

Epidemiology: Early life exposures in diverse cohorts

Lifetime stressful experiences and cognitive performance in African American and white older adults: New evidence from a population-based cohort

Megan Zuelsdorff^{1,2} | Amanda Sonnega³ | DeAnnah R Byrd⁴ |
Susan Flowers Benton⁵ | Robert Turner⁶¹ Wisconsin Alzheimer's Disease Research Center, Madison, WI, USA² University of Wisconsin-Madison School of Nursing, Madison, WI, USA³ University of Michigan Institute for Social Research, Ann Arbor, MI, USA⁴ Wayne State University, Detroit, MI, USA⁵ University of Wisconsin School of Medicine & Public Health, Madison, WI, USA⁶ George Washington University, Washington, DC, USA

Correspondence

Megan Zuelsdorff, Wisconsin Alzheimer's Disease Research Center, Madison, WI, USA.
Email: mzuelstd@wisc.edu

Abstract

Background: Growing evidence suggests that modifiable sociocontextual factors powerfully shape health including risk for Alzheimer's disease and related dementias (ADRD), and contribute substantially to well-established racial disparities in cognitive aging. Stressful experiences cluster and accumulate across the lifespan, plausibly impacting brain health, but cognitive effects of lifetime adversity across diverse populations remain underexplored. We examined relationships between lifetime stressful events and cognition among African American and White older adults in the Health and Retirement Study (HRS).

Method: The study sample included non-demented adults (N=8,222) aged 60 and older who provided cognitive and lifetime stress data at the 2006/08 and 2010/12 HRS waves. Cognitive outcomes included performance on a test of global cognition (Telephone Interview for Cognitive Status) and its immediate and delayed recall subscales. The key predictor of interest was a Lifetime Stress index score (sample range=0-11 experiences). Mixed-effects regression models assessed associations of lifetime stress with each cognitive outcome. Polynomial and three-way interaction models explored potential (1) non-linear associations between stress and cognition, and (2) moderation of those relationships by race.

Result: African Americans (N=1,015) were younger (M=71.7, SD=6.8) than whites (M=72.2, SD=6.3) and reported fewer years of education ($p<0.001$). Reported number of stressful life events reported (M=1.61, SD=1.45) did not vary by race. In adjusted models (Table 1, Model 2), a significant stress quadratic revealed that relationships with global cognition ($p<0.001$) and delayed recall ($p=0.01$) were non-linear. Modification by African American race (Table 1, Model 3; Figure 1) was observed for global cognition ($p=0.01$) but not recall subscales (immediate: $p=0.10$; delayed: $p=0.45$).

Conclusion: We found that lifetime stress is associated with poorer later-life cognitive function; however, detriment is observed only at high levels of stress. African American and White HRS participants report very few stressful life events on average, but African Americans reporting many stressors showed exacerbated

stressor-associated dysfunction in global cognition. Our findings from this large, population-based sample reaffirm the role for stress and stress-adjacent experiences in cognitive aging, particularly among communities facing disproportionate ADRD burden. Expanding community-specific, lifecourse-based research and intervention strategies is a necessary next step toward understanding and mitigating disparity through targeted resource placement and stakeholder partnerships.

Figure 1. Curvilinear relationships between number of lifetime stress and level of cognitive performance by race.

