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Gendered Facial Cues Influence Race Categorizations

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Abstract

Race and gender categories, although long presumed to be perceived independently, are inextricably tethered in social perception due in part to natural confounding of phenotypic cues. We predicted that target gender would affect race categorizations. Consistent with this hypothesis, feminine faces compelled White categorizations, and masculine faces compelled Asian or Black categorizations of racially ambiguous targets (Study 1), monoracial targets (Study 2), and real facial photographs (Study 3). The efficiency of judgments varied concomitantly. White categorizations were rendered more rapidly for feminine, relative to masculine faces, but the opposite was true for Asian and Black categorizations (Studies 1-3). Moreover, the effect of gender on categorization efficiency was compelled by racial phenotypicality for Black targets (Study 3). Finally, when targets' race prototypicality was held constant, gender still influenced race categorizations (Study 4). These findings indicate that race categorizations are biased by presumably unrelated gender cues.

Keywords

person perception, social categorization, race perception, gender

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Social categorization occurs readily and rapidly, exploits visual cues in the face and body, and carries interpersonal consequences. People naturally vary along multiple social category dimensions (e.g., race, gender, age, social class), and perceptions of their intersecting identities are inextricably intertwined. Approximately two decades after seminal work demonstrated that perceivers make social categorizations of nonnormative identities more efficiently than normative identities (Stroessner, 1996), our understanding of the precise mechanisms underlying these intersectional categorization advantages remains incomplete. Here, we test the possibility that covarying race and gender facial cues can systematically bias both the probability and efficiency of race categorizations.

Social Categorizations When Identities Intersect

Social categorization is a highly automated and efficient process that occurs from merely a glimpse of another person. Investigations across many decades and spanning multiple research traditions have documented that social categorization prepares a perceiver for interpersonal interactions (Allport, 1954; Tajfel, 1969) and underlies consequential outcomes such as stereotyping and prejudice (Bargh, 1999; Devine, 1989; Dovidio, Evans, & Tyler, 1986; Fazio & Dunton, 1997; Gilbert & Hixon, 1991; Grant & Holmes, 1981; Sinclair & Kunda, 1999; Tajfel, 1969). Yet throughout this history of research on social categorization, most investigations have focused solely on a single identity while holding other identities constant or controlling for their effects.

More recently, however, theoretical claims and empirical evidence have revealed that various social categorizations are highly contingent on one another (Johnson & Freeman, 2010). Several studies, for example, have now shown that the perception of one social category can systematically bias other social perceptions. The earliest demonstrations of such effects focused on the intersection of gender and emotion. The gender of a target, for instance, biases judgments of facial expressions of emotion (Becker, Kenrick, Neuberg, Blackwell, & Smith, 2007; Hess, Adams, & Kleck, 2004; Plant, Kling, & Smith, 2004). Although the bidirectionality of effects is not

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presumed, the reverse is also true—emotion expressions also bias gender categorizations for both facial expressions and body motions (Hess, Adams, Grammer, & Kleck, 2009; Johnson, McKay, & Pollick, 2011). These biases occur, at least in part, because common phenotypic cues convey multiple categories of information simultaneously (e.g., anger and male; Becker et al., 2007; Hess et al., 2004; Zebrowitz, Fellous, Mignault, & Andreoletti, 2003; Zebrowitz, Kikuchi, & Fellous, 2010), highlighting that coincident visual cues shape social perceptions (see also, Johnson & Carpinella, 2012; Johnson, Lick, & Carpinella, in press).

Similarly, racial group membership can bias judgments of individuals' nationality. American racial groups (i.e., African, Asian, and European) are differentially associated with the category "American" (Devos & Banaji, 2005). Participants judged European Americans as being "Americans" more readily than either Asian Americans or African Americans, although this effect depended on the valence associated with African Americans (Rydell, Hamilton, & Devos, 2010). This bias was demonstrated in implicit social perceptions. Collectively, these findings demonstrate that in multiple domains, social identities are inextricably tethered to one another, biasing social categorizations in a unidirectional or bidirectional fashion.

Intersecting Race and Gender Identities

Intersections between race and gender categories allow for biases to affect categorizations, possibly in a reciprocal fashion (Freeman & Ambady, 2011; Goff, Thomas, & Jackson, 2008; Johnson, Freeman, & Pauker, 2012; Johnson & Ghavami, 2011). As a result, gender bias is not equally applied to targets of all races, and race bias is not equally applied to targets of all genders (Biernat & Sesko, 2013; see also Fryberg & Townsend, 2008; Galinsky, Hall, & Cuddy, 2013; Purdie-Vaughns & Eibach, 2008).

In a seminal study, Stroessner (1996) documented how the simultaneous perception of race and gender affected observers' response latencies when categorizing targets along either a single dimension (e.g., Black or White) or a compound race by gender unit (e.g., Black woman or Black man). He found that observers accomplish gender and race categorizations at different rates, depending on the normative status of each independent identity. When viewing men, participants categorized a nondominant race identity (e.g., Black) more readily than a dominant identity (e.g., White). Compound social perceptions of two nonnormative identities (e.g., Black Women) occurred more rapidly than other combinations. In addition, Zárate and Smith (1990) reported that gender categorizations occurred more readily for women, but that race categorizations occurred more readily for men. Arguably, these effects were obtained because nondominant identities were nonnormative to perceivers, therefore eliciting rapid categorizations. The results of these studies imply that social categorizations do not occur in isolation, but rather unfold alongside the simultaneous perception of other social category memberships, which facilitates or impedes categorization efficiency.

Race Biases Gender Categorizations

The effects of simultaneously perceiving race and gender are widespread. Although gender categorizations are among the most accurate social judgments, they are also prone to bias. For instance, Johnson and colleagues (2012) found that gender categorizations of androgynous faces varied systematically as a function of race cues. As a target's race changed from Black to White to Asian, the probability of a female categorization increased, revealing a strong association between the categories Black and male and the categories Asian and female. In addition, participants categorized the gender of Black men more efficiently than White or Asian men; but they categorized the gender of Asian women more efficiently than White or Black women. The accuracy of gender categorizations followed a similar pattern. Consistent with the documented association of Black with male, other work revealed that although rare, errors in gender category judgments occurred more frequently for judgments of Black women, relative to Black men, White men, or White women (Goff et al., 2008).

The mechanisms by which race biases gender categorizations are increasingly well documented. From visual cues in the face and body, perceptions of race and gender occur concurrently, each accruing evidence dynamically across hundreds of milliseconds to support a perceiver's ultimate judgment (Freeman & Ambady, 2011; Freeman, Johnson, Adams, & Ambady, 2012). Because these perceptions occur in parallel, the partial representation of one social category can bias the simultaneously unfolding representation of another social category. Therefore, as observers categorize a target's gender, the partial and parallel activation of race category information can either facilitate or impair the judgment. Importantly, a target's race category can bias gender categorizations through factors that originate both in the perceiver and in the target of perception.

Top–down influences. The perceiver brings existing stereotypes to bear on the task of gender categorization that can bias both the outcome and the efficiency of judgments (e.g., Johnson et al., 2012). The stereotypes for race and gender are themselves conflated. For example, the category Black is judged to be more stereotypically masculine than the category White (Goff et al., 2008). Similarly, race and gender stereotypes share specific content that produces associations between the categories male and Black and the categories female and Asian. People attribute characteristics such as communal and soft-spoken to the categories Asian and female; they attribute characteristics such as assertive and dominant to the categories Black and male (Bem, 1974; Devine & Elliot, 1995; C. Ho & Jackson, 2001; Spence, Helmreich, & Strapp, 1974). In prior work, the degree to which perceivers held these shared stereotypes fully accounted for the effect of race on gender categorizations (Johnson et al., 2012).

