

Research Article

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Imagine All the People: Investigating People's Perceptual Biases as They Pertain to Age, Race, and Gender

Abstract

Typically, perceptual biases are studied by investigating how people respond to written scenarios, without considering the mental representations people form while reading these descriptions. This paper provides a novel approach to face perception research by looking at people's mental representations of strangers and aims to determine whether current ways of classifying people into definite race, age, and gender categories were accurate or needed to be rethought. Specifically, participants digitally reproduced the faces they imagined while reading different scenarios where strangers were described only by race, age, and gender (N = 76). Subsequently, a different set of participants rated these faces on various traits (N = 1024). In the first part of the study, participants created 9 faces from written descriptions of strangers, the last of which included information about criminal history. In the second part, participants rated these faces on dimensions of attractiveness, trustworthiness, intelligence, and physical strength for faces in the non-crime condition, and on dimensions of threat, criminality, and attractiveness for the crime condition. Linear regression models showed that age, race, and gender had various effects on scores on different dimensions, as well as on within-group variance. For instance, older faces were awarded lower attractiveness ratings than younger faces overall, an effect which was also moderated by race, with older age being less predictive of attractiveness ratings for Black faces. Furthermore, there was significantly less variability in attractiveness ratings for Black faces than White faces. Overall, this study revealed that stereotypes do not always adhere to clear-cut categories of race, age, and gender, suggesting that they may be applied somewhat dimensionally rather than categorically.

Introduction

The recent social media phenomenon of blackfishing, or trying to “pass for” a Black person in order to profit off an identity and/or culture that is not your own, evokes the idea that identity, even racial identity, can be performed. (1) In other words, people can pretend to be something they are not by darkening their skin tone, but also by changing the way they speak, dress, or act. Therefore, blackfishing seems to be one of the most recent manifestations of Goffman's Self in Everyday Life, and the idea that rather than simply extending our private self into the social realm we create and perform a public identity: the social self. (2) Appearance (physical traits, clothing, make-up, etc.) plays a crucial part in determining how we are seen by others, and we know from previous research that faces inspire social judgments of dominance, attractiveness, and trustworthiness. (3) Of course, the face is also a crucial sign of race, age, and gender, and can be used to make inferences about one's culture and life experience.

Stereotyping In-person Perception

Although people can make judgments of race, gender and age in a controlled and reflective manner, these judgments tend to occur quickly in social situations. In these instances, people rely on more automatic mental operations to formulate an impression. People may also have a sense of belonging toward certain groups, and the ways in which they perceive themselves within social categories may in turn impact how they view other people. (4)

Social identity theory argues that people organize their thoughts about others by classifying individuals into categories according to how well they fit within specific social groups, such as that of “woman” or “student”. (5) According to dual process theory, these stereotypes can be the product of conscious reflections, but can also be implicitly held, as shown by the Implicit Association Test. (6)

Physical characteristics may also influence people's opinions of others through automatic bottom-up processes, and although people have been found to make fast and accurate judgments of attractiveness, trustworthi-

ness, and dominance, (7) attributions can become stereotyped by over-reliance on such patterns. Additionally, face perception may involve top-down processes that depend on the characteristics of both the perceiver (context, mood, arousal, personality, etc.) and the target (context, affect, appearance, etc.), as well as interactions between the two. (8) Therefore, face perception interacts with a perceiver's beliefs about race, age, and gender to generate judgments and categorizations of others. (9) In this way, a person's race, age and gender stereotypes may affect how they perceive and imagine strangers' faces. Accordingly, a review of the literature on race (in this case focusing on Black people versus White people), age and gender stereotypes is imposed before establishing new lines of inquiries.

Racism Against Black People

In a study on implicit stereotypes about race, people showed an implicit Black-ape mental association when given the opportunity to associate pictures of apes with pictures of Black versus White faces. These findings helped explain the higher likelihood for Black defendants to be described by the media in ape-like terms, which correlated with the likelihood that they would be executed at the outcome of their trials. (10) Relatedly, the weapon bias has consistently demonstrated a propensity for participants to mistake an object for a weapon more often when in the hands of a Black man compared to a White man (11); the same was true even for young Black boys. (12) and to a lesser degree, for women and young girls. (13) Furthermore, there is a perceptual bias of Black men as being more formidable (taller, heavier, more muscular, and stronger) and more capable to harm than non-Black men that relates to how prototypical the target is. (14) Indeed, Afrocentric facial features are a significant within-race predictor of prison sentence length, as well as a between-race predictor to the extent that White inmates with more Black-typical features than average were given longer sentences than equivalently Afrocentric Black prisoners convicted for similar crimes. (15) Taken together, these findings suggest that we see Black people as threatening, especially black men. Consequently, we might expect that the more Afrotypical a person's features, the more they will be perceived and judged according to specific racial stereotypes. Darkness of the skin, maleness, facial prominence of the lips and nose, and physical cues such as tallness and muscularity may then

define the prototypical Black person in people's imagination, and lead to increased stereotyping and assessment of threat.

