



## Heterogeneity of the Link between Depression and Self-Esteem Based on Race

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### ABSTRACT

**Background:** Although the association between major depressive disorder (MDD) and low self-esteem is well established, we do not know if race and ethnicity modify the magnitude of this link.

**Objectives:** Using a nationally representative sample of adults in the United States, we explored whether or not race alters the association between MDD and self-esteem.

**Materials and Methods:** Data came from the National Survey of American Life (NSAL), a nationally representative household survey with 3,570 African Americans (Blacks) and 891 Non-Hispanic Whites. Low self-esteem (Rosenberg Self-Esteem Scale) was the dependent variable, MDD (Composite International Diagnostic Interview) was the independent variables, gender, age and educational level were controls, and race was the focal moderator. Logistic regressions were used for data analysis.

**Results:** In the pooled sample, MDD and low self-esteem showed reciprocal associations, above and beyond all covariates. Our model showed significant interaction between race and MDD, suggesting a stronger association between MDD and self-esteem among Blacks compared to Whites. We could find such interactions among men but not women.

**Conclusion:** Depression and low self-esteem are more strongly linked among Blacks than Whites, particularly among men. It is not clear whether depression leaves a larger scar on self-esteem for Blacks or that Blacks are more vulnerable to the effect of low self-esteem on depression.

**Keywords:** Major Depressive Disorder; Ethnic Groups; Self-Esteem

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### Introduction

Negative evaluation of self is a core element of depression (1-3). Based on Beck's Cognitive Theory, depression is mainly composed of negative evaluation of self, the world, and the future (4,5). Empirical evidence also supports Beck's

theory, as individuals develop negative evaluations about self, following experiencing failure, which in turn increases risk of depression (6).

People with low self-esteem are at higher risk of depression, and people with depression

are more likely to feel worthless and inadequate. High self-esteem is essential for maintaining emotional well-being (7). Directionality of the association between depression and low self-esteem has been a matter of debate for decades (8,9), with theoretical work and empirical evidence suggesting bidirectional links between depression and low self-esteem. Based on the *scar model*, depression deteriorates subsequent self-esteem, suggesting that depression leaves “scars” on the individual’s self-evaluation (10-12). Based on the *vulnerability model*, low self-esteem is a causal risk factor for future depression (13). A meta-analysis of 77 longitudinal studies with about 35,000 participants indicated that the links between depression and self-esteem are reciprocal (14).

Self-esteem levels vary across race and ethnic groups (15). A study using the Rosenberg Self-Esteem Scale among adolescent samples from four countries (U.S., China, Czech and Korea) showed that, on average, the two subscales of self-esteem scores were higher among American and Chinese adolescents than Czech or Korean adolescents (3). Chinese people have lower total self-esteem than North Americans (16,17), possibly because self-enhancement is unfavorable in East Asian cultures (17). Research has also indicated that self-esteem better predicts emotional well-being in individualistic rather than collectivist cultures (16).

There is a need to study racial, ethnic, and cultural differences in the link between depression and evaluation of the self, others, and future. A growing body of research suggests that our social group membership may shape how our depression is accompanied with dysfunctional attitudes

about ourselves, people around us, and our future (18,19). While depressive symptoms were more strongly associated with poor evaluation of future among Whites in a very recent study (18), in another study, higher level of depressive symptoms was associated with lower level of mastery among White but not Black older Americans (19). Thus, cognitive elements of depression may have different roles in depression across ethnic groups (4,5). Thus, research should still explore whether or not cultural groups differ in the salience of components of Beck's Cognitive Theory.

Based on the *differential effect hypothesis*, diverse populations including race and ethnic groups have different vulnerabilities and resilience to the effects of the very same risk and protective factors on the same health outcomes (20-22). This hypothesis is distinct from the traditional approach in the health disparities literature which has attributed different levels of health outcomes to *different exposures* (23). Built on the *differential effect hypothesis*, this work conceptualized the self-esteem - depression link as a heterogenic association, as psychosocial and medical correlates of depression have shown to vary based on race and ethnicity (23,24-31). That is race moderates the association between self-esteem and depression.

