Comparing Young and Older Adults' Perceptions of Conflicting Stereotypes and Multiply-Categorizable Individuals

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Individuals can be simultaneously categorized into multiple social groups (e.g., racial, gender, age), and stereotypes about one social group may conflict with another. Two such conflicting stereotype sets are those associated with older adults (e.g., frail, kind) and with Black people (e.g., violent, hostile). Recent research shows that young adult perceivers evaluate elderly Black men more positively than young Black men, suggesting that components of the elderly stereotype moderate the influence of conflicting Black stereotypes (Kang & Chasteen, 2009). The current research begins to examine whether this pattern of perceiving multiply-categorizable individuals is maintained among older adults or altered, perhaps due to aging-related cognitive and motivational changes. In three studies using different targets and evaluative tasks, both young and older participants showed evidence of an interplay between Black and elderly stereotypes, such that they perceived elderly Black targets more positively than young Black targets. A similar pattern was observed when assessing emotion change (Study 1), making ratings of warmth and power in the past, present, and future (Study 2), and when directly comparing young and old Black and White targets on traits related to warmth and power (Study 3). The absence of age differences suggests that evaluation of multiply-categorizable targets follows comparable underlying patterns of stereotype activation and inhibition in younger and older adults.

Keywords: stereotyping, perception, older adults, aging, social cognition

We live in dynamically complex social environments, where individuals inhabit many different social groups simultaneously. Although social categorization is complex, most seminal work on person perception and stereotyping examined only one group identity at a time (e.g., Brewer, 1988; Fiske & Neuberg, 1990). More recently, researchers have started to examine the interactive effects of multiple identities (for reviews see Bodenhausen, 2010; Crisp & Hewstone, 2007; Frable, 1997; Freeman & Ambady, 2011; Kang & Bodenhausen, in press), demonstrating how they work together to guide perception (e.g., Johnson, Freeman, & Pauker, 2012; Neuberg & Sng, 2013; Penner & Saperstein, 2013) and evaluation (e.g., Galinsky, Hall, & Cuddy, 2013; Purdie-Vaughns & Eibach, 2008; Sesko & Biernat, 2010).

An additional complexity associated with multiple identities occurs when stereotypes linked to different categories conflict. For example, stereotypes associated with Black people and older adults conflict. Whereas stereotypes link Black people to violence, criminality, and hostility (e.g., Devine, 1989; Dovidio, Evans, & Tyler, 1986; Eberhardt, Goff, Purdie, & Davies, 2004), both positive and negative stereotypes about older adults suggest nonhostility (e.g., warmth, kindness, frailty; Chasteen, Kang, & Remedios, 2011; Chasteen, Schwarz, & Park, 2002; Cuddy & Fiske, 2002; Hummert, Garstka, Shaner, & Strahm, 1994; Kite, Stockdale, Whitley, & Johnson, 2005). Prior research with young adult perceivers suggests that there is an interaction between conflicting stereotypes when observing multiply-categorizable targets (Kang & Chasteen, 2009; Remedios, Chasteen, Rule, & Plaks, 2011). The present research extends these findings, examining whether younger and older perceivers react similarly to targets characterized by conflicting stereotypes, or if these processes are altered, perhaps due to age-related changes in cognition or motivation. We focus specifically on conflicting stereotypes about Black people and older adults, and outline three hypotheses for how these stereotypes might combine to influence target evaluations.

Hypotheses Related to the Combination of Conflicting Stereotypes

The first hypothesis, the "double-jeopardy hypothesis," posits that someone who belongs to two subordinated groups will encounter more negative consequences than someone who has only one subordinated identity (e.g., Beal, 1970; Blakemore & Boneham, 1994). According to this framework, stigma is additive. This

hypothesis makes intuitive sense, but empirical support is lacking, at least among young perceivers (e.g., Dowd & Bengston, 1978; Ferraro, 1987; Kang & Chasteen, 2009; Levin, Sinclair, Veniegas, & Taylor, 2002). However, this hypothesis has not been tested with older adults, and it is necessary to do so. When combining Black and elderly stereotypes, the double-jeopardy hypothesis predicts two main effects, one of race (more bias against Black compared with White targets) and one of age (more bias against old compared with young targets), but no interaction effect.

A second hypothesis, the global inhibition hypothesis, suggests that whenever two stereotype sets are activated, the more dominant one will override the weaker one (e.g., Bodenhausen & Macrae, 1998; Macrae, Milne, & Bodenhausen, 1995). When perceivers encounter conflicting Black and elderly stereotypes, the global inhibition hypothesis predicts *either* a main effect of race *or* a main effect of age, but not two main effects or an interaction. Evidence of this effect has been observed among younger perceivers, but its applicability to older perceivers requires investigation.

Based on our previous research (Kang & Chasteen, 2009), we propose a third hypothesis, that there will be an interaction between conflicting stereotype content when perceiving multiply-categorizable targets. We found an interaction between Black and elderly stereotypes whereby young adults' perceptions of young Black men reflected hostility stereotypes, but perceptions of old Black men were positive. Whereas older White men were evaluated according to negative age stereotypes, older Black men benefitted from the coactivation of the elderly stereotype—likely both from positive components like warmth and kindness and negative components like frailty—which disarmed the hostility stereotype linked to their race. Our results suggest that Black men may "age out" of bias because elderly stereotypes contradict the Black hostility stereotype, resulting in a beneficial interaction between conflicting stereotype content.

Hypotheses Related to Potential Perceiver Age Effects

Although this interaction between conflicting stereotypes has been observed among young perceivers, it is unclear how older adults will respond. We can formulate predictions for young and old perceivers based on the hypotheses discussed above. We expect young perceivers to react as in our previous study, perceiving elderly Black targets more positively than young Black or old White targets—more specifically, we expect to observe an interaction between race and age in young adults' perceptions. The first possibility in terms of perceiver age effects is that older adults will show a pattern of results similar to what we expect of younger adults. Alternatively, cognitive or motivational changes may lead to a different pattern of perception among older adults.

On the cognitive side, because aging is associated with inhibitory changes (Anderson, Reinholz, Kuhl, & Mayr, 2011; Hasher & Zacks, 1988; Healey, Campbell, & Hasher, 2008), younger and older adults may process conflicting stereotypes differently, leading to different impressions of multiply-categorizable targets. However, research on how general inhibitory changes specifically affect stereotyping among older adults is mixed, so it is unclear how older adults will react to contradictory stereotypes. Some research suggests that older adults are more likely to rely on stereotypes (von Hippel, Silver, & Lynch, 2000) and have difficulty suppressing stereotypical information (Hess, 1985). Al-

though young adults tend to actively inhibit stereotypes, older adults have trouble doing so (Radvansky, Copeland, & von Hippel, 2010). However, other work suggests that older adults can recruit the self-regulatory resources required to inhibit stereotyping (Radvansky, Lynchard, & von Hippel, 2008). Further supporting this suggestion is evidence that compensatory neural responding among normally functioning older adults allows them to react to stigmatized targets similarly to younger adults (Krendl, Heatherton, & Kensinger, 2009).

Past studies with young adults (Kang & Chasteen, 2009; Remedios et al., 2011) suggest that positive components of one stereotype (e.g., the elderly stereotype) inhibit conflicting negative stereotypes (e.g., the Black stereotype). If age-related inhibitory decline results in simultaneous activation of Black and old age stereotypes, older adults' perceptions of elderly Black targets should be more negative than any other target, as predicted by the double-jeopardy hypothesis.