Ageism

Ageism is the phenomenon by which older people are perceived by their younger counterparts as "senile, rigid and old fashioned in morality and skills"; creating a disconnect between the two groups. This detachment on the part of the younger generation results in the subsequent neglect of the old. (16 p894) According to the terror management theory, negative attitudes may serve to position old people as an outgroup, protecting younger people from the shock of their own mortality through emotional distancing. (17) According to the stereotype content model, old age most frequently elicits high warmth and low competence judgments, and evokes feelings of pity in others, a finding which has been replicated across cultures, including in collectivist samples. (18) Research on impression formation has given us a few insights into face perception of older targets, who are rated as less attractive, likeable, energetic and growth-oriented than younger faces. (19)

Sexism

Gender stereotypes are linked to sex-differentiated behaviours that give rise to specific gender roles, which in turn perpetuate the status quo and reinforce those same stereotypes. (20) These gender stereotypes may even have an impact on the way women perceive themselves. For instance, the more women felt different from the typical person who studies in a STEM field, the less confident they were in their ability to excel in that field. (21)

Facial characteristics may also contribute to differences in perception of men and women. The more gender-extreme a person's facial features (more masculine men, more feminine women), the faster people could classify them into the appropriate sex category. (22) In the same study, attractiveness was found to be almost identical to femininity for women, while masculinity did not equal being attractive for men. It may be that perception of men and women operates according to different mechanisms, or even different criteria. Prescriptive and descriptive gender stereotypes are associated with a multitude of sex-typed interests, behaviours and personality traits. However, in old age, stereotypes get less precise, and mostly have to do with women being communal. (23)

Intersectional Stereotyping

Research by Kang and Bodenhausen (24) has focused on investigating people's preconceived ideas about different social groups when confronted to individuals with conflicting (ex. biracial, transgender) or intersecting identities (gender and race, ex. a black woman)—what Kimberle Crenshaw (25) described as the co-existence of multiple social identities within a single person. When signals are ambiguous, impression formation can be challenging: depending on how identity-forming labels such as socio-economic status, race, gender and age combine, they may lead to very different outcomes, for instance the classification of a person of ambiguous race as Black or White depending on perceived social status. (26) The recurrent neglect of some social subgroups can also be examined through the lens of intersectionality. With racial stereotypes being typically male-oriented, and gender stereotypes being especially focused on White women, women of color may be left aside. (27) Research in person perception has shown that Black people are rated as more masculine than White people, leading to higher ratings of attractiveness for Black men but lower ones for Black women, compared to their White counterparts. (28) These findings provide some evidence for the idea that race, age, and gender stereotypes may not be as generalizable as previously thought.

How do we Imagine Others?

While people may use stereotypes in social interactions, drawing on an array of sensory and contextual cues to inform this process, whether such

categorical thinking occurs outside of the social realm is less understood. Specifically, how stereotypes manifest in one's imagination is still unclear. For example, it remains to be explored how people form mental representations of faces when they are given only limited information about a stranger's race, age, and gender, and are subsequently asked to imagine, then reproduce this face.

Psychological research in social perception often neglects the visual component of real-world interactions, substituting facial and bodily cues with written descriptions. (9, p.247) We now know that faces influence our impressions of others in numerous and complex ways, but the types of inferences resulting from this process are still unclear.

Current Study

The current study was two-part, looking first at how people mentally represent strangers of different races, ages and genders, and then at how people judge members of various social groups on the basis of facial characteristics. Part 1 was completed with the use of FaceGen, a software that is easy to navigate for first-time users and allows them to manipulate facial features in order to recreate on the computer the face they imagined. People were asked to create eight faces at the intersection of three social categories: age (young versus old), race (Black person versus White person) and gender (male versus female). Participants were also asked to create a final face of a male ex-prisoner who varied by race (White person versus Black person; between-subjects). In part 2, online participants rated the faces from part 1, allowing the collection and aggregation of ratings on different traits.