In this study we hypothesized that race modifies the association between depression and self-esteem. We also explored whether this effect modification depends on gender. Instead of studying additive effects of race, gender, and depression on self-esteem, we were interested in the interactive (non-linear) effects of race, gender, and depression on self-esteem. To provide generalizable results, we used data from National Survey of

American Life (NSAL), a nationally representative study in the United States.

## Materials and Methods

This cross sectional-analytical study used data from the National Survey of American Life (NSAL), 2003. The Institutional Review Board of the University of Michigan approved recruitment and consent procedures.

### *Participants:*

The NSAL used a national household probability sample of African American, and non-Hispanic White individuals 18 years and older. Sampling design, procedures, and interviewer training and supervision have been described previously (32,33). The NSAL has applied a multi-stage sampling design. The 'core' sample for the NSAL was a national area probability sample from which African Americans and Whites were sampled. NSAL also had a special supplemental sample of households in areas of high Caribbean Black residential density. Similar to the National Survey of Black Americans, 1979–80, the NSAL core sample was optimal for drawing the African-American sample. The NSAL national area probability sample was selected independently of other CPES samples.

### *Interview:*

Data was collected through face to face computer-assisted (86%) or telephone (14%) interviews. Interviews typically lasted an average of 2 hours and 20 minutes. All interviews were conducted in English. The final response rate was 72.3% overall.

### *Measures:*

Socio-demographic information collected for this study included age, sex, income, marital status, employment status, and educational level.

**Self-Esteem.** Participants completed the 10-item Rosenberg Self-Esteem Scale, (RSES, Rosenberg, 1965) (34). The responses on the scale were measured on a 5-point Likert scale: 1 (strongly agree), 2 (agree), 3 (neutral), 4 (disagree), and 5 (strongly disagree). Six items are positively-worded (items 1, 2, 4, 6, 7, and 8) whereas the remaining four are negatively-worded (3, 5, 9, and 10). Negative items were reverse-coded prior to data analysis. Addition of the item scores gave an overall score ranging from 10–40 with higher score indicating lower self-esteem. Several studies have used mean score to define low and high self-esteem (35–38).

**Outcome.** Lifetime and twelve month MDD (MDD, MDE, MDDH) were measured using a modified version of the World Mental Health Composite International Diagnostic Interview (CIDI). The CIDI is a fully structured diagnostic interview for evaluation of a wide range of *DSM-IV* psychiatric disorders and has been used reliably on the World Mental Health project (39). The CIDI-based interviews are being conducted by trained lay interviewers to generate diagnoses of lifetime, 12-month, and 30-day *DSM-IV-TR/ICD-10* disorders. Clinical reappraisal studies have documented generally good concordance of CIDI diagnoses with diagnoses made by psychiatrists (40–42). Validity of CIDI among Blacks and ethnic groups of Blacks has been explored previously (43).

### *Statistical Analysis:*

Stata 13 (Stata Corp., College Station, TX, USA) was used for data analysis. As the NSAL used a multistage sample design involving clustering and stratification to account for the complex design, weights were applied to provide nationally representative results. Standard errors were calculated using

Jackknife method, based on strata, clusters, and non-response weights. Sub-population analyses for surveys were applied. Among the pooled sample, and also men and women, we fitted logistic regressions considering poor self-esteem as the dependent variable, and 12-month depression (MDD) as independent variables, age and education as controls, and race and gender as moderators. First, in the pooled sample, main effects of race, gender, and education on self-esteem were determined (Table 2). Then, we included depression (Table 3). Finally, we added the interaction term between race and depression, separately for men and women (Table 4). Adjusted Odds Ratios (OR) and 95% Confidence Intervals (CI) were reported. *p*-value less than 0.05 was considered statistically significant.

## Results

Table 1 presents descriptive statistics in the pooled sample, and based on race, gender, and their intersection.

Table 2 summarizes logistic regressions with race as the predictor and high self-esteem as the outcome in the pooled sample, as well as based on gender. While men and Whites had higher odds of high self-esteem, education was also linked to self-esteem.

Table 3 shows a summary of logistic regressions with race and MDD as predictors, and high self-esteem as the outcome, in the pooled sample, and based on gender. Based on these models, in the pooled sample, and among men, and women, MDD was associated with lower odds of high self-esteem.

