



# Interaction Between Race and Gender and Effect on Implicit Racial Bias Against Blacks

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## Abstract

**Background and aims:** Exposure and vulnerability to racial discrimination is not solely a function of race but the intersection of race and gender, with Black men experiencing more discrimination than Black women. This phenomenon is explained by the subordinate male target hypothesis, suggesting that majority of men specifically target men of color. If that is the case, implicit bias would be most common among the majority of men. The current cross-sectional study investigated race by gender differences in implicit bias against Blacks.

**Methods:** Data came from Harvard University's Project Implicit, an online survey, conducted during 2006-2016. Data included 444422 implicit association tests (IATs) which were taken by Blacks (n=56384) and Whites (n=388038). Using IAT, the dependent variable was implicit bias against Blacks. Independent variables were race, gender, and age. Using SPSS, linear regressions were utilized to test the additive and multiplicative effects of race and gender on implicit bias against Blacks.

**Results:** Race ( $b = 0.39$ ; 95% CI = 0.38-0.39) and gender ( $b = 0.05$ ; 95% CI = 0.05-0.05) were associated with IAT score suggesting higher implicit bias against Blacks among Whites and men. A significant interaction was found between race and gender ( $b = 0.05$ ; 95% CI = 0.04-0.07), suggesting the highest level of implicit bias against Blacks among White men.

**Conclusion:** It is not solely race and gender but their intersection that shapes social distribution of implicit bias against Blacks. This finding extends the previous literature showing that not solely race or gender but their intersection influences exposure to discrimination.

**Keywords:** Ethnic groups, Racism, Racial discrimination, Race, Whites, Blacks, African Americans, Gender, Bias, Implicit bias

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## Introduction

Implicit and explicit bias are two interconnected mechanisms behind racial health disparities in the United States.<sup>1-9</sup> Explicit bias diminishes physical and mental health of Blacks.<sup>6,10-14</sup> Blacks across age groups are victims of explicit and implicit racial bias.<sup>12,15-19</sup>

Implicit and explicit bias influence health of Blacks as they activate a number of pathophysiological pathways that cause illness over time. Overt discrimination evokes negative emotions, distress, and worries, heightens chronic stress response, and results in hyper-vigilance for discrimination.<sup>20</sup> Discrimination increases state and trait negative effect.<sup>15</sup> The discriminated individual may evaluate social interactions as harassment.<sup>21</sup> Vigilance also mediates the effects of discrimination on psychological distress.<sup>20</sup> Finally, discrimination may increase high-risk behaviors; for example, overt discrimination may

result in social isolation and unhealthy behaviors.<sup>5,22</sup> Perceived discrimination increases risk of depression,<sup>23</sup> anxiety,<sup>24</sup> suicide,<sup>25</sup> and substance use.<sup>26-28</sup> Implicit bias also influences Blacks' opportunity for employment, education, and health care.<sup>29-32</sup>

There is growing evidence suggesting that exposure and vulnerability to racial bias is a function of the intersection of race and gender, with Black men having higher exposure and vulnerability to discrimination than Black women.<sup>17,22,33-35</sup> In addition to exposure,<sup>17</sup> the intersection of race and gender also alters harmful effects of discrimination.<sup>23,36-39</sup> In a short cohort, an increase in discrimination was associated with a subsequent increase in depression of male but not female Blacks,<sup>23</sup> a finding which could be replicated over longer periods.<sup>24</sup> All this evidence suggests that exposure and vulnerability to perceived discrimination are not solely a function of race

or gender but their intersection.<sup>25,36,37,39</sup> This phenomenon may be due to the subordinate male target hypothesis,<sup>40</sup> masculinity ideologies,<sup>41</sup> or traditional gender norms.<sup>41</sup>

Most of the research on race by gender differences in bias is focused on explicit, rather than implicit bias.<sup>42</sup> While explicit bias results in mental and behavioral health problems,<sup>23,24,43</sup> there is a need to study factors that shape social patterning of implicit bias as well, which influences a wide range of domains such as interaction and quality of health care.<sup>29-32</sup>

The current study was conducted to test race by gender differences in implicit bias against Blacks. Similar to the literature on the intersection of race and gender on explicit bias,<sup>40,44</sup> and in line with the subordinate male target hypothesis,<sup>40</sup> the highest level of implicit bias was expected in White men.