Alternatively, older adults might respond in line with the global inhibition account. In this scenario, the Black stereotype might dominate elderly stereotypes, resulting in similar negative perceptions of the two Black targets (a single main effect of race; no interaction with age). Conversely, if elderly stereotypes dominate Black stereotypes, we should see similar perceptions of the two old targets (a single main effect of age). These perceptions would likely be negative, because although older adult stereotypes are mixed, they are largely negative (Cuddy, Norton, & Fiske, 2005; Kite et al., 2005).

In addition to these potential cognitive differences, motivational factors may lead younger and older adults to perceive multiply-categorizable targets differently. Specifically, ingroup favoritism may drive younger and older adults to favor targets from their own age-group (e.g., Brewer, 2007; Dasgupta, 2004). Although we do not expect this to occur among younger adults based on our previous findings, it is possible that older adults will exhibit ingroup favoritism, evaluating older targets more positively than younger targets, regardless of race.

Overview of Present Research

We designed three experiments to examine the interplay between Black and elderly stereotypes among young and old perceivers, focusing on face perception, a central process underlying person perception and impression formation. Face processing and the perception of facial cues of emotion are biased by a variety of stereotypes, including those related to race, gender, and social class (e.g., Bijlstra, Holland, Dotsch, Hugenberg, & Wigboldus, 2014; Hugenberg & Bodenhausen, 2003, 2004; Hugenberg & Sczesny, 2006; Livingston & Brewer, 2002; Ratcliff, Hugenberg, Shriver, & Bernstein, 2011; Zebrowitz & Montepare, 2008). For example, people are more likely to perceive anger and less likely to perceive happiness on a Black person's face due to stereotypes linking Black people to aggression and hostility (Hugenberg & Bodenhausen, 2003).

In Study 1, we extend this work by adapting a facial expression change paradigm to examine perceptions of Black and elderly stereotypes among younger and older perceivers. Participants observed facial expression changes of young and old Black and White men between the stereotypical emotions of happiness (associated with warmth but not hostility) and anger (associated with

hostility but not warmth). If cognitive or motivational age differences influence participants' impressions, younger and older adults will demonstrate different perceptions when confronted with conflicting stereotype sets. On the other hand, if the processing of conflicting stereotypes remains stable over the adult life span, younger and older adults will demonstrate similar perceptions. In Studies 2 and 3, we use more direct tests to determine whether differences in emotion change detection are paralleled by differences in stereotype perceptions.

Together, these studies provide the opportunity to examine similarities and differences in young and old perceivers' reactions to conflicting stereotypes. Study 1 investigates whether conflicting stereotypes interact similarly among young and old perceivers, and Studies 2 and 3 utilize different techniques to directly compare these stereotypes in order to shed some light on the potential processes underlying this effect.

Study 1: Investigating the Interplay of Conflicting Stereotypes Using a Facial Expression Change Detection Task

Method

Participants. Participants were 64 young (27 women; age: range = 17–24 years, $M = 18.7$ years, $SD = 1.2$) and 51 older (28 women; age: range = 60–80 years, $M = 70.6$, $SD = 5.5$) adults. Across all studies, young participants were drawn from the undergraduate psychology pool at the University of Toronto and were compensated with course credit; older adults were drawn from the University's Adult Volunteer Pool (AVP), were community-dwelling, fluent in English, resided in North America since at least age 10, and received $16 compensation. The AVP includes 4,612 adults (69% women; age: range = 26–110 years, $M = 72.8$, $SD = 9.1$).

Materials and procedure. Participants were invited to an experiment on facial perception in groups of up to four same-age participants. Participants were seated at private testing stations.

Participants viewed videos of targets' facial expressions changing over time. This procedure has been previously used to examine stereotype application (Hugenberg & Bodenhausen, 2003; Kang & Chasteen, 2009), and the videos have been used to examine multiple stereotypes (Kang & Chasteen, 2009). The videos show eight structurally similar young and old Black and White faces—two exemplars from each category: young Black (YB), old Black (OB), young White (YW), old White (OW)—changing between two stereotypical expressions, happiness and anger, and between happiness and anger and a neutral expression. Two videos were created for each transition (happy-to-angry, angry-to-happy; neutral-to-happy, happy-to-neutral; neutral-to-angry, angry-to-neutral), resulting in 48 videos total. Videos were 17 s in duration and 120 frames in length. Sample stimuli can be found in the Appendix.

Participants were asked to press the spacebar when they judged the first expression to have completely disappeared. The actual expressions were not specified (i.e., participants were not told that the facial expression would change from happy to angry, for example). Two practice trials appeared before the randomized experimental set of videos.

Results and Discussion

To compare bias against the four targets, we examined the mean response latencies at which participants indicated that the facial expression transition was complete. We first removed trials with response latencies over 17,000 ms (maximum video length) or below 1,100 ms (change is undetectable before this point). Less than 1% of all trials were removed due to excessively slow or fast times.

Next, we created average scores within each of the three transition types after reversing as necessary (i.e., angry-to-happy and happy-to-angry (reversed) were averaged; angry-to-neutral and neutral-to-angry (reversed) were averaged; neutral-to-happy and happy-to-neutral (reversed) were averaged). This resulted in mean reaction times (RTs) for the three transitions, angry-to-happy, angry-to-neutral, and neutral-to-happy. Longer RTs indicate taking longer to see a change from a more negative to a more positive expression and, therefore, more bias against the target.

We conducted three-way mixed model analyses of variance (ANOVAs) with participant age (young, old) as a between-subjects factor and target age (young, old) and target race (White, Black) as within-subjects factors. Simple effects tests with Bonferroni corrections were used to probe significant interactions.

Transition 1: Angry-to-happy. Higher values on this transition reflect bias because they indicate a longer time to see anger disappear and happiness appear. This analysis revealed main effects of target age, $F(1, 107) = 21.72$, $p < .001$, $\eta_p^2 = 0.17$, target race, $F(1, 107) = 63.97$, $p < .001$, $\eta_p^2 = 0.37$, and participant age, $F(1, 107) = 4.49$, $p = .036$, $\eta_p^2 = 0.04$. For participant age, young participants ($M = 8.62$ s, $SD = 1.39$ s) displayed more bias than old participants ($M = 8.17$ s, $SD = 1.30$ s).

There was also a Target Age × Target Race interaction, $F(1, 107) = 121.83$, $p < .001$, $\eta_p^2 = 0.53$ (see Figure 1, upper panel). Within the Black race category, participants showed more bias against the YB target ($M = 8.26$ s, $SD = 1.32$ s) than the OB target ($M = 7.90$ s, $SD = 1.20$ s), $F(1, 107) = 10.82$, $p = .001$, $\eta_p^2 = 0.09$. In contrast, participants showed more bias against the OW target ($M = 9.44$ s, $SD = 1.27$ s) than against the YW target ($M = 8.10$ s, $SD = 1.15$ s), $F(1, 107) = 112.43$, $p < .001$, $\eta_p^2 = 0.51$. The presence of this interaction contradicts the double jeopardy and global inhibition hypotheses.

We also investigated the simple effect of target race within each target age category. For young targets, more bias was shown against the YB target than against the YW target, $F(1, 107) = 4.13$, $p = .045$, $\eta_p^2 = 0.04$. For old targets, more bias was shown against the OW target than the OB target, $F(1, 107) = 151.85$, $p < .001$, $\eta_p^2 = 0.59$. These differences confirm that neither age-group demonstrated ingroup favoritism.