Table 4 presents a summary of logistic regressions with race, MDD, and race  $\times$  MDD as the predictors, and high self-esteem as the outcome in the pooled sample and based on

gender. We found a race by MDD interaction, suggesting that the association between MDD and self-esteem is stronger for Blacks compared to Whites. We could replicate this interaction among men but not women.

## Discussion

Supporting the differential effect hypothesis (23,44-51), our study found Black – White differences in the magnitude of the association between MDD and self-esteem, with a stronger association among Blacks than Whites. The stronger association among Blacks was due to Black men.

These findings comply with previous reports by Assari that race alters how Beck's cognitive elements are relevant to depression of Blacks and Whites (18,19). Authors found evidence suggesting that depression may differently accompany negative cognitions about the future (18) and self (19) which are core elements of depression (4,5). In a cross-sectional study, depression had a stronger link with hopelessness among White than Black older adults (18). In a longitudinal study, depressive symptoms and mastery had reciprocal associations among White but not Black older adults (19). This study shows that Blacks and Whites differ in how depression accompanies negative evaluation of self, another core cognitive element of depression.

Depression is more chronic and disabling for Blacks compared to Whites (52,53). Williams and colleagues used data of the NSAL, 2003, and showed that among those with lifetime MDD, 12-month MDD was higher for Blacks compared to Whites (54). Increased comorbidity with medical conditions (55-58) and also more somatic presentation of depression (59) increase the complexity of diagnosis of depression among Blacks.