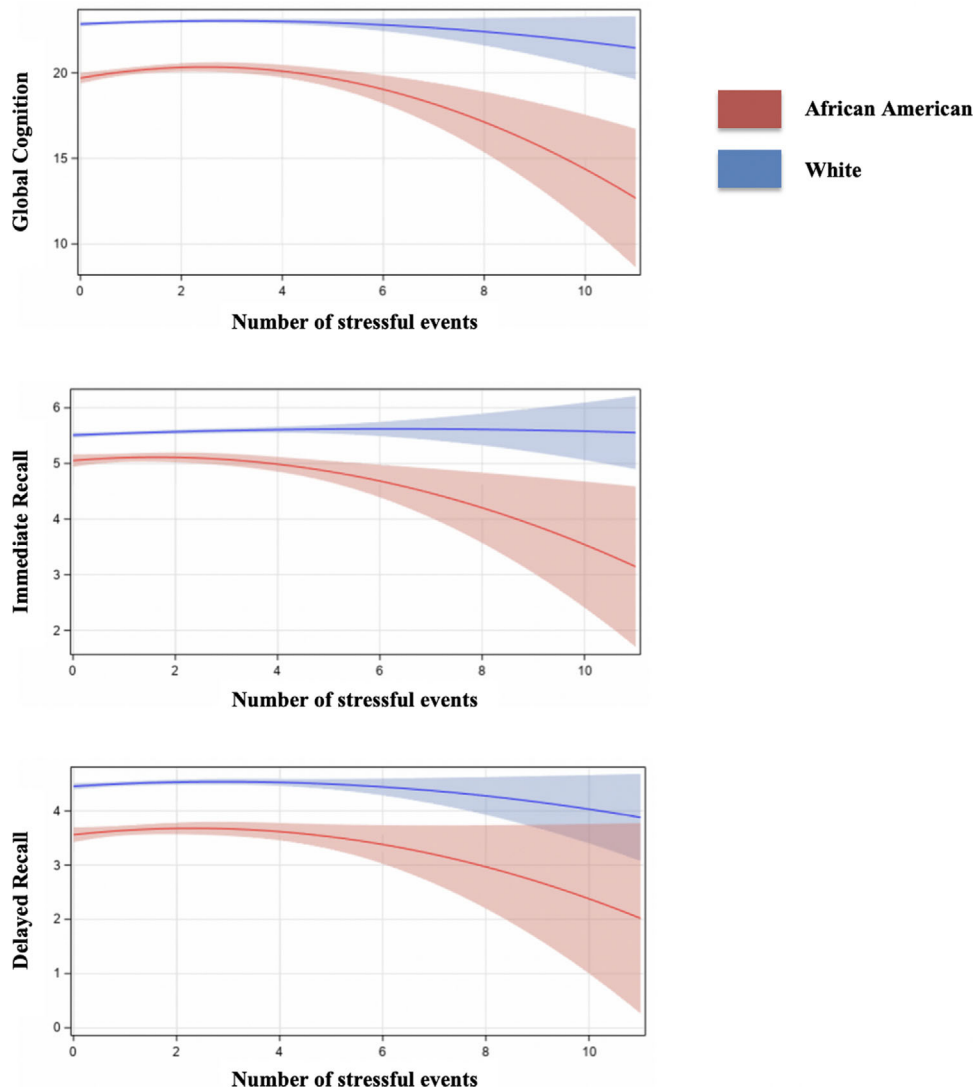


FIGURE 1

TABLE 1**Table 1. Relationships [β (CI)] between key predictors/moderators and cognitive outcomes in two interaction models**

	Global Cognition			Immediate Recall			Delayed Recall		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Afr Amer Race	-0.62 (-0.66, -0.56) [†]	-0.61 (-0.66, -0.57) [†]	-0.65 (-0.73, -0.57) [†]	-0.31 (-0.36, -0.26) [†]	-0.31 (-0.36, -0.26) [†]	-0.29 (-0.37, -0.20)	-0.46 (-0.51, -0.41) [†]	-0.46 (-0.51, -0.41)	-0.46 (-0.55, -0.38)
Life Stress	0.001 (-0.01, 0.01)	0.04 (0.02, 0.07)*	0.03 (0.00, 0.06)*	0.01 (-0.004, 0.02)	0.03 (0.003, 0.06)*	0.02 (-0.01, 0.05)	0.003 (-0.01, 0.02)	0.04 (0.01, 0.06)	0.03 (0.001, 0.06)*
Life Stress²	NA	-0.01 (-0.02, -0.003) [†]	-0.006 (-0.01, 0.00)	NA	-0.004 (-0.01, 0.001)	-0.002 (-0.01, 0.00)	NA	-0.01 (-0.01, -0.001)*	-0.006 (-0.01, 0.00)
Afr Amer Race *Lifestress²	NA	NA	-0.02 (-0.03, -0.003)*	NA	NA	-0.01 (-0.03, 0.002)	NA	NA	-0.01 (-0.02, 0.01)

Test scores are standardized for modeling.

All models additionally adjust for age at visit and gender.

* Significant at the p<0.05 level

† Significant at the p<0.001 level