## Methods

### Design and Setting

This was a cross-sectional study using the Project Implicit data (<https://implicit.harvard.edu>). Data were acquired from the Open Science Framework (<https://osf.io>). Data were collected between 2006 and 2016. Project Implicit provided publicly available data that could be used for research on a wide range of social and political attitudes as well as stereotypes against race, skin tone, age, gender, body weight, and so on. This study included participants who had selected the race-implicit association test (IAT) study from several options. The race-IAT study includes a demographic questionnaire, a questionnaire about race, political attitudes, and also a race-IAT which is being presented in a randomized order.<sup>45</sup> The battery including IAT requires about 15 minutes overall. The battery and the test are both available in several languages. The key words used (stimuli) were translated from the original language (English) to different languages by native speakers.

### Participants

This study only included tests of the individuals who were the residents of United States. A sample of 444 422 IAT which were either for a Black (n=56 384) or a White (n=388 038) individual entered this analysis.

### Measures

*Implicit Association Test.* The IAT measures the association strengths between the attributes *bad* and *good* to the concepts of *Black* and *White*. The IAT is a widely used tool in academic research assessing implicit bias and social preferences, showing that IAT is a valid test.<sup>46-52</sup> The race-IAT is shown as an effective experimental tool to assess implicit racial bias.<sup>29-32,51,52</sup>

The IAT follows a standard protocol described by

Nosek et al.<sup>49</sup> Participants categorize pictures or words representing the four categories – White, Black, good, bad - in two different sorting sets. Stimuli that represent the above four categories are presented one at a time in the center of a computer monitor. Participants are asked to categorize each of these stimuli by pressing either of two keys. In one sorting set, participants are asked to categorize pictures representing Whites and good words with one response key, while categorizing pictures representing Blacks and bad words by using another response key. In the other sorting set, participants categorize the pictures of Whites and bad words and Blacks and good words with the other. The orders of these sorting sets are randomized across test takers.

The IAT score reflects the difference in average latency between the two sorting sets. High IAT score indicates higher association between the race and evaluative categories. Positive scores indicate strong associations of Whites with good and Blacks with bad. Such positive IAT scores are interpreted as there is an implicit preference for Whites over Blacks. Conversely, negative scores indicate strong associations of Blacks with good, and the score is interpreted as an implicit preference for Blacks over Whites.<sup>46-52</sup>

*Demographic factors.* Data were collected on age (collected as date of birth), gender (male, female), and race (White/Caucasian vs Black/African American) using self-reports.

### Statistical Analysis

SPSS 22.0 was used for data analysis. Mean and frequency were reported for descriptive purposes. Pearson correlation was used to test the bivariate correlation between study variables. Adjusted b (regression coefficients) and their 95% CI were reported from multivariable analysis. *P* values less than 0.05 were considered statistically significant. Missing data was not imputed. *Complete case* analysis was used for our regression models.

Linear regressions were used for multivariable analysis. In the model, gender and race were independent variables, age was the covariate, and IAT score was the dependent variable. Multiple linear regression models were run to determine the additive and multiplicative effects of race and gender on IAT score. In the first step, a main effect model was estimated. In the next step, the interaction term between race and gender was added to the model.

## Results

### Descriptive Statistics

Table 1 summarizes the descriptive statistics of the sample who took the IAT. Most of the participants were White (87.31%) and women (60.72%). On average, participants were 28.79 years old. Average IAT score was

0.28 ± 0.44 (Table 1).

Table 2 summarizes the IAT scores based on the intersection of race and gender. White and Black men showed significantly higher IAT scores compared to White and Black women, indicative of higher implicit bias against Blacks among men compared to women (Table 2).

### Bivariate Associations

Table 3 summarizes correlations between age, race, gender, and IAT score. Age was not associated with IAT in bivariate association. Male gender and White race, however, were both positively correlated with IAT scores, suggesting that men and Whites had higher implicit bias against Blacks (Table 3).

### Linear Regression Models

Table 4 summarizes the results of 2 linear regressions with IAT score as the dependent variable and race, gender, and age as the independent variables. *Model 1* only

**Table 1.** Descriptive Statistics in the Pooled Sample (n = 444 422)

	No.	%
<b>Race</b>		
White	388038	87.31
Black	56384	12.69
<b>Gender</b>		
Men	147130	39.28
Women	227437	60.72
	<b>Mean</b>	<b>SD</b>
Age (y)	28.79	44.99
IAT	0.28	0.44

Abbreviation: IAT, implicit association test.

**Table 2.** Descriptive Statistics of the IAT Based on the Intersection of Race and Gender

Race by Gender Group	IAT Scores	
	Mean	SD
Black Women*	28.60	35.36
Black Men*	30.34	39.69
White Women*	28.37	12.29
White Men*	30.25	27.34

Abbreviation: IAT, implicit association test.

