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Through the Looking Glass: A Lens-Based Account of Intersectional Stereotyping

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A growing body of scholarship documents the intersectional nature of social stereotyping, with stereotype content being shaped by a target person's multiple social identities. However, conflicting findings in this literature highlight the need for a broader theoretical integration. For example, although there are contexts in which perceivers stereotype gay Black men and heterosexual Black men in very different ways, so too are there contexts in which perceivers stereotype these men in very similar ways. We develop and test an explanation for contradictory findings of this sort. In particular, we argue that perceivers have a repertoire of *lenses* in their minds—identity-specific schemas for categorizing others—and that characteristics of the perceiver and the social context determine which one of these lenses will be used to organize social perception. Perceivers who are using the lens of race, for example, are expected to attend to targets' racial identities so strongly that they barely attend, in these moments, to targets' other identities (e.g., their sexual orientations). Across six experiments, we show (a) that perceivers tend to use just one lens at a time when thinking about others, (b) that the lenses perceivers use can be singular and simplistic (e.g., the lens of gender by itself) or intersectional and complex (e.g., a race-by-gender lens, specifically), and (c) that different lenses can prescribe categorically distinct sets of stereotypes that perceivers use as frameworks for thinking about others. This lens-based account can resolve apparent contradictions in the literature on intersectional stereotyping, and it can likewise be used to generate novel hypotheses.

Keywords: stereotyping, person perception, intersectionality, social categorization, intergroup relations

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Stereotypes orient and organize social perception. In the United States, for example, learning that someone is Asian versus White can influence our perceptions of how American they seem (Semrow et al., 2020). Learning that someone is a man versus a woman can influence our perceptions of their warmth (e.g., Eagly et al., 2020). And learning that someone is gay versus heterosexual can influence our perceptions of their gender conformity (e.g., McGann & Goodwin, 2007). These and other phenomena have made it abundantly clear that sometimes, we stop seeing people as the individuals that they are and instead come to see them as interchangeable with other members of their social groups (Brewer, 1988; Fiske & Neuberg, 1990; Turner et al., 1987). In this way, the process of stereotyping someone is akin to viewing them through a lens—a lens that sharpens our focus on certain, typically overgeneralized attributes, and that causes us to lose focus, at least for the moment, on the attributes that make that person unique.

Of course, the process of stereotyping is complicated by the fact that people do not belong to just one social group at a time. Instead, people belong to a great many social groups at once. All people have a racial group, a gender group, a sexual orientation group, and the like, and it has become very clear over the last decade that these groups can work in tandem to shape how a person is perceived and treated (e.g., Petsko & Bodenhausen, 2020; Rosette et al., 2018). For example, one well-known bias in the research literature on gender discrimination is that people tend to exhibit backlash (i.e., social and economic sanctions) against women who exhibit dominance in the

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workplace (e.g., Eagly & Karau, 2002; Rudman & Glick, 2001). Yet when the women in question are Black rather than White, backlash effects have been shown to dissipate (Livingston et al., 2012; but see Marshburn et al., 2020). In short, there is growing evidence that stereotyping unfolds intersectionally—that is, in light of the multiple social groups to which a person belongs.

The concept of intersectionality originated in Black-feminist scholarship as a tool for describing systems of interlocking oppression (e.g., the ways by which systemic racism and sexism reinforce one another) as well as for characterizing the experiences of those who are multiply marginalized (Crenshaw, 1991; Hooks, 1984; King, 1988). In psychological science, intersectionality tends to refer more specifically to an epistemology in which one realizes that basic psychological processes—like stereotyping and prejudice—manifest differently for people who possess different combinations of social identities (Cole, 2009; Ghavami et al., 2016; Plaut, 2010). Over the last two decades, a great number of research findings have indeed documented that our perceptions of others tend to be contingent on the intersecting identity groups to which others belong (Kang & Bodenhausen, 2015; Nicolas et al., 2017). For example, the stereotypes applied to men and women often depend on their racial groups (Ghavami & Peplau, 2013), and whether perceivers exhibit racial discrimination can be dependent, at least in some contexts, on targets' sexual orientation groups (Pedulla, 2014; Wilson et al., 2017). This research literature on intersectional stereotyping has been exceedingly generative both for scientists and practitioners. However, an issue with this literature is that its findings can contradict each other without satisfying explanations as to why.

We begin by describing research findings in the literature on intersectional stereotyping that appear to contradict each other. Next, we develop and test one such explanation as to why contradictory research findings coexist. Specifically, we test whether perceivers sharpen their focus on just one social identity at a time, or alternatively on just one intersection of identities at a time, as a function of the social context. In effect, we investigate whether perceivers have functionally independent *lenses* in their minds—situationally activated, identity-specific schemas for categorizing others—and whether perceivers have a tendency to stop using one lens the moment they start using another.

Contradictory Research Findings

Perceivers' impressions of targets can depend on the multiple identity groups to which targets belong. For example, perceivers exhibit a tendency to "see" anger on the faces of Black targets more readily than on the faces of White targets (Becker et al., 2010)—particularly when perceivers are high in implicit anti-Black prejudice (Hugenberg & Bodenhausen, 2003). As it happens, this perceptual bias depends not just on whether the target individuals are Black versus White, but also on whether they are old versus young. When the target faces are of young adults, the conventional racial bias is present. But when the faces are of older adults, the conventional racial bias reverses (Kang & Chasteen, 2009; Kang et al., 2014). Thus, in some contexts, racial stereotyping unfolds intersectionally—in this example, in light of a target person's age group.

In sharp contrast, there are also contexts in which perceivers' impressions of targets *do not* depend on the multiple identity groups to which targets belong. For example, another established racial bias is that perceivers tend to be faster to distinguish criminal objects (e.g., guns) from innocuous objects (e.g., tools) when they are primed with Black faces relative to White faces (Eberhardt et al., 2004; Payne, 2001). Astonishingly, this bias occurs in equal measure whether the face primes are of 5-year-old children versus fully grown adults (Todd, Simpson, et al., 2016; Todd, Thiem, & Neel, 2016). This bias also occurs in equal measure whether the target faces are of older people versus young adults (Lundberg et al., 2018). Thus, racial stereotyping sometimes does and sometimes does not unfold intersectionally as a function of a target person's age group (e.g., Todd et al., 2021).

The findings described above highlight contradictions that relate to how perceivers stereotype targets at various intersections of age and race, but there are findings relating to other intersections of identities that mirror them. For example, just as there is evidence that perceivers' racial bias depends on whether Black men are described as gay versus heterosexual (Petsko & Bodenhausen, 2019b), so too is there evidence that sometimes, racial bias does not depend on whether Black men are described as gay versus heterosexual (Petsko & Bodenhausen, 2019a, Experiment 1). Likewise, just as there is evidence that sexual stereotyping depends on targets' race and gender (e.g., Johnson & Ghavami, 2011), so too is there evidence that sometimes, sexual stereotyping depends only on targets' gender—irrespective of whether targets are Black versus White (Petsko et al., 2021). Contradictions such as these raise an important question. Why is it that perceivers *do* exhibit intersectional patterns of stereotyping in some contexts, but that perceivers *do not* exhibit intersectional patterns of stereotyping in other contexts?

A Lens-Based Account of Intersectional Stereotyping

We propose that perceivers have a repertoire of functionally independent lenses in their minds that they use as frameworks for thinking about others. Furthermore, we propose that perceivers only use one lens at a time in a given social context. Lenses are construed as situationally activated, identity-specific schemas for categorizing others. For example, perceivers have a lens for gender, a lens for race, a lens for sexual orientation, and the like. And when one lens comes into focus, other lenses (as well as the social categories they imply) are expected to fall out of focus. Thus, if the lens of race is made salient to perceivers, race-related social categories (e.g., East Asian, Black, White) will come sharply into perceivers' focus, whereas lens-irrelevant social categories (e.g., woman, gay, old) will fall out. Notably, lenses can be specifically intersectional—inducing perceivers to categorize a target person as an *old man*, for example, or as a *Black woman*, but causing, in these moments, targets' more general group memberships (e.g., *men* more generally, or *Black people* more generally) to fade into the perceptual background.

The notion that lenses trade off with one another in the minds of perceivers is adapted from previous models of stereotyping and social categorization. For example, self-categorization theory presumes that "in any given situation, only one identity is psychologically real" to perceivers (Hogg et al., 2004, p. 252). Likewise, the stereotype activation–inhibition model argues that when perceivers direct their attention to one social category, they cognitively inhibit their attention to alternative social categories that they might have used as bases for stereotyping targets (Bodenhausen & Macrae, 1998; Macrae et al., 1995). In models such as these, perceivers' tendency to sharpen their focus on one social identity at a time is thought to serve an epistemic function. Attending to particular social

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identities gives perceivers ready-made templates for understanding who others are and how others are likely to behave in particular social contexts (Hogg, 2007). Like these earlier models, the lens model presumes that perceivers sharpen their focus on one identity at a time primarily for epistemic purposes. Lenses give perceivers a frame of reference for disambiguating social reality.[1] What differentiates the lens model from these earlier models is that according to the lens model, this frame of reference can be *specifically* intersectional. Lenses can invite perceivers to attend to sexual orientation and race simultaneously (Preddie & Biernat, 2021), for example.

To summarize, the lens-based account recognizes that perceivers can stereotype Black women, for example, in a variety of categorically distinct ways. In some contexts, perceivers may view Black women through the lens of race. In these contexts, perceivers would be expected to categorize Black women as *Black*, and to stereotype them much like they stereotype Black men, but to overlook—in these moments—the fact that Black women are women. In other contexts, perceivers may view Black women through the lens of gender. In these contexts, perceivers would be expected to categorize Black women as *women*, and to stereotype them much like they stereotype White women, but to overlook—in these moments—the fact that Black women are Black. And then finally, in some contexts, perceivers may use intersectional lenses for thinking about Black women. In these contexts, perceivers would be expected to categorize and stereotype Black women not as *Black* more generally or as *women* more generally, but as *Black women* specifically.[2]

How does this lens-based account compare with other prevalent accounts of intersectional stereotyping? In general, psychologists tend to examine intersectional stereotyping from one of two major perspectives, termed *dominance perspectives* and *integration perspectives*, respectively (Bodenhausen, 2010; Petsko & Bodenhausen, 2020; Remedios & Vinluan, in press). Dominance perspectives suggest that perceivers inevitably attend to certain social identities more often than others when engaging in intersectional stereotyping (e.g., Kurzban et al., 2001; Sidanius et al., 2018). Integration perspectives, in contrast, suggest that perceivers inevitably attend to all salient social identities at once when engaging in intersectional stereotyping (Freeman et al., 2020; Hall et al., 2019; Kawakami et al., 2017; Kunda & Thagard, 1996). The lens-based account, described here, fits within a third tradition of perspectives, called *compartmentalization perspectives*. Compartmentalization perspectives—for example, the stereotype activation–inhibition model (Bodenhausen & Macrae, 1998), or self-categorization theory (Turner et al., 1987)—suggest that social contexts cause perceivers to sharpen their focus on just one identity, or at most on one intersection of identities, at a time. Notably, unlike dominance models, compartmentalization models do not presume that some identities inevitably grab perceivers' attention. And unlike integration models, compartmentalization models do not presume that all salient identities are inevitably integrated into perceivers' impressions of targets. Instead, whether integration of multiple identities occurs, or whether instead one identity comes to dominate person perception, is thought to be a matter of whether intersectional lenses (e.g., age and race) versus singular lenses (e.g., race alone) are brought to bear on person perception.

Both dominance perspectives and integration perspectives have been tremendously useful for the field of social psychology. Dominance models, for example, have given the field a variety of falsifiable hypotheses to test regarding person perception. And integration models have given the field a sophisticated understanding of how targets at the intersection of multiple identities will be stereotyped when perceivers are indeed thinking about the multiple identities that targets harbor (e.g., see Hall et al., 2019). However, neither type of approach provides a fully satisfying account for the contradictory research findings described in the previous section. Dominance perspectives do not provide a satisfying account of these contradictory findings as they are too constrained to fit the data. From the perspective of dominance perspectives, like evolutionary models of person perception (e.g., Kurzban et al., 2001), situations in which racial stereotyping overrides age-based stereotyping (e.g., Todd, Simpson, et al., 2016) should be somewhat atypical. This is because in these models, age categorization—but not race categorization—is thought to be obligatory (Pietraszewski et al., 2015). Integration perspectives do not provide a satisfying account for contradictory findings in the literature on intersectional stereotyping for the opposite reason—they are not constrained enough. As noted elsewhere, integration models allow for the possibility that perceivers can stereotype target people in a potentially infinite number of ways (Petsko & Bodenhausen, 2020). This flexibility makes integration models difficult to ever falsify. In short, then, the existing frameworks psychologists tend to use for thinking about intersectional stereotyping are either too constrained to fit the data or are too unconstrained to be ruled out. The lens-based perspective described here is designed to offer a theoretical middle ground; it is flexible enough to account for contradictions in the literature on intersectional stereotyping, but it is still constrained enough that it can yield falsifiable predictions.

If it is the case that perceivers sharpen their focus on one lens at a time as a function of the social context, then indeed the contradictions discussed above can be reconciled. If a context invites perceivers to use the lens of race, for example, it would make sense for perceivers to sharpen their focus on race so strongly that they overlook whether the targets of their perceptions are children versus adults (Todd et al., 2021), or gay versus heterosexual (Petsko & Bodenhausen, 2019a, Experiment 1). In contrast, if a context invites perceivers to use intersectional lenses, it would make sense for perceivers' impressions of targets to depend on targets' race *and* age groups (Kang et al., 2014), or on targets' race *and* sexual orientation groups (Preddie & Biernat, 2021). However, there is still very much to be discovered over what causes patterns like these to unfold in social contexts. In a recent review of the intersectional stereotyping literature, Petsko and Bodenhausen (2020) identified four general

[1] However, it is worth noting that people often disambiguate social reality in ways that serve nonepistemic goals (Balcetis & Dunning, 2006). For example, White people who are motivated to maintain power differences between racial groups may be inclined to use the lens of race more often than White people who are not (see Stangor et al., 1992, for suggestive evidence of this possibility). This point is elaborated upon in the General Discussion section.