**Table 1.** Descriptive statistics in the pooled sample, and based on race and gender

	All	Black	Whites	Men	Women	White Men	White Women	Black Men	Black Women
	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)
<b>Age</b>	43.44 (42.05-44.84)	42.02 (40.94-43.10)	44.75 (42.04-47.46)	44.04 (42.58-45.50)	42.94 (41.22-44.65)	46.00 (43.43-48.57)	43.64 (40.15-47.12)	41.76 (40.40-43.12)	42.23 (41.05-43.40)
<b>Self-Esteem (Total)</b>	11.50 (11.29-11.72)	11.27(11.06- 11.47)	11.72 (11.34-12.10)	11.30 (10.97-11.63)	11.68 (11.47-11.88)	11.60 (11.01-12.19)	11.83 (11.47-12.19)	10.95 (10.66-11.24)	11.52 (11.30-11.74)
<b>Self-Esteem (Positive)</b>	9.58 (9.49-9.67)	9.49 (9.38-9.59)	9.66 (9.51-9.81)	9.36 (9.24-9.49)	9.75 (9.67-9.84)	9.47 (9.26-9.68)	9.83 (9.71-9.95)	9.24 (9.09-9.39)	9.68 (9.56-9.80)
<b>Self-Esteem (Negative)</b>	1.93 (1.77-2.08)	1.78 (1.64-1.92)	2.06(1.78- 2.34)	1.94 (1.70-2.18)	1.92 (1.75-2.09)	2.13 (1.71-2.55)	2.00 (1.68-2.33)	1.71 (1.50-1.92)	1.84 (1.68-1.99)
<b>Education</b>									
11 or less	19.45 (16.73-22.49)	24.12 (21.79-26.62)	15.13 (10.66-21.04)	19.02 (15.65-22.92)	19.81 (16.55-23.53)	15.90 (10.39-23.57)	14.44 (9.64-21.06)	22.65 (19.54-26.08)	25.28 (21.99-28.89)
12 years	34.28 (31.29-37.40)	37.61 (35.45-39.81)	31.20 (25.79-37.19)	36.40 (30.41-42.85)	32.49 (30.28-34.79)	33.53 (22.80-46.29)	29.12 (25.28-33.28)	39.73 (36.28-43.29)	35.94 (33.43-38.52)
13-15 years	24.08 (22.33-25.93)	23.98 (21.96-26.12)	24.18 (21.23-27.40)	22.68 (19.96-25.65)	25.27 (22.59-28.14)	22.44 (18.16-27.39)	25.74 (20.81-31.39)	22.96 (19.68-26.60)	24.78 (22.56-27.14)
16 years or more	22.19 (17.02-28.39)	14.29 (12.12-16.78)	29.48 (19.87-41.35)	21.90 (15.23-30.44)	22.43 (18.02-27.55)	28.12 (16.12-44.34)	30.70 (22.12-40.85)	14.66 (11.77-18.13)	14.00 (11.86-16.46)
<b>Self-Esteem (Total)</b>									
Low	60.14 (57.01-63.19)	64.01 (61.1266.80)	56.57 (50.67-62.29)	62.19 (58.06-66.15)	58.42 (55.17-61.60)	57.78 (50.49-64.76)	55.48 (49.33-61.46)	67.32 (62.98-71.37)	61.41 (58.27-64.46)
High	39.86 (36.81-42.99)	35.99 (33.20-38.88)	43.43 (37.71-49.33)	37.81 (33.85-41.94)	41.58 (38.40-44.83)	42.22 (35.24-49.51)	44.52 (38.54-50.67)	32.68 (28.63-37.02)	38.59 (35.54-41.73)
<b>Self-Esteem (Positive)</b>									
Low	59.27 (56.68-61.80)	60.18 (57.52-62.78)	58.43 (53.79-62.91)	64.75 (61.55-67.83)	54.65 (52.07-57.20)	63.82 (58.28-69.01)	53.59 (49.16-57.96)	65.84(62.29- 69.22)	55.73 (52.72-58.69)
High	40.73 (38.20-43.32)	39.82 (37.22-42.48)	41.57 (37.09-46.21)	35.25 (32.17-38.45)	45.35 (42.8047.93)	36.18 (30.99-41.72)	46.41 (42.04-50.84)	34.16 (30.78-37.71)	44.27 (41.31-47.28)
<b>Self Esteem (Negative)</b>									
Low	53.54 (50.63-56.42)	59.58 (56.79-62.31)	47.95 (42.80-53.15)	52.32 (46.77-57.81)	54.56 (51.46-57.63)	44.35 (34.74-54.40)	51.18 (45.11-57.22)	38.41 (34.53-42.45)	58.00 (55.16-60.79)
High	46.46 (43.58-49.37)	40.42 (37.69-43.21)	52.05 (46.85-57.20)	47.68 (42.19-53.23)	45.44 (42.37-48.54)	55.65 (45.60-65.26)	48.82 (42.78-54.89)	61.59 (57.55-65.47)	42.00 (39.21-44.84)
<b>MDD</b>									
Yes	14.93 (13.35-16.65)	10.31 (9.19-11.54)	19.20 (16.77-21.89)	12.55 (9.64-16.19)	16.93 (14.43-19.75)	17.33 (12.22-23.99)	20.87 (16.33-26.28)	7.00 (5.58-8.74)	12.91 (11.33-14.67)
No	85.07 (83.35-86.65)	89.69 (88.46-90.81)	80.80 (78.11-83.23)	87.45 (83.81-90.36)	83.07 (80.25-85.57)	82.67 (76.01-87.78)	79.13 (73.72-83.67)	93.00 (91.26-94.42)	87.09 (85.33-88.67)

MDD; Major Depressive Disorder

**Table 2.** Summary of logistic regressions with race as the predictor and high self-esteem as the outcome

	All			Men			Women		
	Total	Positive	Negative	Total	Positive	Negative	Total	Positive	Negative
	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)
<b>Men</b>	1.19 (1.01-1.40)*	1.51 (1.33-1.71)***	0.94 (0.74-1.21)						
<b>Whites</b>	1.41 (1.03-1.93)*	1.07 (0.87-1.32)	1.63 (1.24-2.15)***	1.44 (0.98-2.12)#	1.01 (0.77-1.31)	1.95 (1.29-2.94)**	1.41 (1.04-1.91)*	1.11 (0.89-1.39)	1.44 (1.08-1.92)*
<b>Age</b>	1.00 (1.00-1.01)	1.00 (1.00-1.01)	1.00 (1.00-1.01)	1.00 (0.99-1.01)	1.01 (1.00-1.02)	1.00 (0.99-1.01)	1.00 (1.00-1.01)#	1.00 (0.99-1.01)	1.00 (1.00-1.01)*
<b>Education</b>									
11 or less									
12 years	0.57 (0.44-0.75)***	0.84 (0.66-1.08)	0.59 (0.45-0.79)***	0.55 (0.34-0.89)*	0.85 (0.52-1.38)	0.54 (0.32-0.92)*	0.59 (0.41-0.86)**	0.85 (0.64-1.13)	0.64 (0.43-0.94)*
13-15 years	0.53 (0.36-0.80)**	0.83 (0.54-1.25)	0.45 (0.320.62)***	0.66 (0.39-1.09)	0.83 (0.47-1.47)	0.47 (0.28-0.81)**	0.45 (0.29-0.69)***	0.82 (0.52-1.30)	0.42 (0.28-0.63)***
16 years or more	0.44 (0.34-0.56)***	0.74 (0.58-0.94)*	0.50 (0.39-0.64)***	0.58 (0.42-0.79)***	0.85 (0.60-1.19)	0.66 (0.41-1.05)#	0.34 (0.23-0.51)***	0.66 (0.47-0.94)*	0.40 (0.26-0.59)***