\*  $P < 0.05$  for comparison of four groups, using ANOVA test.

**Table 3.** Correlation mMatrix in the Pooled Sample

	1	2	3	4
1 Age	1.00	0.00	0.01*	0.00
2 Gender (Men)		1.00	0.04*	0.06*
3 Race (White)			1.00	0.28*
4 IAT				1.00

Abbreviation: IAT, implicit association test.

\*  $P < 0.01$ , using Pearson Correlation test.

included main effects. *Model 2* included an interaction term between race and gender.

*Model 1* showed that race ( $b = 0.39$ ; 95% CI = 0.38-0.39) and gender ( $b = 0.05$ ; 95% CI = 0.05-0.05) were associated with IAT score suggesting that Whites and men had higher levels of implicit bias against Blacks. *Model 2* showed a significant interaction was found between race and gender ( $b = 0.05$ ; 95% CI = 0.04-0.07), suggesting that White men had the highest level of implicit bias against Blacks (Table 4).

### Discussion

The study showed that White men had the highest level of implicit bias against Blacks compared to all other groups included in this analysis. The result that White men had the highest implicit bias is alarming as White men are most economically privileged group and have the highest level of political power in the United States. There is a need to invest on policies and programs that reduce explicit and implicit bias in the United States.

Race and gender interact when it comes to implicit (automatic) bias against Blacks. This pattern may explain police brutality, mass incarceration, stop and frisk policies, and other practices that are disproportionately perpetrated by White men against Black men.<sup>53,54</sup> Implicit bias may also be involved in teachers' discrimination against Black males that results in school drop-out of Black boys that contribute to the school to prison pipeline.<sup>55-58</sup> Black parents provide more race socialization messages to Black boys compared to Black girls.<sup>59,60</sup>

This study expanded the existing understanding regarding the interaction between race and gender, and their influence on shaping exposure and vulnerability to racial bias. Environmental stressors such as discrimination may have larger effects on depression of Black males than they do on Black women.<sup>61</sup> In a study, skin tone increased discrimination against Caribbean Black males but not females.<sup>62</sup> In another study among Caribbean Black youth, males were more sensitive than females to the effects of perceived discrimination on substance use.<sup>62</sup> In another study, discrimination better predicted substance use for Black males, compared to Black females.<sup>39</sup> Recent experience of discrimination increases risk of smoking among Black men, but not Black women.<sup>63</sup> Similar gender differences in the effects of discrimination are reported for other domains of psychopathology including psychological distress,<sup>37</sup> depressive and anxiety symptoms,<sup>23,24</sup> and major depressive disorder.<sup>61</sup> All these findings collectively suggest that Black males are the most likely victims of discrimination, and a significant proportion of psychopathology in Black males can be attributed to discrimination.

**Table 4.** Summary of Linear Regressions in the Pooled Sample With the Implicit Association Test (IAT) Score as the Dependent Variable

	Model 1 Main Effects			Model 2 Main Effects + Race by Gender Interaction		
	b (SE)	95% CI	95% CI	b (SE)	95% CI	95% CI
Age	-0.01(0.00)	-0.02--0.01	<0.001	-0.01(0.00)	-0.02--0.01	<0.001
Gender (Men)	0.05(0.00)	0.05-0.05	<0.001	0.00(0.01)	-0.01-0.01	0.671
Race (White)	0.39(0.00)	0.38-0.39	<0.001	0.37(0.00)	0.36-0.38	<0.001
Race × Gender (White Men)	-	-	-	0.05(0.01)	0.04-0.07	<0.001
Intercept	-0.08(0.00)	-0.08--0.07	<0.001	-0.06(0.00)	-0.07--0.05	<0.001

Abbreviation: IAT, implicit association test.

In the United States, race and gender interact and affect exposure and vulnerability to discrimination, with Black men experiencing the highest levels of exposure<sup>36</sup> and vulnerability<sup>23</sup> to discrimination. In a similar pattern, this study showed that interaction of race and gender also contribute in shaping the social patterning of having an implicit bias against Blacks. Thus, perpetration and victimization of racial bias are more common among males than females. Black women experience less discrimination and show lower levels of vulnerability to discrimination than do Black men. Similarly, White women hold lower levels of implicit bias against Blacks than White men.<sup>64-73</sup>

