

BLACK RACIAL IDENTITY AS A MEDIATOR OF CARDIOVASCULAR REACTIVITY TO RACISM IN AFRICAN-AMERICAN COLLEGE STUDENTS

Objectives: The purpose of the present study was to examine the ability of Black racial identity to mediate cardiovascular reactivity to racism. The Multidimensional Model of Racial Identity (MMRI), which consists of four dimensions, salience, centrality, regard, and ideology was used to define Black racial identity. The subdimensions of ideology are oppressed minority, nationalist, humanist, and assimilationist racial identities.

Design and Methods: Heart rate, cardiac output, stroke volume, and blood pressure were measured in 72 African-American men as they viewed a videotaped scene depicting racial profiling and a neutral scene. We hypothesized that individuals with high levels of Black-oriented identities (centrality, public regard, private regard, oppressed minority, and nationalist) would be less stressed by the racial profiling scenes than those low in these identities. In addition, we predicted that individuals with high levels of non-Black-oriented identities (assimilationist, humanist) would be more stressed by the racial profiling scenes than those with low levels of these identities.

Results: Private regard, humanist, and assimilationist racial identities were significantly associated with increased cardiovascular reactivity to the scenes. Specifically, private regard significantly predicted cardiac output and stroke volume responses to the scenes. In addition, assimilationist and humanist racial identities were associated with greater blood output and faster heart rates in response to the scenes.

Conclusions: Although private regard (Black oriented) and assimilationist and humanist (non-Black oriented) racial identities showed elevated cardiovascular reactivity to the scenes, the underlying mechanisms of these associations may differ. (*Ethn Dis.* 2006;16: 108–113)

Key Words: Assimilationist Racial Identity, Cardiac Output, Private Regard Racial Identity, Racism, Stroke Volume

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INTRODUCTION

Adoption of anti-Black values and beliefs may lead African Americans to acquire identities that lower their defenses against racism.^{1,2} Empiric evidence to support this argument found that non-Black-oriented racial identities, those seen in African Americans whose race is not central to their self-identity, were associated with poor mental health in African Americans. For example, non-Black-oriented identities have been linked with low levels of self-esteem,³ high levels of substance abuse,^{4,5} and high levels of internalized racialism.⁶

In contrast, Black-oriented racial identities have been associated with psychological health and well-being in African Americans. Black-centered racial identities have been positively associated with mature psychological defenses.^{7–10} In more recent research, Caldwell et al¹¹ examined the relationship among racial identity, maternal support, and perceived stress in 512 African-American 12th graders. They found that African Americans whose race was central to their self-identity and African Americans who had positive feelings about their race had high levels of maternal support (caring, concern, advice) and low levels of perceived stress. Caldwell et al¹² examined the ability of Black racial identity to protect African-American youths from behaving violently. The investigators found that African-American males who viewed their race as central to their self-identity engaged in fewer violent behaviors than those whose race was not central. The investigators concluded that having your race as an essential part of your identity may

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reduce stress-related violence in African Americans.

MULTIDIMENSIONAL MODEL OF RACIAL IDENTITY

Several models have been used to assess racial identity in African Americans.¹³ While these models have contributed greatly to the understanding of Black racial identity, the Multidimensional Model of Racial Identity (MMRI)^{3,14} considers the historical and cultural significance that race has played in the experiences of African Americans and extends other identity theories by including situational stability and situational variability dimensions of racial identity.^{3,14} The MMRI consists of four dimensions: salience, centrality, regard, and ideology. Salience, the only situational variability dimension, refers to the extent to which race is central to the self-concept of African Americans in various situations. A situationally stable racial identity, centrality, is seen in African Americans who view race as an essential part of their identity. While salience and centrality emphasize the inclusion of race in Black self-identity, regard and ideology assess the value individuals place on being an African American. Specifically,

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private regard refers to the extent to which African Americans feel positively about being a member of their ethnic group as well as African Americans in general. Public regard refers to the extent to which African Americans feel others view African Americans positively. Ideology refers to the way African Americans believe members of their group should behave and consists of four dimensions: oppressed minority, humanist, assimilationist, and nationalist. Oppressed minority is a viewpoint that emphasizes the commonalities between African Americans and other oppressed minorities. The assimilationist ideology emphasizes the commonalities between African Americans and other Americans. Humanist ideology is a viewpoint that emphasizes the commonalities among all humans, and nationalist ideology is a viewpoint that emphasizes the uniqueness and importance of being of African descent.

BLACK RACIAL IDENTITY AND RACISM

Research on Black racial identity and racism has focused mainly on the influence of group identification on perceptions of racial discrimination. Research shows that African Americans who identify with their ethnic group tend to label negative ambiguous situations as racially oriented.¹⁴⁻¹⁶ Individuals with Black-oriented racial identities habituate to the racism experienced in their daily lives, and this habituation may buffer the psychological effects of racism. In support of this assertion, Sellers and Shelton¹⁷ found that African Americans whose race is central to their identity reported experiencing more incidents of racial discrimination and that the positive feelings about their race appeared to protect individuals from the negative psychological consequences of racism.