#p<0.1, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001

**Table 3.** Summary of logistic regressions with race and MDD as predictors, and high self-esteem as the outcome

	All			Men			Women		
	Total	Positive	Negative	Total	Positive	Negative	Total	Positive	Negative
	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)
<b>Men</b>	1.16 (0.98-1.37)#	1.52 (1.33-1.73)***	0.89 (0.68-1.15)						
<b>Whites</b>	1.41 (1.03-1.93)*	1.09 (0.88-1.34)	1.59 (1.20-2.12)**	1.46 (0.99-2.15)#	1.04 (0.79-1.37)	1.87 (1.21-2.89)**	1.42 (1.07-1.88)*	1.12 (0.90-1.40)	1.42 (1.08-1.87)*
<b>Age</b>	1.00 (1.00-1.01)	1.00 (1.00-1.01)	1.00 (1.00-1.01)	1.00 (0.99-1.01)	1.01 (0.99-1.02)	1.00 (0.99-1.01)	1.00 (1.00-1.01)	1.00 (0.99-1.01)	1.01 (1.00-1.01)#
<b>Education</b>									
11 or less									
12 years	0.54 (0.41-0.70)***	0.83 (0.65-1.05)	0.56 (0.42-0.74)***	0.53 (0.32-0.90)*	0.87 (0.51-1.49)	0.51 (0.28-0.92)*	0.55 (0.38-0.80)**	0.81 (0.61-1.08)	0.60 (0.41-0.88)*
13-15 years	0.48 (0.31-0.74)***	0.79 (0.51-1.23)	0.39 (0.27-0.57)***	0.65 (0.39-1.09)	0.86 (0.47-1.57)	0.45 (0.25-0.79)**	0.38 (0.23-0.60)***	0.74 (0.44-1.23)	0.35 (0.23-0.54)***
16 years or more	0.43 (0.33-0.55)***	0.76 (0.60-0.96)*	0.48 (0.37-0.62)***	0.61 (0.45-0.83)**	0.93 (0.65-1.33)	0.69 (0.44-1.09)	0.31 (0.21-0.46)***	0.65 (0.46-0.90)*	0.35 (0.23-0.54)***
<b>MDD</b>	0.83 (0.78-0.89)***	0.93 (0.86-1.00)*	0.77 (0.73-0.80)***	0.87 (0.80-0.96)**	0.96 (0.88-1.04)	0.75 (0.68-0.82)***	0.79 (0.73-0.87)***	0.90 (0.82-1.00)*	0.77 (0.72-0.82)***

MDD; Major Depressive Disorder  
#p<0.1, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001

**Table 4.** Summary of logistic regressions with race, MDD, and race × MDD as predictors, and high self-esteem as the outcome