Transition 2: Angry-to-neutral. Longer response latencies reflect bias because they indicate taking longer to see an angry expression neutralize. This analysis revealed a main effect of target age, $F(1, 106) = 25.91$, $p < .001$, $\eta_p^2 = 0.20$, and two two-way interactions: Target Age × Participant Age, $F(1, 106) = 6.75$, $p = .011$, $\eta_p^2 = 0.06$, and Target Age × Target Race, $F(1, 106) = 105.66$, $p < .001$, $\eta_p^2 = 0.50$. These two-way interactions were further qualified by a Target Age × Target Race × Participant Age interaction, $F(1, 106) = 5.56$, $p = .020$, $\eta_p^2 = 0.05$.

To examine the three-way interaction, we conducted simple interaction tests for the target age by target race interaction within
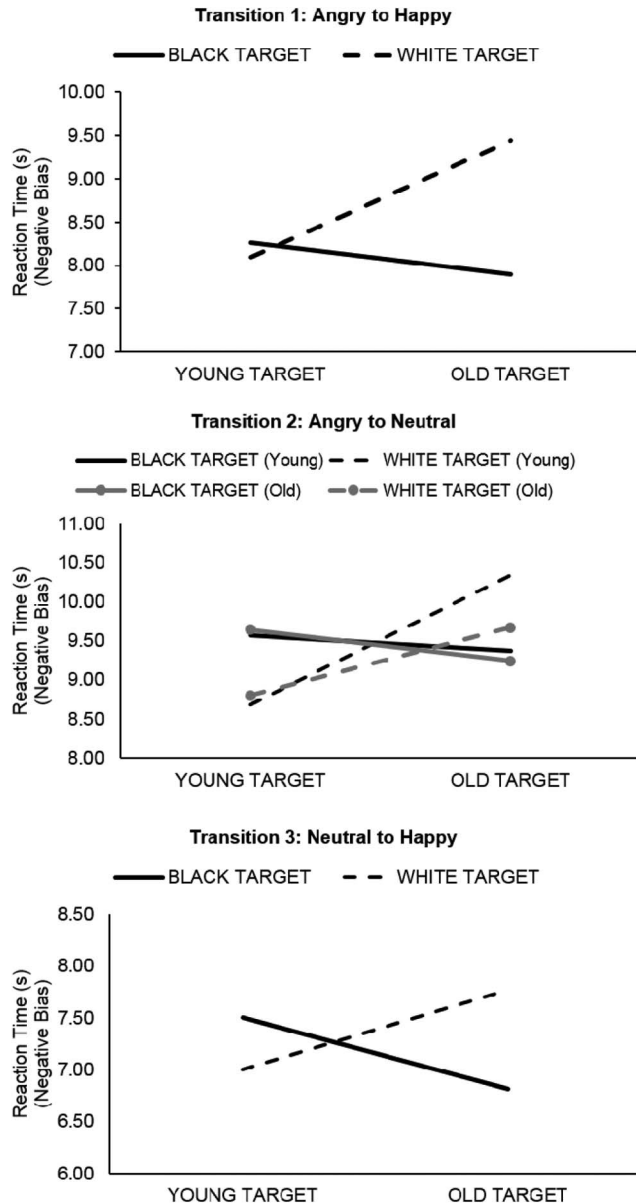
Figure 1. Negative bias displayed toward old and young Black and White targets across three facial expression transitions. Values represent response time latencies, and higher values indicate more bias against the target in question. In Transition 2 (middle panel), participant age-group is indicated in parentheses.

each participant age category. Young and old participants showed the same pattern of results, but the effect was stronger among young participants (see Figure 1, middle panel; young participants: $F(1, 61) = 95.97$, $p < .001$, $\eta_p^2 = 0.61$; old participants: $F(1, 45) = 26.49$, $p < .001$, $\eta_p^2 = 0.37$).

For young participants, the effect of target age differs within each target race category. Young participants did not differ in their evaluation of YB ($M = 9.57$ s, $SD = 1.08$ s) or OB targets ($M = 9.37$ s, $SD = 1.28$ s), $F(1, 61) < 1$, *ns*. Conversely, young participants showed more bias against the OW target ($M = 10.34$

s, $SD = 1.34$ s) than the YW target ($M = 8.68$ s, $SD = 1.13$ s), $F(1, 61) = 112.08$, $p < .001$, $\eta_p^2 = 0.65$.

We next examined the simple effect of target race within each target age category. Young adults showed more bias against the YB target than the YW target, $F(1, 61) = 30.65$, $p < .001$, $\eta_p^2 = 0.33$. Once again, the opposite pattern emerged among old targets: Significantly more bias was shown against the OW target than the OB target, $F(1, 61) = 37.50$, $p < .001$, $\eta_p^2 = 0.38$.

Older participants showed a similar pattern of results: marginally more bias against the YB target ($M = 9.64$ s, $SD = 1.51$ s) than the OB target ($M = 9.24$ s, $SD = 1.43$ s), $F(1, 45) = 3.80$, $p = .057$, $\eta_p^2 = 0.38$; and more bias against the OW target ($M = 9.67$ s, $SD = 1.40$ s) than the YW target ($M = 8.80$ s, $SD = 1.12$ s), $F(1, 45) = 28.14$, $p < .001$, $\eta_p^2 = 0.39$, although this effect was reduced.

For the simple effect of target race within each target age category, older participants showed more bias against the YB target than the YW target, $F(1, 45) = 14.66$, $p < .001$, $\eta_p^2 = 0.25$. The opposite pattern emerged for old targets: more bias was shown against the OW target than the OB target, $F(1, 45) = 11.72$, $p = .001$, $\eta_p^2 = 0.21$.

Transition 3: Neutral-to-happy. Higher values on this transition reflect bias as they indicate taking longer to see a positive expression (happiness) appear. Results revealed a main effect of target race, $F(1, 113) = 9.90$, $p = .002$, $\eta_p^2 = 0.08$, and three two-way interactions.

First, there was a significant Participant Age × Target Age interaction, $F(1, 113) = 9.07$, $p = .003$, $\eta_p^2 = 0.07$. Young participants displayed more bias against old targets ($M = 7.29$ s, $SD = 1.27$ s) than against young targets ($M = 7.03$ s, $SD = 1.26$ s), $F(1, 113) = 5.68$, $p = .019$, $\eta_p^2 = 0.05$. Old participants showed marginally more bias against young targets ($M = 7.52$ s, $SD = 1.69$ s) than old targets ($M = 7.29$ s, $SD = 1.44$ s), $F(1, 113) = 3.65$, $p = .059$, $\eta_p^2 = 0.03$.

Next, analyses revealed a significant Participant Age × Target Race interaction, $F(1, 113) = 7.03$, $p = .009$, $\eta_p^2 = 0.06$. Young participants displayed more bias against White targets ($M = 7.35$ s, $SD = 1.25$ s) than Black targets ($M = 6.97$ s, $SD = 1.26$ s), $F(1, 113) = 18.95$, $p < .001$, $\eta_p^2 = 0.14$. Old participants did not distinguish between racial groups in their overall evaluations, $F(1, 113) < 1$, *ns*.