Bottom–up influences. In addition, social targets exhibit visual cues that may be diagnostic of multiple social categories simultaneously. For example, the same facial characteristics are common to both anger expressions and to men (e.g., angular jaws, thin lips, and heavy brows; Becker et al., 2007; Hess et al., 2009; Zebrowitz et al., 2003; Zebrowitz et al., 2010). In a similar way, gendered cues in the face vary as a function of race category (e.g., eye size, nose size; Johnson et al., 2012). Such common phenotypic cues occur naturally in real faces. For instance, Black faces, on average, exhibit more masculine cues than either White or Asian faces. Consequently, masculine cues in Black faces afforded more efficient male, but less efficient female categorizations.

Collectively, these findings showcase persistent social perception biases that emerge at the intersection of gender and race. The majority of this work focused on gender-based effects—either in terms of gender categorizations or the subsequent application of gender stereotypes that stem from race perception. Therefore, evidence that links race to gender-related biases is plentiful (e.g., Biernat & Sesko, 2013; Galinsky et al., 2013; Johnson & Ghavami, 2011). Whether race perceptions vary as a function of gender-linked visual cues in the face remains unclear. Our research addresses this question.

The Possible Influence of Gender on Race Categorizations

Gender and race perceptions are inextricably tethered to one another. Empirical evidence has shown that targets' race biases gender categorizations through both top–down and bottom–up perceptual routes. However, the bidirectionality of this effect has not yet been empirically demonstrated.

One straightforward prediction stemming from previous work is that gender will also bias race categorizations. Nonetheless, it would be premature to assume that this is the case. Indeed, in other domains, the process by which one social identity category biases the perception of another is not necessarily bidirectional. For instance, facial cues for gender and age covary. On average, there is less sexual dimorphism in the facial appearance of older adults given that testosterone and estrogen decrease with age. Accordingly, gender category judgments became less efficient as targets' age increased (Quinn & Macrae, 2005). However, age categorizations (i.e., young or old) were not influenced by target gender. Therefore, it is not necessarily the case that because one identity biases the perception of another, the effect will be bidirectional.

Furthermore, the impact of gender on race categorizations cannot be assumed given that people may accomplish gender and race categorizations at different speeds (Ito & Urland, 2003; Stroessner, 1996). Although both race and gender are categorized automatically, some researchers have found that race perception precedes gender perception (Ito & Urland, 2003); whereas, others have found the opposite (Zárate & Smith, 1990). Furthermore, when race and gender identities are considered intersectional units, categorization efficiency depends on the specific combination of identities (Stroessner, 1996). Therefore, it remains an empirical question as to whether and to what extent gendered cues may bias race categorizations.

Existing evidence, although limited, supports the possibility that race categorizations will be biased by gender. First, race and gender facial cues covary. Common facial cues denote both masculinity and Black race group membership (Johnson et al., 2012). Thus, overlapping phenotypes may allow a target's gender to bias race category judgments. Second, race categorizations can be biased by social motives. Personal safety concerns, for example, affect race categorizations, especially when judgments are made under uncertainty. Racially ambiguous stimuli were more likely to be categorized as Black when the targets were masculine (Miller, Maner, & Becker, 2010) or when they exhibited an angry facial expression (Hugenberg & Bodenhausen, 2004). Therefore, race categorizations can be influenced by social motives or beliefs ostensibly unrelated to the category judgments.

Thus, prior research probing common phenotypic cues and stereotyping supports the possibility that race perceptions will be biased by gender. Given the importance of race categorization to compel stereotyping and prejudice, it is surprising that evidence of gender biases in race categorizations remains scant. We sought to address this gap in the literature.

Overview of Current Research

Coupled with suggestive evidence from prior work, the systematic overlaps between race and gender categories in both stereotype content and facial characteristics provide the basis for our prediction that a target's gender would systematically affect observers' race categorizations as well as the efficiency of those category judgments. We tested this possibility in four experiments in which perceivers categorized the race of faces that varied in facial masculinity/femininity. Based on prior findings that documented phenotypic overlaps in facial characteristics (Johnson et al., 2012), we hypothesized that race categorizations would be more efficient when phenotypic overlaps (i.e., commonality in facial cues) for gender and race were high (e.g., masculine and Black) than when they were low (e.g., feminine and Black).

First, we investigated how gender affected race categorizations of computer-generated racially ambiguous (Study 1) and monoracial faces (Study 2). We hypothesized that Black categorizations would be more likely and more efficient when faces appeared more masculine. Conversely, we predicted that Asian and White categorizations would be more likely and more efficient when faces appeared more feminine. In Study 3, we measured the natural covariation of race and gender cues and examined how gender influenced the efficiency of race categorizations of real facial photographs. In addition, we tested the functional role of phenotypic overlap as the means by which these categorization biases occurred, predicting that gendered cues that coincide with race would bias the efficiency of race categorizations. Finally, in Study 4, we tested the robustness of these effects by examining how gendered cues affect race categorizations and their efficiency for computer-generated faces that vary in gendered appearance, but that hold racial prototypicality constant.

Study 1

In Study 1, we tested whether gendered facial cues affect race categorizations of racially ambiguous stimuli. We hypothesized that as facial femininity increased, White and Asian categorizations would be more probable but that Black categorizations would be less probable.

Method

Participants. A total of 110 undergraduates (68 women, 37 men, 5 unreported) participated in exchange for course credit. Our sample included 38 Asian, 32 White, 14 Hispanic, 16 Biracial/Other, 5 Black, and 5 unreported participants.

Stimuli and procedure. Stimuli depicted racially ambiguous faces that varied continuously from "very masculine" to "very feminine." First, we created 45 androgynous base faces using commercial software (FaceGen Modeler; Blanz & Vetter, 1999).[1] To create the androgynous base faces, we set the software to generate a face that was at the midpoint between male and female exemplars. Next, we altered these androgynous faces to exhibit racially ambiguous features by setting the race for each face at the midpoint between two monoracial categories, including 15 Black–White, 15 Asian–White, and 15 Asian–Black faces. Finally, we manipulated the gender of each resulting face to yield five levels of gendered appearance—very masculine, masculine, androgynous, feminine, and very feminine (see Appendix A). Importantly, other facial characteristics that covary with gender (e.g., pigmentation) were allowed to vary concomitantly. This procedure generated 225 distinct faces. These images were cropped to depict only the internal facial structure and were standardized in size (400 × 400 pixels).

Participants provided race category judgments for each face. Each trial consisted of a fixation cross (500 ms), followed by a face that appeared in the center of the screen. Participants judged the race of the face via key-press using keys labeled "White," "Asian," or "Black." The presentation order of stimuli was randomized for each participant. In addition, the order of the key labels was counterbalanced across participants. Race Category Judgments and Categorization Efficiency (i.e., response latency in milliseconds) were recorded for each trial.

