. This result further suggests that implicit age self-stereotypes can influence older individuals' views of other older individuals as well as of themselves.

An assumption of this study is that self-perceptions and performance are activated by stereotypes. To increase the likelihood that the older individuals' old age identities were activated, the researcher recruited participants through signs that asked for individuals age 60 and older and they were told that the study was assessing "aging memory." In addition, the twenty-four stereotype prime words that were used for the priming intervention were all judged as characteristic of old age by members of an intergenerational panel. Further, in the stereotype priming intervention for both the positive and the negative condition, the word *old* and the word *senior* were presented five times each. As a result, since altogether 100 stereotype words were presented in either the positive or negative intervention, 10 percent of the words were age-category words. Finally, the influence of age stereotypes on memory performance was found in the old, but not in the young, participants.

Although previous priming studies had found that activating stereotypes of a social group could influence participants' perceptions of members of another group (Devine 1989; Banaji, Hardin and Rothman 1993), Levy (1996) examined whether implicitly activating stereotypes of individuals' own social group influenced their performance. It was also the first study to activate both positive and negative stereotypes of the same social group. Research on the content of age stereotypes had suggested that most individuals are aware of both positive (e.g., *wise*) and negative (e.g., *senile*) stereotypes of older individuals (Brewer, Dull, and Lui 1981; Hummert, 1990; Schmidt and Boland 1986). However, stereotype priming research previously had focused on one stereotype per group (Devine 1989). Also, while previous implicit stereotype studies had been limited to college students as participants (Perdue and Gurtman 1990), Levy's respondents included older individuals.

The implicit self-stereotyping effect has been replicated among individuals in diverse groups. For example, Shih, Pittinsky, and Ambady

(1999) took advantage of the cultural stereotypes that Asians have superior quantitative skills compared to other ethnic groups and that women have inferior quantitative skills compared to men. When the researchers implicitly primed Asian American women's gender identity, they performed worse on a mathematics test, and when they implicitly primed the women's Asian identity, the women performed better on the mathematical test than a control group who had neither identity activated. By conducting a cross-cultural analysis, the researchers concluded that it was the participants' stereotypes, and not their identity, that was influencing their performance. Steele and Aronson (1998) demonstrated that merely asking African American students to record their race was sufficient to impair test performance. From such research, we gather firm support for the idea of automatic self-stereotyping. With friends like oneself, who needs enemies?

In addition, the depth and breadth of the impact of implicit self-stereotypes on aging have been demonstrated in a series of studies using subliminal priming procedures. In research following the memory performance finding, Levy, Ashman, and Dror (2000) found that self-stereotype activation influenced older individuals' reported will to live. Again, old and young participants were randomly assigned to either negative or positive stereotypes of old age. As predicted, the priming selectively influenced the responses of the older participants to hypothetical medical situations. Aged participants primed with negative age stereotypes tended to refuse life-prolonging interventions, whereas the old participants primed with positive age stereotypes tended to accept the same interventions. As expected, this priming did not emerge among younger participants, for whom the stereotypes were less personally relevant. The results go further than the ones showing lowered performance on a test to suggest that societally transmitted negative stereotypes of aging can weaken elderly people's will to live.

In order to determine whether self-stereotypes of aging affect behavior that is assumed to operate without the control of conscious processes (Allport and Vernon 1933), Levy (2000) examined whether stereotypes can influence a behavior associated with age change: handwriting. She found that those exposed to negative stereotypes of aging demonstrated shakier handwriting than those exposed to positive stereotypes, as determined by judges blind to the participants' stereotype condition. This study suggests that handwriting may prove to be a useful tool for monitoring the influence of negative stereotypes in future experiments, as well as in clinical settings.

Because implicit self-stereotypes of aging operate without awareness, the process may be particularly harmful. Just as younger individuals who are not aware of the impact of implicit age stereotypes are unlikely to correct for resulting discriminatory behavior, older individuals are unlikely to recognize outcomes they experience as being due to implicit age self-stereotypes. An adverse health outcome, for instance, might be attributed to an inevitable consequence of aging rather than to a response triggered by a negative implicit self-stereotype.