Finally, analyses revealed a Target Age × Target Race interaction, $F(1, 113) = 88.42$, $p < .001$, $\eta_p^2 = 0.44$ (see Figure 1, lower panel). For Black targets, the YB target ($M = 7.50$ s, $SD = 1.42$ s) was evaluated more negatively than the OB target ($M = 6.81$ s, $SD = 1.18$ s), $F(1, 113) = 36.92$, $p < .001$, $\eta_p^2 = 0.25$. Conversely, more bias was observed against the OW target ($M = 7.77$ s, $SD = 1.08$ s) than the YW target ($M = 7.00$ s, $SD = 1.20$ s), $F(1, 113) = 48.24$, $p < .001$, $\eta_p^2 = 0.30$.

Lastly, we investigated the simple effect of target race within each target age category. For young targets, participants showed more bias against the YB target than against the YW target, $F(1, 113) = 21.55$, $p < .001$, $\eta_p^2 = 0.16$. Similar to the other transitions, the opposite pattern was seen among old targets: More bias was shown against the OW target than the OB target, $F(1, 113) = 109.81$, $p < .001$, $\eta_p^2 = 0.49$.

In terms of our hypotheses related to the combination of conflicting stereotypes, the results for all three transitions support the hypothesis that an interaction between conflicting stereotype con-

tent influences perception of multiply-categorizable targets among *both* young *and* old perceivers. If inhibitory deficits prevented stereotype suppression among older adults, we would have seen results as predicted by the double jeopardy hypothesis (i.e., highest levels of bias against the old Black target). On the contrary, older adults' perceptions were just as suggestive of an interaction between stereotypes as younger adults' perceptions. These results also rule out the global inhibition hypothesis, which does not predict an interaction.

The only transition where participant age moderated this effect was in the angry-to-neutral transition, where the effect was weaker among older perceivers. Similarly, older adults had quicker RTs overall in the angry-to-happy transition, meaning that they detected happiness sooner across all target faces. These results may reflect a positivity effect observed in other research whereby older adults prefer to attend to happy faces rather than to faces displaying negative emotions like sadness or anger, an effect not seen among younger perceivers (Isaacowitz, Wadlinger, Goren, & Wilson, 2006a, 2006b). No evidence of age-ingroup favoritism was observed in the first two transitions, but young and old perceivers did display some ingroup favoritism in the neutral-to-happy transition, with higher response latencies for the outgroup faces. One possibility is that perceivers may be more sensitive to positive emotion on ingroup faces. As to why evidence of ingroup favoritism is not observed in either of the transitions involving an angry face, it is possible that these displays of anger disrupt any benefits of ingroup categorization (Miller, Maner, & Becker, 2010).

Study 2: Perceptions of Elderly and Black Stereotypes Over Time

Although the facial expression paradigm in Study 1 demonstrated that young and old perceivers have similar perceptions of targets characterized by conflicting stereotype content, it does not assess stereotypes directly. We observed a pattern of results which is ostensibly influenced by stereotypes, but what exactly are these stereotypes and how do they differ between targets and over time? We sought to directly examine the stereotypical beliefs underlying these effects in Study 2.

We asked participants to compare young and old Black and White targets on traits related to warmth and power, which are implicated both in stereotypes about Black people (e.g., Black people are cold but physically powerful) and about older adults (e.g., older adults are warm but physically weak; Cuddy, Fiske, & Glick, 2007). Further, because age is a dynamic variable and its interaction with race may change over time (Small, Pope, & Norton, 2012; see also Fiske, Bergsieker, Russell, & Williams, 2009), we also measured perceived change in these traits. Although we could not conduct a truly longitudinal test and examine every point along the life span, we conducted a simplified test by examining elderly and Black stereotypes at ages 25 and age 75. We examined the perceived trajectory of these traits by asking participants to imagine and rate young targets in the present and at age 75, and to imagine and rate old targets in the present and at age 25. This design allows us to examine whether traits are thought to be static or dynamic as targets age, and whether this varies between racial groups.

Based on the results from Study 1, we predicted that participants would expect that old Black targets had become warmer but less powerful over time, and that old White targets had become colder and less powerful over time. We also predicted that participants would expect young targets to become warmer and less powerful over time, but were unsure whether this effect would differ by race. We did not expect to find perceiver age differences, in line with the hypothesis that interaction between conflicting stereotype content occurs among both young and old perceivers. Therefore, we did not expect to find evidence for double jeopardy or global inhibition. Because we did not observe consistent effects of ingroup favoritism in Study 1, we did not expect to see strong ingroup favoritism in Study 2.

Method

Participants. Participants were 125 young adults (65 women; age: range 17–35 years, $M = 19.14$, $SD = 2.77$) and 139 older adults (64 women; age: range 52–80 years, $M = 70.78$, $SD = 6.20$). One participant who did not complete the future/past ratings was excluded from analyses.

Materials and procedure. Participants were invited to the laboratory for a study on person perception and were randomly assigned to one of four target conditions: YB, OB, YW, or OW. Participation occurred at private testing stations in groups of up to four same-age participants. Materials included target photographs (please see Appendix) selected from The Center for Vital Longevity Face Database (Kennedy, Hope, & Raz, 2009; Minear & Park, 2004). The photographs show targets facing forward with neutral expressions.

In the two young conditions, an image of a 25-year old Black or White man appeared on screen; an image of a 75-year old Black or White man appeared on screen in the two old conditions.

Participants rated targets on 35 traits; five reflecting warmth [kind, friendly, warm, rude (reversed), cold (reversed); $\alpha = .83$] and five reflecting power [athletic, active, strong, weak (reversed), frail (reversed); $\alpha = .79$]. Participants thought carefully about the target and then rated each adjective according to its descriptiveness of the target on a scale from 1 (*not at all descriptive*) to 5 (*very descriptive*). All participants completed ratings of the target in the present.

Next, participants in the young target conditions imagined the person at age 75, and prospectively rated him on the same traits. Only participants in the young target conditions completed future ratings.

In the old target conditions, participants next imagined the target at age 25 and made retrospective ratings on the same traits. Only participants in the old target conditions completed past ratings.

Results and Discussion

We were interested in perceptions of young and old Black and White targets in the present, past, and future. All four targets were rated on their present characteristics. Additionally, young targets were rated on future characteristics, and old targets were rated on past characteristics. In order to analyze these trait ratings, we used participant Age × Target Race × Target Age ANOVAs to examine perceptions of warmth and power of the four targets in the present. Repeated measures ANOVAs were then used to analyze predicted change over time. Temporal judgments differed, with past ratings for old targets and future ratings for young targets, so these analyses were conducted separately for ease of interpretation.

Perceptions of present warmth and power. Three-way ANOVAs with participant age-group (young, old), target age (young, old) and target race (Black, White) as fixed factors were used to examine differences in current perceptions of warmth (see Figure 2) and power (see Figure 3) between the four targets. Analyses of the warmth ratings revealed significant effects of target age, $F(1, 256) = 80.76$, $p < .001$, $\eta_p^2 = 0.24$, target race, $F(1, 256) = 8.88$, $p = .003$, $\eta_p^2 = 0.03$, and their interaction, $F(1, 256) = 4.77$, $p = .030$, $\eta_p^2 = 0.02$. Whereas the YB ($M = 2.87$, $SD = 0.62$) and YW ($M = 2.81$, $SD = 0.59$) targets were perceived as equally warm, $F(1, 260) < 1$, ns, the OB target ($M = 3.73$, $SD = 0.54$) was perceived as significantly warmer than the OW target ($M = 3.33$, $SD = 0.72$), $F(1, 260) = 13.66$, $p < .001$, $\eta_p^2 = 0.05$. Neither the effect of participant age nor any of its interactions were significant, all $ps > 0.117$.