Results and Discussion

Analytic strategy. Race Category Judgments were nested under participant. We therefore analyzed data using generalized estimating equations to accurately model the hierarchical nature of the data (Fitzmaurice, Laird, & Ware, 2004), specifying a normal distribution. We report unstandardized regression coefficients (B) that also provide a direct index of effect size and Wald Z values for each parameter. Target Race and Race Category Judgments were coded multicategorically (1 = Asian, 2 = Black, 3 = White), and Target Gender was coded continuously (−2 = very masculine, −1 = masculine, 0 = androgynous, 1 = feminine, 2 = very feminine). All analyses were run in a stepwise fashion, first testing main effects and subsequently adding predicted interactions to the model. Participant Gender and Participant Race (coded as self-identified race, White/non-White, and Asian/non-Asian) were initially included as factors in all analyses. None of these variables qualified the effects described hereafter, and they were therefore dropped from all analyses. Because our primary interest was in how participants resolved racial ambiguity as a function of gendered cues, analyses of Categorization Efficiency appear in the online supplement.

Race category judgments. We predicted that race categorizations would vary as a function of Target Gender. As a first test of this prediction, we analyzed each subset of stimuli separately (i.e., Black–White, Asian–White, and Asian–Black), predicting the likelihood of each categorical possibility.

As Black–White faces changed from masculine to feminine, the probability of a Black categorization decreased by approximately 50%, $B = -0.66$, standard error (SE) = 0.02, $z = -35.31$, $p < .0001$, 95% confidence interval (CI) = [−0.70, −0.62], odds ratio (OR) = 0.52; whereas, the probability of a White categorization increased by more than 90%, $B = 0.66$, $SE = 0.02$, $z = 35.31$, $p < .0001$, 95% CI = [0.62, 0.70], OR = 1.94 (see Figure 1a).

As Asian–White faces changed from masculine to feminine, the probability of an Asian categorization decreased by more than 30%, $B = -0.35$, $SE = 0.02$, $z = -21.32$, $p < .0001$, 95% CI = [−0.38, −0.32], OR = 0.70; whereas the probability of a White categorization increased by more than 40%, $B = 0.35$, $SE = 0.02$, $z = 21.32$, $p < .0001$, 95% CI = [0.32, 0.38], OR = 1.42 (see Figure 1b).

As Asian–Black faces changed from masculine to feminine, the probability of an Asian categorization increased by 40%, $B = 0.35$, $SE = 0.02$, $z = 20.63$, $p < .0001$, 95% CI = [0.31, 0.38], OR = 1.41; whereas, the probability of a Black categorization decreased by nearly 30%, $B = -0.35$, $SE = 0.02$, $z = -20.63$, $p < .0001$, 95% CI = [−0.38, −0.31], OR =

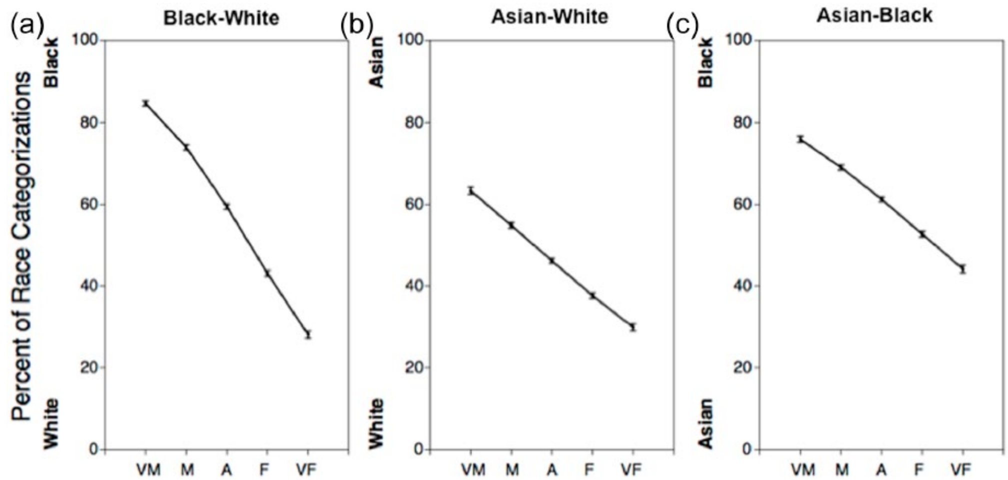


Figure 1. Predicted values for the percentage of Asian, Black, and White judgments of racially ambiguous targets in Study 1 for (a) Black–White, (b) Asian–White, and (c) Asian–Black faces.
Note. Predicted values for the percentage of each race judgments were estimated by converting predicted logit values to percentages.

0.71 (see Figure 1c). These patterns were replicated for analyses of Categorization Efficiency (see online supplement).

When confronted with racially ambiguous targets, gendered appearance determined how perceivers disambiguated the targets' race. As faces became more feminine, White categorizations were more likely, but Black categorizations were less likely. Interestingly, the effect of Target Gender on Asian categorizations depended on the racial composition of the face—a feminine appearance increased the likelihood of an Asian categorization for Asian–Black targets, but decreased the likelihood of an Asian categorization for Asian–White targets. Therefore, the effect of Target Gender on Asian race categorizations appears to vary based on the target's racial composition. In Study 2, we probed the generality of these effects, testing whether race categorizations and their efficiency vary as a function of gender for racially unambiguous targets.

Study 2

In Study 2, participants provided race category judgments of targets that were racially unambiguous—White, Asian, and Black—but that varied in apparent gender. We expected that participants would achieve high accuracy in their race judgments of monoracial targets. Our predictions therefore focused primarily on the efficiency of race categorizations. We hypothesized that Black categorizations would be more efficient for masculine targets, but that White categorizations would be more efficient for feminine targets. Given that Target Gender was less strongly associated with Asian categorizations in Study 1, we tentatively predicted that the efficiency of Asian categorizations would not vary as a function of Target Gender.

Method

Participants. Sixty undergraduate students (43 women, 17 men) participated in exchange for course credit. Our sample included 23 White, 22 Asian, 7 Biracial/Other, 7 Hispanic, and 1 Black participant.

Stimuli and procedure. Stimuli depicted monoracial faces that varied continuously in gender from "very masculine" to "very feminine." First, we created androgynous base faces by constraining FaceGen to generate a face at the midpoint between male and female. Next, we varied the race of each androgynous face to exhibit monoracial features, including 15 Black, 15 White, and 15 Asian faces (see Appendix B). As before, we also manipulated the gender of each face to yield five levels of gendered appearance. This procedure generated 225 distinct faces. Again, facial characteristics that covary with gender (e.g., racial phenotypicality) were allowed to vary concomitantly. These images were cropped to depict only the internal facial structure and standardized in size (400 × 400 pixels). All remaining procedures were identical to Study 1.

Results and Discussion

Analytic strategy. We used the analytic strategy and coding described in Study 1 with the exception that trials in which targets' race was incorrectly categorized were excluded (6.4% of the responses) from all analyses, although their inclusion did not change the pattern of results or their significance. As in Study 1, all analyses were run in a stepwise fashion, first testing main effects and subsequently adding predicted interactions to the model.

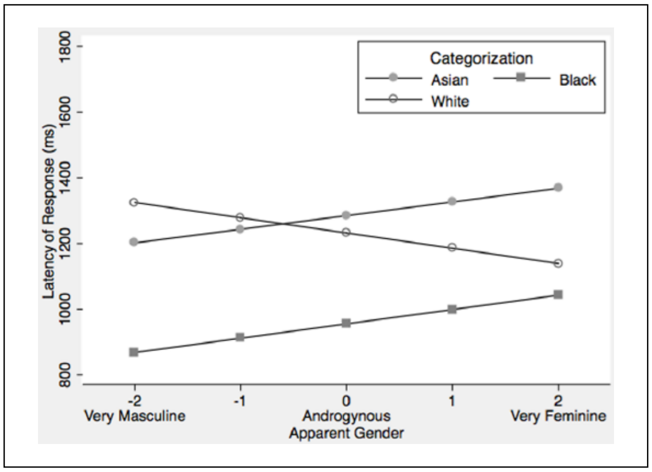


Figure 2. Predicted values for categorization efficiency as a function of apparent gender and race categorizations in Study 2.