The potential for this misinterpretation is suggested by the results of a study that examined whether aging self-stereotypes can influence cardiovascular function (Levy et al. 2000). After elderly persons were subliminally exposed to either positive or negative aging stereotypes, they faced mathematical and verbal challenges. Those exposed to the negative aging stereotypes demonstrated a heightened cardiovascular response to stress, measured by heart rate, blood pressure, and skin conductance, as compared to those exposed to positive aging stereotypes (see figure 3.2). It appears that the negative aging stereotypes acted as direct stressors, whereas the positive aging stereotypes helped protect participants from

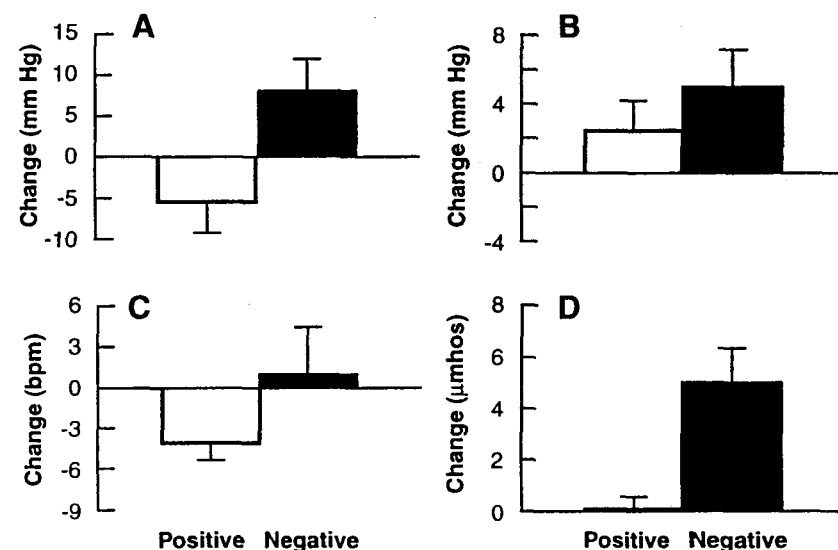


Figure 3.2

The influence of implicit aging self-stereotypes on cardiovascular response to stress. Change from baseline for (A) systolic blood pressure, (B) diastolic blood pressure, (C) heart rate, and (D) skin conductance.

experiencing elevated cardiovascular reactivity or response to stress (associated with the onset and progression of cardiovascular disease; Barnett et al. 1997).

Overall, these studies suggest that ageism may have an impact on older individuals' cognition, behavior, and health without their awareness. Although most studies tend to select a particular dependent variable for ease and tractability, there is no reason to believe that only one system is affected at a time. Instead, it seems likely that these different effects of implicit age stereotypes could be interrelated and perhaps mutually reinforcing.

The process of implicit aging self-stereotypes could be activated by many of the manifestations of stereotypes that permeate society. In turn, the manifestations of age self-stereotypes are perceived by others. There is, then, a reciprocal nature to this automatic exchange between stereotypes and self-stereotypes. For example, elderly individuals often encounter an expectation that they are subject to memory loss. This expectation takes forms that range from enforced early retirement to casual references by middle-aged individuals to their own "senior moments" when they have forgotten something. It is also possible that when young people are around older people, they adjust their behaviors in ways that reflect age stereotypes and thus activate the age stereotypes in older individuals.

In an experiment aimed at determining the effect of stereotype priming on younger individuals' behavior, Bargh and his colleagues used scrambled sentences containing words intended to activate age stereotypes (Bargh, Chen, and Burrows 1996). Although the priming did not occur subliminally, the participants were unaware of the purpose of the experiment (they were told it was to test language proficiency), and they were unaware of what constituted the outcome of the experiment (the rate at which they walked down the hall after the test was seemingly over). The researchers found that participants in the stereotype group walked slower afterward than did the participants who had been in the neutral group.

The assumption that the influence of stereotypes is tied to their relevance, so that the old would be more affected than the young by primed stereotypes of aging, is not necessarily at odds with the finding by Bargh, Chen, and Burrows (1996) that the aging primes induced young subjects to walk more slowly. Using the subliminal stereotype of aging priming technique, the effect of aging self-stereotypes on the gait of older participants was examined. When positive stereotypes of aging were activated in the study, walking speed increased from baseline by 9 percent, and the

percentage of swing time—the time spent with a foot off the ground, which reflects balance capabilities—increased significantly (Hausdorff, Levy, and Wei 1999). The improved gait speed is similar to gains that have been seen in older participants after weeks of participation in exercise programs. Participants exposed to the negative stereotypes of aging primes showed no significant changes in walking, perhaps because the association between slow walking and negative stereotypes of aging had already been saturated after a lifetime of exposure.