Although Black-centered racial identities buffer the negative effects of racism on mental health, the ability of

these identities to mediate the cardiovascular effects of racism has not been clearly established. Racism contributes to the etiology of cardiovascular diseases/illnesses by eliciting excessive cardiovascular reactivity in African Americans.¹⁸⁻²⁰ Only two studies to date have examined the relationship between Black-oriented racial identities and vascular responses to stress in African Americans. Thompson, Kamarck, and Manuck²¹ examined the relationship between transitional racial identity and resting blood pressure responses of African-American male and female adults. Transitional racial identity is characterized by a rejection of White culture and an intense concentration on the African-American culture.²¹ The investigators found that transitional identity was positively correlated with resting systolic and diastolic blood pressure and significantly mediated these vascular indices. Torres and Bowers²² reported similar findings for the internalization theme of racial identity. Internalization is an attitude seen in African Americans who value their culture and also respect people of other cultures. Torres et al²² found a positive correlation between internalization and systolic blood pressure responses to a math test and to a description of a frustrating situation with racial overtones. Based on the Torres et al²² and Thompson et al²¹ studies, a relationship between Black racial identity and stress clearly exists; however, use of a racially noxious stressor may help one to understand the underlying mechanisms of this relationship. In addition, studying additional cardiovascular indices such as cardiac output and stroke volume may help to elucidate the relationship between Black racial identity and racism.²³ To this end, we examined the ability of Black racial identity to mediate cardiovascular responses to racism. Heart rate, stroke volume, cardiac output, and systolic and diastolic blood pressures were measured as 72 African-American males viewed videotaped scenes depict-

ing racial profiling. Since African-American men are likely to experience significant and recurring incidents of racism,²⁴ they were the focus of this study. The following hypotheses were proposed:

Hypothesis 1: Given that participants with Black-oriented identities (those scoring high in centrality, public regard, private regard, oppressed minority, nationalist) are more likely to view racism as an everyday occurrence for African Americans, we hypothesized that they would be less stressed by the racial profiling scene than participants with non-Black-oriented identities (humanist and assimilationist ideologies).

Hypothesis 2: Since African Americans with non-Black-oriented identities do not report perceiving racism to a great extent,¹⁷ we hypothesized that participants with these identities would not have the defenses necessary to cope with this type of stressor and would be more stressed by the racial profiling scene than their Black-oriented counterparts.

METHODS

Study Sample

Seventy-two African-American male college students, between 18-34 years of age, (mean 20.5 years) participated in this study. Students who were under the age of 18, had cardiovascular disorders, or were taking prescribed medications were not allowed to participate in the study. The participants were citizens of the United States and were recruited from universities and colleges in the Southeast. All participants volunteered to be in the study and were paid \$15 for their participation.

Materials and Apparatus

A Medex NCCOM3 cardiovascular impedance machine was used to obtain heart rate, stroke volume, and cardiac output. An Ohmeda Finapres 2300

blood pressure monitor was used to obtain noninvasive continuous systolic and diastolic blood pressure measurements. A racial profiling scene was used to induce stress. The scene showed White policemen following, stopping, and harassing a young African-American male driver because of his race. A neutral scene, which showed a rabbit hopping around an open field, was also used. The scenes were counterbalanced such that each scene was seen first and second an equal number of times.

Measures

The Multidimensional Inventory of Black Identity (MIBI)³ was given to all participants. The 51-item MIBI consists of six subscales that represent three dimensions of Black-oriented racial identity (centrality, private and public regard, and ideology) and two dimensions of non-Black-oriented racial identity (assimilationist, humanist). The salience racial identity was not included in the MIBI. The six subscales are centrality, private regard, nationalist, oppressed minority, assimilationist, and humanist. The Cronbach α ranges from .60 (private regard) to .79 (nationalist).

Procedure

Data were collected during two sessions, a stressor session and a questionnaire session. In the stressor session, cardiac output, stroke volume, heart rate, and diastolic and systolic blood pressures were measured as the participants viewed the racial profiling scene and the neutral scene on videotape. Measurements were taken before each scene (prestessor period), during the scenes (stressor period), while the participant reflected on the scenes (reflection period), and while the participant recovered from the scenes (recovery period). Each period lasted two minutes, and three cardiovascular measurements were taken 20 seconds into the period. Half of the participants were given the psychological question-

Table 1. The ability of private regard to predict cardiac output and stroke volume

	<i>B</i>	<i>R</i> ²	<i>P</i>
<i>Cardiac output</i>			
Racial profiling			
Prestessor	-.38	.19	.01
Stressor	-.30	.17	.05
Recovery	-.41	.18	.01
Neutral			
Prestessor	-.37	.17	.05
Stressor	-.30	.19	.05
<i>Stroke volume</i>			
Racial profiling			
Prestessor	-.44	.19	.01
Stressor	-.44	.22	.01
Reflection	-.41	.18	.01
Recovery	-.40	.15	.01
Neutral			
Prestessor	-.44	.20	.01
Stressor	-.44	.20	.01
Reflection	-.41	.21	.01
Recovery	-.39	.20	.01

naires before viewing the scenes, and half were given the questionnaires at the end of the recovery period of the last scene. At the completion of the last session, participants were debriefed and compensated \$15.