Race categorization efficiency. We predicted that Categorization Efficiency would vary as a function of the Race Category Judgment and Target Gender. To test this prediction, we first regressed Categorization Efficiency onto Race Category Judgments. Overall, Categorization Efficiency varied as a function of Race Category Judgment, $\chi^2(2) = 274.67$, $p < .0001$. Both White and Black categorizations were rendered faster than Asian categorizations, Bs = −51.09 and −326.61, SEs = 21.69 and 21.53, zs = −2.36 and −15.17, ps = .019 and .0001, 95% CIs = [−93.6, −8.57] and [−368.80, −284.41]. Black categorizations were also rendered faster than White categorizations, $B = -275.52$, $SE = 20.98$, $z = -13.13$, $p < .0001$, 95% CI = [−316.64, −234.4]. Next, we regressed Categorization Efficiency onto Target Gender. Overall, Categorization Efficiency did not vary as a function of Target Gender, $B = 11.28$, $SE = 6.26$, $z = 1.80$, $p = .071$, 95% CI = [−0.98, 23.55].

Finally, we regressed Categorization Efficiency onto Target Race, Target Gender, and their interaction. Importantly, the overall effects described above were qualified by the Race Category Judgment and Target Gender interaction, $\chi^2(2) = 46.72$, $p < .0001$ (see Figure 2). As stimuli became feminine, White categorizations were made more rapidly, simple $B = -46.40$, $SE = 10.57$, $z = -4.39$, $p < .0001$, 95% CI = [−67.13, −25.67], but Asian and Black categorizations were made more slowly, simple Bs = 41.55 and 43.66, SEs = 11.21 and 10.38, zs = 3.70 and 4.20, ps < .0001, 95% CIs = [19.57, 63.54] and [23.29, 64.02]. Indeed contrast analyses confirmed that these simple slopes differed between White and Black judgments and between White and Asian judgments, Bs = 90.06 and 87.96, SEs = 14.82 and 15.41, zs = 6.07 and 5.71, respectively, ps < .0001, 95% CIs = [61, 119.12] and [57.74, 118.17], but not between Asian and Black categorizations, $B = 2.10$, $SE = 15.29$, $z = 0.14$, $p = .89$, 95% CI = [−27.86, 32.07]. As in previous studies, these patterns were partially replicated using Race Category Judgments instead of Categorization Efficiency (see online supplement).

As predicted, a feminine appearance facilitated White categorizations, but a masculine appearance facilitated Black categorizations. We also found that a masculine appearance facilitated Asian categorizations, an effect that is similar to how participants disambiguated the race of Asian–White targets in Study 1. Notably, prior research indicated that the sexual dimorphism or variation in the gendered appearance of Asian targets was less pronounced relative to White targets (Hopper, Finklea, Winkielman, & Huber, 2014). Moreover, gendered cues have been less consistently linked to the category Asian, relative to other race categories (Johnson et al., 2012). This may be because links between gender and the category Asian stem primarily from shared stereotype associations, rather than from common facial cues (Johnson et al., 2012). Therefore, the tenuous relation between gendered cues and Asian categorizations may stem from these factors.

Together with Study 1, these findings augment existing evidence for the tethering of perceived race and gender. Specifically, our findings establish the bidirectional nature of this influence, demonstrating that not only do race-cuing features bias gender categorizations (e.g., Johnson et al., 2012) but also that gender-cuing features bias race categorizations. As such, they provide an important extension of prior work that identified both "White" and "male" as default social categories (e.g., Stroessner, 1996) and that demonstrated that masculine targets are likely to be disambiguated as Black (Miller et al., 2010).

Studies 1 and 2 substantiate the notion that gendered cues influence race category judgments and their efficiency, yet they do not pinpoint the putative mechanism underlying these effects. Study 3 provided a direct test of the impact of common facial cues for certain race and gender categories (i.e., phenotypic similarity) on categorizations.

Study 3

In Study 3, we tested whether racial phenotypicality varies naturally as a function of a target's sex for Asian, Black, and White targets. Given prior demonstrations showing overlap in masculine facial cues and prototypically Black targets, we hypothesized that Black men would appear most race-typical compared with other race/sex combinations. Next, seeking to replicate our findings from Study 2, we tested whether gendered facial cues affect race categorizations of facial photographs. Because we expected that participants would achieve high accuracy for race judgments of monoracial targets, our focal predictions concerned categorization efficiency, and analyses of the probability of the categorizations themselves are reported in the online supplement. We hypothesized that as facial masculinity increased, Black categorizations would be more efficient but that White and Asian categorizations would be less efficient. Finally, we examined whether targets' racial phenotypicality compelled efficiency in race categorizations.

Participants

Sixty undergraduates (47 women, 13 men) participated in exchange for course credit. Our sample included 19 Asian, 15 White, 14 Hispanic, 9 Biracial/Other, and 3 Black participants. We specified our target sample size based on our own prior research in social perception.

Stimuli and Procedure

We included 172 facial photographs from preexisting stimulus archives, including Asian targets (34 Asian men, 23 Asian women), Black targets (25 Black men, 18 Black women), and White targets (38 White men, and 33 White women; Chiao & Ambady, 2001; Matsumoto & Ekman, 1988; Minear & Park, 2004; Tottenham et al., 2009). These images have been used in past research to examine person perception. Photos varied in their race and sex, but were matched for approximate age (18-29 years) and displayed neutral facial expressions. All images were cropped to depict only the internal facial structure and were standardized in size (400 × 400 pixels).

We used FaceGen Modeler to measure the racial phenotypicality of each face, based on the anthropometric norms of hundreds of facial scans that were used to create the software.[2] Using the Race Morph Tool, we quantified the degree of racial phenotypicality, separately for Black, White, and East Asian targets (see Johnson et al., 2012, for a more comprehensive description of this measurement technique). With this measurement, hereinafter called Phenotype, each face was placed along a continuum wherein higher values indicated a more race-typical appearance, and lower values indicated a less race-typical appearance. In our sample, mean centered Phenotype values ranged from −5 (less race-typical) to 23 (highly race-typical). All procedures regarding race categorizations were identical to Studies 1 and 2.

Results and Discussion

Analytic strategy. For analyses that tested for differences in Phenotype, we used stepwise ordinary least squares (OLS) regression because these data were not hierarchical. Analyses of categorization efficiency used generalized estimating equations as described above. Target Race and Race Category Judgments were coded multicategorically (1 = Asian, 2 = Black, 3 = White). Target Sex was coded dichotomously (1 = male, 2 = female). All analyses were run in a stepwise fashion, first testing main effects and subsequently adding predicted interactions to the model. We coded perceivers' judgments for accuracy (1 = accurate, 0 = inaccurate). Trials in which race was incorrectly categorized were excluded (5.6% of the responses) from all analyses, although their inclusion did not change the pattern of results or their significance.