[2] The lens model assumes that intersections of identities are cognitively represented as distinct from their constituent identities, and that often, intersections of identities are characterized by emergent stereotype content (e.g., Kunda et al., 1990; Weber & Crocker, 1983). However, the contribution of the lens model is not necessarily to explain what content comes to mind when perceivers are attending to intersections. Rather, the contribution of the lens model is to predict when intersections of identities will be used to organize social perception, and when singular identities (e.g., race alone) will be used to organize social perception, instead.

factors that ought to increase the likelihood that perceivers use one social lens over others when stereotyping intersectional targets:

1. *Lens accessibility*, or the ease with which a social lens can be retrieved from memory (Bruner, 1957; Higgins, 1996).
2. *Lens fit,* or the extent to which a lens "explains," normatively or comparatively, patterns of intergroup behavior in a context (Oakes et al., 1991).
3. *Perceiver goals*, or desired end states that motivate the use of some lenses over alternatives (e.g., Neel & Lassetter, 2019; Sinclair & Kunda, 1999).
4. *Distinctiveness,* or the extent to which a lens-associated identity is rare and thus attention-grabbing in a social context (Hamilton & Gifford, 1976; McGuire et al., 1978).

Although there is theoretical support for the possibility that each of these factors plays a role in guiding which lenses perceivers use for thinking about others (and sometimes for thinking about themselves: Ambady et al., 2001; Shih et al., 1999, 2002), these factors have received only limited empirical support in the context of intersectional stereotyping (but for exceptions, see: Macrae et al., 1995; Palma et al., 2019; Rattan et al., 2019; Todd et al., 2021). In the experiments that follow, an aim of ours will be to empirically examine whether two of these factors—lens fit and perceiver goals—can indeed induce perceivers to attend to the social categories implied by one lens so strongly that they cease to attend to social categories implied by alternative lenses. These factors will be explained in greater detail as they become relevant to our experiments.

Putting the Lens-Based Account to the Test

The experiments that follow were designed to provide a preliminary test of the lens-based account for which we have been advocating. In particular, these experiments were designed to test (a) whether perceivers indeed pay attention to the social categories implied by one lens at a time when thinking about intersectional targets (Experiments 1a and 1b), (b) whether perceivers' stereotypes about targets depend on which lens they are using (Experiments 2a and 2b), and (c) whether the lenses perceivers use can be intersectional and complex in addition to being singular and simplistic (Experiments 3a and 3b). Findings such as these, if supported, would not only help to resolve some of the contradictions discussed earlier, but also would pave the way for a variety of new and consequential predictions that could propel this research literature forward. The following experiments received institutional review board approval, and they report all exclusions and manipulations. Survey materials, data files, and R scripts associated with this project are available on the Open Science Framework (OSF) website. Predictions and analysis plans for Experiments 2a, 2b, 3a, and 3b were preregistered and are also available on the OSF website: https://osf.io/xbtds/. Statistical power for detecting main effects and interactions will be presented in the Results section of each experiment. All power analyses were conducted in the "simr" package (Green & MacLeod, 2016), which runs Monte Carlo simulations to arrive at power estimates for multilevel models (see: Bolger et al., 2012, for more on this technique).

Experiments 1a and 1b

Experiments 1a and 1b were designed to test whether perceivers use *one lens at a time* when thinking about intersectional targets. Experiment 1a tested whether perceivers stop paying attention to older women's gender when viewing them through the lens of age, and as well, whether perceivers stop paying attention to older women's age when viewing them through the lens of gender. Experiment 1b tested an analogous set of predictions with a different focal target group: Black women. Specifically, Experiment 1b tested whether perceivers stop paying attention to Black women's gender when viewing them through the lens of race, and as well, whether perceivers stop paying attention to Black women's race when viewing them through the lens of gender. A notable contribution of these experiments—above and beyond testing whether perceivers use one lens at a time when thinking about intersectional targets—is that their predictions compete with a prevalent prediction in the evolutionary psychology literature. Specifically, they compete with the prediction that perceivers cannot help but to engage in sex and age categorization (Kurzban et al., 2001; Pietraszewski et al., 2015; Sidanius & Pratto, 2012). According to Pietraszewski et al. (2015), for example, perceivers *inevitably* attend to targets' age and gender groups. In contrast, the lens-based account of intersectional stereotyping suggests that attending to targets' age and gender groups may not be inevitable. Instead, our perspective suggests that perceivers may cease to attend to targets' age groups when viewing targets through the lens of gender (Experiment 1a), and that perceivers may cease to attend to targets' gender groups when viewing targets through the lens of race (Experiment 1b).

The situational factor that was manipulated in Experiments 1a and 1b was a factor called *comparative fit*. Comparative fit describes the extent to which patterns of intergroup behavior correlate with targets' social identities in a given social context (Oakes et al., 1991; see also Lau & Murnighan, 1998). For example, if a perceiver were to walk into a room where a group of Black individuals were arguing with a group of White individuals, the lens of race would provide good comparative fit to the context. This is because in this moment, race would correlate with who is doing what. In contrast, if a perceiver were to walk into a room where women (regardless of race) were arguing with men (regardless of race), then the lens of gender would provide good comparative fit to the context. This is because in this latter moment, gender would correlate with who is doing what. In Experiments 1a and 1b, we tasked participants with viewing conversations that approximated situations such as these—situations that were designed to bring one lens into focus at the expense of bringing other lenses into focus. We then unobtrusively measured participants' tendency to categorize targets by their gender groups, racial groups, and age groups by assessing their memories for who said what (Klauer et al., 2014; Taylor et al., 1978).

Method

In both experiments (1a and 1b), participants were told that they would be watching a conversation unfold between 12 interaction partners. These 12 interaction partners were either a mix of older and younger women and men (Experiment 1a), or a mix of Black and White women and men (Experiment 1b). The conversations themselves were manipulated in ways that maximized the comparative fit of either (a) the lens of gender, (b) the lens of the cross-cutting category

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(either age or race, depending on the experiment), or (c) neither of these lenses. At the end of the experiment, participants' memories for who said what were tested. The key prediction was that participants' memory errors would correspond to compartmentalized patterns of social categorization. This is to say that when participants were in conditions that comparatively fit the lens of gender, they were expected to exhibit memory errors consistent with gender-based categorization, but *not* with age-based (Experiment 1a) or race-based (Experiment 1b) categorization. Conversely, when participants were in conditions that comparatively fit the lenses of age or race, respectively, they were expected to exhibit memory errors consistent with age categorization (Experiment 1a) or race categorization (Experiment 1b), but not—in these moments—with gender categorization. Such patterns, if supported, would suggest that perceivers indeed use one lens at a time when thinking about intersectional targets.

Design

Experiment 1a was a three-condition experiment with one between-person factor: comparative fit condition (age-fit, gender-fit, control). Experiment 1b was also a three-condition experiment with just one between-person factor: comparative fit condition (race-fit, gender-fit, control).

Participants

A total of 302 U.S. citizens were recruited from MTurk to complete Experiment 1a in exchange for $3.00. Of these, $n = 7$ (2.32%) were excluded for not responding "yes" to the question, "Did you take this study seriously?" The remaining participants were mostly male (170 male, 125 female), mostly White (235 White, 23 Black, 14 Asian, 13 Latinx, 4 American Indian, 4 multiracial, 2 nonrespondent), and had ages spanning from 19 to 72 ($M = 36.47$, $SD = 10.17$). In addition, 58% held at least a bachelor's degree, and the sample skewed toward political liberalism ($M = 3.92$, $SD = 3.04$, on an 11-point scale from 0 = *extremely liberal* to 10 = *extremely conservative*).

A total of 298 U.S. citizens were recruited to participate in Experiment 1b. Of these participants, the majority ($n = 168$) were undergraduates at private midwestern university who participated in exchange for course credit; the remaining participants ($n = 130$) were recruited from the MTurk website in exchange for $3.00.[3] Of these participants, $n = 14$ (4.70%) were excluded for not responding "yes" to the question, "Did you take this study seriously?" Remaining participants were mostly male (143 male, 134 female, 2 nonbinary), mostly White (187 White, 16 Black, 53 Asian, 15 Latinx, 1 American Indian, 10 multiracial, 2 nonrespondent), and had ages spanning from 18 to 70 ($M = 25.81$, $SD = 10.47$). As this sample drew upon undergraduate students, Experiment 1b's sample was less educated than Experiment 1a's (only 21.13% held at least a bachelor's degree). Experiment 1b's sample also skewed toward political liberalism ($M = 3.72$, $SD = 2.54$, on the same 11-point scale as before).

Procedure

Participants in Experiments 1a and 1b completed a variant of the who-said-what task (Taylor et al., 1978). Upon entering the survey, all participants learned that they were going to watch a conversation unfold between 12 interaction partners. In Experiment 1a, interaction partners consisted of three older women, three younger women, three older men, and three younger men (all of whom were White). In Experiment 1b, interaction partners consisted of three Black women, three White women, three Black men, and three White men (all of whom were young adults). The conversation itself was always on a topic that was normed in advance to seem stereotypically neutral with respect to each experiments' intersectional identities of interest (e.g., Experiment 1a's conversation topics were normed to ensure stereotypic neutrality with respect to both the age and gender of the interaction partners). During the conversation, participants saw each interaction partner take turns speaking in a one-at-a-time fashion. Following in the footsteps of others who have employed the who-said-what paradigm (e.g., Kurzban et al., 2001), there was no audio to accompany the conversation. Instead, participants clicked through multiple survey pages, each of which depicted the headshot of a single speaker along with whatever statement that speaker was making. Over the course of the conversation, each interaction partner "spoke" a total of three times, meaning that there were 36 statements in total over the course of the conversation that participants were to remember. Participants were told in advance of the conversation that their job would be to try and remember who said what.

Both experiments featured a manipulation of comparative fit as the primary mechanism for making one lens more salient than alternatives. Comparative fit was manipulated by randomly assigning participants to one of three versions of their respective conversation. In Experiment 1a, participants were either assigned a version in which all the older adults tended to disagree with all the younger adults (age-fit condition), a version in which all the women tended to disagree with all the men (gender-fit condition), or a version in which who disagreed with whom was randomized (control condition). Experiment 1b followed the same logic. Participants in Experiment 1b were either assigned a version of their conversation in which all the Black interaction partners disagreed with all the White interaction partners (race-fit condition), a version in which all the women disagreed with all the men (gender-fit condition), or a version in which who disagreed with whom was randomized (control condition). In both experiments, after the conversation (and fit manipulation) was over, participants completed several dependent variables, described in a subsequent section below.

Stimuli. Stimuli of interaction partners in Experiment 1a came from the FACES database (Ebner et al., 2010), which featured White male and female individuals whose faces were normed as appearing distinctively younger (ages 20–30) versus older (ages 70–80). Stimuli of interaction partners in Experiment 1b came from the Chicago Face Database (Ma et al., 2015), which featured male and female young adults whose faces were normed as reliably being categorized as either Black or White.

Participants in both experiments were randomly assigned a set of 12 interaction partners that came from the larger stimulus pools described above. The larger stimulus pool from Experiment 1a comprised a total of 108 possible target individuals; the larger stimulus pool from Experiment 1b comprised a total of 120 possible target individuals. Sampling stimulus faces from these larger pools was done to ensure that any results obtained from Experiments 1a and

[3] We ideally intended for Experiment 1b to rely entirely on undergraduate participants. However, we exhausted the available undergraduate subject pool at $n = 168$ and therefore needed to turn to MTurk in order to reach our target of $N = 300$ participants. Reported effects hold across participants sourced from MTurk versus the university subject pool; however, there is some evidence lenses more powerfully influenced patterns of social categorization among the university subject pool participants (see Supplemental Materials).

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1b would generalize across a broad range of faces. Beyond the facial stimuli that were used, two conversation topics were developed for each experiment. Which of two conversation topics participants in each experiment were assigned was designed to be an internal replication factor, much like the decision to use multiple facial stimuli. In Experiment 1a, participants were assigned either to see the 12 interaction partners have a conversation over the topic of (a) whether introverts are more intelligent than extroverts, or (b) whether people who mirror the behavior of other people are phony. These two topics were normed as seeming stereotypically neutral with respect to age and gender (all $ps \geq .19$; see Supplemental Materials for more detail). In Experiment 1b, participants were assigned either to see the 12 interaction partners have a conversation over the topic of either a) whether celebrities earn too much money, or (b) whether attempted suicide should be made illegal. These two topics were normed as seeming stereotypically neutral with respect to race and gender (all $ps \geq .38$; see Supplemental Materials for more detail).

Main Dependent Variable: Who Said What? The primary dependent variable in the who-said-what paradigm was a memory task. This dependent variable was measured by showing participants each of the 36 spoken statements from the conversation they viewed—along with 36 distractor statements that were *not* part of the conversation they viewed—and asking them first, "Have you seen this statement before?" If participants responded "yes," they were then shown the statement again alongside all 12 interaction partners' faces. Their task was to click on the face of the person whom they remembered saying each statement.

Supplementary Dependent Variables. We also included supplementary measures that were designed to index stereotype application. In particular, after the conversation, but before the who-said-what memory task, participants were shown the following prompt: "Now that the conversation is over, we'd like to gather some information on how you think *the average American* might perceive (and stereotype) some of the people from the conversation you viewed" (instructions adapted from Devine & Elliot, 1995; see also Ghavami & Peplau, 2013). After these instructions, participants were shown one of the older women (in the case of Experiment 1a) or one of the Black women (in the case of Experiment 1b) from the conversation they had just viewed, and they were asked to (a) list stereotypes about her and (b) provide ratings of her facial features. Stereotypes were measured by showing participants the popular checklist measure of stereotype application (Katz & Braly, 1933, as adapted by Hall et al., 2015). The checklist measure requires participants to select the ten most stereotypic attributes about a target person from a list of 99 trait words (e.g., aggressive, intelligent, witty)—words that have already been normed on how "Black," "feminine," and on how stereotypically "old" they seem (see Supplemental Materials for more detail). After completing the checklist measure, participants were shown the face of the same target person and they were asked to rate the person's face on several attributes. In Experiment 1a, the focal attributes were how "typical of old people" and "typical of women" the target person's face looked; in Experiment 1b, the focal attributes were how "typical of Black people" and "typical of women" the target person's face looked.

Results

Results are presented while collapsing across internal replication factors (which set of facial stimuli participants were assigned, which conversation topic they were assigned), as including these factors in the models did not meaningfully change their conclusions (see Supplemental Materials for more detail). According to Monte Carlo simulations, Experiments 1a and 1b had more than 80% power to detect social categorization effects on the who-said-what paradigm as small as $\beta = 0.18$. In addition, these experiments had more than 80% power to detect two-way interaction effects (of social categorization by experimental condition) as small as $\beta = 0.38$.

