



# Jackson Heart Study Manuscript Proposal Form

Submission Date: 3/2/2016

Proposal ID: P0700

## I. TITLE

### I. Title Information

A. Proposal Title:

Racial Discrimination and Mental Health in the Jackson Heart Study: Age-Related Differences in Internalized Stress Responses and Their Impact on Depressive Symptoms

B. Abbreviated Title:

Age Differences in Discrimination and Depression

C. Suggested Keywords

African American, Jackson Heart Study, discrimination, depressive symptoms

## II. AUTHOR INFORMATION & CONTRIBUTIONS

### Lead Author:

James Fisher

Senior Author

Corresponding Author

a. Responsibilities:

Design & Concept of Study, Data Acquisition, Statistical Analysis, Literature Review, Draft/Review

Received TRANS data package

### Is this manuscript proposal for a student/trainee research project?

Type of student/trainee:

Name of supervisor/advisor/mentor:

Institutional Affiliation:

Address:

City:

State:

Zip code:

Email:

Telephone:

Mentor assurance?



No File Uploaded

**Project type:**

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**CoAuthors (6)**

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<u>Name</u>	<u>Affiliation</u>	<u>Address</u>	<u>Telephone</u>	<u>Email</u>	<u>Responsibilities</u>
Mario Sims	University of Mississippi Medical Center (UMMC)	2500 North State Street Jackson MS 39216	601-815-5784	Msims2@umc.edu	Design & Concept of Study, Methodological Expertise, Statistical Analysis, Draft/Review
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### III. MANUSCRIPT PROPOSAL OUTLINE

**F. Is this manuscript proposal based on an Ancillary Study? No**

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If yes, please provide the ASC# :

**A. Brief Overview**

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Provide a brief overview of the proposal including the nature of the problem to be addressed, scientific relevance, objectives/aims, research question/hypotheses, and methods/analytical plan (<250 words):

Empirical research has uncovered a distinct relationship between discrimination and negative mental health outcomes in African American populations (Williams & Mohammed, 2009; Paradies, 2006). Recent research also has explored the individual's tendency to internalize stress responses as a mediator of the relationship between perceived discrimination and psychological symptoms (Gibbons et al., 2014). Although various measures have been used to assess perceived discrimination, with everyday discrimination evidencing a stronger association with depressive symptoms than does lifetime discrimination (Lee & Turney, 2012), race-related attributions have not been consistently used to qualify the perceived discrimination reported. Moreover, age and sex effects for differences in internalized distress and depressive symptoms have not been the primary subjects of empirical inquiry. National averages may not accurately reflect the

prevalence of depressive symptoms for African American adults in Mississippi, where the lack of access to adequate mental health treatment likely exacerbate the psychological difficulties experienced by this population (Faris, 2012). The purpose of this investigation is to determine the mediating effects of an internalized stress response on the relationship between racial discrimination and depressive symptoms (see Figure 1 for an illustration) and to examine inter-generational differences in internalized affective responses. Analysis of an internalized response-mediated relationship between racial discrimination-inspired stress and depressive symptoms will be conducted using structural equation modeling (SEM). An analysis of covariance (ANCOVA) will be used to further examine differences between age-grouped cohorts. We anticipate significant differences in internalized stress responses and severity of depressive symptoms as a function of age and sex.

## **B. Background/Rationale**

(Please include discussion on relevance of African Americans to the proposed topic) (< 1000 words):

Because African Americans report greater levels of depressive symptoms (Williams et al., 2007) and higher levels of discrimination (Sims et al., 2012) than do Whites, the current investigation is relevant to the sample of adults included in the JHS cohort, as well as to the larger population of African Americans who live in the Southern US. While racial discrimination is not unique to the experience of African Americans, it is a prevalent psychosocial stressor for those living in a sociohistoric context of marginalization by a majority race (Jones et al., 2008; Yip, Seaton, & Sellers, 2006). Given the elevated risk of developing cardiovascular disease (CVD) that is associated with depressive symptomatology (Sims et al., 2015; Carney et al., 2001) – a risk that research has found is significantly greater for African Americans than it is for Whites (Lewis et al., 2011) – the proposed analyses will elucidate the likelihood of developing CVD for individuals who likewise may bear an increased susceptibility due to the geographic location in which they live (in 2012, Mississippi was named the state with the highest rate of depression; Faris, 2012). A large sample of African Americans in the Southern US also is needed to adequately investigate the extent to which the association of discrimination with depressive symptoms is mediated by internalized stress. Moreover, differences in discrimination-inspired depressive symptoms between African American adults of different age and sex groups have yet to be investigated. We plan to utilize data gathered by the Jackson Heart Study (JHS), which is the largest cohort of African Americans that examines the causes and consequences of CVD and related risk factors. The JHS also has collected data on perceived racial discrimination, stress, and depressive symptomatology among African Americans in the tri-county area of the Jackson, MS metropolitan statistical area. The JHS is ideal for addressing this topic, particularly given stark disparities in the cardiovascular health of African Americans and Whites in Mississippi (Mississippi State Department of Health Office of Health Disparity Elimination, 2015).