Analysis

A multiple regression analysis was used to determine the ability of the dimensions of centrality, private regard, and public regard and the oppressed minority, humanist, assimilationist, and nationalist ideologies to predict each cardiovascular measure. To further assess the relationship between Black racial identity and cardiovascular reactivity to racial profiling, a correlation analysis was used to examine the relationship among racial identities and cardiovascular measures. The median was used to divide participants with the highest levels of each racial identity and participants with the lowest levels. Lastly, a $2 \times 4 \times 2$ multivariate analysis of variance (MANOVA) was conducted to examine the effects of the levels (highest, lowest) of each racial identity, the periods (prestessor, stressor, reflection, recovery), and the scenes (racism, neutral) on each cardiovascular measure.

RESULTS

Hypothesis I stated that participants who scored high in the Black-oriented identities would be less stressed by the racial profiling scenes than those who scored low in these identities. This hypothesis was not supported by the results. Private regard was the only significant predictor of cardiovascular reactivity (see Table 1 for significant regression values). Private regard significantly predicted cardiac output during the prestessor, stressor, and recovery periods of the scene with the racial profiler and the prestessor and stressor periods of the neutral scene. Private regard also significantly predicted stroke volume during all periods of both scenes. These findings revealed an inverse relationship between private regard and cardiac output and between private regard and stroke volume, which indicates that the hearts of participants with high levels of private regard pumped out less blood in response to the scenes, which resulted in their being more aroused by the scenes than their low-scoring counterparts.

In support of the regression analysis, the correlation findings revealed that

Table 2. Significant correlations among private regard, cardiac output, and stroke volume

	Pre	Stressor	Reflec	Rec
<i>Cardiac output</i>				
Racial profiler	-.32	-.30	—	-.39
Neutral	-.31	-.31	-.26	
<i>Stroke volume</i>				
Racial profiler	-.33	-.34	-.31	-.28
Neutral	-.36	-.36	-.31	-.38

All correlations are significant at the $P < .05$ level.

Pre=prestessor period; Stressor=stressor period; Reflec=reflection period; Rec=recovery period.

private regard was negatively correlated with cardiac output during the prestessor ($r = -.32$, $P = .006$) and stressor ($r = -.30$, $P = .012$) periods of the racial profiling scene and the prestessor ($r = -.31$, $P = .009$), stressor ($r = -.31$, $P = .008$), and reflection ($r = -.26$, $P = .03$) periods of the neutral scene (see Table 2 for all significant correlation values). Private regard also was negatively correlated with stroke volume during the prestessor ($r = -.33$, $P = .005$), stressor ($r = -.34$, $P = .003$), reflection ($r = -.31$, $P = .009$), and recovery ($r = -.28$, $P = .017$) periods of the scene with the racial profiler and the prestessor ($r = -.36$, $P = .002$), stressor ($r = -.36$, $P = .002$), reflection ($r = -.31$, $P = .008$), and recovery ($r = -.38$, $P = .001$) periods of the neutral scene. These correlations indicate that the hearts of those participants with high levels of private regard pumped out less

blood as they viewed the scenes. Compared to the resting state, the heart needs to pump more blood during stressful situations in an effort to prepare the body for fight or flight. The low levels of blood output by the participants with private regard identity suggest that they were more aroused by the scenes than those low in private regard. No significant cardiovascular correlate of any of the other Black oriented racial identities was seen.

A MANOVA was used to examine the effects of period, scene, and racial identity on each cardiovascular measure. A significant main effect for private regard was found for cardiac output during the prestessor ($F(1) = 13.19$, $P = .001$), stressor ($F(1) = 11.25$, $P = .001$), reflection ($F(1) = 8.56$, $P = .005$), and recovery periods ($F(1) = 7.70$, $P = .007$) of the racial profiling scene. A significant main effect for private

regard was also found for stroke volume during the prestessor ($F(1) = 11.19$, $P = .001$), stressor ($F(1) = 12.56$, $P = .001$), reflection ($F(1) = 8.06$, $P = .006$), and recovery ($F(1) = 6.73$, $P = .012$) periods for the racial profiling scene (see Table 3 for means). Overall, the MANOVA findings indicate that participants who scored high on this identity were more stressed by the racial profiling scenes than their low-scoring counterparts.