Covarying race and sex phenotypes. First, we tested whether Phenotype varied as a function of Target Race and Target Sex. Using stepwise OLS regression, we first regressed Phenotype onto Target Race. The effect of Target Race on Phenotype was significant, $F(2, 163) = 35.00$, $p < .0001$. Overall, Black targets appeared less race-typical than Asian and White targets, Bs = −6.47 and −6.37, SEs = 0.87 and 0.84, zs = −7.44 and −7.61, ps < .0001, 95% CIs = [−8.19, −4.75] and [−8.02, −4.71]. Asian and White targets did not differ in the degree of Phenotype, $B = 0.11$, $SE = 0.74$, $z = 0.14$, $p = .89$, 95% CI = [−1.37, 1.58]. Next, we regressed Phenotype onto Target Sex, but found no reliable difference, $B = 0.26$, $SE = 0.78$, $z = 0.33$, $p = .74$, 95% CI = [−1.28, 1.80].

We regressed Phenotype onto Target Sex, Target Race, and their interaction. Importantly, the interaction between Target Race and Target Sex was significant, $F(2, 160) = 6.03$, $p < .0001$ (see Figure 3). Among White targets, women appeared more race-typical than men, simple $B = 2.07$, $SE = 0.98$, $z = 2.12$, $p = .036$, 95% CI = [0.14, 3.99]. Among Black targets, men appeared more race-typical than women, simple $B = -3.40$, $SE = 1.30$, $z = -2.60$, $p = .01$, 95% CI = [−5.96, −0.82]. Among Asian targets, Target Sex did not influence racial phenotypicality, simple $B = 1.34$, $SE = 1.09$, $z = 1.22$, $p = .23$, 95% CI = [−0.83, 3.50]. Contrast analyses confirmed that the simple slopes differed between White and Black targets, $B = 5.45$, $SE = 1.62$, $z = 3.35$, $p = .001$, 95% CI = [2.24, 8.67].

Black men appeared more race-typical than Black women, but White women appeared more race-typical than White men. These findings imply that a natural covariation exists in the facial cues conveying race and sex that may underlie systematic differences in race categorization efficiency.

Race Categorization Efficiency

Given these coincident facial cues, we next replicated our previous analyses from Study 2, testing whether the efficiency of race categorizations varies as a function of Target Sex. As before, we predicted that Categorization Efficiency would vary as a function of Race Category Judgment and Target Sex, such that Black categorizations would be made more rapidly for men, and White and Asian categorizations would be made more rapidly for women.

First, we regressed Categorization Efficiency onto Target Race and found a reliable effect, $\chi^2(2) = 213.36$, $p < .0001$. Black categorizations were rendered faster than both Asian and White categorizations, Bs = 153.77 and 211.51, SEs = 15.35 and 14.60, zs = 10.02 and 14.48, ps < .0001, 95% CIs = [123.69, 183.85] and [182.88, 240.14]. Asian categorizations were also rendered more quickly than White categorizations, $B = -57.74$, $SE = 13.61$, $z = -4.22$, $p < .0001$, 95% CI = [−84.54, −30.94]. Next, we regressed Categorization Efficiency onto Target Sex and found that judgments were

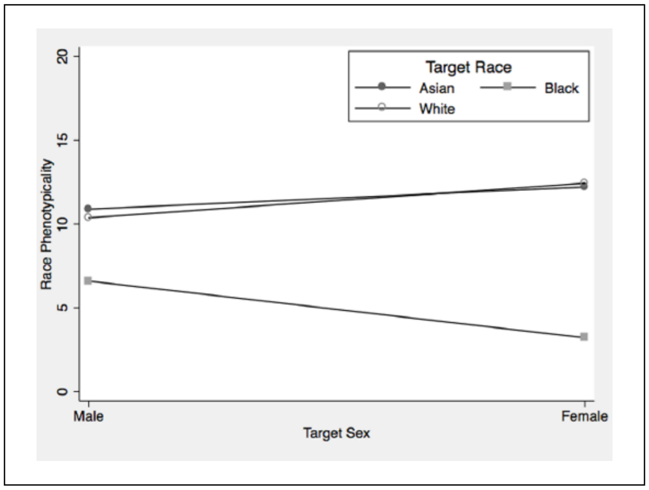


Figure 3. Racial phenotypicality as a function of target sex and target race in Study 3.
Note. Higher values on racial phenotypicality indicate a more race-typical appearance.

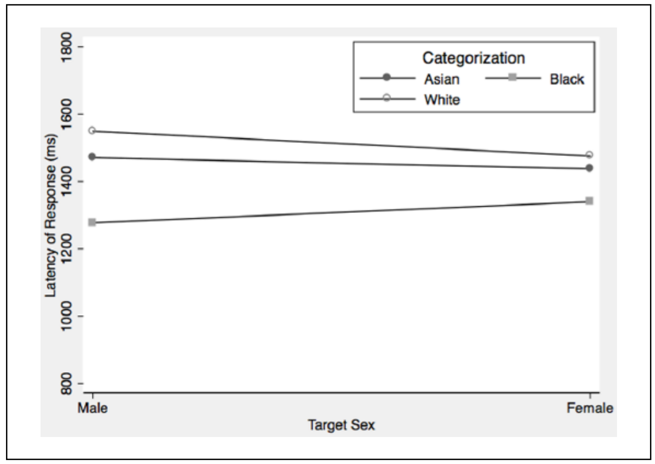


Figure 4. Predicted values for categorization efficiency as a function of target sex and target race categorizations in Study 3.

rendered marginally faster for women than for men, B = −21.76, SE = 11.88, z = −1.83, p = .067, 95% CI = [−45.03, 1.52].

Importantly, when we regressed Categorization Efficiency onto Target Race, Target Sex, and their interaction, the interaction was significant, $\chi^2(2) = 21.84$, $p < .0001$ (see Figure 4). White categorizations were made more rapidly for women than for men, simple B = −73.85, SE = 18.06, z = −4.09, p < .0001, 95% CI = [−109.24, −38.46]. Black categorizations were rendered more quickly for men than for women, simple B = 62.58, SE = 23.11, z = 2.71, p = .007, 95% CI = [17.28, 107.87]. Categorization efficiency for Asian categorizations did not vary by Target Sex, simple B = −33.46, SE = 20.84, z = −1.61, p = .11, 95% CI = [−74.31, 7.40]. Contrast analyses confirmed that the simple slopes differed between White and Black categorizations, B = −136.43, SE = 29.33, z = −4.65, p < .0001, 95% CI = [−193.91, −78.95]. These findings were replicated using the likelihood of Race Category Judgments instead of Categorizations Efficiency (see online supplement).

Using real facial photographs, these findings provide additional evidence that gendered cues influence the efficiency and probability of race category judgments. White categorizations were made more rapidly for women; Black categorizations were rendered more rapidly for men. The efficiency of Asian categorizations was unaffected by Target Sex. These findings are consistent with our predictions for Black and White, but not Asian targets. One possibility is that the photographs exhibited a restricted range of gendered facial cues for Asian targets. This possibility is supported by prior research, which demonstrated that gender varied more for White faces compared to Asian faces (Hopper et al., 2014). The lack of an effect for Asian targets will be further discussed in the "General Discussion" section of this article.

The Role of Common Cues

Next, we sought to clarify the role of common phenotypic cues in the categorization biases that we have observed. Importantly, prior research established that race affects gender categorizations through common phenotypic cues: Black faces were, on average, more phenotypically masculine than either Asian or White faces (Johnson et al., 2012) and these overlaps in cues accounted for the race-related variability in the efficiency of gender categorizations. So far, the current findings support the possibility that the complement to this effect might also be true. Therefore, we tested the possibility that gender-specific variations in race phenotypic cues may account for the impact of gender on race categorization efficiency. We predicted that a systematic covariance between cues to race and gender might be responsible for the effect of gender on race categorizations and their latencies observed so far. More specifically, we hypothesized that the overlap in phenotypic cues would influence race categorizations and, based on our prior findings, that this tendency would be strongest for Black categorizations.