## **C. Research Hypothesis**

We hypothesize the following: 1. Perceived discrimination will be significantly associated with depressive symptoms/severity after adjustment for covariates (socioeconomic status, sex, level of physical activity, and perceived general health) 1a. This association will be significantly stronger for everyday discrimination than for lifetime discrimination 1b. The association of perceived discrimination with depressive symptoms will be mediated by internalized stress responses 2. The association of discrimination with depressive symptoms will vary by age categories 3. The association of discrimination with depressive symptoms will be significantly greater for women than for men 4. Perceived social support will moderate the relationship between tendency to internalize stress and depressive symptoms

## **C. Study Design**

Longitudinal

Other (specify):

## **D. Inclusions**

Inclusion criteria for the primary analysis will be attribution of perceived discrimination to race at Exam 1; however, additional analyses will be conducted with non-race attributions for perceived discrimination as the primary predictor variables by means of comparing the results with those gathered from individuals who made racial attributions. Participants also must have offered ages/DOBs at Exam 1 and must have completed Exam 1 Coping Strategies Inventory (CSI) and Spielberger Anger Expression Inventory (STX) forms. Also, those included in the investigation must likewise have completed the Exam 3 Major Depressive Episode Form (MDE).

## **D. Exclusions**

Participants will be excluded from primary analyses if they do not meet designated inclusion criteria.

## **E. Data**

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**Location of Statistical Analysis:**

GTEC

Working

Group:

Vanguard

Center:

Other:

Will data be requested from JHSCC: Yes

Requested data: Uploaded

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**E. Brief Statistical Analysis Plan and Methods:**

(Including power calculations, if necessary.)

Analysis of the internalized response-mediated relationship between racial discrimination and depressive symptoms will be conducted using structural equation modeling (SEM). Recursive paths in the model will comprise the primary Exam 1 predictor (perceived discrimination attributed to race), mediators (i.e., measures of stress and indicators of the tendency to internalize stress), a moderator (i.e., perceived social support), and the outcome variable (depression severity at Exam 3); additional SEM analyses will include non-race attributions as primary predictor variables. Figure 2 depicts the larger internalizing/externalizing response-mediated pathway, based largely on the differential mediation hypothesis of Gibbons et al. (2014), while Figure 3 shows the proposed model structure for the key variables in the current investigation. A confirmatory factor analysis (CFA) will be conducted to test the fit of the measurement model (as well as to determine bivariate correlations), with all constructs except covariates specified as latent variables. A CFA will likewise be used to determine how well the structural model fits the data; Lagrange multipliers will detect unspecified paths that could improve the fit of the model, and stability paths will be calculated. Controlling for covariates, odds ratios (separate from the SEM analysis) will also be calculated with Exam 1 perceived lifetime and everyday discrimination and Exam 3 symptoms of depression. Descriptive statistics will include the percentage of the overall JHS sample that made attributions of perceived everyday and lifetime discrimination to race at Exam 1 (subclassified by the ages of participants), as well as the percentage of men and women who reported clinically relevant depressive symptoms. Age-grouped cohorts will be examined for significant differences using an analysis of covariance (ANCOVA) to determine differential effects of depressive symptoms at Exam 3; tests for interactions will be performed to determine if associations vary by age. The relative contributions of covariates will also be assessed in these analyses to further uncover their relative influence in each age group; covariates are those that the literature indicates influence the relationship between discrimination-inspired stress and mental health outcomes (i.e., socioeconomic status, health and lifestyle factors, and overall physical health). A post hoc statistical power analysis was conducted using the statistical package G\*Power 3 for the fixed effects ANCOVA that will be conducted to determine the significance of differences in major depressive symptomatology between age-grouped cohorts. For an alpha level of .05, an approximated sample size of  $n = 2,003$ , and a large effect size ( $f = .4$ ; Faul et al., 2008), the predicted power is  $p = 1.00$ ; this power is also well above the established 0.80 standard for adequacy.