Analysis of the power ratings also revealed significant effects of target age, $F(1, 256) = 62.46$, $p < .001$, $\eta_p^2 = 0.20$, and race, $F(1, 256) = 13.54$, $p < .001$, $\eta_p^2 = 0.05$, and a main effect of participant age, $F(1, 256) = 29.28$, $p < .001$, $\eta_p^2 = 0.10$. Overall, older participants' ratings of power were higher than younger participants', young targets were perceived as more powerful than old targets, and Black targets were perceived as more powerful than White targets. This analysis also revealed a significant Participant Age × Target Age interaction, $F(1, 256) = 12.55$, $p < .001$, $\eta_p^2 = 0.05$. Although both young and old participants rated old targets as less powerful than young targets, this effect was stronger among younger perceivers, $F(1, 259) = 61.95$, $p < .001$, $\eta_p^2 = 0.19$, than among old perceivers, $F(1, 259) = 9.57$, $p = .002$, $\eta_p^2 = 0.04$. No other significant effects emerged for ratings of current power.

Perceptions of warmth and power across time. We next investigated how participants envisioned the targets changing over time. For each target age-group, we ran two repeated measures ANOVAs (one for warmth, one for power) with time entered as a within-subjects factor (young targets: Time 1 = present, Time 2 = future; old targets: Time 1 = past, Time 2 = present) and target race and participant age entered as between-subjects factors.

Changes in warmth among young targets. Analyses revealed a main effect of time on ratings of warmth, $F(1, 129) = 13.35$, $p < .001$, $\eta_p^2 = 0.09$ (Figure 2, solid lines). Participants anticipated that both young targets, regardless of race, would become warmer over time (present: $M = 2.83$, $SD = 0.60$; future: $M = 3.04$, $SD = 0.72$). No other effects were significant, $Fs < 1$.

Changes in warmth among old targets. We next examined ratings of warmth in the past and present for old targets (Figure 2,
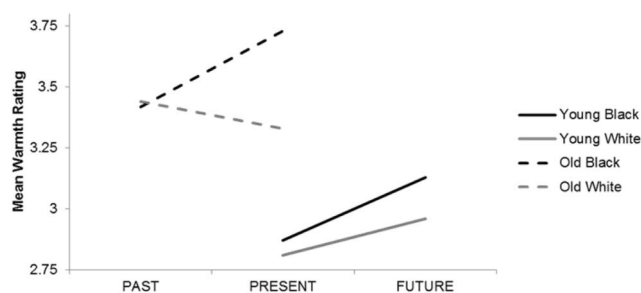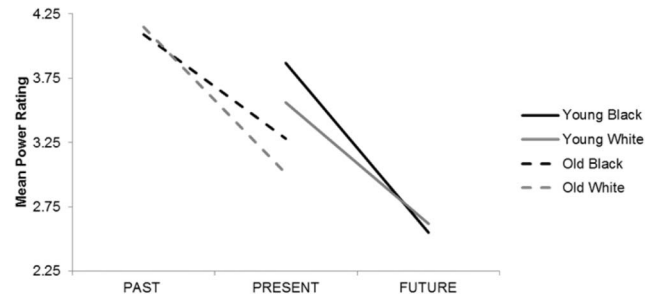

Figure 3. Current, retrospective, and prospective ratings of power for young and old Black and White targets.

dashed lines). Analyses revealed a marginal main effect of time on warmth ratings, $F(1, 127) = 3.37$, $p = .069$, $\eta_p^2 = 0.03$: older targets were thought to be warmer in the present ($M = 3.53$, $SD = 0.66$) than in the past ($M = 3.43$, $SD = 0.56$). There was also a main effect of target race, $F(1, 127) = 4.10$, $p = .045$, $\eta_p^2 = 0.03$, whereby OB targets ($M = 3.56$, $SD = 0.69$) were perceived to be warmer than OW targets ($M = 3.39$, $SD = 0.71$). Two significant interactions also emerged: Time × Target Race, $F(1, 127) = 15.37$, $p < .001$, $\eta_p^2 = 0.11$, and Time × Participant Age, $F(1, 127) = 4.63$, $p = .033$, $\eta_p^2 = 0.04$.

For the Time × Target Race interaction, participants judged the OB target ($M = 3.72$, $SD = 0.54$) as warmer than the OW target ($M = 3.33$, $SD = 0.72$) in the present, $F(1, 127) = 12.53$, $p = .001$, $\eta_p^2 = 0.09$. However, participants predicted that the OB target ($M = 3.42$, $SD = 0.59$) and the OW target ($M = 3.44$, $SD = 0.53$) had been equally warm at age 25, $F < 1$, ns. Pairwise comparisons confirmed that although participants predicted the OB target had become warmer over time, $t(67) = -3.67$, $p < .001$, $d = 0.54$, the predicted decrease in warmth for OW targets was marginally significant, $t(62) = 1.56$, $p = .062$ (one-tailed), $d = 0.19$.

For the Time × Participant Age interaction, older and younger participants had similar overall judgments of warmth at Time 2 (present), $F < 1$, but older adults' warmth ratings were higher at Time 1 (past), $F(1, 127) = 8.27$, $p. = .005$, $\eta_p^2 = 0.06$.

Changes in power among young targets. For ratings of power in the present and future for young targets, analyses revealed a main effect of time, $F(1, 129) = 281.27$, $p < .001$, $\eta_p^2 = 0.69$ (Figure 3, solid lines): Participants anticipated that young targets would become less powerful over time (present: $M = 3.71$, $SD = 0.60$; future: $M = 2.59$, $SD = 0.72$). Additionally, two significant interactions were revealed: Time × Target Race, $F(1, 129) = 7.37$, $p = .008$, $\eta_p^2 = 0.05$, and Time × Participant Age, $F(1, 129) = 18.28$, $p < .001$, $\eta_p^2 = 0.12$.

For the Time × Target Race interaction, participants judged the YB target ($M = 3.87$, $SD = 0.55$) as more powerful than the YW target ($M = 3.56$, $SD = 0.61$) in the present, $F(1, 129) = 9.63$, $p = .002$, $\eta_p^2 = 0.07$. However, participants predicted that both the Black ($M = 2.54$, $SD = 0.74$) and White target ($M = 2.60$, $SD = 0.70$) would decrease to the same level of power at age 75, $F < 1$, ns.

For the Time × Participant Age interaction, older and younger participants had similar overall judgments of power at Time 1 (present), but older adults' ratings of power were higher at Time 2 (future), $F(1, 129) = 43.73$, $p < .001$, $\eta_p^2 = 0.25$.

Figure 2. Current, retrospective, and prospective ratings of warmth for young and old Black and White targets.

Changes in power among old targets. For ratings of power in the past and present for old targets (Figure 3, dashed lines), analyses revealed a main effect of time, $F(1, 127) = 253.87$, $p < .001$, $\eta_p^2 = 0.67$. Participants thought that old targets had become less powerful over time (past: $M = 4.11$, $SD = 0.56$; present: $M = 3.14$, $SD = 0.73$). Analyses also revealed a main effect of participant age, $F(1, 127) = 23.98$, $p < .001$, $\eta_p^2 = 0.16$; older adult participants made higher overall ratings of power than young participants.