There are some theoretical frameworks that may explain why males are main perpetrators and victims of racial bias. According to the subordinate male target hypothesis, minority men are subject to more experiences of discrimination than minority women.<sup>43</sup> According to subordinate male hypothesis, we expect more discrimination against males across various ethnic minority groups. Based on this theory it is not race but the intersection of race and gender that determines social patterning of discrimination. Black males have been stereotyped as aggressive and anti-intellectual.<sup>34,35,74,75</sup> Black men have been also stereotyped as “endangered, aggressive, angry, superhuman, subhuman, lazy, hyperactive, jailed, and paroled, on probation, lost, loveless, incorrigible, or just simply self- destructive”.<sup>76,77</sup>

In line with subordinate male target hypothesis, racial discrimination may be mostly a male to male phenomenon. As a result, understanding masculinity and gender norms are essential for understanding act, experience, and vulnerability to discrimination. There are attempts to understand how hegemonic masculine beliefs impact experience and vulnerability to discrimination.<sup>40</sup> Racial identity may also have a role in shaping individual's exposure and interpretations of racial discrimination.<sup>5,19,35,64,65</sup> Racial attribution also alters the vulnerability to discrimination.<sup>38</sup> It is still unknown how masculinity and other social norms explain race by gender differences in implicit bias.

Hegemonic masculine ideologies that emphasize a

need for dominance and hierarchy may explain why male gender is mostly responsible for act of discrimination, and also most vulnerable to experience of discrimination. There are at least two studies showing that masculine beliefs may moderate the effect of racial discrimination on depressive symptoms among Black men, suggesting that high masculine beliefs place the individual at a vulnerability status to discrimination and related social stress.<sup>66,67</sup> In addition to orientation for dominance, males with higher hegemonic masculinities may have lower empathy, as masculine ideologies also reflect restrictive emotionality.<sup>40</sup> With the same argument, masculine beliefs may be a reason White males have the highest implicit bias against Blacks.<sup>35</sup>

Race, gender, age and socioeconomic status (SES)<sup>15,68-71</sup> also influence exposure and vulnerability to discrimination. Among Black males, high SES increases vulnerability to discrimination among Blacks, particularly males.<sup>72,73</sup>

Men and women differ in using coping styles in their daily lives.<sup>35,78</sup> Overall, men more frequently use confrontational coping,<sup>79</sup> while women have a higher tendency to avoid stressors.<sup>78</sup> Compared to women, men also have a higher tendency in acting out their stress<sup>80</sup> and externalizing their emotions.<sup>81</sup> These findings may explain why implicit bias is higher in White men than White women.

### Implications

The findings that White men have higher implicit bias against Blacks have implications for public policy as well as health care system. In the community, the most privileged group, White men, need the most training for reduction of implicit bias. This is particularly important given most of legislators and powerful officials are White men. The same may also be probably true in the health care system. Implicit bias is a source of racial disparities in health. Patients who have higher levels of racial bias are less likely to engage in high quality communication with their physicians who do not belong to their race. Health care providers who have high levels of implicit bias are also at risk of providing low quality care for patients who

are not of their own race. This study suggests that White male physicians may probably require more training for reduction of implicit and explicit racism and bias against Black patients, compared to White female physicians. At the same time, Black male patients may also require more training in a similar way. These findings may also offer an explanation for why in most cases, men have a lower quality of communication with their doctors regardless of their race.

### Limitations

There are a few limitations to this study. First, we did not have a comprehensive list of demographic and socioeconomic factors. A more detailed information on place, nativity, and social class of the individuals could provide more information regarding who holds the highest levels of implicit bias against Blacks. Another limitation was that other races were not considered. Finally, the study only focused on implicit bias against Blacks. A self-report measure of explicit bias could show the degree of association between implicit and explicit bias against Blacks. Despite these limitations, large sample size and using an intersectionality approach were the two main strengths of the study. The results are also unique and extend the literature.

### Future Research

It is still unknown how class, place, age, gender, and race interact in shaping implicit bias. It is also unknown whether education can mask implicit bias or not. Future research should replicate these findings for bias against other marginalized and stigmatized groups. Research should test determinants of implicit bias against obesity, sexual minorities, and other minority groups.

### Conclusion

This study showed that it is not race and gender per se but their intersection that shapes social patterning of implicit bias against Blacks. The finding that White men have the highest levels of implicit bias is concerning as White men are most politically powerful sociodemographic group in the United States. There is a need to invest on policies and programs that reduce explicit and implicit bias in the United States. Although such programs should target all genders and races, such programs should not leave out White men, as they hold higher levels of implicit bias against Blacks.

### Ethical Approval

All participants provided online informed consent. The institutional review board (IRB) of the Harvard University approved the study protocol (Name of the Project = Implicit Social Cognition on the Internet; IRB number =

10453). All the data were kept fully confidential.

### Conflict of Interest Disclosures

None.

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