Since neither study included the complementary age group and the study conducted by Bargh and his colleagues did not include a positive stereotypes age group, a precise comparison of performance in the two studies is not easily possible. Nonetheless, the striking improvement among the positively primed older participants in the Hausdorff, Levy, and Wei study may be a guide to how it can be reconciled with the Bargh, Chen, and Burrows study. Insofar as the elderly self-stereotypes may have been more relevant to the old than they were to the young, the old may have been affected to a greater degree than the young would have been if they were included.

There is another explanation for the results in the study conducted by Bargh and his colleagues. The college students may not have been responding to the primes that were unambiguously related to aging, such as *old*, *retired*, and *wrinkle*. Instead, other words that were intended as additional aging primes might have been relevant to the participants in a nonaging way. Among these words were several that might have acted as primes to walk slowly, such as *careful*, *helpless*, and *cautious*. Either way, the effectiveness of priming was demonstrated.

The Development of Implicit Ageism

Although there are no analyses yet of the precise processes by which implicit ageism develops, we can speculate using the related research with children and accounts of the development of automatic biases more generally. Some research suggests that implicit social cognition begins in explicit form and that through chronic activation, what initially requires conscious thought and feeling eventually becomes automatic (Bargh 1997). Children as young as 6 years old can report the age stereotypes of their culture (Isaacs and Bearison 1986). Yet it is possible that age attitudes and stereotypes need not be explicitly stated to be acquired early in life. Comments such as, "Poor Grandma can't walk fast," may be part of what causes negative attitudes to be learned, but simple observation of

the disabilities of age, as well as a neglect of the elderly, may be learned without explicit reference on the part of adults.

Unlike negative attitudes and stereotypes of race and gender, negative feelings and thoughts about age are still prevalent in public spheres. Through fairy tales, children are likely to be exposed to older characters who are portrayed as evil and sinister (Hansel and Gretel) or weak and gullible (Little Red Riding Hood; Cohen, 2000). Television may also promote images of aging that contribute to the formation of implicit age stereotypes. The old are often absent or else appear in comical roles that highlight stereotypes of their decline and incompetence (Kubey 1980; Zebrowitz and Montepare 2000). For example, an advertisement for the search engine hotbot.com showed its rival search engine as a group of dangerously incompetent old men promoting such products as asbestos children's pajamas. The advertisement ends with the statement: "Don't waste time with old links."

The elderly seem distant to the young in the sense that acquisition of old age is seen for what it is: a slow and lengthy process. This may in fact encourage the development of implicit age stereotypes in children because old age has little relevance to their emerging selves, and children may have little reason to question these stereotypes since they are not referring to their in-group (Langer 1989). Children's uncritical acceptance of age stereotypes may contribute to the process by which chronic exposure to negative images of aging in the environment are the data that constitute the associations that continue to operate in both conscious and unconscious form throughout life.

Once age stereotypes have been acquired, they are likely to be automatically triggered by the presence of an elderly person. The broader process has been described by Ichheiser (1970) as one in which "the situation evokes automatically the appropriate attitude and thus controls the selection of classificatory types applied in concrete human relations" (p. 63).

A number of studies have demonstrated that the automatic categorization of individuals into social groups occurs easily and effortlessly in the domains of age, race, and gender (Banaji and Hardin 1996; Devine 1989; Hamilton and Sherman 1994; Perdue and Gurtman 1990). There may well be a functional advantage to automatic stereotypes, for without them, the encounter with any new individual would require continuous new learning. Implicit stereotypes reflect generalizations that are in the interest of simplifying the demands on thinking and feeling and promoting adaptation. By automatic categorization into social groups, such as age, the perceiver, it is assumed, is able to reorient cognitive resources and at-

tention to nonroutine tasks (Bodenhausen, Kramer, and Susser 1994; MacCrae, Milne, and Bodenhausen 1994).

Maintenance of Implicit Age Bias

Implicit age stereotypes are probably maintained, and may even be strengthened, over time by several processes. Research shows that repetitive exposure to primes can increase the strength of an implicit stereotype (Dijksterhuis and van Knippenberg 1998; Levy et al. 2000; Murphy, Monahan, and Zajonc 1995).