	All			Men			Women		
	Total	Positive	Negative	Total	Positive	Negative	Total	Positive	Negative
	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)
<b>Men</b>	1.15 (0.97-1.36) <sup>#</sup>	1.51 (1.33-1.72) <sup>***</sup>	0.89 (0.68-1.15)	-	-	-	-	-	-
<b>Whites</b>	0.94 (0.56-1.58)	0.78 (0.49-1.24)	1.57 (1.00-2.46) <sup>*</sup>	0.81 (0.37-1.76)	0.48 (0.25-0.93) <sup>*</sup>	1.84 (0.78-4.34)	1.12 (0.58-2.13)	1.05 (0.60-1.85)	1.49 (0.81-2.74)
<b>Age</b>	1.00 (1.00-1.01)	1.00 (1.00-1.01)	1.00 (1.00-1.01)	1.00 (0.99-1.01)	1.01 (0.99-1.02)	1.00 (0.99-1.01)	1.00 (1.00-1.01)	1.00 (0.99-1.01)	1.01 (1.00-1.01) <sup>#</sup>
<b>Education</b>									
11 or less									
12 years	0.54 (0.41-0.70) <sup>***</sup>	0.83 (0.65-1.05)	0.56 (0.42-0.74) <sup>***</sup>	0.53 (0.32-0.89) <sup>**</sup>	0.87 (0.51-1.49)	0.56 (0.28-0.92) <sup>*</sup>	0.55 (0.38-0.80) <sup>**</sup>	0.81 (0.60-1.08)	0.60 (0.41-0.88) <sup>**</sup>
13-15 years	0.48 (0.32-0.74) <sup>***</sup>	0.79 (0.51-1.24)	0.39 (0.27-0.57) <sup>***</sup>	0.65 (0.39-1.10)	0.86 (0.46-1.61)	(0.25-0.79) <sup>**</sup>	0.38 (0.23-0.60) <sup>***</sup>	0.74 (0.44-1.23)	0.35 (0.23-0.54) <sup>***</sup>
16 years or more	0.43 (0.33-0.55) <sup>***</sup>	0.76 (0.60-0.96) <sup>*</sup>	0.48 (0.37-0.62) <sup>***</sup>	0.61 (0.45-0.83) <sup>**</sup>	0.92 (0.64-1.32)	(0.43-1.09)	0.31 (0.21-0.46) <sup>***</sup>	0.65 (0.47-0.90) <sup>**</sup>	0.35 (0.23-0.54) <sup>***</sup>
<b>MDD</b>	0.87 (0.80-0.94) <sup>***</sup>	0.96 (0.86-1.07)	0.77 (0.72-0.82) <sup>***</sup>	0.92 (0.81-1.03)	1.02 (0.92-1.13)	0.75 (0.66-0.84) <sup>***</sup>	0.82 (0.71-0.94) <sup>**</sup>	0.91 (0.78-1.07)	0.76 (0.69-0.85) <sup>***</sup>
<b>MDD×Race (Blacks)</b>	0.62 (0.42-0.92) <sup>*</sup>	0.68 (0.41-1.13)	0.98 (0.68-1.41)	0.51 (0.26-1.00) <sup>*</sup>	0.42 (0.22-0.80) <sup>**</sup>	0.98 (0.48-2.02)	0.75 (0.41-1.38)	0.92 (0.46-1.86)	1.06 (0.63-1.79)

MDD; Major Depressive Disorder  
<sup>#</sup>*p*<0.1, <sup>\*</sup>*p*<0.05, <sup>\*\*</sup>*p*<0.01, <sup>\*\*\*</sup>*p*<0.001

In addition to lower chance of diagnosis and treatment, quality of psychiatric services is lower for Blacks as they tend to receive treatments in primary care settings where they seek care for medical conditions (60). Given low access to the healthcare system mistrust, and high stigma, depression is expected to be more consequential for Blacks than Whites (52,54,61). Blacks endorse more negative beliefs regarding pharmaceutical treatment of depression compared to Whites (54), as they have higher tendency to prefer non-pharmacologic approaches (e.g., counseling and prayer), and less frequently believe in high efficacy of depression medications. Blacks have higher tendency to believe that antidepressants are addictive (62). All of these beliefs operate as barriers against depression treatment among Blacks. Thus, improvement of screening, diagnoses, and treatment of depression among Blacks may require enormous efforts (54,63,64).

Multiple disadvantage theory suggests that a new chronic disease or stressor will be more disabling in the presence of multiple conditions and stressors (48). Based on this theory, depression is expected to have more consequences for Blacks than Whites (49). Racial groups differ in number of conditions (28), access to health care, social position, severity of disease (50), and delay until diagnosis and treatment (51) which may explain the stronger effect of depression on self-esteem for Blacks compared to Whites.