Across age, it was hypothesized that the older the face, the more stereotypical it would be. In line with intersectionality research, it was thought that women would be rated as less intelligent than men, with Black women being rated as the least intelligent; furthermore, it was predicted that men would be rated as more physically strong than women, with White women being rated as the least physically strong. For the crime condition, it was anticipated that Black ex-prisoners would be rated as more likely to commit a crime, and as more threatening than White ex-prisoners. Lastly, attractiveness ratings were expected to vary across race, and across condition (crime vs non-crime).

Methods

Materials

FaceGen software. FaceGen is a flexible and user-friendly program that allows people to create a face by changing its dimensions using both general (e.g., older/younger or masculine/feminine) and specific commands (i.e., wider/narrower nose, thicker/thinner lips).

Attitudes Toward Blacks. (29) This scale uses 20 items to assess White people's feelings about Black people.

Ambivalent Sexism Inventory. (30) This scale uses 6 items of hostile sexism and 6 items of benevolent sexism to measure sexist attitudes.

Ambivalent Ageism Inventory. (31) This scale is constituted of 13 items measuring both hostile and benevolent forms of ageism

Participants

For part 1, 76 participants were recruited through the McGill psychology participant pool. For part 2, 1024 participants were recruited online through Mechanical Turk and paid \$0.50 to complete the survey.

Procedure, Part 1

Participants were seated at a computer, where they were asked to read and sign a consent form. Subsequently, the research assistant running

the session explained the study procedure briefly and oriented participants to the FaceGen software. Participants were then asked to first read a short description of a stranger, and then imagine the face of the stranger in the scenario with their eyes closed. 4 minutes were allowed for participants to reproduce the imaginary stranger's face on the computer using the FaceGen software. The first 8 scenarios were given to participants in a randomized, within-subject design. The last scenario was randomized between two alternatives in a between-subject design, with participants receiving either the Black male ex-criminal scenario or the White male ex-criminal scenario (Fig. S1).

Participants were then asked to complete the attitude questionnaires. Once they were done, they were debriefed about the study verbally and in written form. Each session lasted an hour and participants were awarded 1% in course credit.

Procedure, Part 2

Participants clicked on a link to access the online survey, where they were asked to rate faces generated through FaceGen by participants in part 1. The race-by-gender-by-age faces were assessed on intelligence, physical strength, attractiveness and trustworthiness. The Black and White ex-criminals' faces were rated on dimensions of attractiveness, threat, and likelihood to commit a crime. Finally, participants provided their age and gender.

Results

Data analysis was conducted separately for the non-crime and crime conditions, with 572 and 73 faces, respectively.

Mean Ratings by Social Category

Mixed effects linear regression models for the non-crime condition included race, age, and gender as potential predictors of participant ratings on the dimensions of intelligence, trustworthiness, physical strength and attractiveness. These predictors were nested within participants. Analysis revealed several significant main effects, as well as a few interaction effects.

Attractiveness (Fig. S2, Table S1). Older faces were awarded lower ratings than younger faces. This effect was moderated by race, with older age being less predictive for Black faces.

Intelligence (Fig. S3, Table S2). A marginal effect of racist beliefs on ratings of intelligence was found; more racist beliefs predicted lower scores for Black faces. An effect of age was also found, with older faces receiving lower intelligence scores than young faces.

Physical strength (Fig. S4, Table S3). Gender and race both independently predicted judgments of physical strength, with higher scores for male and Black faces. However, the gender effect was less predictive for old versus young faces, and the effect of race was larger for female faces. These findings support the initial hypothesis that men would be rated as stronger than women, and White women would be rated as least physically strong. The finding that older faces are less susceptible to gender effects feeds into the hypothesis that old faces are stereotyped more often than young ones. Given these effects, additional analysis to include participants' beliefs about race and gender were entered into the model. No mediating effect of such beliefs was found on ratings of strength. Therefore, gender and race effects do not appear to be driven by prejudicial attitudes.

Trustworthiness (Fig. S5, Table S4). Interestingly, the same pattern of results as that for attractiveness was found for trustworthiness, including the moderating effect of race. Old faces were rated as less trustworthy than young ones, but less so for Black faces. Given the redundancy of the age effect for attractiveness, intelligence and trustworthiness ratings, a secondary analysis was run to control for the effect of age on intelligence and attractiveness. Most of the effect of age on trustworthiness could be accounted for by these two other variables. In other words, ratings of intelligence and attractiveness mediated the relationship between old age and ratings of trustworthiness. Furthermore, females were rated as more trustworthy than males on average, which is concurrent with research on agency and communality. (23)

Overall, the lower ratings given to old faces on most dimensions revealed a pattern of more negative attitudes toward the aging population but were not unexpected given the literature on the subject. Results on physical strength are also worth mentioning, as they point to the relevance of intersectionality in psychological research.