To test the role of common phenotypic cues for gender-based differences in categorization efficiency, we used the causal steps approach for multilevel data outlined by Muller, Judd, and Yzerbyt (2005). First, we regressed Categorization Efficiency onto Target Race, Target Sex, and their interaction. As before, the interaction between Target Race and Target Sex was significant, $\chi^2(2) = 21.84$, $p < .0001$. More specifically, White categorizations were made more rapidly for women, simple B = −73.85, SE = 18.06, z = −4.09, p < .0001, 95% CI = [109.24, −38.46]. Black categorizations were rendered more quickly for men, simple B = 62.58, SE = 23.10, z = 2.71, p = .007, 95% CI = [17.29, 107.87]. Categorization efficiency for Asian categorizations did not vary by Target Sex, simple B = −33.46, SE = 20.84, z = −1.61, p = .11, 95% CI = [−74.31, 7.40].

Next, we regressed Phenotype onto Target Race, Target Sex, and their interaction. The interaction between Target Race and Target Sex was significant, $\chi^2(2) = 702.33$, $p < .0001$. White women appeared more race-typical than White men, simple $B = 2.01$, $SE = 0.13$, $z = 15.87$, $p < .0001$, 95% CI = [1.77, 2.26]. Black men appeared more race-typical than Black women, simple $B = -3.36$, $SE = 0.17$, $z = -19.85$, $p < .0001$, 95% CI = [−3.70, −3.03]. Asian women appeared more race-typical than Asian men, simple $B = 1.42$, $SE = 0.15$, $z = 9.79$, $p < .0001$, 95% CI = [1.14, 1.71]. Because we had more statistical power here with a multilevel model, this effect becomes statistically significant where it was not previously with the single-level regression model.

Finally, we regressed Phenotype and the interaction of Target Race and Target Sex onto Categorization Efficiency. Targets who appeared more race-typical were categorized more quickly, $B = -7.59$, $SE = 1.50$, $z = 5.07$, $p < .0001$, 95% CI = [−10.52, −4.65]. When controlling for Phenotype, the effect of Target Gender on Categorization Efficiency was significantly reduced in magnitude for both White and Black targets. More specifically, the effect remained statistically significant for White targets, simple $B = -59.13$, $SE = 18.69$, $z = -3.16$, $p = .002$, 95% CI = [−95.75, −22.50], whereas the effect was no longer statistically significant for Black targets, simple $B = 24.38$, $SE = 25.15$, $z = 0.97$, $p = .33$, 95% CI = [−77.23, 21.29]. When controlling for Phenotype, Categorization Efficiency for Asian categorizations remained uninfluenced by Target Sex, simple $B = -22.72$, $SE = 21.22$, $z = -1.07$, $p = .28$, 95% CI = [−64.31, 18.87].

These findings indicate that Phenotype biased the efficiency of race categorizations differentially depending on a target's gender. More specifically, to the extent that race- and gender-cuing features were covariant, the effect of Target Gender on Categorization Efficiency was significantly reduced after controlling for Phenotype. This reduction was most pronounced for Black targets. Therefore, the phenotypic overlap or commonality in facial cues allowed gender to influence the efficiency of race categorization for Black targets.

Study 4

Although we have demonstrated that gendered facial cues affect race categorizations and their efficiency, the results are also consistent with the possibility that more efficiently categorized faces that are simply higher in race prototypicality (Zebrowitz et al., 2003; Zebrowitz et al., 2010). Indeed, in each of the prior studies, gender and race cues were allowed to vary concomitantly. To determine whether gendered cues provide unique information that affects race categorizations over and above the effect of race prototypicality, we generated new facial stimuli in which we held racial phenotypicality constant. In Study 4, therefore, any effects of gendered cues on race categorizations cannot be attributed solely to simultaneous variations in race prototypicality.

In Study 4, we tested whether gendered facial cues affect race categorizations of racially ambiguous stimuli in which we held racial phenotypicality constant within each respective racial combination (i.e., Black–White, Asian–White, and Asian–Black). We hypothesized that as facial masculinity increased, Black categorizations would be more probable but that White would be less probable.

Participants

Sixty-five workers from Amazon's Mechanical Turk (37 women, 28 men) participated in a study of social perception in exchange for 40 cents. Our sample included 47 White, 5 Asian, 5 Hispanic, 5 Black, 2 Biracial, and 1 American Indian participant.

Stimuli

Stimuli included racially ambiguous faces that varied continuously in gender from "very masculine" to "very feminine." Using the procedures described in Study 1, we created 45 androgynous base faces and then altered each face to exhibit racially ambiguous features (15 Black–White, 15 Asian–White, and 15 Asian–Black faces). Finally, we manipulated the gender of each face. Importantly, we did not allow other facial characteristics indicative of racial phenotypicality (e.g., pigmentation) to vary as a function of our gender manipulation. Apparent race was held constant (and ambiguous), thus overcoming the natural tendency for race phenotypes to fluctuate with gendered cues. This procedure generated 225 distinct faces that were cropped to depict only the internal facial structure and were standardized in size (400 × 400 pixels).

Procedure

Internet users provided race category judgments for faces that varied by race and gender. During each trial, a face appeared in the center of the screen and participants judged the race of the face via mouse-click indicating a judgment of "White," "Asian," or "Black." The presentation order of stimuli was randomized for each participant. In addition, the race categorization labels were randomly ordered. Response latencies were not recorded because judgments were rendered online.

Results and Discussion

Race category judgments. We used the same analytic and coding strategy described in Study 1. We predicted that race categorizations would vary as a function of Target Gender. As a first test of this prediction, we analyzed each subset of stimuli separately (i.e., Black–White, Asian–White, Asian–Black), predicting the likelihood of each categorical possibility.

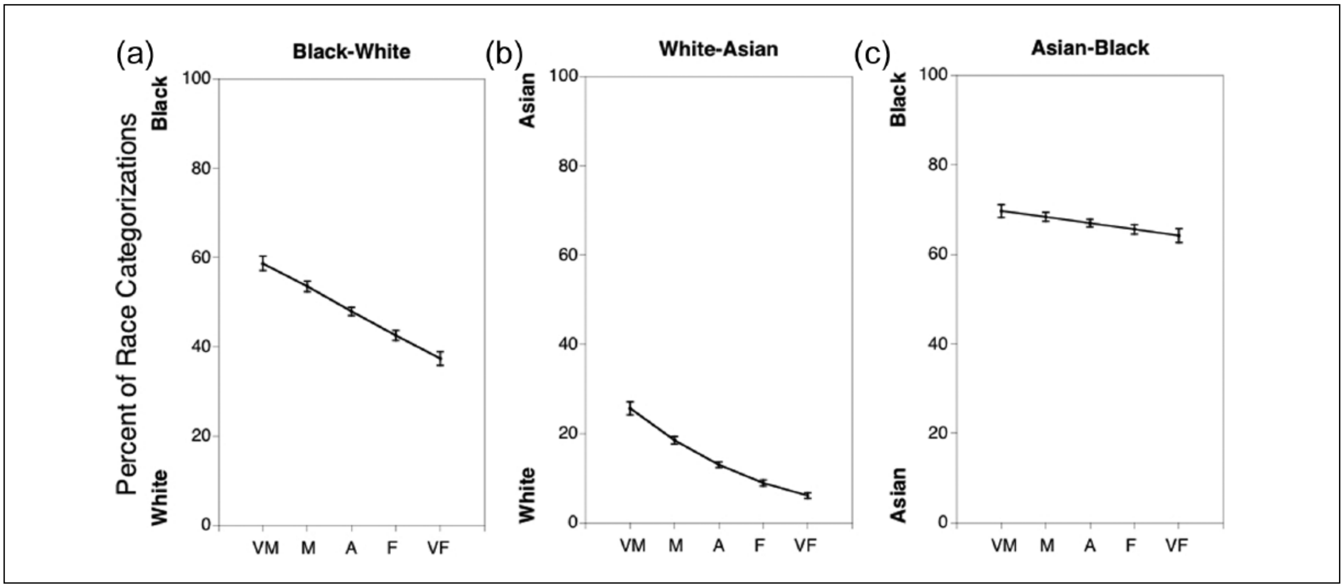


Figure 5. Predicted values for the percentage of Asian, Black, and White judgments of racially ambiguous targets in Study 4 for Black–White (a), Asian–White (b), and Asian–Black (c) faces.
Note. Predicted values for the percentage of each race judgments were estimated by converting predicted logit values to percentages.