Experiment 1a

Participants were expected to use one lens at a time when categorizing and stereotyping intersectional targets. For example, the age-lens condition was expected to enhance participants' tendency to categorize older women by their age groups—and to amplify their tendency to view older women as seeming stereotypically old—but was expected to attenuate participants' tendency to categorize these women by their gender groups. Conversely, the gender-lens condition was expected to enhance participants' tendency categorize older women by their gender groups—and to amplify the tendency to view older women as seeming stereotypic of women—but was expected to attenuate participants' tendency categorize these women by their age groups.

Who Said What? Participants were hypothesized to be attending to targets' age groups more in the age-fit condition—when the lens of age was active—than in the other two conditions. To investigate whether this was indeed the case, memory errors on the who-said-what task were categorized according to whether they were within-age-group errors (e.g., confusing an older person for another older person) or between-age-group errors (e.g., confusing an older person with a young person). Under this approach, *age categorization* is indexed by the extent to which within-age-group errors are more frequent than between-age-group errors.[4] To examine participants' levels of age categorization, errors were subjected to a 2 (error type: within-group, between-group) × 3 (condition: age-fit, control gender-fit) mixed-linear model that was statistically analogous to a mixed analysis of variance (ANOVA) with repeated measures on the first factor.[5] This model included just one random effect: a random effect of participant intercept, which adjusted for the fact that error type was nested within-person.[6] This analysis revealed, first, a main effect of error type, suggesting that across all conditions, participants exhibited a general tendency to categorize targets by age. That is, when participants could not remember who said what,

[4] An adjustment was made to these error frequencies to account for the fact that some errors are more probable than others (e.g., for the fact that there are six possible ways to make a between-age-group error but only five possible ways to make a within-age-group error). This adjustment was made following the advice of Pietraszewski (2018).

[5] All models in this manuscript were conducted by regressing outcomes onto contrast codes—which were always orthogonal to each other, centered around zero, and which always summed to one—that represented the specified (mixed) factorial experimental designs. For more on this approach, see Judd et al. (2017). To compute standardized betas (βs), outcomes were simply *z*-standardized in advance of running each model. R^2 values were computed following the guidelines described in Edwards et al. (2008) and in Page-Gould et al. (2019).

[6] Mixed-linear and multilevel analyses throughout this manuscript are conducted using the "lme4" and "lmerTest" packages in R (Bates et al., 2015; Kuznetsova et al., 2016), which uses the Satterthwaite approximation to estimate degrees of freedom. Fluctuations in degrees of freedom across statistical tests are attributable to approximation variability rather than to missing data.

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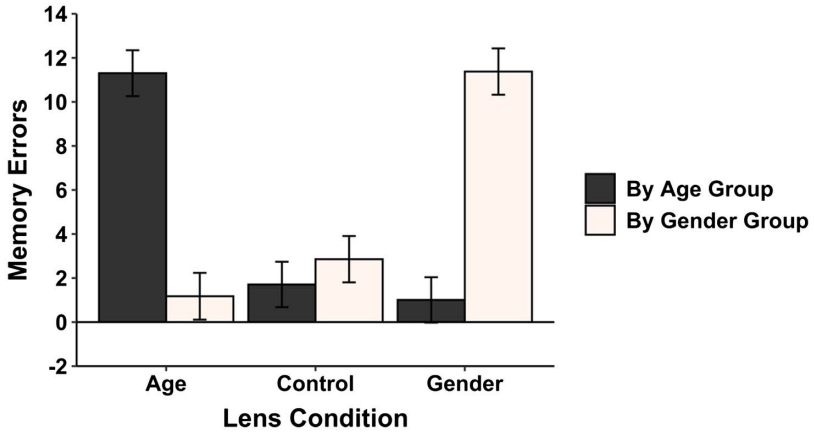
they made significantly more within-age-group errors ($M = 10.29$, $SE = 0.22$) than between-age-group errors ($M = 5.61$, $SE = 0.22$), $M_{diff} = 4.67$, 95% CI [4.08, 5.27], $\beta = 0.93$, $F(1, 295) = 234.98$, $p < .001$, $R^2 = .44$. In addition, and in line with predictions, the degree of age-based categorization was moderated by whether or not participants were in the condition that comparatively fit the lens of age: $\beta = 1.98$, $F(1, 295) = 234.95$, $p < .001$, $R^2 = .44$. Specifically, age categorization was greater in the age-fit condition, $M_{diff} = 11.30$, 95% CI [10.26, 12.35], $\beta = 2.25$, $F(1, 295) = 452.16$, $p < .001$, $R^2 = .61$, than it was in the other two conditions, $M_{diff} = 1.36$, 95% CI [0.63, 2.09], $\beta = 0.27$, $F(1, 295) = 13.32$, $p < .001$, $R^2 = .04$. The degree of age categorization was not moderated by whether participants were in the control condition or in the gender-fit condition (see Figure 1), $\beta = 0.14$, $F(1, 295) = 0.88$, $p = .35$, $R^2 < .01$. These data are broadly consistent with the principle that perceivers use one lens at a time when stereotyping intersectional targets: when the lens of age comparatively fit the context (vs. not), participants were more likely to use age as a category for organizing their memories. Yet when the lens of gender comparatively fit the context, or when neither the lens of age nor gender comparatively fit the context, age categorization plummeted. Indeed, age-categorization accounted for 61% of the variance in memory errors in the age-lens condition; yet it accounted for only 4% of the variance in memory errors in the control and gender-lens conditions.

Participants were also hypothesized to attend to targets' gender groups more in the gender-fit condition—when the lens of gender was active—than in the other two conditions. To examine whether this was the case, participants' memory errors for who said what were analyzed according to the same 2×3 analysis described above. This analysis revealed a main effect of error type, suggesting that on average, participants were using gender as a category for organizing their memories. That is, when participants could not remember who said what, they were more likely to erroneously attribute a statement to someone of the same gender category ($M = 10.54$, $SE = 0.22$) than to someone of the opposite gender category ($M = 5.40$, $SE = 0.22$), $M_{diff} = 5.14$, 95% CI [4.53, 5.75], $\beta = 1.00$, $F(1, 295) = 272.75$, $p < .001$, $R^2 = .48$. Furthermore, and as expected, the degree of gender categorization was moderated by whether or not participants were in the condition that comparatively fit the lens of gender (see Figure 1): $\beta = 1.83$, $F(1, 295) = 202.09$, $p < .001$, $R^2 = 0.41$. Participants in the gender-fit condition made a substantial number of within- relative to between-gender-group confusions: $M_{diff} = 11.38$, 95% CI [10.31, 12.44], $\beta = 2.22$, $F(1, 295) = 449.28$, $p < .001$, $R^2 = .60$. Participants in the other two conditions exhibited the same pattern, but to a much weaker degree: $M_{diff} = 2.01$, 95% CI [1.27, 2.76], $\beta = 0.39$, $F(1, 295) = 27.90$, $p < .001$, $R^2 = .09$. Finally, gender categorization was moderated by whether participants were in the age-fit versus control conditions, $\beta = 0.33$, $F(1, 295) = 4.87$, $p = .028$, $R^2 = .02$. The nature of this interaction was that gender categorization occurred more in the control condition, $\beta = 0.55$, $F(1, 295) = 28.32$, $p < .001$, $R^2 = 0.09$, than in the age-fit condition, $\beta = 0.23$, $F(1, 295) = 4.68$, $p = .031$, $R^2 = .02$. This is supportive of the lens-switching dynamics that we have been proposing—of the possibility that when the lens of age comes into focus, the lens of gender falls out. Moreover, it contradicts the argument that gender is in focus at all times and across all contexts (Kurzban et al., 2001). Indeed, whereas gender categorization was pronounced in the gender-fit condition (accounting for 60% of the variance in memory errors), it became a near-null effect (and came to account for just 2% of the variance in memory errors) in the age-lens condition. This is to say that gender categorization may not be ever-present, but may instead be present only on the condition that another lens is not situationally grabbing perceivers' attention.

Supplementary Dependent Measures. Participants were expected to nominate traits for individual older women that were rated (by naive raters) as seeming stereotypically older in the age-fit condition than in the control or gender-fit conditions. In addition, participants were expected to rate the faces of individual older women as seeming more "typical of older adults" in the age-fit condition than in the other two conditions. Contradicting hypotheses,

Figure 1

Age and Gender Categorization Broken Down by Lens Condition (Experiment 1a)



Note. Within-relative to between-group memory errors (Experiment 1a) broken down by whether participants were in conditions that comparatively fit of the lens of age (left), gender (right), or neither age nor gender (middle). Effect estimates are encompassed by 95% confidence intervals. See the online article for the color version of this figure.

one-way analysis of variance tests on both dependent variables yielded null results. Participants' trait attributions toward older women were rated as similarly "old" regardless of experimental condition: all ps $\geq$ .10. In addition, participants' ratings of how "typical of older adults" the individual women seemed likewise did not vary across experimental conditions (all ps $\geq$ .19; see Supplemental Materials for greater detail).

Participants were also expected to nominate "more feminine" attributes for older women in the gender-fit condition than in the other two conditions, and they were likewise expected to perceive older women's faces as looking more "typical of women" in the gender-fit condition. Here, as above, we observed null results. Individual older women were stereotyped as similarly feminine regardless of experimental condition (all ps $\geq$ .86), and their faces were rated as looking similarly "typical of women" regardless of experimental condition, (all ps $\geq$ .45), according to one-way ANOVAs across all three conditions. Thus, while we *did* find evidence that perceivers use one lens at a time when engaging in social categorization (on the who-said-what task), we did not find evidence that different lens use was associated with applying different stereotypes to individual older women.

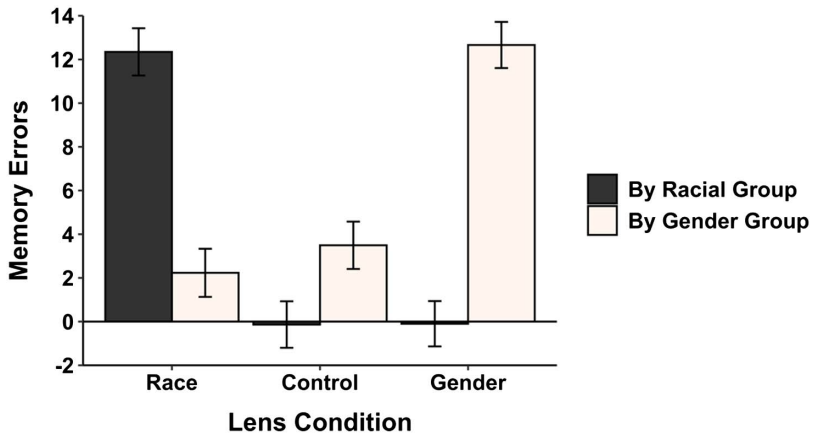
Experiment 1b

Participants in Experiment 1b were expected to use one lens at a time when categorizing and stereotyping intersectional targets. For example, the gender-lens condition was expected to enhance participants' tendency to categorize Black women by their gender groups—and to amplify the tendency to view Black women as seeming stereotypic of women—but to attenuate participants' tendency to categorize these women by their racial groups.

Who Said What? Participants were hypothesized to be attending to targets' racial groups more in the race-fit condition—when the lens of race was active—than in the other two conditions. To test this, participants' memory errors were categorized as either within- or between-racial-group errors, and they were subjected to a 2 (error type: within-group, between-group) $\times$ 3 (condition: race-fit, control gender-fit) mixed-linear model that was statistically analogous to a mixed ANOVA with repeated measures on the first factor. This model included just one random effect: a random effect of participant intercept, which adjusted for the fact that error type was nested within-person. This analysis revealed a main effect of error type, suggesting that participants were indeed using race as a category for organizing their memories. That is, when participants could not remember who said what, they made significantly more within-racial-group errors (M = 10.62, SE = 0.22) than between-racial group errors (M = 6.58, SE = 0.22), M_{diff} = 4.04, 95% CI [3.43, 4.65], β = 0.79, $F(1, 568) = 167.03$, $p < .001$, $R^2 = .23$. In line with the lens-based stereotyping account we have been developing, the degree of race categorization was moderated by whether or not participants were in the condition that comparatively fit the lens of race: $\beta = 2.44$, $F(1, 568) = 346.78$, $p < .001$, $R^2 = 0.38$. The nature of this interaction was that race categorization was substantially greater in the race-fit condition, M_{diff} = 12.35, 95% CI [11.26, 13.43], $\beta = 2.41$, $F(1, 568) = 500.91$, $p < .001$, $R^2 = .47$, than it was in the other two conditions, M_{diff} = −0.12, 95% CI [−0.86, 0.63], $\beta = -0.02$, $F(1, 568) = 0.09$, $p = .76$, $R^2 < .01$. In addition, the degree of race categorization was not moderated by whether participants were in the control condition or in the condition that comparatively fit the lens of gender (see Figure 2), $\beta = -0.01$, $F(1, 568) < 0.01$, $p = .96$, $R^2 < .01$. This is consistent with the one-lens-at-a-time principle for which we have been advocating. When the lens of race was in focus, target race accounted for 47% of the variance in participants' memory errors for who said what; but when the lens was not in focus, either because no lens was situationally afforded or because the lens of gender was in focus, target race came to account for less than 1% of the variance in participants' memory errors for who said what.

Figure 2

Race and Gender Categorization Broken Down by Lens Condition (Experiment 1b)



Note. Within-relative to between-group memory errors (Experiment 1b) broken down by whether participants were in conditions that comparatively fit of the lens of race (left), gender (right), or neither race nor gender (middle). Effect estimates are encompassed by 95% confidence intervals. See the online article for the color version of this figure.

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Participants were also expected to be engaging in gender categorization more in the gender-fit condition—when the lens of gender was active—than in the other two conditions. Subjecting participants' gender-related errors to the same 2 × 3 analysis described above revealed a main effect of error type: when participants could not remember who said what, they were more likely to erroneously attribute a statement to someone of the same gender category (M = 11.76, SE = 0.23) than to someone of the opposite gender category (M = 5.63, SE = 0.23), M_{diff} = 6.13, 95% CI [5.51, 6.75], β = 1.12, $F(1, 568) = 370.83$, $p < .001$, $R^2 = .39$. Furthermore, and as expected, the degree of gender categorization was moderated by whether or not participants were in the condition that comparatively emphasized targets' gender: β = 1.79, $F(1, 568) = 215.47$, $p < .001$, $R^2 = .28$. When participants were in the gender-fit condition, they exhibited an amplified tendency to make within- relative to between-gender errors: M_{diff} = 12.66, 95% CI [11.61, 13.72], β = 2.32, $F(1, 568) = 552.34$, $p < .001$, $R^2 = .49$. Participants in the other two conditions exhibited the same pattern, but to a much weaker degree: M_{diff} = 2.86, 95% CI [2.09, 3.63], β = 0.52, $F(1, 568) = 52.75$, $p < .001$, $R^2 = .08$. The degree of gender categorization was not moderated by whether participants were in the race-fit versus control conditions, β = 0.23, $F(1, 568) = 2.56$, $p = .11$, $R^2 < .01$. These findings are consistent with the idea that categorizing targets by gender is more obligatory than categorizing people by race (Kurzban et al., 2001). However, these findings also demonstrate that categorization by gender can be substantially attenuated when perceivers are attending to another social identity that targets harbor. Indeed, the tendency to attend to gender was substantially strengthened in the gender-fit condition—where it accounted for 49% of the variance in memory errors—relative to conditions in which no lens was afforded by the social context or in which the lens of race was afforded by the social context (where it accounted for just 8% of the variance in these errors).