In addition, once an implicit stereotype is formed, the stereotype is usually not diminished when a person encounters contradictory evidence (Hill et al. 1990). If anything, the contradiction, such as the successfully aging 78-year-old astronaut John Glenn, may be classified as an exception. Hilton and von Hippel (1996), in their review of stereotypes, discuss the process of self-perpetuation of bias in the context of implicit race and gender stereotypes; it seems reasonable to assume that age stereotypes operate similarly. They show that individuals may strengthen stereotypes in spite of encountering contradictory evidence. For example, children often report that all doctors are male, even when their own pediatricians are female (Adler 2000). Such automatic associations between doctor and male (among many other gender-profession associations) are also observed in studies of college students, regardless of their explicit beliefs (Banaji and Hardin 1996).

The maintenance of negative implicit age stereotypes may also benefit from the process of implicit negative evaluations that lead to avoidance of information (Bargh 1997). When encountering a new object or person, individuals tend to assign a global evaluation of good or bad within a quarter of a second (Zajonc 1980). This implicit evaluation has been linked to approach-avoidance motivation (Lewin 1935). For example, study participants pushed a lever away faster following unpleasant words than the pleasant words and pulled the lever toward themselves faster in response to pleasant than the unpleasant words (Chen and Bargh 1997; Solarz 1960). If the old are automatically assigned a negative evaluation, as suggested by Perdue and Gurtman (1990), younger adults may find ways to avoid interacting with the elderly. This avoidance in turn could reduce the opportunity for younger adults to have meaningful interaction and contact with the elderly, a context in which positive explicit age stereotypes may develop (Palmore 1998).

Recent research by Cunningham, Nezlek, and Banaji (2002) suggests a connection between implicit and explicit attitudes that challenges previous

assumptions that they may be fully dissociated. These investigators demonstrate that when multiple measures are used and the data are subjected to covariance structural modeling, previous assumptions of a complete lack of relationships between conscious and unconscious measures are invalid. Instead, they showed that implicit and explicit attitudes toward five social groups (black-white, gay-straight, American-foreign, Jewish-Christian, and rich-poor) are significantly correlated (while confirmatory factor analysis also reveals the two families of measures are unique in that a single-factor solution does not fit). Although the process by which explicit and implicit attitudes come to be associated is not adequately understood and likely to be complex, it is now possible to speculate that the two may influence each other. If younger adults have no opportunities to develop positive explicit age stereotypes, it may be difficult to change the basis of implicit age stereotypes.

Implicit Out-Group Favoritism

Although a vast body of research demonstrates strong preference for in-groups over out-groups (e.g., Tajfel 1981), the findings reviewed here suggest that age attitudes and stereotypes do not necessarily fit this pattern. Older individuals show evidence of negative attitudes and beliefs toward the elderly, at least on implicit measures. An explanation for this phenomenon may be that by the time younger individuals become elderly, they have spent over a half-century expressing and internalizing negative stereotypes of aging. When the stereotype becomes relevant to their own acquired identity, aged individuals may remain vulnerable because they have not had the opportunity to develop the mechanisms for defending against disparaging views of their group. Thus, the most effective approach may be to avoid identifying with the in-group until that becomes less and less possible, and by then it may be too late to have developed any protection against the negative attitudes and beliefs about the elderly. In support of this, research on implicit processes shows that unlike most other groups studied, such as women and African Americans, who tend to identify with their own social group, older individuals implicitly tend to identify with the young as strongly as the young themselves do (Greenwald et al. in press).

Compounding this problem, the negative implicit stereotypes directed at the elderly (and, later, at oneself) are particularly salient, as suggested by the strength of the negative response to them in the IAT Internet survey. A component of this salience probably arises from the fact that most negative stereotypes about aging relate to some form of debilitation, ei-

ther physical or mental, which is a precursor to the ultimate outcome of old age, death. Since thoughts about death frequently lead to anxiety and tend to operate on an implicit level (McCoy et al. 2000), they may exacerbate the negativity of implicit age stereotypes.

Although theorists have argued that stereotypes exist to protect or enhance oneself or one's group (Adorno et al. 1950; Allport 1954; Lippman 1922; Tajfel 1981), in the case of most aging self-stereotypes, which tend to be negative, it is not the elderly as individuals or a group that is protected and enhanced. Instead, stereotypes of aging reflect the needs of younger members of society. To the extent that the elderly are perceived in negative terms, the converse becomes positive: not being old represents health, acuity, and other desirable states of being. Those who are not old are, by contrast, the beneficiaries of negative stereotypes about aging and remain so until they reach old age.