This analysis also revealed three significant two-way interactions. The first was the Time × Target Race interaction, $F(1, 127) = 6.22$, $p = .014$, $\eta_p^2 = 0.05$ (see Figure 3). Participants judged the OW target ($M = 4.15$, $SD = 0.55$) and OB target ($M = 4.09$, $SD = 0.57$) to have been equal in power at age 25, $F < 1$. However, participants perceived that the OB target ($M = 3.28$, $SD = 0.72$) was currently more powerful than the OW target ($M = 3.01$, $SD = 0.72$), $F(1, 127) = 4.61$, $p = .034$, $\eta_p^2 = 0.04$.

Next was the Time × Participant Age interaction, $F(1, 127) = 17.58$, $p < .001$, $\eta_p^2 = 0.12$. Although there were no differences in past ratings, $F(1, 127) = 2.34$, *ns*, older adult participants ($M = 3.47$, $SD = 0.67$) had higher present ratings than young adult participants ($M = 2.79$, $SD = 0.62$), $F(1, 127) = 36.63$, $p < .001$, $\eta_p^2 = 0.22$.

Finally, the Target Race × Participant Age interaction was significant, $F(1, 127) = 4.14$, $p = .044$, $\eta_p^2 = 0.03$. Young participants' overall ratings of Black and White targets did not differ, but old participants rated Black targets ($M = 3.95$, $SD = 0.65$) as more powerful than White targets ($M = 3.69$, $SD = 0.70$) overall, $F(1, 127) = 4.81$, $p = .030$, $\eta_p^2 = 0.04$.

This study examined how stereotypical traits are perceived to have changed or were predicted to change over time. Based on Study 1, we hypothesized an interaction between conflicting stereotypes, such that perceptions of young and old targets would depend on their race. For Black targets, we predicted more positive perceptions of old compared with young men. Conversely, for White targets, we predicted more positive perceptions of young compared with old men. Further, we predicted that White men would be judged more negatively at age 75 than age 25, but Black men would be judged more positively at age 75 than age 25. In terms of perceiver age effects, we predicted that both age-groups would show a similar target age by target race interaction and this is indeed what we found. Some perceiver age differences did emerge for overall ratings, such that older adults sometimes gave higher ratings of warmth or power. However, these participant age effects were not indicative of ingroup bias.

This study supports the finding that older adults are perceived as warmer but less powerful than younger adults (Cuddy et al., 2005; Kite et al., 2005). Differences emerged when perceivers thought about changes prospectively or retrospectively. Across Black and White targets, power was predicted to decrease from young adulthood into old age. For warmth, race-based differences emerged for retrospective, but not prospective, judgments. Specifically, older Black men were thought to have become warmer over time, but older White men were thought to have become less warm. This suggests that retrospective judgments about warmth could be responsible for the interaction effects found in Study 1. When making judgments about warmth and related facial expressions, perceivers, both young and old, may be making retrospective comparisons between older targets and their younger selves. Be-

cause notions of increased warmth conflict with negative stereotypes about Black people in general, the older Black target is perceived relatively positively.

Study 3: Directly Comparing Perceptions of Young and Old Black and White Targets

After establishing that both young and old perceivers show similar patterns of social perception of conflicting stereotypes, we sought to further examine the stereotypical beliefs underlying these effects. In Study 3, we used a forced choice comparison task in which young and old perceivers made rapid judgments directly comparing young and old Black and White targets. As in Study 2, we focused on traits related to warmth and power.

Directly comparing targets provides further explanatory utility. Forcing participants to choose which of two targets is best characterized by a specific trait helps to determine whether stereotypes apply equally across racial and age-groups, and whether these stereotypes are shared by young and old perceivers. For example, Black men are traditionally characterized as physically powerful, but does this trait apply to older Black men? Based on the results of Study 2, we predict that this trait applies more to young Black men compared with old Black men. Directly testing stereotypes will help us to further understand the findings of Study 1.

Based on Studies 1 and 2, we predicted that old targets would be favored over young targets for ratings of warmth. For the comparisons of young targets, we predicted that the White target would be favored, reflecting the belief that young Black men are cold and hostile, a belief which contributes to the results seen in Study 1. For the comparisons of old targets, we predicted that the Black target would be favored, indicating stereotype interaction rather than double jeopardy or global inhibition. Although the old White target may be perceived negatively because of stereotypes linking him to low warmth (e.g., old people are curmudgeonly), the old Black target would likely benefit from the coactivation of warmth-related aspects of the elderly stereotype (e.g., old people are kind).

For power, we predicted that young targets would always be favored over old targets. In the comparison between the two young targets, we predicted that the Black target would be favored. We were uncertain about who would be seen as more powerful between the two old targets, as we expected both to be seen as lacking power.

If the predicted choices are equivalent between young and old perceivers, this will lend further support to the assertion that an interaction between conflicting stereotype content occurs for both age-groups.

Method

Participants. Participants were 48 young adults (24 women; age: range = 17–24 years, $M = 18.77$, $SD = 1.75$) and 60 older adults (36 women; age: range = 60–80 years, $M = 70.55$, $SD = 5.96$).

Materials and procedure. Participants were invited to the laboratory for a study on comparative person perception in groups of up to four same-age participants; participants were seated at private computer stations. Pictures of two targets appeared on a monitor under a trait word (e.g., TALENTED); participants chose which target was best described by the word. Participants were encouraged to respond as quickly as possible.

Materials used in this study were the four photographs of YB, OB, YW, and OW targets used in Study 2 (see Appendix).

We planned for ratings to be made on a series of five trait words chosen to index warmth and five trait words chosen to index power. Due to a programming error, only four warmth words [warm, kind, cold (reverse-coded), rude (reverse-coded)] and four power words [strong, active, athletic, frail (reverse-coded)] were displayed. These traits were randomly presented along with 25 filler traits. Participants compared the targets on each trait, including the warmth and power traits of interest. Comparisons were presented and paired with trait words randomly.

Results and Discussion

Participants made choices across six comparisons: YB/YW, YB/OB, YB/OW, YW/OB, YW/OW, and OB/OW. The first target listed was coded as −1, and the second target listed was coded as 1 (presentation of targets was counterbalanced).

We conducted independent samples t tests to compare choices between the two participant age-groups for each comparison. Next, we looked at each age-group separately and conducted one sample t tests with a test value of 0, using a Bonferroni-corrected alpha significance value of .008. Because the first target listed was coded as −1 and the second target listed was coded as 1, using a test value of 0 enabled us to determine whether participants favored

either of the two choices during the task. These two analytical approaches reveal: (a) whether the choices made by older and younger adults differed, and (b) which target older and younger adults were more likely to choose (analyzed separately). Significant differences within and between participant age-groups are displayed in Figure 4.

Warmth. For all but the YB/YW comparison, younger and older participants made similar choices. As predicted, in all comparisons with an old and young target, the older target was chosen more often to represent warmth. Also as predicted, the OB target was favored between the old targets. Descriptive statistics are displayed visually in Figure 4.

For the YB/YW comparison, the independent samples t test comparing young and old participants revealed a significant difference in choice between the two participant age-groups, $t(106) = 3.18$, $p = .002$, $d = 0.62$. The one-sample t test indicated that old participants were more likely to choose the YB target, $t(59) = -2.80$, $p = .007$. Young participants did not distinguish between these two targets, $t(47) = 1.76$, ns.