Hypothesis II predicted that participants high in non-Black-oriented identities (humanist and assimilationist) would be more stressed by the racial profiling scenes than those low in these identities. Supporting the hypothesis, heart rate and stroke volume significantly differentiated between participants who scored high and low in the humanist and assimilationist racial identities. Participants who scored high in the humanist racial identity had higher heart rates during the prestessor, ($F(1) = 7.04$, $P = .010$) and stressor ($F(1) = 4.36$, $P = .04$) periods of the racial profiling scene compared to their low humanist counterparts. Stroke volume differentiated between participants high and low in the assimilationist racial identity during the prestessor ($F(1) = 7.3$, $P = .009$), stressor ($F(1) = 7.1$, $P = .010$), reflection ($F(1) = 8.6$, $P = .005$), and recovery ($F(1) = 4.33$, $P = .041$) periods of the racial profiling scene and during the prestessor ($F(1) = 8.1$, $P = .006$), stressor ($F(1) = 8.08$, $P = .006$), reflection ($F(1) = 9.24$, $P = .003$), and recovery ($F(1) = 7.8$, $P = .007$) periods of the neutral scene. The findings indicate that those participants with high levels of these identities were more aroused by the scenes than those with low levels.

DISCUSSION

The first major finding of the study showed that private regard was a significant predictor of cardiac output and

Table 3. Means and standard deviations for each cardiovascular index and racial identity

	Means	Standard Deviations
Heart rate (bpm)	74.6	10.4
Stroke volume (mL)	98.7	25.9
Cardiac output (L/mm)	7.2	1.8
Systolic blood pressure (mm Hg)	119.3	16.0
Diastolic blood pressure (mm Hg)	75.9	12.8
Centrality	4.15	.78
Private regard	3.83	.40
Public regard	2.11	.70
Oppressed minority	4.31	.67
Nationalist	4.08	.77
Assimilation	4.19	.69
Humanist	4.56	.69

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stroke volume during the racial profiling and neutral scenes. Contrary to the hypothesis, the results for this study indicated that the more African Americans feel positively about their race, the more aroused they were by the scenes. These unexpected findings may be attributed to the ability of racially noxious stimuli to elicit physiological arousal in African Americans with a private regard racial identity. Shelton et al¹⁴ and Operario et al¹⁶ found that African Americans whose race is central to their identity were likely to attribute an ambiguous situation to racial discrimination. Similarly, Sellers et al¹⁷ examined the relationship among racial identity, racial discrimination, and psychological distress and found that African-American males with high levels of private regard and public regard perceived racial discrimination more often than African-American males with low levels of these identities. According to Sellers et al,²⁵ African Americans who identify with their race may possess characteristics that result in racial discrimination from individuals of other racial groups. Whereas racial discrimination has been associated with increased cardiovascular reactivity in African Americans,^{19,20,26} the findings in the present study may be attributed to the sensitivity of individuals with the private regard identity to perceive racism and their proclivity to respond negatively to it.

The second major finding of the study showed that, as predicted, hu-

manist and assimilationist identities significantly affected heart rate and stroke volume reactivity to the scenes. Specifically, participants with high levels of these identities were more aroused by the scenes than their low-scoring counterparts. The lack of appropriate coping strategies by this group may have caused African Americans with these identities to have greater cardiovascular reactivity to racism. For example, Thompson et al²⁷ examined the effects of stress caused by the assimilation of African Americans into the dominant White European culture and found that individuals who do not believe their race is central to their identity experienced more psychological distress during the assimilation process. In addition, Fischer et al²⁸ examined the relationship between Black racial identity and anger expression and reported that a Black racial identity seen in African Americans who reject their Black race and identify with the White race was positively associated with suppressing anger during stressful, anger-provoking situations. The assimilation/acculturation process that African Americans with non-Black racial identities aspire to achieve may not prepare them for the harmful physiological effects of racism.

SUMMARY

Since racism has detrimental psychological and physiological effects on African Americans, we must find factors that mediate these adverse effects. Black-centered racial identities reduce the negative psychological effects of racism; however, the effects of these Black racial identities on physiological reactivity to racism had not been determined. To this end, the present study examined the ability of Black racial identity to mediate cardiovascular reactivity to racism. The results revealed that private regard and assimilationist and humanist racial identities were associated with greater blood output

and faster heart rates in response to the scenes. While these racial identities had an increase in physiological responses to racism, the underlying mechanisms of these associations may differ. The increase in blood output by the participants with the private regard identity may be attributed to their perceptions of racism. The assimilation process and their inability to cope with psychological stressors in general may have caused the increase in blood output and heart rates by participants with the assimilationist and humanist ideologies.

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