As Black–White faces changed from masculine to feminine, the probability of a Black categorization decreased by approximately 19%, $B = -0.22$, $SE = 0.03$, $z = -8.04$, $p < .0001$, 95% CI = [−0.27, −0.16], OR = 0.81; however, the probability of a White categorization increased by 24%, $B = 0.22$, $SE = 0.03$, $z = 8.04$, $p < .0001$, 95% CI = [0.16, 0.27], OR = 1.24 (see Figure 5a).

As Asian–White targets changed from masculine to feminine, the probability of an Asian categorization decreased by approximately 34%, $B = -0.42$, $SE = 0.04$, $z = -10.65$, $p < .0001$, 95% CI = [−0.49, −0.34], OR = 0.66; however, the probability of a White categorization increased by 52%, $B = 0.42$, $SE = 0.04$, $z = 10.65$, $p < .0001$, 95% CI = [0.34, 0.49], OR = 1.52 (see Figure 5b).

As Asian–Black faces changed from masculine to feminine, the probability of an Asian categorization increased by approximately 6%, $B = 0.06$, $SE = 0.03$, $z = 2.28$, $p = .02$, 95% CI = [0.01, 0.12], OR = 1.06; however, the probability of a Black categorization decreased by nearly 6%, $B = -0.06$, $SE = 0.03$, $z = -2.28$, $p = .022$, 95% CI = [−0.12, −0.01], OR = 0.94 (see Figure 5c).

Thus, these findings extended the findings of Studies 1 to 3, showing that race categorizations were biased by target gender over and above targets' race prototypicality. Replicating our previous studies, as apparent gender changed from masculine to feminine, White categorizations became more likely but Black categorizations became less likely. The probability of Asian categorizations depended on the race of the target. A more feminine appearance corresponded to a decrease in the probability of an Asian categorization for Asian–White targets but an increase in probability of an Asian categorization for Asian–Black targets. These effects persisted in spite of our constraining the natural covariation between gender and race cues. As such, the alternative explanation that race prototypicality was solely driving our effects cannot fully account for these patterns because the effects persisted even when race prototypicality was held constant.

General Discussion

Historically, models of social categorization implicitly assumed that various categorical social judgments occurred independently. More recent theoretical and empirical research, however, called this assumption into question, showing that across modalities and domains of judgment, the perception of one social category systematically affects the perception of other social categories. Here, we found that gendered cues affected both the probability and the efficiency of race category judgments.

Across four studies, we showed that as gendered cues transitioned from masculine into feminine, White categorizations became more likely and more efficient, but Black categorizations became less likely and less efficient. This basic pattern was obtained as participants disambiguated the race of racially ambiguous targets (Studies 1 and 4) and as participants categorized the race of racially unambiguous targets (Studies 2 and 3). The possibility that race prototypicality was driving our effects over and above apparent gender was ruled out by replicating these patterns even for judgments of faces in which race prototypicality was held constant (Study 4). Importantly, we found that race-cuing features decreased for Black and Asian targets, but increased for White targets as faces changed from masculine to feminine (Study 3). The overlap in facial cues between Black and masculine faces fully accounted for gender's effect on Black categorizations (Study 3). These findings suggest that gendered appearance contributes to race category judgments, although the two categories are ostensibly orthogonal.

These findings inform existing models of social perception by revealing how race and gender perception are tethered (Johnson & Freeman, 2010). Because targets of social perception vary along several dimensions, the perception of one category is likely to affect the perception of another category (Johnson & Carpinella, 2012; Johnson et al., 2014; see also Freeman et al., 2012). Indeed, the current findings add to the growing list of category combinations that are mutually influential, including the effect of emotion on gender categorizations of body motions and faces (Hess et al., 2009; Johnson et al., 2012), the impact of race on sexual orientation judgments (Johnson & Ghavami, 2011), the impact of gender on political party judgments (Carpinella & Johnson, 2013), and importantly, the effect of race on gender categorizations (Johnson et al., 2012). The finding that gendered cues bias race categorizations in a similar fashion supports the bidirectional nature of these effects.

We also found support for one proposed mechanism by which multiple categorizations bias one another as they unfold. Specifically, perceiving one category biases the perception of other categories through common visual cues, in part because distinct social categories share physical characteristics that inform social categorizations. This stimulus-driven perceptual route to biased social categorizations has been documented for other social category intersections (e.g., gender and emotion; Becker et al., 2007; Hess et al., 2009; Zebrowitz et al., 2003). The current findings highlight a similar mechanism underlying biases in gender and race judgments. Here, we established that race-cuing features differ as a function of gendered cues. Common cues accounted for the gender-based bias on race categorizations, particularly for categorizations of Black faces. Importantly, we ruled out the possibility that faces that are higher in racial phenotypicality are merely deemed to be more prototypical. Specifically, even when faces were not allowed to vary in their racial phenotypicality, we nevertheless found that race category judgments varied as a function of gendered cues, independent of race prototypicality (Study 4).

Notably, the observed patterns associated with Asian categorizations varied somewhat between studies. Johnson and colleagues (2012) found that overlaps in stereotype content between the categories "Asian" and "female" compelled greater processing efficiency for more feminine Asian targets. For monoracial faces, we found that a more masculine appearance facilitated Asian categorizations (Studies 2 and 3). For racially ambiguous faces, the probability of an Asian categorization depended on the racial composition of the face (Studies 1 and 4). As Asian–White faces became more feminine, Asian categorizations were more likely, but the opposite was true for Asian–Black faces. Importantly, these patterns were largely unrelated to the targets' racial phenotypicality. This is not surprising given that White faces exhibit greater sexual dimorphism than Asian faces (Hopper et al., 2014). Reduced gender variance in Asian targets suggests that Asian targets' racial phenotypicality would be less likely to affect their race category judgments. Thus, common phenotypic cues cannot account for the impact of gendered cues on Asian categorizations. Instead, consistent with the findings described in Johnson et al. (2012), it seems likely that shared stereotypes compel the categorization of Asian individuals.

It is important to note that our ability to speak more broadly about these patterns may be limited by our use of computer-generated stimuli. In particular, these faces are constrained by the population included in the three-dimensional facial scans that informed the algorithms within the program. Indeed, White participants were overrepresented in the Blanz and Vetter (1999, 2003) protocol. Consequently, the greater variability in the racial phenotypicality of White targets may be a function of this overrepresentation. Although beyond the scope of the current work, additional research may profitably examine how the representation of gender and racial groups may differ as a function of the composition of individuals included in the face generation algorithm.