Variance in Face Ratings by Social Category

In order to answer our hypotheses concerning tendencies to stereotype groups as homogenous, the variance between the ratings of faces within the same age, gender, and race group was analysed.

Attractiveness (Fig. S6, Table S5). There was significantly less variability in the attractiveness ratings of Black faces. Ratings also varied less for old faces than they did for young ones, feeding into the narrative that older people are generally perceived as a homogenous group.

Intelligence (Fig. S7, Table S6). Contrary to ratings of attractiveness, those for intelligence were actually found to vary more for old versus young faces. Notably, this effect was marginally weaker for Black faces.

Physical strength (Fig. S8, Table S7). There was a main effect of race on ratings of physical strength, with less variance for Black faces, but this was moderated by gender, so that this effect was found for female faces, but not male ones.

Trustworthiness (Fig. S9, Table S8). There was a marginal effect of race on ratings of trustworthiness, resulting in less variance for ratings of Black faces compared to White faces; this effect seemed to be moderated by age, with old Black faces varying less than young ones. Overall, these findings seem to point toward a general trend of stereotyping Black faces more than White faces. There was also a significant effect of gender on variance of trustworthiness ratings, but it was moderated by age and race. Ratings were more similar for young White male faces than they were for young White female faces.

Overall findings. Black faces were significantly more likely to be rated uniformly. Globally, Black faces being rated more similarly than White ones is relevant as it pertains to stereotyping in general. However, the fact that this effect is sometimes moderated by age or gender suggests that stereotyping may not affect all members of the same group equally.

Ratings of Ex-Criminal Faces

For the crime condition, a simple linear regression was run on participants' ratings according to race. Contrary to expectations, race did not seem to have an influence on outcomes related to criminality.

There was no difference in the estimated likelihood of committing a crime between White and Black faces, $b=0.02$, $t(0.50)$, $p=0.616$, 95% CI [-0.06, 0.10]. Similarly, race did not have an effect on perceived threat, $b=0.09$, $t(0.57)$, $p=0.571$, 95% CI [-0.24, 0.43]. To confirm the results, the analysis was run again, this time including racist beliefs and afro-typicality of the facial features. Neither had an effect on ratings of threat, which was somewhat surprising considering the literature on Afrocentrism and on racial disparities within the criminal system.

However, there was a marginal effect of race on attractiveness, $b=-0.21$, $t(-1.71)$, $p=0.093$, 95% CI [-0.45, 0.04], with White faces rated as marginally less attractive than Black faces. Once again, this was regardless of racist beliefs or facial Afrocentrism. Interestingly, we found a main effect of race on shape gender, $b=-0.88$, $t(-3.24)$, $p=0.002$, 95% CI [-1.43, -0.34] such that white faces were significantly more male-shaped than Black ones. One explanation for the co-occurrence of these two results may relate to studies which have found an association between femininity and attractiveness, and the lack thereof for masculinity. These effects were somewhat surprising, especially considering the effect of race on dimensions evaluated for the non-crime condition. A reasonable hypothesis would be that the information about crime took primacy over racial cues when participants were asked to imagine these faces.

Discussion

Overall, these findings support the idea that certain groups of people are more likely than others to be stereotyped or judged negatively. Although this is not surprising in the least, outcomes show more complex patterns of stereotyping than would be expected according to traditional views. By evaluating participants' stereotypes from the faces they created, this study examined biases in people's mental representations, rather than their ratings of real faces. Indeed, participants in part 2 were evaluating figments of other people's imagination, which were created according to Part 1 participants' beliefs about various social groups. In this sense, the stereotypes that emerged should be approached as mostly driven by perceiver characteristics. The purpose of taking this perspective is accentuating the role of the perceiver in relation to that of the target in social impression formation. Neglecting perceiver characteristics is a mistake because it leads to over-generalizations in the types of stereotypes we expect from specific agents.