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**F. References:**

(Maximum 15)

Carney, R. M., Blumenthal, J. A., Stein, P. K., Watkins, L., Catellier, D., Berkman, L. F., Czajkowski, S. M., O'Connor, C. ... & Freedland, K. E. (2001). Depression, heart rate variability, and acute myocardial infarction. *Circulation*, 104, 2024-2028. doi: 10.1161/hc4201.097834

Faris, S. (2012). Depression statistics. Healthline. Retrieved from <http://www.healthline.com/health/depression/statistics#1>

Gibbons, F. X., Kingsbury, J. H., Weng, C.-Y., Gerrard, M., Cutrona, C., Wills, T. A., & Stock, M. (2014). Effects of perceived racial discrimination on health status and health behavior: A differential mediation hypothesis. *Health Psychology*, 33(1), 11-19.

Hicken, M. T., Lee, H., Morenoff, J., House, J. S., & Williams, D. R. (2014). Racial/ethnic disparities in hypertension prevalence: Reconsidering the role of chronic stress. *American Journal of Public Health*, 104(1), 117-123.

Jones, C. P., Truman, B. I., Elam-Evans, L. D., Jones, C. A., Jones, C. Y., Jiles, R., Rumisha, S. F., & Perry, G. S. (2008). Using "socially assigned race" to probe White advantages in health status. *Ethnicity & Disease*, 18(4), 496-504.

Lee, H., & Turney, K. (2012). Investigating the relationship between perceived discrimination, social status, and mental health. *Society and Mental Health*, 2(1), 1-20. doi: 10.1177/2156869311433067

Lewis, T. T., Guo, H., Lunos, S., Mendes de Leon, C. F., Skarupski, K. A., Evans, D. A., & Everson-Rose, S. A. (2011). Depressive symptoms and cardiovascular mortality in older Black and White adults. *Circulation*, 124(3), 293-299.

Mississippi State Department of Health Office of Health Disparity Elimination. (2015). State of the state: Mississippi's annual health disparities and inequalities report. Retrieved from

[http://www.msdh.state.ms.us/msdhsite/\\_static/resources/6143.pdf](http://www.msdh.state.ms.us/msdhsite/_static/resources/6143.pdf) Paradies, Y. (2006). A systematic review of empirical research on self-reported racism and health. *International Journal of Epidemiology*, 35, 888–901. doi: 10.1093/ije/dyl056

Sims, M., Diez-Roux, A. V., Dudley, A., Gebreab, S., Wyatt, S. B., Bruce, M. A., James, S. A., Robinson, J. C., Williams, D. R., & Taylor, H. A. (2012). Perceived discrimination and hypertension among African Americans in the Jackson Heart Study. *American Journal of Public Health*, 102(Supplement 2), S258-265. doi: 10.2105/AJPH.2011.300523

Sims, M., Redmond, N., Khodneva, Y., Durant, R., Halanych, J., & Safford, M. (2015). Depressive symptoms are associated with incident coronary heart disease or revascularization among Blacks but not Whites in the REasons for Geographical and Racial Differences in Stroke (REGARDS) Study. *Annals of Epidemiology*, 25(6), 426-432.

Williams, D. R., Jackson, J., González, H. M., Neighbors, H., Nesse, R., Abelson, J. M., & Sweetman, J. (2007). Prevalence and distribution of Major Depressive Disorder in African Americans, Caribbean Blacks, and Non-Hispanic Whites. *Archives of General Psychiatry*, 64(3), 305-315.

Williams, D. R., & Mohammed, S. A. (2009). Discrimination and racial disparities in health: Evidence and needed research. *Journal of Behavioral Medicine*, 32, 20-47.

Yip, T., Seaton, E. K., & Sellers, R. M. (2006). African American racial identity across the lifespan: Identity status, identity content, and depressive symptoms. *Child Development*, 77, 1504–1517. doi: 10.1111/j.1467-8624.2006.00950.x

## IV. JHS MANUSCRIPT OVERLAP

### Manuscript Overlap

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The Lead Author has reviewed all existing JHS manuscripts / manuscript proposals and found: Found no similarities

### Manuscript/Proposal List (0)

## V. ADDITIONAL INFORMATION

### H. Genetic Information:

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1. Do you propose use of data from a participant's DNA? No
2. If yes, for a primary aim or secondary aim of JHS? (check one or both)

- Primary Aim (heart, vascular disease)
- Secondary Aim (other conditions)

### I. Conflict of Interest

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1. Are these analyses to involve a for-profit corporation? No

If yes, please describe the nature of conflict of interest:

Name of corporation:

2. Do you or any member of your Writing Group intend to patent any process, aspect of outcome of these analyses? No

Describe plans for such patents:

### J. Manuscript Completion

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**Note: It is expected that the manuscript will be completed within two years. The manuscript proposal will expire if no manuscript is submitted for JHS review after two years from the date of approval.**