Supplementary Dependent Measures. Participants were expected to nominate traits for individual Black women that were rated (by naive raters) as seeming more stereotypically Black in the race-fit condition, when the lens of race was activated, than when in the control or gender-fit conditions. In addition, participants were expected to rate the faces of individual Black women as seeming more "typical of Black Americans" in the race-fit condition than in the other two conditions. Contradicting hypotheses, one-way analysis of variance tests on both dependent variables yielded null results. Participants' trait attributions toward Black women were rated as similarly "Black" regardless of experimental condition: all ps ≥ .61. In addition, participants' ratings of how "typical of Black Americans" the individual women seemed likewise did not vary across experimental conditions (all ps ≥ .19; see Supplemental Materials).

Participants were also expected to nominate "more feminine" attributes for Black women in the gender-fit condition than in the other two conditions, and they were likewise expected to perceive Black women's faces as looking more "typical of women" in the gender-fit condition. Here, as above, we observed null results. Individual Black women were stereotyped as similarly feminine regardless of experimental condition (all ps ≥ .33), and their faces were rated as looking similarly "typical of women" regardless of experimental condition, (all ps ≥ .42), according to one-way ANOVAs across all three conditions.

Discussion

Experiments 1a and 1b provide support for the possibility that when perceivers sharpen their focus on the social categories implied by one lens, they tend to lose focus on the social categories implied by others. An implication of Experiment 1b, for example, is that when perceivers view Black women through the lens of gender, they focus their attention on gender so strongly that they come to view Black women as interchangeable with other women (mistaking these women's statements with the statements of other women), but they cease to view these women as interchangeable with other members of their racial groups. Indeed, participants in the gender-lens condition of Experiment 1b were *as likely* to confuse Black women with White women as they were to confuse Black women with other Black women. This pattern implies that situational forces in general, and the force of comparative fit in particular (Oakes et al., 1991), can make one lens so salient in the minds of perceivers that other lenses fall out of focus.

There are at least two notable limitations of Experiments 1a and 1b that are worth addressing. First, the one-lens-at-a-time prediction argues that when one lens (e.g., the lens of gender) is in focus, participants should not attend—in these moments—to lens-irrelevant identities (e.g., age). However, Experiments 1a and 1b revealed that participants do in some cases exhibit significant, if substantially attenuated, levels of social categorization on the basis of lens-irrelevant identities. For example, participants in the gender-lens condition exhibited a significant (albeit weak, by comparison to other conditions) tendency to categorize targets on the basis of age (Experiment 1a); and participants in the race-lens condition exhibited a significant (but again, weak by comparison to other conditions) tendency to categorize targets on the basis of gender (Experiment 1b). One explanation as to why participants exhibited sustained social categorization on the basis of targets' nonfocal identities may be, as evolutionary scholars have argued, that attention to targets' age groups and gender groups is extremely difficult for participants to "switch off" (e.g., Kurzban et al., 2001; Pietraszewski et al., 2015). This is a possibility that subsequent experiments will continue to examine.

A second limitation is that while these experiments did suggest that participants' *attention* to social categories trades off as a function of which lens is made situationally salient, they provided no evidence that the stereotypes that are then applied to individual target people follow from these different social categories. For example, participants did not come to view individual older women as seeming stereotypically older in the age-lens condition than in the gender-lens condition; nor did participants come to view individual Black women as seeming stereotypically Blacker in the race-lens condition than in the gender-lens condition. One possible explanation as to why, on the one hand, participants' attention to social categories traded off as a function of which lens was in focus but why, on the other hand, participants' stereotypes did not, concerns the timing of the experiment itself. In particular, it may be the case that lenses come in and out of focus quickly, as a function of contextual pressures (like comparative fit; see also Xiao & Van Bavel, 2019). Thus, while participants may have been using the lens of gender, for example, for thinking about older women when the lens of gender comparatively fit the context (i.e., during the conversation that unfolded), this lens may have quickly fallen out of focus later in the experiment when they encountered these older women as individual people to be rated. If this explanation is correct, then it stands to reason that participants

may exhibit evidence of compartmentalized stereotyping provided that stereotypes are measured during a time when participants are being situationally induced to use one lens over alternatives. This possibility was what we examined next, in Experiments 2a and 2b.

Experiments 2a and 2b

Experiments 2a and 2b had the aim of continuing to examine the one-lens-at-a-time idea in the context of intersectional person perception. However, Experiments 2a and 2b were designed to be an improvement over the first two experiments in a few critical ways. First, unlike the first two experiments—which were concerned primarily with measuring perceivers' social categorization—Experiments 2a and 2b were concerned primarily with measuring perceivers' stereotypes. Second, unlike the first two experiments, which measured stereotype application after our primary lens manipulation, Experiments 2a and 2b employed a paradigm that enabled us to examine whether perceivers apply stereotypes to targets *while* a particular lens was made contextually salient. And then finally, whereas Experiments 1a and 1b sought to manipulate lens salience by way of a comparative fit manipulation (Oakes et al., 1991), Experiments 2a and 2b manipulated lens salience by manipulating perceivers' goals. In particular, in Experiments 2a and 2b participants were explicitly given the goal of categorizing targets either in light of one lens (e.g., age), or in light of a different lens (e.g., gender). Past research suggests that giving perceivers the temporary goal to attend to one identity can indeed inhibit attention to—and can perhaps inhibit stereotyping on the basis of—alternative identities (e.g., Palma et al., 2019; Volpert-Esmond & Bartholow, 2019).

In Experiments 2a and 2b, perceivers completed a multi-attributes implicit association test (m-IAT: Yamaguchi & Beattie, 2020). The advantage of an m-IAT is that it enables experimenters to examine whether participants exhibit a racial bias *even when* they are instructed to pay attention to a category other than race (e.g., gender). This feature of the m-IAT made it desirable for our purposes. In Experiment 2a, we examined the question of whether participants would exhibit evidence of implicit male-science stereotyping—a tendency to associate men with science concepts, and women with liberal arts concepts, more quickly than the reverse—when given the explicit goal of focusing on the lens of gender, but *not* when focusing the lens of age. In Experiment 2b, we examined a parallel question: whether participants would exhibit evidence of implicit Black-weapons stereotyping—a tendency to associate Black people with weapons, and White people with harmless objects, more quickly than the reverse—when given the goal of focusing on lens of race, but *not* when focusing on the lens of age.

We chose these two forms of implicit stereotyping as our dependent variables because (a) they appear to be robust, and (b) they appear to be consequential. Implicit male-science associations, for example, have been observed in every country in which the gender-science IAT has been administered (Charlesworth & Banaji, 2019; Miller et al., 2015)—and notably, there is no evidence to date that these associations can be "switched off" in the minds of perceivers. Not only are these implicit associations globally present, but also they appear to be consequential. For example, the magnitude by which citizens of a nation implicitly associate men (more than women) with science is predictive of 8th grade girls' (relative to 8th grade boys') disengagement from mathematics curricula in that nation (Nosek et al., 2009). Similarly, Black-weapons biases are persistent to an alarming degree in the minds of U.S. citizens (e.g., Eberhardt et al., 2004). As we mentioned in this article's introduction, for example, there is evidence that perceivers in the United States occasionally attend to race so strongly (in the context of weapons identification tasks) that they overlook whether the targets of their perceptions are fully grown adults versus 5-year-old children (e.g., Todd, Simpson, et al., 2016; Todd, Thiem, & Neel, 2016). This bias is consequential for a variety of reasons, not the least of which is that stronger Black-weapons stereotypes are predictive of erroneously "shooting" at unarmed Black (vs. White) individuals in computer simulation tasks (Glaser & Knowles, 2008).

Against the backdrop of the evidence reported above, it would be notable if we were to find that each of these implicit stereotyping effects depended on which lens was made situationally salient to perceivers. It would be notable if, for example, the tendency to implicitly associate men with science were present when perceivers were using the lens of gender, but absent when perceivers were using the lens of age. Likewise, it would be notable if the tendency to implicitly associate Blackness with weapons were present when perceivers were using the lens of race, but absent when perceivers were using the lens of age. Examining whether such patterns emerge was the purpose of Experiments 2a and 2b.

Method

In both experiments (2a and 2b), participants were told that they would complete a series of speeded response tasks. Participants in Experiment 2a completed a gender-science IAT that featured older (i.e., appearing to be in their 70s or older) and younger (i.e., appearing to be in their 20s and 30s) men and women (all of whom were White). Participants in Experiment 2b completed a race-weapons IAT that featured Black and White adults (appearing in their 20s and 30s) and children (appearing between 4 and 6 years old).

In both experiments (2a and 2b), participants completed the IAT twice: once while focusing on the focal identity that these tasks were designed around (gender, in the case of Experiment 2a; race, in the case of Experiment 2b), and once while focusing on the cross-cutting identities in these experiments (i.e., age). Thus, the manipulation in these experiments was not heavy-handed. Participants were simply instructed to sort targets one way (e.g., as *male* vs. *female*), and then later, to sort targets another way (e.g., as *old* vs. *young*). The prediction was that if perceivers indeed use one lens at a time when stereotyping intersectional targets, then they should implicitly associate men (more than women) with science *only* when focusing on targets' gender groups—but not, in Experiment 2a, when focusing on these targets' age groups. Likewise, if perceivers indeed use one lens at a time when stereotyping intersectional targets, they should implicitly associate Black people (more than White people) with weapons *only* when focusing on these targets' racial groups—but not, in Experiment 2b, when focusing on these targets' age groups.

Design

Experiment 2a was a two-condition experiment with one within-person factor: IAT type (gender-IAT, age-IAT). Experiment 2b was also a two-condition experiment with one within-person factor: IAT type (race-IAT, age-IAT).

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Participants

A total of 114 U.S. citizens were recruited from MTurk to complete Experiment 2a in exchange for $2.00. Of these, $n = 2$ (1.75%) were excluded for not responding "yes" to the question, "Did you take this study seriously?" The remaining participants were mostly male (65 male, 45 female, 2 nonspecified), mostly White (80 White, 10 Black, 10 Latinx, 7 Asian, 3 American Indian, 2 multiracial), and had ages spanning from 21 to 71 (M = 36.01, SD = 10.33). In addition, 54% held at least a bachelor's degree, and the sample skewed toward political liberalism (M = 3.91, SD = 3.09, on an 11-point scale from 0 = *extremely liberal* to 10 = *extremely conservative*). A total of 154 undergraduates at private midwestern university completed Experiment 2b in exchange for course credit. Of these participants, $n = 6$ (3.90%) were excluded for not responding "yes" to the question, "Did you take this study seriously?" Remaining participants were mostly female (78 female, 68 male, 1 nonbinary), mostly White (64 White, 47 Asian, 16 Latinx, 4 Black, 17 multiracial), and had ages spanning from 18 to 24 (M = 19.43, SD = 1.05). Experiment 2b's sample also skewed toward political liberalism (M = 3.48, SD = 2.08, on the same 11-point scale as before).

Procedure

Participants in Experiment 2a were randomly assigned either to take a gender-science IAT prior to an age-science IAT, or to take an age-science IAT prior to a gender-science IAT. Both IATs featured the same stimulus faces and stimulus words. The stimulus faces included six older men, six young men, six older women, and six young women (whose faces were drawn from the FACES database: Ebner et al., 2010). The words were either science-related (e.g., Physics, Chemistry, Engineering) or liberal arts-related (e.g., History, English, Humanities). In the gender-science variant of this IAT, participants completed two blocks in which they associated male faces with science concepts—and female faces with liberal arts concepts—and two blocks in which they completed the reverse of these associations (i.e., male faces with liberal arts concepts and female faces with science concepts). All participants completed 120 trials of each pairing type. In the age–science variation of this IAT, the stimuli were exactly the same, however, the social category of focus was age groups (old, young) rather than gender groups. On this version of the IAT, participants completed two blocks in which they associated older faces with science concepts—and young faces with liberal arts concepts—and two blocks in which they completed the reverse of these associations (i.e., old faces with liberal arts concepts and young faces with science concepts). Again, participants completed 120 trials of each pairing type. Within all IATs, block ordering was randomized, as was which key participants had to press for each of these respective pairing types.[7]

Participants in Experiment 2b completed an analogous set of procedures with a different set of social targets. Participants in Experiment 2b were randomly assigned either to take the race-weapons IAT prior to an age-weapons IAT, or to take an age-weapons IAT prior to a race-weapons IAT. Both IATs featured the same stimulus faces and stimulus words. The stimulus faces included six Black men, six White men, six Black boys, and six White boys. The faces of grown men were normed as appearing in their 20s and 30s and came from the Chicago Face Database (Ma et al., 2015). The faces of Black and White boys were normed as appearing 4–6 years old and came from the Child Affective Expression Set (LoBue & Thrasher, 2015). Of note, we used the exact same stimulus faces in Experiment 2b as those from experiments documenting the presence of a racial bias that—in the context of weapons-identification procedures—appears to manifest toward Black children and adults to equal degrees (Thiem et al., 2019). The words in both IATs were either weapons (e.g., Pistol, Blade, Gun) or harmless objects (e.g., Camera, Phone, Soda). In the race-weapons variant of this IAT, participants completed two blocks in which they associated Black faces with weapons—and White faces with harmless objects—and two blocks in which they completed the reverse of these associations (i.e., White faces with weapons and Black faces with harmless objects). All participants completed 120 trials of each pairing type. In the age–weapons variation of this IAT, the stimuli were exactly the same, however, the social category of focus was age groups (child, adult) rather than racial groups (Black, White). On this version of the IAT, participants completed two blocks in which they associated adult faces with weapons—and children's faces with harmless objects—and two blocks in which they completed the reverse of these associations (i.e., children's faces with weapons and adult faces with harmless objects). Again, participants completed 120 trials of each pairing type. Within all IATs, block ordering was randomized, as was which key participants had to press for each of these respective pairing types.