Old faces were consistently perceived in a less flattering light than young faces, even for trustworthiness. On this point, results were somewhat surprising. As the stereotype content model suggests, judgments of competence are expected to be low, but ratings of warmth should be rather high. However, trustworthiness ratings were actually lower for old faces. This might be explained by the lower ratings of attractiveness and intelligence for old faces. The discrepancy between the literature and the findings may be explained by the way people interpreted "trustworthiness", for instance as something more akin to competence than to warmth. The effect of gender on perceived strength was also weaker for old faces, which is consistent with research on the discarding of people as they get older, making them more likely to be rated in a uniform way.

Despite overall lower intelligence ratings, there was significant variance in the scores given to old people, which may be attributed to the subtypes that can be found within the main category "old". (32) Depending on people's specific schemas of old people, they may think of them as being full of wisdom, or conversely, may believe that they are completely out of touch with today's reality.

Black men and women were equally likely to be rated at less intelligent than White men and women. This ties into the concept of interactions between target and perceiver characteristics (8) as people's personal beliefs about Blackness influenced how they rated Black faces relative to White ones. Furthermore, Black faces were less susceptible to the effects of age on ratings of attractiveness and trustworthiness, meaning old and young Black faces were rated similarly. Looking at variance specifically, Black faces were rated more similarly on attractiveness, a trend that could also be observed for old Black faces on trustworthiness, and female Black faces on physical strength. Together, these findings may be interpreted as evidence for the increased stereotyping of Black people compared to White people. The results mentioned above are also significant as they relate to intersectionality. Although ratings of physical strength varied less for Black people, the effect was moderated by gender, meaning that only Black female faces were rated more similarly. This may be interpreted as an instance of Black women being perceived differently than men, or White women. Feelings of trust regarding old Black men in particular were also significantly uniform, pointing to the idea that this group may possess certain

unique characteristics.

Interestingly, ratings of young white males varied significantly less than young white females. Considering the pattern of ratings for this group (stronger, more intelligent, more attractive, less trustworthy), they seem to be perceived overall as competent, and agentic. It is worth considering whether this ensemble of traits may be uniquely associated with this group in people's collective imaginary. Furthermore, it is interesting to reflect upon the comparison of young white males to young white females in the context of stereotypes about gender. Indeed, a pattern of constant comparison between maleness and femaleness was observed in the literature search on gender stereotypes, and although sex-typed stereotyping tends to seem restrictive for women, perhaps as these results suggest, they are also very much so for men.

Despite the effects of race on ratings of non-criminals, and expectations regarding the crime condition, race did not impact opinions about threat, nor criminality. One explanation for this finding is that while making the faces, participants focused on the information about crime more than any other cue, creating faces that are similarly threatening and evocative of criminal tendencies regardless of race. This would also explain the findings on attractiveness ratings. While no main effect of race was found for ratings of attractiveness in the non-crime condition, White faces in the crime conditions were rated as marginally less attractive. This once again points to the idea that faces of criminals were created somewhat differently than other faces. Coincidentally, White criminals also had more masculine features than did Black ones, suggesting that gender shape may have been the variable most affected by this condition. However, understanding the reason why White and Black men were differently impacted by this variable would require further investigation.

Limitations

Exploring people's mental representations of strangers is a novel method of studying stereotyping in person perception, and as such, results should be interpreted with caution. The use of computer-generated faces presents the advantage of giving people complete freedom in creating faces, while being a fairly easy tool to use. However, real-world interactions are filled with extra-facial cues that inform people's judgments about others, which were not present in this study. These results should therefore be considered as preliminary, and as an encouragement for others to explore this novel perspective further. Additionally, cognitive processes do not always translate into specific behaviours, and unconscious biases of our imagination may not reflect conscious beliefs either. It is thus impossible to elaborate on the potential impact of people's mental representations on the way they interact with others in daily life. Lastly, cross-level interactions between variables of interest and people's attitudes about gender, race, and age were based on a much smaller sample size and might not have allowed for sufficient statistical power. Consequently, although truly significant effects of people's beliefs on participants' ratings were not found, it is possible that the sample size was simply too small to detect an effect.

Conclusion

It appears that the faces people imagine when reading about different groups of strangers are not as similar as they would be if they depended solely on stereotypical categories of race, age and gender. Instead, people's mental representations of unknown others seem to be intersectional in nature, varying depending on the ways in which perceiver and target characteristics combine. Intersectionality was even present in specific age, race and gender categories, with different levels of variability pointing to the existence of various subgroups within the main cluster. This study demonstrates the importance of individuality in the process of stereotyping in face perception and takes a stance toward increased inclusion of intersectional theory and knowledge of the variability in age, race and gender stereotypes in the conceptualization of psychological research.

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