Next came a series of comparisons between a young and old target. As mentioned above, the old target was always favored for warmth. For the YB/OB comparison, both young and old participants were more likely to choose the OB target: young participants, $t(47) = 15.46$, $p < .001$; old participants, $t(59) = 13.98$, $p <$
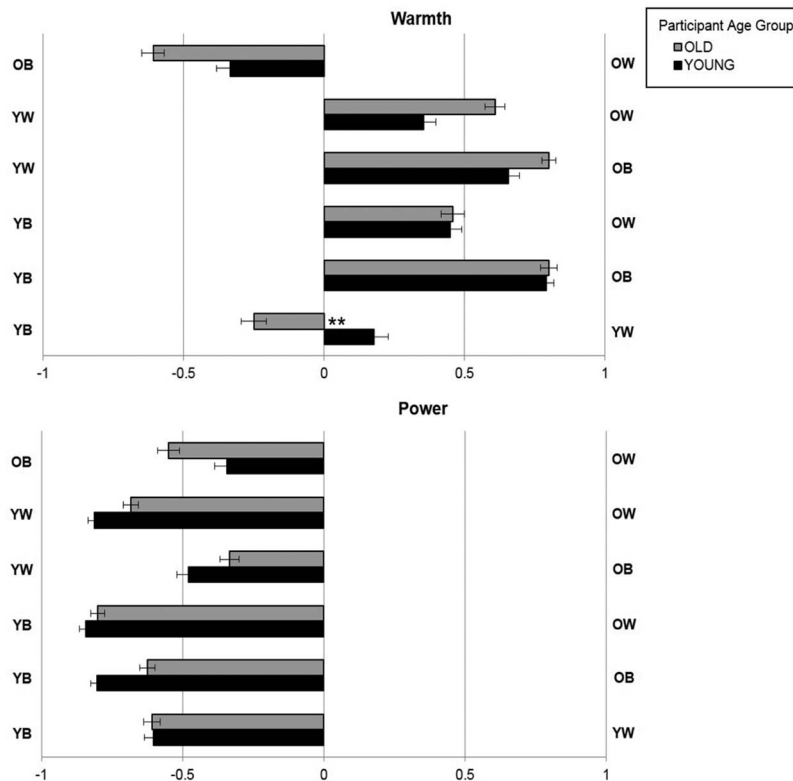

Figure 4. Choices made between targets for warmth (upper panel) and power (lower panel). In each comparison, a score of −1 indicates preference for the first target and a score of +1 indicates a preference for the second target. A score of 0 indicates no preference. Scores for young and old perceivers are plotted separately, with results of independent t tests comparing ratings made by young versus old perceivers indicated (** indicates $p < .008$).

.001. Similarly, for the YB/OW comparison, both young and old participants were more likely to choose the OW target: young participants, $t(47) = 5.38$, $p < .001$; old participants, $t(59) = 5.44$, $p < .001$; both young and old participants were also more likely to choose the OB target in the YW/OB comparison: young participants, $t(47) = 8.16$, $p < .001$; old participants, $t(59) = 15.78$, $p < .001$. In the YW/OW comparison, both young and old participants were more likely to choose the OW target: young participants, $t(47) = 4.08$, $p < .001$; old participants, $t(59) = 8.52$, $p < .001$.

Finally, in the comparison between the old targets, participants were more likely to choose the OB target: young participants, $t(47) = -3.44$, $p = .001$; old participants, $t(59) = -7.71$, $p < .001$.

Power. As predicted for comparisons regarding power, the young target was always chosen in comparisons between a young and old target. In the YB/OW comparison, both young and old participants were more likely to choose the YB target: young participants, $t(47) = -19.85$, $p < .001$; old participants, $t(59) = -16.23$, $p < .001$; in the YW/OB comparison, participants were more likely to choose the YW target: young participants, $t(47) = -17.59$, $p < .001$; old participants, $t(59) = -4.83$, $p < .001$.

Similarly, in the YB/OB comparison, participants were more likely to choose the YB target: young participants, $t(47) = -17.26$, $p < .001$; old participants, $t(59) = -11.87$, $p < .001$. Finally, in the YW/OW comparison, participants were more likely to choose the YW target: young participants, $t(47) = -17.59$, $p < .001$; old participants, $t(59) = -12.27$, $p < .001$.

Also as predicted, in the comparison between the young targets (YB/YW), the YB target was judged to be more powerful: young participants, $t(47) = -9.58$, $p < .001$; old participants, $t(59) = -10.02$, $p < .001$.

In the final comparison, OB/OW, participants judged the OB target to be more powerful: young participants, $t(47) = -4.07$, $p < .001$; old participants, $t(59) = -7.17$, $p < .001$.

This study allowed us to directly compare perceptions of warmth and power. The results suggest that warmth is stereotypically linked to older adults and power is stereotypically linked to Black people. When we examine the critical comparisons between the two elderly targets, a more nuanced picture emerges. Although both old targets were perceived as warmer but less powerful than their same-race young counterparts, the OB target was favored for both warmth and power in the OB/OW comparison. This may help to explain the results seen in Study 1—although the OB target still activates race-related power stereotypes, these power stereotypes may be disarmed by the coactivation of age-related warmth stereotypes.

As with the previous study, we did not see many differences across participant age-group, suggesting that young and old perceivers espouse similar beliefs. However, we did observe dissociation in the YB/YW warmth comparison, with older adults favoring the YB target and younger adults not distinguishing between the targets. Given that older adults displayed a bias against the YB target in Study 1, it may be the case that they are demonstrating a more socially desirable response on this more explicit task.

General Discussion and Conclusion

The majority of work on stereotyping has focused on the application and experience of stereotypes based on one social group membership. This single-category approach is insufficient to explain stereotyping in our complex social environments. These three studies

examine the combined influence of two conflicting stereotype sets, those related to the Black racial group and the older adult age-group. Given conflicting evidence about whether aging-related inhibitory deficits interfere with stereotype suppression among older adults (e.g., Radvansky et al., 2010; Radvansky et al., 2008), as well as possible age-related motivational differences in ingroup favoritism, it was unclear whether older and younger adults would apply Black and elderly stereotypes similarly. We were interested in whether older adults would show an interaction between these stereotypes as previously observed with younger adults, or if their perceptions would reflect double jeopardy, global inhibition, or ingroup favoritism.

We first examined this question in Study 1 by replicating and extending our earlier findings to older adults. We uncovered further evidence for, and some explanation of, this effect in Studies 2 and 3 using two different paradigms. Across these experiments, we found evidence of an interaction between the conflicting stereotypes rather than any of the other discussed hypotheses. Participants perceived young Black targets negatively, when assessing emotion-change (Study 1), rating warmth and power in the past, present, and future (Study 2), and directly comparing young and old Black and White targets on warmth and power (Study 3). In contrast, perceptions of older Black men were positive across these paradigms.

In terms of perceiver age effects, there were no meaningful age differences in how participants perceived multiply-categorizable targets. This suggests that despite potential age differences in cognition and motivation, young and old perceivers similarly process these conflicting stereotypes., There was some evidence of ingroup favoritism for the neutral-to-happy transition as discussed in Study 1, but otherwise no systematic evidence of ingroup favoritism was observed.