Results

Prior to analyzing the data from Experiments 2a and 2b, we eliminated participants whose mean response latencies were unusually fast or slow. To conduct these eliminations, each participant's mean response latency was compared against the median of these mean response latencies within each IAT of each experiment. If a participant's mean latency was more than three median absolute deviations (MAD) away from the sample median (in the case of Experiment 2a), or more than two MAD from the sample median (in the case of Experiment 2b), they were removed from the data file prior to analysis (see Leys et al., 2013, for more on this approach). Of note, the exclusion criterion used for Experiment 2b is actually stricter than the criterion we preregistered. Readers should, therefore, consider the reported results for Experiment 2b to be exploratory. Nevertheless, we opted to report results while using this stricter exclusion criterion as we had strong reason to believe that our planned exclusion criterion was not strict enough.[8] Notably, the patterns we report below hold regardless of which exclusion criterion we use, but significance levels do change (see Supplemental Materials for a full report on this issue, and to see what results look like when using the planned exclusion criterion). According to Monte Carlo simulations, Experiment 2a had more than 80% power to detect IAT main effects (e.g., a male-science bias) as small as $\beta = 0.05$, and two-way interactions (between main effects and IAT type) as small as $\beta = 0.11$. Experiment 2b had more than 80% power to detect IAT main effects (e.g., a Black-weapons

[7] These and all subsequent IATs were programmed using default settings in iatgen (see Carpenter et al., 2019, for more detail).

[8] For example, using the stricter exclusion criterion of two MADs rather than three MADs reduced skew in the distribution of response latencies by a whopping 86.59%, and it reduced noise (i.e., standard errors) around all effect estimates by at least 48.52% (see Supplemental Materials).

bias) as small as $\beta = 0.05$, and two-way interactions (between main effects and IAT type) as small as $\beta = 0.09$.

Experiment 2a

To analyze the data in Experiment 2a, response latencies (in milliseconds) for facial stimuli were regressed, in a multilevel model, onto within-person contrast codes that represented the full 2 (IAT type: gender-IAT; age-IAT) × 2 (gender pairing: male-science + female-arts; male-arts + female-science) × 2 (age pairing: old-science + young-arts; old-arts + young-science) within-person factorial design of this experiment. This model included estimates of three random effects: a random effect of IAT block intercept, which adjusted for any variation in response latencies that was attributable to some blocks coming earlier in the experiment than others; a random effect of participant intercept, which adjusted for the fact that the full factorial design of this experiment was nested within person; and a random effect of stimulus intercept, which adjusted for the fact that observations were also nested within particular stimulus faces. This multilevel modeling approach is preferable to the computation of *D*-scores as *D*-scores do not adjust for random variation in stimuli (which, when not adjusted for, increases the likelihood of making Type-I errors; Judd et al., 2012; Skinner & Rae, 2019).

The main hypotheses in Experiment 2a were that (a) participants would exhibit a tendency to associate men with science (and women with liberal arts) more quickly than the reverse; but that (b) this bias would be eliminated when participants were using the lens of age for viewing targets rather than the lens of gender. Supporting the first of these hypotheses, the 2 (IAT type) × 2 (gender pairing) × 2 (age pairing) analysis described above revealed a main effect of gender pairing. The nature of this main effect was that participants were indeed faster to associate men with science (and women with liberal arts: $M = 747.15$, $SE = 15.23$) than the reverse of these pairings ($M = 778.38$, $SE = 15.23$), $M_{diff} = -31.23$ ms, 95% CI [−43.66, −18.81], $\beta = -0.08$, $F(1, 11381) = 24.27$, $p < .001$, $R^2 < .01$. Thus, participants did indeed exhibit a tendency to implicitly associate men (more than women) with science concepts. Moreover, and in support of the second hypothesis, this tendency was moderated by IAT type: $\beta = -0.15$, $F(1, 11377) = 18.64$, $p < .001$, $R^2 < .01$. The nature of this interaction was that the tendency to implicitly associate men (more than women) with science was present when faces were being categorized by their gender groups, $M_{diff} = -58.60$ ms, 95% CI [−76.15, −41.04], $\beta = -0.16$, $F(1, 11374) = 42.80$, $p < .001$, $R^2 < .01$, but not when faces were being categorized by their age groups, $M_{diff} = -3.87$ ms, 95% CI [−21.46, 13.72], $\beta = 0.01$, $F(1, 11381) = 0.19$, $p = .67$, $R^2 < .01$. Thus, this experiment yielded very strong support for the lens-based account of intersectional stereotyping for which we have been advocating. When participants were given the processing goal of attending to the lens of gender, they stereotypically associated men more than women with science. Yet when participants were instead given the processing goal of attending to the lens of age, they ceased to exhibit any implicit gender stereotyping whatsoever (see Figure 3).[9]

Although there were no preregistered predictions related to age stereotyping, the 2 (IAT type) × 2 (gender pairing) × 2 (age pairing) analysis described above also revealed a main effect of age pairing, such that participants tended to associate older adults with science (and young adults with liberal arts: $M = 751.49$, $SE = 15.23$) more quickly than the reverse of these pairings ($M = 774.05$, $SE = 15.23$), $M_{diff} = -22.56$ ms, 95% CI [−34.99, −10.12], $\beta = -0.06$, $F(1, 11316) = 12.65$, $p < .001$, $R^2 < .01$. Interestingly, magnitude of this effect was also moderated by IAT type in a way that was highly sensible from the perspective of the lens-based account we have been developing: $\beta = 0.17$, $F(1, 11341) = 23.61$, $p < .001$, $R^2 < .01$. That is, the tendency to associate older adults with science more quickly than young adults *only* emerged when participants were attending to age: $M_{diff} = -53.38$ ms, 95% CI [−70.97, −35.78], $\beta = -0.15$, $F(1, 11143) = 35.37$, $p < .001$, $R^2 < .01$. When participants were attending to gender, this tendency, too, disappeared: $M_{diff} = 8.26$ ms, 95% CI [−9.31, 25.83], $\beta = 0.02$, $F(1, 11377) = 0.85$, $p = .36$, $R^2 < .01$. Thus, age stereotyping only emerged when participants were using the lens of age—it did not emerge when participants were using the lens of gender (see Figure 3). This finding is highly consistent with the lens-switching dynamics that we have been developing.

Experiment 2b

To analyze the data in Experiment 2b, response latencies (in milliseconds) for facial stimuli were regressed, in a multilevel model, onto within-person contrast codes that represented the full 2 (IAT type: race-IAT, age-IAT) × 2 (race pairing: Black-weapon + White-harmless; White-weapon + Black-harmless) × 2 (age pairing: adult-weapon + child-harmless; child-weapon + adult-harmless) within-person factorial design of this experiment. This model included estimates of three random effects: a random effect of IAT block intercept, which adjusted for any variation in response latencies that was attributable to some blocks coming earlier in the experiment than others; a random effect of participant intercept, which adjusted for the fact that the full factorial design of this experiment was nested within person; and a random effect of stimulus intercept, which adjusted for the fact that observations were also nested within particular stimulus faces.

In Experiment 2b, we hypothesized that (a) participants would exhibit a tendency to associate Black individuals with weapons (and White individuals with harmless objects) more quickly than the reverse; but that (b) this bias would be eliminated when participants were using the lens of age for viewing targets rather than the lens of race. Supporting the first of these hypotheses, the 2 (IAT type) × 2 (race pairing) × 2 (age pairing) analysis described above revealed a main effect of race pairing. The nature of this main effect was that participants were indeed faster to associate Black individuals with weapons (and White individuals with harmless objects: $M = 764.37$, $SE = 17.72$) than the reverse of these pairings ($M = 828.55$, $SE = 17.72$), $M_{diff} = -64.18$ ms, 95% CI [−73.54, −54.82], $\beta = -0.20$, $F(1, 16156) = 180.69$, $p < .001$, $R^2 = .01$. Thus, participants did indeed exhibit a tendency to implicit associate Black individuals (both adult men and young boys) with weapons more quickly than they associated White individuals (both adult men and young boys) with weapons. Moreover, and in support of the second hypothesis, this tendency was

[9] Of note, in Experiment 2a we also preregistered our expectation that the male-science bias would not only become a null effect in the age-IAT condition, but would become significantly closer to zero than to the least nonzero effect we had 80% power to detect ($\beta = 0.05$). However, an equivalence testing procedure—specifically, the two one-sided tests (TOST) procedure (Lakens, 2017)—did not reveal evidence that this was the case: one-tailed $t(11381) = 1.62$, $p = 0.53$.

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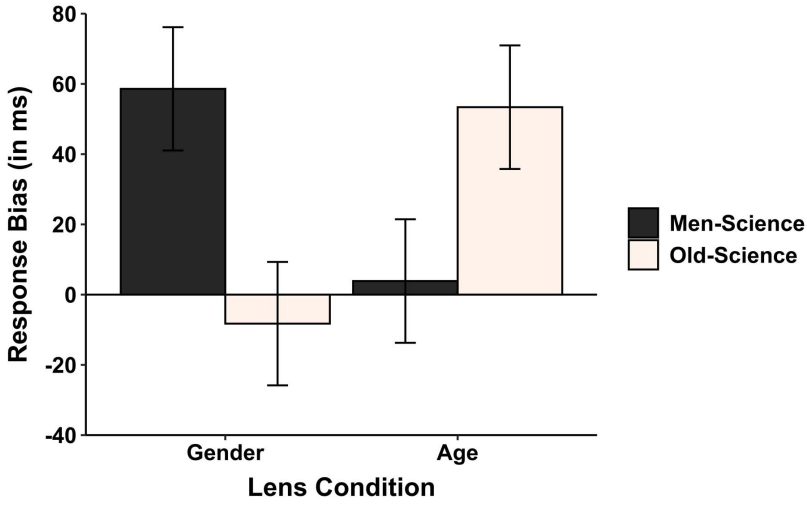
Figure 3

Implicit Gender and Age Stereotyping Broken Down by Lens Condition (Experiment 2a)



Note. Average male-science and old-science implicit associations (Experiment 2a), broken down by whether participants were completing a gender-lens implicit association test (IAT; left) or an age-lens IAT (right). Higher scores indicate stronger implicit associations (in milliseconds). Effect estimates are encompassed by 95% confidence intervals. See the online article for the color version of this figure.

moderated by condition: $\beta = -0.27$, $F(1, 16152) = 83.94$, $p < .001$, $R^2 = .01$. The nature of this interaction was that the tendency to implicitly associate Black individuals (more than White individuals) with weapons was present when faces were being categorized by their racial groups, $M_{diff} = -107.91$ ms, 95% CI [−121.13, −94.70], $\beta = -0.33$, $F(1, 16150) = 256.03$, $p < .001$, $R^2 = .02$, was significantly weakened when faces were being categorized by their age groups, $M_{diff} = -20.44$, 95% CI [−33.69, −7.19], $\beta = -0.06$, $F(1, 16158) = 9.14$, $p = .002$, $R^2 < .01$. Thus, this experiment, much like Experiment 2a, yielded very strong support for the lens-based account of intersectional stereotyping that we have been advocating. When participants were given the processing goal of attending to the lens of race, they stereotypically associated Black individuals with weapons more readily than they associated White individuals with weapons—and as we will discuss below, they did so irrespective of whether the target individuals were fully grown men versus 5-year-old children. Yet when participants were instead given the processing goal of attending to the lens of *age*, their implicit racial stereotyping attenuated significantly (see Figure 4).

In Experiment 2b, we also hypothesized that (a) participants would exhibit a tendency to associate adults with weapons (and children with harmless objects) more quickly than the reverse of these pairings, and that (b) this bias would only be present when participants were using the lens of age. In line with the one-lens-at-a-time idea, we did not expect that this age bias would be present when participants were using the lens of race. Supporting the first of these hypotheses, the 2 (IAT type) × 2 (race pairing) × 2 (age pairing) analysis described above revealed a main effect of age pairing, such that participants tended to associate adults with weapons (and children with harmless objects: $M = 780.51$, $SE = 17.72$) more quickly than the reverse of these pairings ($M = 812.41$, $SE = 17.72$), $M_{diff} = -31.90$ ms, 95% CI [−41.25, −22.54], $\beta = -0.10$, $F(1, 16155) = 44.69$, $p < .001$, $R^2 < .01$. Moreover, and in line with hypotheses, the magnitude of this effect was also moderated by IAT type: $\beta = 0.14$, $F(1, 16152) = 24.38$, $p < .001$, $R^2 < .01$. Specifically, the tendency to associate adults with weapons (and children with harmless objects) *only* emerged when participants were attending to age: $M_{diff} = -55.46$ ms, 95% CI [−68.69, −42.23], $\beta = -0.17$, $F(1, 16151) = 67.54$, $p < .001$, $R^2 < .01$. When participants were attending to race, this tendency disappeared: $M_{diff} = -8.33$ ms, 95% CI [−21.56, 4.90], $\beta = -0.03$, $F(1, 16156) = 1.53$, $p = .22$, $R^2 < .01$. Taken together, then, Experiment 2b provided strong support for the one-lens-at-a-time idea. When Black and White targets were viewed through the lens of race, perceivers did not differentiate children from adults. In these moments, perceivers exhibited a racial bias—a tendency to associate Black individuals with weapons more readily than White individuals—but they exhibited no age-based bias. On the contrary, when perceivers viewed targets through the lens of age, they did something quite different: they associated children with harmless objects—in a sense, with innocence—and they paid much less attention to these children's racial groups. In other words, when age came into focus, race largely fell out (see Figure 4).