Higher effect of MDD on self-esteem of Blacks compared to Whites is compatible by the cumulative disadvantage framework (65) suggesting that the consequences of each risk factor are larger for Blacks. For

instance, in a study, Blacks reported a stronger response to life events, than Whites in a variety of domains (66). In a longitudinal study, change in stress better explained change in depression for Blacks than Whites (67). From other aspect, average levels of self-esteem vary across cultures (68). For example, North American children and adolescents show higher total self-esteem scores compared with their Chinese and Japanese counterparts (68). Social identity theory indicates that individuals' self-concepts are derived from perceived membership of particular social groups (69). Therefore, ethnic identity as an aspect of self-concept may protect individuals from life risks. In line with this, resilience framework also considers self-esteem as a protective factor among youth against stress resulted from negative life events and also as a protective factor against depression (70,71). Cross-sectional studies have also identified a significant negative relation between self-esteem and depressive symptoms for Latino, African American, and White adolescents (71,72). Study findings of Umaña-Taylor (71) among 1062 Mexican-origin adolescents who were attending schools with various ethnic composition (i.e., predominately Latino, predominately non-Latino, and balanced Latino/non-Latino) indicated that ethnic identity exploration positively predicts self-esteem and that self-esteem partially mediates the relation between perceived discrimination and adolescents' depressive symptoms (68).

Based on a phenomenon called the Black-White paradox (73,74), despite high levels



of medical conditions, depression is not common among Blacks (75). Despite being exposed to a wide range of stressors (76), Blacks have disproportionately low rates of depression (77). Blacks' low rate of depression despite higher psychosocial stress and chronic medical conditions (76-80) suggests that race mitigates correlates of depression in a wide range of domains. Differential correlates of depression and depressive symptoms among Whites and Blacks may be in part due to racial differences in how depression influences evaluation of self, others, and future (18).

The results reported here have major clinical implications for diagnosis and treatment of depression, as well as handling low self-esteem in diverse populations. We argue that psychotherapies and cognitive behavioral therapies may differently benefit from considering and targeting self-esteem across race groups. To be more specific, health care providers and therapists who treat depression may consider additional focus on dysfunctional attitudes and beliefs about self among Blacks with depression, particularly Black men with depression. Low self-esteem may be a more important part of depression among Blacks, compared to Whites. Future research should also determine direction of the association, whether effect of depression on self-esteem is stronger for Blacks, or Blacks with low self-esteem are more susceptible to depression.

Our study had a few limitations. First, differential validity of measurements for MDD, and self-esteem was not ruled out. In addition, we cannot rule out under-reporting of depression among Blacks (81,82). The

validation of the CIDI diagnosis of MDE using the Structured Clinical Interview for DSM-IV (SCID) has shown high validity among Blacks, even higher than Whites (83). Despite the above limitations, our study had numerous strengths. This is one of the first studies on the moderating effects of race on the link between depression and self-esteem. Using a nationally representative sample was an additional strength of the current study.

The extent to which depression deteriorates self-esteem of racial groups is not well known. By the same amount of exposure, responses and consequences of stress depend on race (84). Despite the above limitations, results provided here shed more light on racial and gender disparities in depression. Our results may show one of many ways that explain racial disparities and thus may be helpful for policy makers and program planners to tackle racial inequalities in the United States.

To conclude, Blacks and Whites differ in the link between MDD and self-esteem, with Blacks showing a stronger association between the two than Whites. The stronger link between depression and low self-esteem among Blacks may be one of several mechanisms behind lower health care utilization, as well as worse outcomes associated with depression treatment among Blacks. The mechanism behind differential link between depression and cognitive elements of depression across ethnic populations is unclear (85). Future research is needed on cross-cultural differences in the link between depression and evaluation of self, others, and future. This information

may also help us better understand racial differences in outcomes as well as course of depression (86-88).

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### **Conflict of Interest**

Shervin Assari and Masoumeh Dejman declare that they do not have any potential conflicts of interest to report.

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### **Authors' Contribution**

Shervin Assari designed the work, analyzed the data, and drafted the manuscript. Masoumeh Dejman contributed to the conceptualization and revision of the paper.

### **Informed Consent**

Informed consent was obtained from all participants. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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