Although we acknowledge that we have not conclusively pinpointed the mechanism underlying the target effects, our studies do suggest some clues. Particularly, Study 2 sheds light on why stereotypes of elderly people seem to offset those of Black people. In that study, we investigated perceptions of warmth and power in the present and in the past (for old targets) and future (for young targets). The results suggest that the patterns observed in the emotion change task in Study 1 reflect retrospective judgments about older targets' warmth at a younger age. Specifically, older Black men are perceived positively relative to their former cold selves, and older White men are perceived negatively relative to their former warm selves.

In Study 3, we obtained a more nuanced view of the stereotypes being applied to each target using a forced-choice comparison task. As in Study 2, old targets were perceived to be warmer but less powerful than young targets, and Black targets were perceived to be more powerful than White targets. Further, in one critical comparison, the old Black target was perceived to be warmer and more powerful than the old White target.

One point of departure between Studies 2 and 3 is that in Study 2, ratings of young and old White targets' present warmth were equivalent, but the old White target was judged to be warmer than the young White target in Study 3. These results illustrate the value of adding the forced-choice ratings—we gain a different perspective on stereotype activation and application when two targets are encountered simultaneously. When the two White targets are encountered simultaneously, age categories and related stereotypes are strongly activated, and positive age stereotypes related to warmth (and negative age stereotypes related to power) may guide

the comparative evaluations. The procedure in Study 2 provides a complementary picture of the stereotyping process as it unfolds within the same target over time. Critically, in Study 3 the old Black target was judged to be warmer and less powerful than the young Black target, supporting the results of our first two studies.

Although Study 3 provides some information about beliefs underlying perceptions of conflicting stereotypes, it may be limited by explicitly asking participants to compare targets. However, in combination with the results of Studies 1 and 2 which asked participants to rate targets independently, we believe that these studies provide a more comprehensive picture of the stereotyping process which unfolds when these four targets are encountered.

Study 2 also makes suggestions regarding the comparisons of young and old targets within each race-group. Our results suggest that warmth is a particularly salient feature when perceivers are asked to rate or compare young and old Black men. In contrast, power appears to be more salient when perceivers are asked to rate or compare young and old White men. Further, retrospective judgments appear to be particularly important in making judgments about older targets, a pattern shown among both young and old perceivers. Therefore, old Black targets may be evaluated positively due to a contrast against comparatively colder and more hostile young Black targets, but old White targets may be evaluated negatively because they are contrasted with comparatively stronger and healthier young White targets. Further research is needed to determine exactly how this process unfolds. Overall, the present research makes an important contribution by suggesting that age-based stereotypes are applied differently for targets who vary by race.

An important limitation of Study 2 is that our two-age design only allows for a limited understanding of longitudinal effects. A more comprehensive design examining multiple age points could elucidate the nature of warmth and power changes. It may be the case that the changes are linear, as observed in our study, but adding more targets could uncover a curvilinear relationship, and provide more information about the rate at which warmth and power are predicted to change over time.

A possible alternative explanation for our results is that older Black men represent a positive subtype of Black men (e.g., Weber & Crocker, 1983). Although we know of no studies demonstrating that elderly Black men represent a unique, positively evaluated subtype, it may be the case that members of this group are perceived more positively than either of their general categories. However, we argue that: (a) participants in our studies were unlikely to have enough exposure to or experience with elderly Black men to regard them as a unique, independent category; and (b) it is cognitively inefficient for perceivers to hold unique stereotypes of multiple subtypes, so perceivers are much more likely to rely on broad category-based stereotypes to save cognitive resources during perception (e.g., Macrae, Milne, & Bodenhausen, 1994). Research with another intersectional group, Black gay men, also lends support to the hypothesis that an interaction between conflicting stereotypes occurs (Remedios et al., 2011). Although perceivers show more bias against gay White men than straight White men, they evaluate gay Black men more positively than straight Black men. In this case, stereotypes about gay men (e.g., effeminate, gentle) may disarm the Black hostility stereotype. It is extremely unlikely that gay Black men represent a preferred subtype of either Black men or gay men, so these results further

strengthen the idea that an interaction between these intersectional identities is taking place to guide perception of these targets.

Another direction for future research will be to examine other types of multiply-categorizable targets. Examining a broader range of stereotypes (e.g., related to other racial groups as well as to gender, occupation, socioeconomic status, etc.) will help to reach a better understanding of the complex processes underlying perceptions during multiple categorization. As well, more work is needed to directly examine the interplay between stereotype activation and inhibition in response to conflicting stereotypes. Although the present research provides evidence of the application of age and race stereotypes across three studies, it does not directly assess stereotype activation and inhibition.

Overall, these three studies echo previous work demonstrating the complexity of perception of multiply-categorizable targets. Our examination of older adult and Black stereotypes suggest that the interplay between these two specific stereotypes results in an interaction effect, rather than the effects predicted by the double-jeopardy or global inhibition hypotheses. Importantly, our findings also demonstrate that despite other inhibitory changes that occur with age, any inhibitory processes that may be involved in evaluations of complex targets appear to be preserved in later life. Finally, our work begins to demonstrate the importance of examining stereotypes at different ages, rather than at static time points across the life span. Gaining a better understanding for how these processes unfold may suggest promising avenues for interventions aimed at reducing the negative consequences of stereotyping for stigmatized individuals. For example, we may be able to train both young and old perceivers to selectively suppress negative stereotypes with simultaneously activated positive stereotypes, thus helping to decrease negative outcomes for stigmatized individuals.

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Appendix

Sample Stimuli
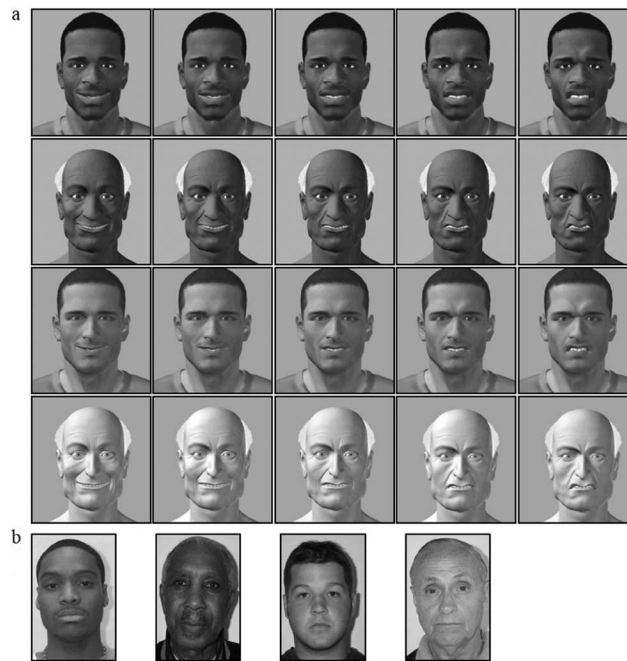
Sample stimuli from Study 1 (a) and stimuli from Studies 2 and 3 (b). Five frames taken from the happy-to-angry videos for each of the four target types (young Black, old Black, young White, old White) are shown in (a). Adapted from Kang and Chasteen (2009) with publisher's permission. Four photographs used in Studies 2 and 3 for the young Black, old Black, young White, and old White conditions are shown in (b). Reproduced from "The Center for Vital Longevity Face Database" with permission from the authors (Kennedy et al., 2009; Minear & Park, 2004). The original movies and photographs were presented in full color.