Discussion

In Experiment 2a, participants exhibited a tendency to associate men with science concepts—and women with liberal arts concepts—more quickly than the reverse of these pairings (replicating what we tend to observe all around the world: Miller et al., 2015; Nosek et al., 2009). However, participants did this *only* on the condition that the lens of gender was made situationally salient. When a different lens became salient to perceivers—in this experiment, the lens of age—implicit stereotypes linking men with science dissipated. Moreover, when the lens of age was made situationally salient to perceivers,

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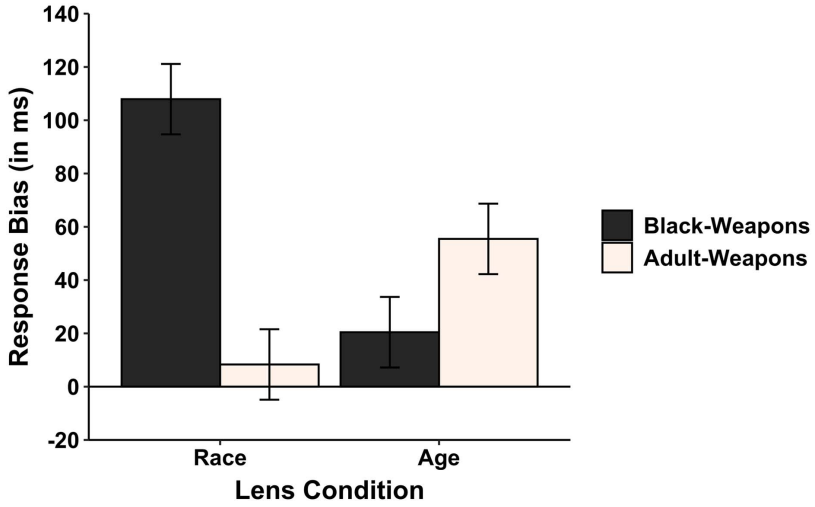
Figure 4

Implicit Race and Age Stereotyping Broken Down by Lens Condition (Experiment 2b)



Note. Average Black-weapons and adult-weapons implicit associations (Experiment 2b), broken down by whether participants were completing a race-lens implicit association test (IAT; left) or an age-lens IAT (right). Higher scores indicate stronger implicit associations (in milliseconds). Effect estimates are encompassed by 95% confidence intervals. See the online article for the color version of this figure.

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perceivers exhibited a tendency to associate older people with science concepts—and younger people with liberal arts—more quickly than the reverse of these pairings. What this implies is that the stereotypic attributes that come into perceivers' minds when thinking of older women can shift flexibly as a function of which social lens is situationally activated. When gender comes into focus, gender stereotyping ensues (and age stereotyping attenuates); yet when age comes into focus, age stereotyping ensues (and gender stereotyping attenuates).

Experiment 2b examined how lens use might influence the manifestation of a different implicit stereotype: the tendency to associate Black individuals with weapons more readily than White individuals with weapons (Glaser & Knowles, 2008). Replicating past research in this area, we found that when the lens of race was situationally activated, the stereotypic Black-weapons bias readily emerged, and it emerged irrespective of whether the targets of perceivers' attention were adults versus 5-year-old children (replicating, e.g., Todd, Simpson, et al., 2016). However, Experiment 2b further demonstrated that this racial bias—as alarming as it is—is moderated by which lens a social context invites perceivers to use. Indeed, when the lens of age was situationally activated, it was no longer the case that perceivers treated 5-year-old children as interchangeable with adult members of their racial groups. Instead, perceivers attended strongly to age in the age-lens condition—viewing children (relative to adults) as stereotypically linked with harmless objects more than with weapons—and in this condition perceivers exhibited very little bias on the basis of these children's racial groups. These findings, coupled with those from Experiment 2a, provide compelling evidence that stereotypes toward intersectional targets can shift dramatically as a function of which lens is situationally activated.

Experiments 2a and 2b are notable for a few reasons. First, they go beyond the prior experiments by suggesting that as attention to the social categories implied by different social lenses shifts, so too do intersectional *stereotypes* shift. Second, they provide clear and compelling evidence in favor of the one-lens-at-a-time idea. That is, these experiments clearly demonstrate that when the lens of age, for example, comes clearly into focus, perceivers exhibit very little tendency—in these moments—to stereotype targets on the basis of these targets' gender groups (Experiment 2a) and racial groups (Experiment 2b). Beyond being practically significant, these findings are theoretically significant. As noted previously, findings such as these should be somewhat atypical from the perspective of evolutionary reasoning. This is because in evolutionary models, gender categorization and age categorization are thought to be obligatory (Pietraszewski et al., 2015). Yet these findings reveal that the "switching off" of gender- and age-based stereotyping readily occurs when another lens comes into perceivers' focus. Thus, the evidence in Experiments 2a and 2b is more aligned with the one-lens-at-a-time idea than it is with the idea that some social categories inevitably grab our attention. Finally, Experiments 2a and 2b are an extension of Experiments 1a and 1b in that the first two experiments manipulated the comparative fit of social lenses. In contrast, Experiments 2a and 2b manipulated lens salience by way of perceiver goals—specifically, by explicitly giving participants the goal of categorizing social targets according to one lens-associated identity versus another.

Experiments 3a and 3b

An argument that we made previously was that lenses could be both singular and simplistic (e.g., the lens of gender alone) or intersectional and complex (e.g., a race-by-gender lens, specifically). Thus, sometimes perceivers may think of older women, for example, as *old*, at other times they might think of older women as

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women, and they may at still other times regard older women not as older people or as women more generally, but as *older women* specifically. However, an issue with our experiments so far is that they have revealed evidence of singular lens use only—a tendency for perceivers as to think of (Experiment 1a) or stereotype (Experiment 2a) older women as *old people*, for example, but never as *older women* in particular. Thus, the purpose of Experiments 3a and 3b was to examine whether there are moments when perceivers indeed use intersectional lenses over more simplistic lenses for thinking about the targets of their perceptions, and to examine whether these lenses can prescribe stereotypes about targets that are categorially distinct from those that would have come to mind had perceivers been situationally pressured to use more simplistic lenses. As in Experiments 2a and 2b, these final two experiments manipulated lens use by way of giving participants the explicit goal of attending to one lens (e.g., a singular gender lens) versus another (e.g., an intersectional race-by-gender lens).

Experiment 3a was designed to examine whether Black women would be associated with weapons more quickly than White men when viewed through the lens of race, whether this bias would be attenuated when these women were viewed through an intersectional lens, and whether this bias would reverse entirely when these women were viewed through the lens of gender. Such a pattern, if supported, would suggest that intersectional lenses do not have to be the same—in terms of the magnitude by which they can bring stereotypes to mind—as more simplistic lenses. Experiment 3b was designed to examine whether intersectional lenses can bring stereotypes to perceivers' minds that are greater than the average of what comes to mind when perceivers are using singular lenses. In particular, Experiment 3b tested whether (a) older women would be associated with church concepts (Payne & Whittington, 1976)—and whether young men would be associated with fraternity concepts (Ashmore et al., 2002)—more quickly than the reverse of these pairings, and it tested whether (b) this bias would manifest *most strongly* when targets are being viewed through intersectional lenses rather than through singular lenses. Predictions and analysis plans for Experiments 3a and 3b were preregistered. Their findings, if supported, would lend credence to the idea that intersectional lenses can bring their own stereotypes to perceivers' minds, and that these stereotypes do not have to be the average of what comes to perceivers' minds when they use singular lenses.

Method

In Experiment 3a, perceivers completed an IAT that measured how quickly they associated Black women (vs. White men) with weapons. In Experiment 3b, perceivers completed an IAT that measured how quickly they associated older women (vs. young men) with church concepts. The key predictions in these experiments were (a) that intersectional lenses would bring stereotypic associations to mind that were of categorically different magnitudes than those that came to mind in the singular lens conditions, and (b) that intersectional lenses would bring to mind stereotypes that were not simply the algebraic average of stereotypes in the singular lens conditions. Such patterns, if supported, would lend legitimacy to the idea that perceivers not only use one lens at a time, but also to the idea that these lenses can vary in their degree of complexity, at times invoking intersections, and at times invoking more general group memberships.

Design

Experiment 3a was a three-condition experiment with one between-person factor: IAT type (race-IAT, gender-IAT, intersectional-IAT). Experiment 3b was also a three-condition experiment with just one between-person factor: IAT type (age-IAT, gender-IAT, intersectional-IAT).

Participants

A total of 726 U.S. citizens were recruited from MTurk to complete Experiments 3a and 3b in exchange for $1.00. Of these, $n = 21$ (2.89%) were excluded for not responding "yes" to the question, "Did you take this study seriously?" The remaining participants were mostly male [432 male, 269 female, 4 transgender (whose additional gender identities were not specified)], mostly White (521 White, 78 Black, 49 Asian, 40 Latinx, 3 American Indian, 3 Pacific Islander, 8 other, 3 nonspecified), and had ages spanning from 20 to 75 ($M = 36.99$, $SD = 11.55$). In addition, 52% held at least a bachelor's degree, and the sample skewed toward liberalism ($M = 3.85$, $SD = 3.03$, on an 11-point scale from 0 = *extremely liberal* to 10 = *extremely conservative*).

Procedure

Participants in Experiment 3a completed one of three different versions of the race-weapons IAT. All three versions of the race-weapons IAT included the same stimulus faces (six Black women's faces and six White men's faces, taken from the Multi-Racial Mega-Resolution Database: Strohminger et al., 2016) and the same stimulus words: words that could be categorized either as weapons (e.g., Pistol, Blade, Gun) or as harmless objects (e.g., Camera, Soda, Phone). Across all three versions of the race-weapons IAT, there were two blocks in which participants associated Black women's faces with weapons and White men's faces with harmless objects, and two blocks in which they completed the reverse of these pairings. However, what was manipulated in Experiment 3a was which lens was afforded to participants. In one condition (the race-lens condition), participants categorized faces by race (Black, White). In another condition (the gender-lens condition), participants categorized faces by gender (male, female). And in a third and final condition (the intersectional-lens condition), participants categorized faces by their intersectional identities (i.e., Black women were categorized specifically as *Black women*, and White men were categorized specifically as *White men*). All participants completed 120 trials in which they associated Black women (irrespective of how they were being categorized) with weapons and White men (irrespective of how they were being categorized) with harmless objects—and all participants completed 120 trials in which they did the reverse. Block ordering was randomized for each participant, as was which key participants had to press for each of these respective pairing types.

Participants in Experiment 3b completed an analogous procedure with a different set of target groups: older women and young men. In particular, participants in Experiment 3b completed one of three different versions of an IAT that we designed specifically for the purposes of Experiment 3b—what we are calling a "church-woman" IAT. All three versions of the church-woman IAT included the same stimulus faces (six older White women's faces and six young White

men's faces, all from the FACES database; Ebner et al., 2010) and the same stimulus words: words that could be categorized either as church concepts (e.g., Religion, Prayer, Church) or as fraternity concepts (e.g., College, Party, Drinking). Across all three versions of the church-woman IAT, there were two blocks in which participants associated older women's faces with church concepts and young men's faces with fraternity concepts, and two blocks in which they did the reverse. However, as in Experiment 3a, what was manipulated in Experiment 3b was which lens was afforded by the experimental context. In one condition (the gender-lens condition), participants categorized faces by gender (male, female). In another condition (the age-lens condition), participants categorized faces by age (old, young). Finally, in a third condition (the intersectional-lens condition), participants categorized faces by their intersectional identities (i.e., older women were categorized specifically as *old women*, and younger men were categorized specifically as *young men*). All participants completed 120 trials in which they associated old women (irrespective of how they were being categorized) with church concepts and young men (irrespective of how they were being categorized) with fraternity concepts—and all participants completed 120 trials in which they did the reverse. Again, block ordering was randomized for each participant, as was which key participants had to press for each of these respective pairing types.

Results

Prior to analyzing the data from Experiments 3a and 3b, we eliminated participants whose mean response latencies were unusually fast or slow. To conduct these eliminations, each participant's mean response latency was compared against the median of these mean response latencies within each IAT condition of each experiment. If a participant's mean latency was more than three MAD from the sample median within a particular condition, they were removed from the data file prior to analysis. According to Monte Carlo simulations, Experiment 3a had more than 80% power to detect Black-weapons biases as small as $\beta = 0.04$, and moderation tests of these biases by IAT type as small as $\beta = 0.09$. Experiment 3b had more than 80% power to detect "church-woman" biases as small as $\beta = 0.04$, and moderation tests of these biases by IAT type as small as $\beta = 0.08$.

Experiment 3a

To analyze the data in Experiment 3a, response latencies (in milliseconds) were regressed onto a set of mixed linear contrast codes that was statistically analogous to a 3 (IAT type: race-IAT, gender-IAT, intersectional-IAT) × 2 (pairing type: Black-weapon + White-harmless; White-weapon + Black harmless) mixed ANOVA with repeated measures on the second factor. This model included estimates of two random effects: a random effect of participant intercept, which adjusted for the fact that trials (of both pairing types) were nested within person; and a random effect of stimulus intercept, which adjusted for the fact that observations were also nested within particular stimulus faces and words.

In Experiment 3a, we hypothesized (a) that participants would be faster to associate Black women with weapons—and White men with harmless objects—than the reverse of these pairings when attending to the lens of race; (b) that this bias would reverse when attending to the lens of gender (given that men tend to be stereotypically linked with aggression more than women); and (c) that this bias would be of a categorically different magnitude when attending to an intersectional lens. By "categorically different magnitude," we mean simply that the magnitude of the Black-weapons bias was expected to differ significantly between the intersectional-lens condition and the singular lens conditions. Indeed, we anticipated that in the intersectional-lens condition there may be no tendency to associate Black women (vs. White men) with weapons whatsoever. To test these hypotheses, we subjected participants' response latencies to the 3 × 2 model described above. This analysis revealed, first, that there was a main effect of trial type. That is, people were faster to associate Black women with weapons and White men with harmless objects ($M = 759.08$, $SE = 15.03$) than the reverse of these pairings ($M = 778.57$, $SE = 15.02$), $M_{diff} = -19.49$ ms, 95% CI [−27.69, −11.30], $\beta = -0.05$, $F(1, 34887) = 21.72$, $p < .001$, $R^2 < .01$. However, and consistent with hypotheses, this effect was significantly moderated by IAT type: $\beta = -0.10$, $F(1, 34888) = 24.18$, $p < .001$, $R^2 < .01$ (see Figure 5). The nature of this interaction was that participants' tendency to associate Black women (more than White men) with weapons was significantly stronger in the race-lens condition, $M_{diff} = -48.79$ ms, 95% CI [−63.19, −34.38], $\beta = -0.12$, $F(1, 34884) = 44.08$, $p < .001$, $R^2 < .01$) than it was in the other two conditions, $M_{diff} = -4.85$ ms, 95% CI [−14.82, 5.12], $\beta = -0.01$, $F(1, 34888) = 0.91$, $p = .34$, $R^2 < .01$. Moreover, the magnitude of the tendency to implicitly associate Black women (vs. White men) with weapons differed significantly between these latter two conditions: $\beta = -0.11$, $F(1, 34888) = 20.50$, $p < .001$, $R^2 < .01$. Whereas the racial bias *reversed* in the gender-lens condition—causing participants to associate weapons with White men more quickly than with Black women, $M_{diff} = 18.18$ ms, 95% CI [4.02, 32.34], $\beta = 0.04$, $F(1, 34893) = 6.34$, $p = .012$, $R^2 < .01$—the conventional racial bias was present, albeit to a weaker degree than in the race-lens condition, in the intersectional-lens condition, $M_{diff} = -27.88$ ms, 95% CI [−42.06, −13.70], $\beta = -0.07$, $F(1, 34884) = 15.15$, $p < .001$, $R^2 < .01$. Taken together, these findings provide additional evidence that participants may use one lens at a time for viewing, and ultimately stereotyping, the targets of their perceptions. In addition, Experiment 3a suggests that intersections can bring stereotypes to mind that are not necessarily the same as what would have come to mind had perceivers been viewing targets through nonintersectional lenses.