The elderly provide an example of a culturally peripheral group; therefore, according to Lewin, its members' "opinions about themselves are greatly influenced by the low esteem the majority has for them" (Lewin 1948, p. 194). Although Crocker and Major (1994) have shown that membership in disadvantaged groups need not destroy self-esteem, this fortuitous state of affairs may require conscious acknowledgment of prejudice toward the group and a mentally active buffering that protects against stigma associated with the group. Black Americans, we know from the Web data, show among the highest implicit self-esteem (Nosek et al. in press) and women show implicit self-esteem effects that are comparable to men's (Farnham, Greenwald, and Banaji 1999).

Additionally, women, who represent a group that is socially and politically marginalized like the elderly, do not show the same lack of positive attitudes toward the in-group, even though they may hold implicit negative stereotypes of the group. Women show strong, positive implicit attitudes toward their own group (Carpenter and Banaji 2000), and this effect appears whether or not the group *male* is directly present in the evaluation context (Mitchell, Nosek, and Banaji 2002). In this regard, women's group attitudes differ in a crucial way from those of the elderly. To our knowledge, the elderly is the only group that shows as strong negative implicit attitudes toward their own group as does the out-group (the young). This state of affairs raises the question of the importance of positive explicit attitudes; insofar as the elderly are not the beneficiaries of positive implicit attitudes and stereotypes, it is especially important to achieve the benefits of positive attitudes and beliefs through conscious, explicit modes.

Reducing Negative Implicit Age Stereotypes

Once implicit negative age stereotypes are formed, even though they operate below awareness, several studies suggest that they may be susceptible to appropriate interventions by either reinforcing implicit positive age stereotypes through subliminal priming (Levy 1996; Levy et al. 2000) or through exposure to pictures and descriptions of admired older individuals and disliked younger individuals (Dasgupta and Greenwald (in press), see also Blair and Ma 2002 and Carpenter and Banaji 2000 for similar results with gender). Blair and Ma (2002) found that by encouraging women to think about a "strong woman," they increased automatic stereotypes of women as strong. Similarly, Haines (1999) was able to increase women participants' association of self with strength by using a simulation game in which they were assigned to play a powerful woman.

An equivalent process has been applied to racial and age stereotypes. Dasgupta and Greenwald (in press) demonstrated that pro-white automatic stereotypes could be reduced through exposure to pictures and descriptions of admired black individuals (e.g., Martin Luther King) and disliked white individuals (e.g., Timothy McVeigh), as opposed to a group that was exposed to admired white individuals (e.g., John F. Kennedy) and disliked black individuals (e.g., O. J. Simpson). These authors also found that they could bring about a similar change in implicit negative age stereotypes with exposure to exemplars of admired elderly. In another study, they exposed participants to pictures and descriptions of admired older individuals (e.g., Mother Teresa) and disliked younger individuals (e.g., Tonya Harding), as opposed to admired younger individuals (e.g., Ben Affleck) and disliked older individuals (e.g., Bob Packwood). In both studies, such exposure seemingly focused attention on evaluatively distinct exemplars of the same social group (elderly or young) and produced notable differences in implicit attitude.

These studies demonstrate that an intervention can make a negatively viewed group, such as the elderly, appear more positive on a temporary basis. These experiments are also noteworthy because they show changes in attitude and stereotype that are themselves outside conscious control. In addition, these studies have demonstrated that individuals generalize the intervention exposure to primes of well-known individuals into stronger associations of positivity (or negativity) toward the category as a whole, that is, toward unknown older individuals.

To bring about long-term reduction in negative implicit age stereotypes, other interventions will be necessary. From reviewing how implicit

age stereotypes are initially formed and then reinforced, one approach to change would be a stronger prescription to limit exposure to negative age stereotypes and increase exposure to positive stereotypes of the elderly across the life span. An additional measure may be necessary that requires the efforts of older individuals themselves. History suggests that reduction in discrimination is achieved with social recognition and political action. Both the civil rights and feminist movements were led in large part by members of the disadvantaged groups themselves: African Americans and women, respectively. Nothing less may be required to reduce age bias that supports the existing power structure of younger and middle-aged adults. The task may be harder to accomplish, because unlike other groups, the elderly are not their own best advocates, at least gauging by their implicit attitudes and stereotypes. Our research suggests that as all humans age, they should be aware of their own implicit negative views of their group and consciously develop an identity with old age and its positive attributes, using these to compensate for the ill effects of automatic ageism.

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