Research Implications

Our research has important implications for understanding social perceptions of the growing multiracial population in the United States. Multiracial individuals can pose a perceptual challenge for observers to categories because their race is inherently ambiguous (Chen & Hamilton, 2012). Our findings suggest that in such instances, race may be disambiguated as a function of a target's gendered appearance. We propose, therefore, that race categorizations of multiracial individuals will vary not only as a function of racial ancestry but also as a function of gender. For example, Black–White men may be more readily categorized as Black than Black–White women. Similarly, Asian–White women may be readily categorized as Asian than Asian–White men. By extension, the gender-linked race categorization of multiracials could yield unique consequences for evaluative judgments of male and female multiracials (A. K. Ho, Sidanius, Levin, & Banaji, 2011).

Another important implication of this work is that it provides a more nuanced understanding of the gender specificity in racial stereotyping. The notion that stereotypes apply primarily to the men, but not the women, of a particular nationality or racial group is a common assumption in the literature. Some evidence supports this claim (Eagly & Kite, 1987; Ghavami & Peplau, 2013), but the mechanisms by which this specificity occurs have remained unclear. Our finding that the categories Black and male share phenotypic characteristics suggests that Black stereotypes, in particular, may be most strongly associated with Black men, but poorly associated with Black women. The opposite pattern characterized the association of gender and racial phenotypicality for White and Asian faces, however. This leads to the provocative prediction that the tendency for stereotypes to characterize the men of a particular group will differ across racial groups—exhibiting strong associations for Black stereotypes, but weakened or even reversed associations for Asian and White stereotypes. Of course, this possibility is speculative, but it is consistent with observations that stereotypes of Black individuals tend to be most extreme (Devine & Elliot, 1995) as well as evidence that out-group stereotypes are more likely to be associated with the male members of racially subordinate groups (Pratto, Sidanius, & Levin, 2006). Others have provided a theoretical account of why this might be the case (Neuberg & Sng, 2013), but our approach affords an empirically based foundation to inform future theoretical and empirical work.

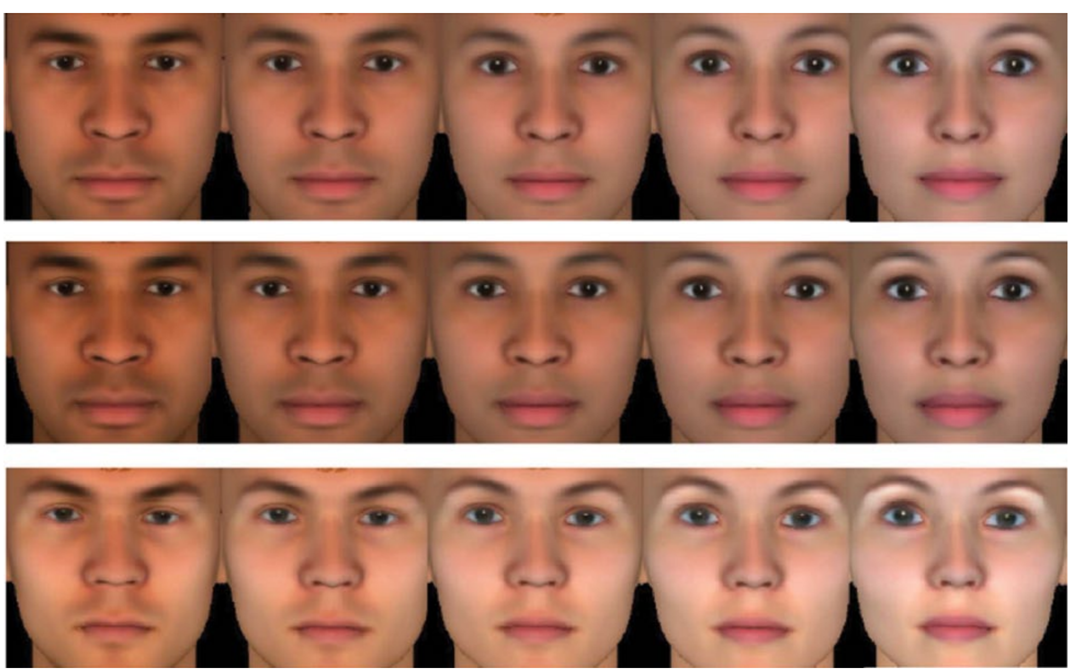
Finally, our results provide insights into the underpinnings of the "white male norm" in social perceptions. Specifically, Stroessner (1996) demonstrated that nonnormative identities gain a perceptual advantage that can both improve and impair social categorization efficiencies, depending on the particular combination of race and gender identities. Our findings suggest that one route by which categorization advantages might be achieved is through coincident visual cues to categories. Specifically, when visual cues are common to both race and gender (e.g., as in the case of Black men), the competing category activation will facilitate categorizations, reducing response latencies. In contrast, when visual cues are in conflict, the opposite pattern of bias is evident in a perceptual impairment (e.g., as in the categorization of Black women). Overall, our findings indicate that this facilitation effect was most pronounced with ease of categorization efficiency for Black men. Thus, these findings show one means by which social targets that deviate from the White male norm may gain a perceptual advantage—the visual cues to their identities simultaneously cue both identities, producing mutual facilitation (e.g., Asian women). Importantly, such differences in the fluency with which others are perceived are likely to carry important evaluative implications (Lick & Johnson, 2013, in press).

Conclusion

In conclusion, these studies showcase the importance of an intersectional approach to understanding social perception, in general, and social categorization, more specifically. They highlight the bidirectional influence in which cues that are common to both race and gender categories exert mutual influence on one another's perception. As such, they illuminate a path for understanding the consequences of race perception—stereotyping and prejudice—in a more nuanced and targeted fashion.

Appendix A

Race Ambiguous Faces Generated With FaceGen Modeler



Note. Each face set varies in gendered appearance from very masculine to very feminine. Top row represents Asian–Black faces, middle row represents Black–White faces, and bottom row represents Asian–White faces.

Appendix B

Monoracial Faces Generated With FaceGen Modeler

Note. Each face set varies in gendered appearance from very masculine to very feminine. Top row represents Asian faces, middle row represents Black faces, and bottom row represents White faces.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Notes

1. Facial parameters in FaceGen Modeler are based on the facial scans of 272 individuals (163 male, 109 female). In this scanned population, 183 individuals self-identified as European/Caucasian, 29 Asian, 26 African American, 26 other, and 8 Indian. FaceGen Modeler uses the facial parameters inferred from this scanned population to create probability distributions for gender and race characteristics (Blanz & Vetter, 1999). We used the random generate function in FaceGen which exploited a probability distribution to create new faces that reflected particular race and gender characteristics. Using the Gender Morphing Tool, we altered the gender typicality of the faces to incorporate the multidimensional characteristics that typify masculine to feminine faces. Given that the FaceGen random generate function creates novel faces based on observed group differences, we choose to allow the race of the targets to vary concomitantly as we systematically manipulated target gender.
2. On uploading each real facial photograph, FaceGen Modeler estimated the three-dimensional shape of each face resulting in model coefficients stored within the FaceGen program (Blanz & Vetter, 2003). These model coefficients estimated where, based on the optimization algorithm, a particular image of a person fell within the distribution of individuals' facial scans. By uploading each face into FaceGen and utilizing the optimization algorithm program, we were able to obtain a quantitative measurement of how race-typical each real facial photograph was.

Supplemental Material

The online supplemental material is available at http://pspb.sagepub.com/supplemental.

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