However, in Experiment 3a, it is unclear why the magnitude of the Black-weapons bias in the intersectional-lens condition was intermediate compared with the two alternative conditions. On the one hand, a data pattern like this could have been driven by what we have been arguing for all along—that intersectional lenses can bring stereotypes to mind that are of their own, categorically distinct magnitude (relative to what they would have been in the nonintersectional-lens conditions). However, the data pattern in Experiment 3a could also be explained by a simple averaging effect. Perhaps the stereotypic bias that participants exhibited when thinking of *Black women* was simply the average of their biases about *Black people* and *women*. Or perhaps it was the case that roughly of half of participants continued to focus on race in the intersectional-lens condition, and that roughly half of participants continued to focus on gender in the intersectional-lens condition. In any case, it remains possible that Experiment 3a did not show evidence of intersectional lens use so much as it showed evidence

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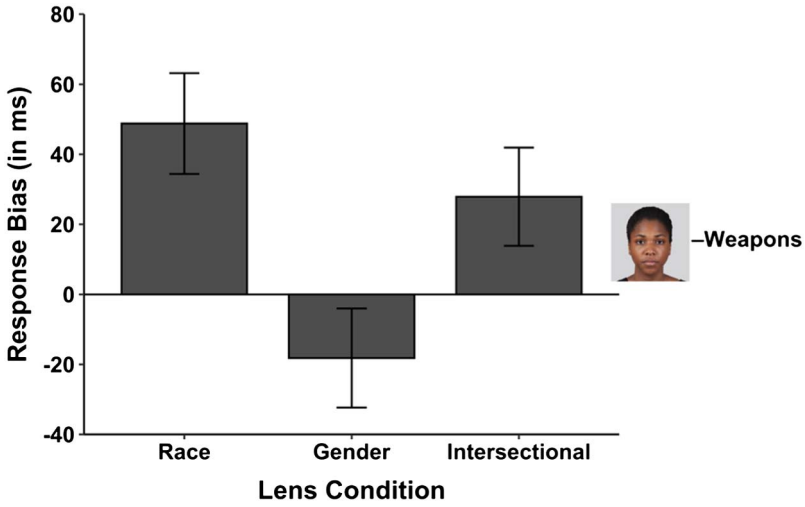
Figure 5

Implicit Stereotyping of Black Women Broken Down by Lens Condition (Experiment 3a)



Note. Average association between Black women (vs. White men) and weapons, broken down by whether participants were completing a race-lens implicit association test (IAT; left), a gender-lens IAT (middle), or an intersectional-lens IAT (right). Scores above zero indicate faster associations between Black women and weapons than between White men and weapons. Scores below zero indicate the reverse. Effect estimates are encompassed by 95% confidence intervals. The depicted stimulus face comes from the Multi-Racial, Mega-Resolution (MR2) Database (Strohminger et al., 2016). The MR2 database is licensed under a Creative Commons 4.0 International License. See the online article for the color version of this figure.

of averaged-together simplistic lens use. In order to rule out this latter explanation—and indeed, to support the explanation that intersections can bring stereotypes to mind that are something greater than the average of their constituent parts—we turned our attention to Experiment 3b.

Experiment 3b

To analyze the data in Experiment 3b, response latencies (in milliseconds) were regressed onto a set of mixed linear contrast codes that was statistically analogous to a 3 (IAT type: age-IAT, gender-IAT, intersectional-IAT) × 2 (pairing type: church-woman + frat-boy; frat-woman + church-boy) mixed ANOVA with repeated measures on the second factor. This model included two random effects: a random effect of participant intercept, which adjusted for the fact that trials were nested within person; and a random effect of stimulus intercept, which adjusted for the fact that observations were also nested within particular stimulus faces and words.

In Experiment 3b, we made two predictions: (a) that there would be evidence of an implicit "church-woman" stereotype among participants, such that they would be faster to associate older women with church concepts, and young men with fraternity concepts, than the reverse and (b) that this stereotypic response bias would be significantly stronger in the intersectional-lens condition than in the singular lens conditions. That is, we expected older women to be stereotyped as "church women" most strongly when regarded not as *women*, or as *old people*, but as *older women* specifically. To test these hypotheses, we subjected participants' response latencies to the 3 × 2 model described above. This analysis revealed, first, that there was a main effect of trial type. That is, participants were indeed significantly faster to associate older women with church concepts and young men with fraternity concepts ($M = 791.48$, $SE = 15.12$), than they were to complete the reverse of these pairings ($M = 898.17$, $SE = 15.12$), $M_{diff} = -106.68$ ms, 95% CI [−115.20, −98.16], $\beta = -0.22$, $F(1, 40295) = 602.36$, $p < .001$, $R^2 = .01$. Thus, there was clear evidence that participants exhibited the hypothesized church-woman stereotype. But did this effect vary significantly by experimental condition? Indeed, it did: $\beta = 0.06$, $F(1, 40295) = 9.03$, $p = .003$, $R^2 < .01$ (see Figure 6). Specifically, and consistent with hypotheses, participants stereotyped older women (vs. young men) as most church-like when they were in the intersectional-lens condition: $M_{diff} = -125.04$ ms, 95% CI [−139.60, −110.48], $\beta = -0.26$, $F(1, 40294) = 283.28$, $p < .001$, $R^2 = .01$. Those in the nonintersectional-lens conditions also exhibited evidence of a church-woman stereotype, but they did so to a significantly weaker degree, on average: $M_{diff} = -97.50$ ms, 95% CI [−108.01, −87.00], $\beta = -0.20$, $F(1, 40295) = 331.02$, $p < .001$, $R^2 = .01$. Finally, and although we did not anticipate this, there was evidence that the church-woman association was stronger in the gender-lens condition, $M_{diff} = -109.80$ ms, 95% CI [−124.69, −94.91], $\beta = -0.22$, $F(1, 40295) = 208.95$, $p < .001$, $R^2 = .01$, than it was in the age-lens condition, $M_{diff} = -85.21$ ms, 95% CI [−100.03, −70.39], $\beta = -0.18$, $F(1, 40295) = 126.99$, $p < .001$, $R^2 < .01$, interaction: $\beta = 0.05$, $F(1, 40295) = 5.26$, $p = .022$, $R^2 < .01$. In sum, then, there was evidence in Experiment 3b that stereotypes that emerge when intersectional lenses are activated are not necessarily the algebraic average of those that emerge when nonintersectional lenses are activated. What it means to be an *old woman* specifically—in the minds of perceivers—may be something greater than the mixture of its parts.

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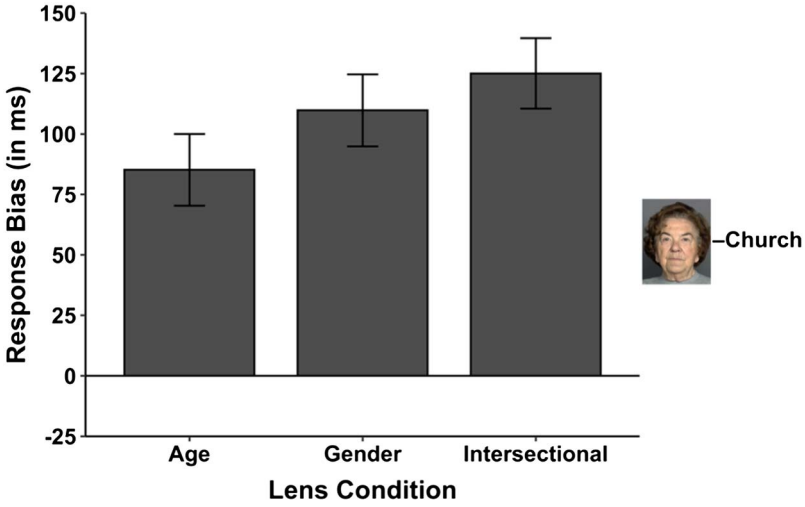
Figure 6

Implicit Stereotyping of Older (White) Women Broken Down by Lens Condition (Experiment 3b)



Note. Average association between older women (vs. young men) and church concepts, broken down by whether participants were completing an age-lens implicit association test (IAT; left), a gender-lens IAT (middle), or an intersectional-lens IAT (right). Scores above zero indicate faster associations between older women and church than between young men and church. Scores below zero indicate the reverse. Effect estimates are encompassed by 95% confidence intervals. The depicted stimulus face comes from the FACES database (Ebner et al. 2010). Copyright 2010 by the Max Planck Institute for Human Development, Center for Lifespan Psychology, Berlin, Germany. See the online article for the color version of this figure.

Discussion

Experiments 3a and 3b were designed to investigate whether the same targets (e.g., Black women) might be stereotyped differently depending on whether they are stereotyped through the inflection of one singular lens (e.g., gender), another singular lens (e.g., race), or through the inflection of an intersectional-lens (e.g., race-by-gender). Experiment 3a revealed that Black women are indeed associated most strongly with racial stereotypes when viewed through a race lens as compared with other lenses. Furthermore, Experiment 3a suggested that stereotypes disadvantaging Black women relative to White men can be supplanted by stereotypes that *advantage* Black women relative to White men. When perceivers viewed targets through the lens of gender, they associated White men with weapons more quickly than they associated Black women with weapons—a pattern that contradicts the well-established Black-weapons bias that this task typically unveils (e.g., Glaser & Knowles, 2008).

Experiment 3b was designed to investigate whether intersectional lenses can bring certain stereotypes to mind more strongly than would nonintersectional lenses. In particular, Experiment 3b investigated whether "church-woman" and "frat-boy" stereotypes might be most strongly applied to older (White) women and young (White) men, respectively (Ashmore et al., 2002; Payne & Whittington, 1976), when these targets were viewed through an intersectional lens. Consistent with this possibility, Experiment 3b showed that the tendency to associate older women with church concepts—and to associate young men with fraternity concepts—manifested to a significantly stronger degree when these targets were viewed through intersectional lenses than when these targets were viewed through the singular lenses of age or gender. This suggests not only that intersectional lenses can trade off in perceivers' minds with more simplistic lenses, but also that intersectional lenses can themselves bring stereotypes to mind that would not come to mind as strongly as when nonintersectional lenses are in use.

Experiments 3a and 3b also shed some light on how the lens model may relate to other perspectives on intersectional stereotyping. For example, the selective inhibition model (Kang & Chasteen, 2009), the MOSAIC framework (Hall et al., 2019), and the dynamic–interactive model (Freeman et al., 2020) can all be used to make predictions about how intersectional targets will be stereotyped. And indeed, many of these models' predictions cohere nicely with the findings of Experiment 3a and 3b. For example, according to the model of stereotyping through associated and intersectional categories (MOSAIC), stereotypes that are applied to Black women are expected to be dilutions of the stereotypes that are applied to Black men. Experiment 3a's data are consistent with the possibility that stereotypes about Black women involve a dilution of racial stereotypes. What Experiment 3a also reveals, however, is that patterns of stereotype dilution may be conditional on Black women being viewed *specifically* as Black women. In other words, when perceivers are using intersectional lenses, the models described above are likely to be useful for describing how intersectional targets will be stereotyped. However, when perceivers are using nonintersectional lenses, it may be the case that intersectional identities are not integrated in perceivers' minds, making the described models less useful for describing—in these moments—how intersectional targets will be stereotyped.

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General Discussion

Prevalent theories of social perception tend to argue for one of two perspectives when explaining how perceivers engage in intersectional stereotyping: either (a) that perceivers attend to certain social identities more than others (e.g., Pietraszewski et al., 2015), or (b) that perceivers attend to *all* of targets' (salient) social identities at once (e.g., Freeman et al., 2020). The main issue with the former perspective is that it is too constrained to fit the available data; the main issue with the latter perspective is that it is too unconstrained to ever be ruled out (Petsko & Bodenhausen, 2020; Remedios & Vinluan, in press). In contrast to these perspectives, we advocate for a theoretical "middle path"—a perspective that is flexible enough to account for contradictory findings in the literature on intersectional stereotyping, but not so flexible as to be virtually unfalsifiable.

In particular, the present manuscript argues for the possibility that perceivers have a repertoire of lenses in their minds that they can use as frameworks for thinking about others, and that they only use one lens at a time in a given social context. This perspective construes lenses as situationally activated, identity-specific schemas for categorizing others. For example, when the lens of gender is made salient to perceivers, perceivers are expected to categorize others in light of others' gender groups, but not in light of others' age groups. In contrast, when the lens of age is made salient to perceivers, perceivers are expected to categorize others in light of others' age groups, but not in light of others' gender groups. Finally, when intersectional lenses are made salient to perceivers, perceivers are expected to categorize others in light of their specific intersections, but not in light of their broader, nonintersectional social group memberships.

Summary of Findings and Contributions

Six experiments were designed to provide preliminary tests of the perspective outlined above. Experiments 1a and 1b examined whether a comparative fit manipulation could cause perceivers' social categorization tendencies to trade off with one another in a given social context. Generally speaking, these experiments supported the one-lens-at-a-time idea. When a lens provided strong comparative fit to the social context (Oakes et al., 1991), perceivers exhibited a strong tendency to categorize targets in light of lens-relevant identities, but *not* in light of lens-irrelevant identities. For example, when the experimental context comparatively fit the lens of gender, perceivers exhibited a robust tendency to categorize Black women as *women*, and they exhibited no evidence of categorizing Black women as *Black*.

Experiments 2a and 2b extended these findings by suggesting that as one lens comes into focus, stereotypes relating to the lens-associated identity—but not to the lens-irrelevant identity—become associated with targets in the minds of perceivers. For example, Experiment 2a revealed that when the lens of gender is made salient to perceivers (by way of giving perceivers the explicit goal of attending to gender during an IAT), they exhibit a predictable pattern of gender stereotyping (i.e., a male-science bias: Nosek et al., 2009). However, when the lens of age is made salient to perceivers instead, they stop exhibiting evidence of gender stereotyping and instead exhibit evidence of age stereotyping (such that they associate older people with science more readily than they associate young people with science).

Finally, Experiments 3a and 3b expanded these findings by showing, first, that when perceivers are attending to targets' intersectional identities, they exhibit patterns of implicit stereotyping that are of categorically different magnitudes than those they exhibit when attending to targets' nonintersectional identities. For example, the magnitude of an implicit Black-weapons bias against Black women (vs. White men) differed significantly across each of three conditions: a race-lens condition (where it was the strongest), and intersectional-lens condition (where it was significantly weaker), and a gender-lens condition (where it was not just weaker, but significantly reversed). The second way that these experiments expanded the prior findings was by showing that in some contexts, intersectional lenses can bring stereotypic associations to perceivers' minds more strongly than would nonintersectional lenses. In particular, Experiment 3b revealed that when perceivers were attending to older women's (and young men's) intersectional identities, they exhibited a stronger tendency to associate older women with church concepts (Payne & Whittington, 1976)—and young men with fraternity concepts (Ashmore et al., 2002)—than they did when attending to these targets' nonintersectional identities (i.e., their gender groups alone or their age groups alone). Collectively, these experiments provide strong evidence for the fundamental tenets of the lens-based account that we have been advancing: (a) that perceivers use one lens at a time for making sense of other people; (b) that the lenses perceivers use can be singular and simplistic, or intersectional and complex; and (c) that different lenses can prescribe categorically distinct sets of stereotypes that perceivers use as frameworks for thinking about targets.

Lens Socialization and Acquisition

We have argued that perceivers use lenses primarily for epistemic purposes. Without lenses, the social world is perceptually ambiguous. With lenses, the social world is made perceptually clear. But how do people acquire lenses in the first place? And why are some lenses more frequently employed within a given culture than others? Reasonable answers to these questions come from developmental intergroup theory (Bigler & Liben, 2006, 2007). According to this perspective, children are motivated to understand their social worlds, and as a result, they actively seek to determine which bases for classifying people are important. One way in which children learn which bases of classification—or in our parlance, which lenses—are important is through their socialization experiences (Bigler et al., 2001; Gelman & Heyman, 1999). For example, educators in the U.S. often use language that explicitly references students' gender groups (e.g., as when teachers say "good morning, boys and girls"), which reinforces children's belief that the lens of gender is relevant toward the end of understanding who's who (Bem, 1983). Another way in which people acquire lenses is through interaction with norms, laws, and institutions that, even if not explicitly referencing group divisions, nevertheless suggest that certain group divisions matter more than others (Allport, 1954; Bigler & Liben, 2007). For example, most neighborhoods in the United States are heavily segregated according to race and social class (e.g., Lichter et al., 2015, 2017). Such de facto segregation sends the message to children (and adults) that race and social class—and perhaps even their intersection—are relevant lenses for the purposes of understanding and making predictions about other people (e.g., Bonam et al., 2017). These processes, a broad mixture of socialization experiences and inductive reasoning about which group distinctions matter, are thought to give rise to lens acquisition.

After lenses have been acquired, they must be reinforced in order to be retained in perceivers' cognitive repertoires. One primary way by

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which lenses are reinforced is by gratifying perceivers' epistemic motives. The more a lens equips perceivers with a subjective sense that the world is orderly and predictable, the more likely it is to be used in the future. However, it is worth noting that perceivers are also expected to have a preference for lenses that are multifinal—that is, lenses that disambiguate social reality in ways that are congenial with multiple motives (Fishbach & Ferguson, 2007; Kruglanski et al., 2002). For example, a well-established psychological tendency is that people are motivated to feel positively about themselves, and by extension, their group memberships (Tajfel & Turner, 1979; Turner et al., 1987). All else equal, the principle of multifinality suggests that perceivers will have a preference for using lenses that both disambiguate social reality *and* allow for a favorable self-conception (vs. lenses that disambiguate social reality but do not allow for a favorable self-conception). Similarly, the principle of multifinality suggests that those who are motivated to maintain intergroup hierarchies will have a preference for lenses that afford them the chance to think about others in hierarchy-enhancing ways. Thus, although lenses serve the primary function of disambiguating one's social surroundings, they are not expected to do so in ways that are unbiased. Instead, lenses are thought to be reinforced in ways that, very much of the time, allow people to see what they want to see (Balcetis & Dunning, 2006).

Understanding the Causes of Lens Salience

A limitation of the present experiments is that they manipulated just two factors that are theoretically expected to shape which lens perceivers use in a social context: comparative fit (Experiments 1a−1b), and perceiver goals (Experiments 2a−3b). However, we have claimed that there are four factors that ought to govern which lenses perceivers use in a particular social context (Petsko & Bodenhausen, 2020): (1) *lens accessibility*, (2) *lens* fit, (3) *perceiver goals*, and (4) *distinctiveness*. It would be informative for future research to examine each of these factors in turn. For example, the principle of *normative fit* argues that a lens is more likely to be used in contexts that are stereotypically linked with that lens (Oakes et al., 1991). In line with this idea, one experiment revealed that perceivers who read about a defendant who had been accused of committing a violent crime (which is stereotypically linked with the concept of Blackness in the U.S.; e.g., Eberhardt et al., 2004) judged the defendant more harshly if he was Black rather than White. However, participants did not, in this experiment, judge the defendant any differently as a function of whether he was gay vs. heterosexual (Petsko & Bodenhausen, 2019a, Experiment 1). It would be useful for future research to determine whether this pattern reverses when the crimes in question are stereotypically associated with sexual orientation rather than with race. Moreover, it would be useful for scientists to scrutinize the role of normative fit in lens salience more broadly. Although it is reasonable to expect that perceivers will use the lens of race more at a Black Lives Matter rally than at a Women's March, for example, hypotheses like this have received only limited empirical support.

The principle of *distinctiveness* also has documented relevance for lens salience. Contextually unusual or rare identities attract attention and are likely to invite the activation of a corresponding lens (Hamilton & Gifford, 1976; McGuire et al., 1978). Although there is support for the idea that distinctive identities activate identity-relevant stereotypes in the minds of perceivers (e.g., Biernat & Vescio, 1993; Nelson & Miller, 1995; Taylor et al., 1978), this idea has not been closely examined in the context of intersectional stereotyping. It would be useful to know, for example, whether perceivers think of Hispanic women as "more Hispanic" when these women are surrounded by White women than when they are surrounded by Hispanic men. In the former context, Hispanic women's ethnicity would be distinctive, which should activate the lens of ethnicity. In the latter context, Hispanic women's gender group would be distinctive, which should activate the lens of gender. It would likewise be useful to know whether distinctiveness can explain when perceivers use intersectional lenses rather than singular lenses. For example, it could be the case that Black women who are tokenized specifically as Black women at their companies are indeed often viewed through the lens of their intersecting race and gender identities. Hypotheses such as these should be examined in order to scrutinize the assumptions of the lens model more closely, and also to understand when intersectional lenses (vs. singular lenses) are likely to be used in real-world contexts.

Finally, although the present experiments included momentary manipulations of *perceiver goals*—or desired end-states that motivate the use of some lenses over alternatives—these experiments cannot speak to the ways by which chronic goals influence lens salience. Theoretically, both momentary and chronic goals ought to make some lenses more salient than others in the minds of perceivers. For example, as implied in a previous section, White perceivers who have the chronic goal of maintaining stratification between racial groups may indeed be more inclined to use the lens of race over alternatives. In line with this idea, one experiment documented that perceivers who were higher in racial prejudice were indeed more likely to spontaneously categorize targets by their racial groups (Stangor et al., 1992). It is conceivable that findings such as these stem from the fact that those who chronically think about certain identities (e.g., race) are also chronically more likely use the lenses that are associated with those identities. Investigating the role that chronic goals play in guiding lens selection would be useful for shedding light not just on situational forces that govern intersectional stereotyping, but also on individual differences that may govern intersectional stereotyping.

Limitations and Future Directions

In future research, it will be important to confirm and extend these initial results in several respects. The present studies relied primarily on indirect measures of social categorization and stereotyping. Although there is good reason to believe that indirect measures of stereotyping (like the IAT) are predictive of intergroup behavior, this relation is often small in effect size (see Kurdi et al., 2019, for a meta-analysis). Furthermore, measures of social categorization and implicit stereotyping are often devoid of rich contextual information, and many of these measures index judgments about groups of people rather than judgments about individual people. As such, questions remain about the extent to which the lens model identified here is (a) predictive of real-world intergroup behavior, and (b) useful for anticipating how individuals (rather than groups of people) will be stereotyped by those around them. A pressing future direction for the lens model, in light of these issues, will be to examine the model's utility for explaining how individuals are stereotyped beyond the context of social categorization paradigms. It may be the case, for example, that the lens model best explains social stereotyping in paradigms that circumvent perceivers' motivation and ability to respond in socially desirable ways, when such motivation leads perceivers to override (or conceal) the lens-based

impressions that are deemed to be socially inappropriate. However, emerging experiments in the intersectional stereotyping literature suggest that the lens model may hold up even in contexts in which perceivers are susceptible to social desirability concerns. For example, a recent set of experiments (Rattan et al., 2019) documented that participants will explicitly rate an individual Asian woman as less competent and hirable for a technology position when her gender—rather than her race—is made salient. Findings such as these suggest that the lens model may do well to predict how individuals are perceived outside the context of the social categorization paradigms implemented in this manuscript. However, more empirical attention on this possibility is needed in order to ascertain how generalizable the lens model may be to the wider world.

The present research focused only on the lenses of race, gender, and age, although our model assumes that much wider assortment of lenses are likely to reside in the minds of social perceivers. We chose to focus on these lenses as race, gender, and age are very common identities along which groups of people are stratified in the United States. Thus, there is good reason to believe that most people in the United States are likely to have lenses pertaining to race, gender, and age in their repertoires. However, the lens model presumes that *any* social identity (social class, ability status, political group, etc.) can become the basis for a lens—a presumption that applies to both singular lenses and to intersectional lenses. In a related vein, Experiments 3a and 3b measured stereotypes related to dual-identity intersections only (e.g., Black women, older women). But the formal presumption of the lens model is that in principle, intersectional lenses can comprise any number of intersecting identities (e.g., two identities, like gender and race; three identities, like race, gender, and age; etc.). However, the lens model also presumes that a lens is only maintained in perceivers' repertoires to the extent that it is reinforced over time. What this means, practically speaking, is that highly complex intersectional lenses (e.g., race-by-gender-by-sexual-orientation-by-ability-status lenses) are considerably less likely to be formed or used in a given culture than are lenses that pertain to less complex and more frequently encountered groupings of people (e.g., race-by-gender lenses, or age-by-gender lenses).[10] Future research should investigate what the upper limits of lens complexity may be, including how complex an intersectional lens can become before perceivers are effectively individuating targets rather than stereotyping targets (e.g., Brewer, 1988).

A final topic worth discussing is what the implications of these findings might be for antibias interventions. In general, the lens model suggests that pernicious forms of stereotyping may only occur on the condition that a lens is sharpening perceivers' focus on a negatively stereotyped identity. For example, Experiment 2b showed that troubling forms of racial stereotyping toward Black children dissipated when these children were viewed through the lens of age. Likewise, Experiment 2a showed that troubling forms of gender stereotyping toward older women dissipated when these women were viewed through the lens of age. However, we do not believe the take-home point of these data is that researchers should design interventions that replace one form of demographic stereotyping (e.g., race-based stereotyping) with another form of demographic stereotyping (e.g., age-based stereotyping). Instead, a potentially fruitful direction for antibias interventions would be to create social situations that are designed to make lenses related to *shared identities* between perceivers and targets salient. For example, in organizational contexts in which gender- and race-based discrimination are a concern, managers could be explicitly trained to use language that enhances the accessibility of shared identities (e.g., "as a member of *our team,* what would you say is one of your greatest strengths?"). Decades of research on the common in-group identity model (Gaertner & Dovidio, 2000) and on the crossed categorization model (Crisp & Hewstone, 1999, 2007) suggest that invoking shared identities can indeed be an effective strategy for reducing intergroup prejudice. According to the lens model, if the lenses related to these shared identities are invoked strongly enough, they ought not just to reduce intergroup prejudice, but to perhaps eliminate it entirely (at least for the duration that lenses related to shared identities are invoked). Future research should directly investigate this possibility.

Concluding Remarks

A wide variety of scientific findings may depend on which lens a social context invites perceivers to use for thinking about others. For example, in the context of hiring, there is some evidence that gay Black men fare better than heterosexual Black men (e.g., Pedulla, 2014). In the context of leadership evaluations, there is some evidence that evaluations of Black women diverge from those of White women—sometimes for better (e.g., Livingston et al., 2012), and sometimes for worse (e.g., Rosette & Livingston, 2012). There is also a more general argument that people with multiple marginalized identities may be rendered chronically invisible from the minds of perceivers in ways that can cause them to be overlooked or forgotten (Purdie-Vaughns & Eibach, 2008; Sesko & Biernat, 2010). Similar to other developing accounts of intersectional person perception (Neel & Lassetter, 2019), the lens-based model developed here suggests that intersectional discrimination patterns such as these may not be inevitable. Rather, intersectional patterns of discrimination, from positively evaluating gay Black men to overlooking the contributions of Black women in the workplace, may depend fundamentally on whether perceivers are using an intersectional lens in a social environment. That is, it may be the case that gay Black men are more likely to be hired than heterosexual Black men when hiring managers are thinking intersectionally about these men, but not when they are instead viewing these men through the lens of race. Similarly, it may be the case that evaluations of Black women leaders diverge from those of White women leaders when these leaders are viewed through an intersectional lens, but not when these leaders are viewed through the lens of gender. Predictions such as these should be tested both for practical reasons (e.g., understanding when hiring discrimination does vs. does not unfold within a context) and theoretical reasons (e.g., helping scientists understand the boundary conditions of established phenomena). Such testing would help to organize the existing literature on intersectional stereotyping, and it could propel this research literature forward. Our hope is that the lens model developed here becomes a useful framework for conducting such testing—both within social psychology and in the behavioral sciences more broadly.

[10] More broadly, this line of reasoning implies that the frequency of lens use (whether intersectional or nonintersectional) is likely to be correlated with how much people in a given culture are stratified according to that lens. For example, in the United States, where institutions heavily stratify people based on race (Trawalter et al., 2020), the lens of race may be more frequently used than in countries that are less stratified by race.

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Correction to Petsko et al. (2022)

In the article "Through the Looking Glass: A Lens-Based Account of Intersectional Stereotyping" by Christopher D. Petsko, Ashleigh Shelby Rosette, and Galen V. Bodenhausen (*Journal of Personality and Social Psychology: Interpersonal Relations and Group Processes.* Advance online publication. January 13, 2022. https://doi.org/10.1037/pspi0000382), a coding error that impacted the results of Experiments 2a and 2b has been corrected, and the supplemental material and Figures 3 and 4 have also been updated. All versions of this article have been corrected.

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