

Neighborhood Risk And Protective Factors Associated With Cognitive Aging Among Black Older Adults

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INTRODUCTION

- Neighborhood vulnerability, or limited resource availability and distribution in a specific neighborhood as measured by the Social Vulnerability Index (SVI), is associated with worse cognitive health among Black older adults.¹
- However, there is growing evidence that some neighborhood characteristics, such as living among a high concentration of other Black older adults, may be protective for cognitive aging.²
- While the SVI is negatively associated with cognition, associations between its 4 component domains and cognition in Black older adults are unclear.
- **Aim:** Examine associations of individual SVI domains with cognitive trajectories among community-dwelling Black older adults.

METHODS

Participant Inclusion Criteria (N=911)

- Enrolled in Minority Aging Research Study (MARS) or Rush Clinical Core at the RADC
- No known dementia at baseline
- Available SVI data at baseline
- Baseline neuropsychological evaluation & at least one follow-up

Measures

- **Social Vulnerability Index (SVI):** Composite measure of 16 indicators derived from the US Census & American Community Survey at study enrollment³ across 4 domains:
 1. Socioeconomic status,
 2. Household characteristics,
 3. Racial & ethnic minority composition,
 4. Housing & transportation access.

- **Cognitive function:** Global & domain-specific cognition (episodic memory, semantic memory, working memory, processing speed, visuospatial ability) measured annually via 19 standardized neuropsychological tests

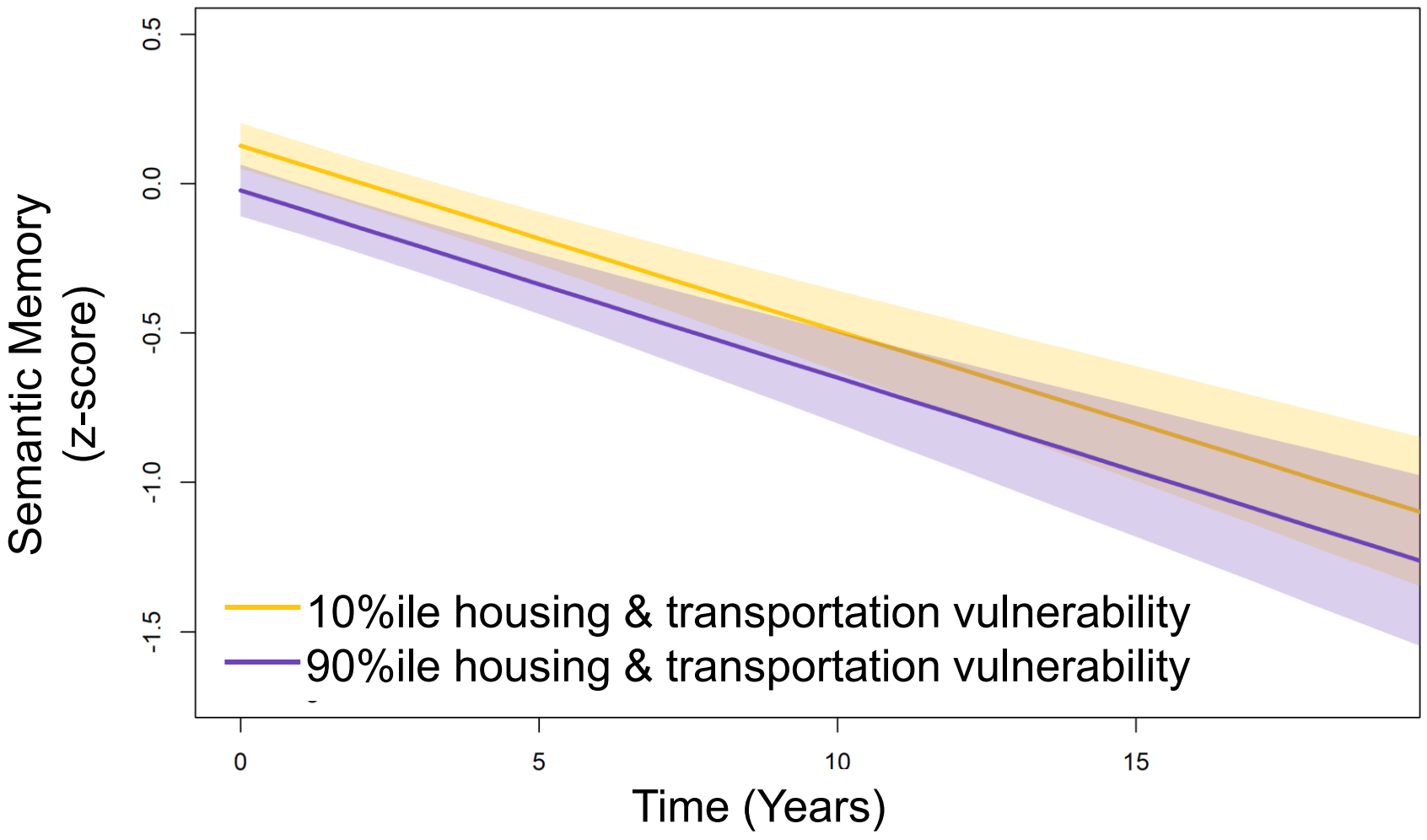
- **Covariates:** age, sex, education, visit mode (phone vs. in-person), & income

Statistical Analysis

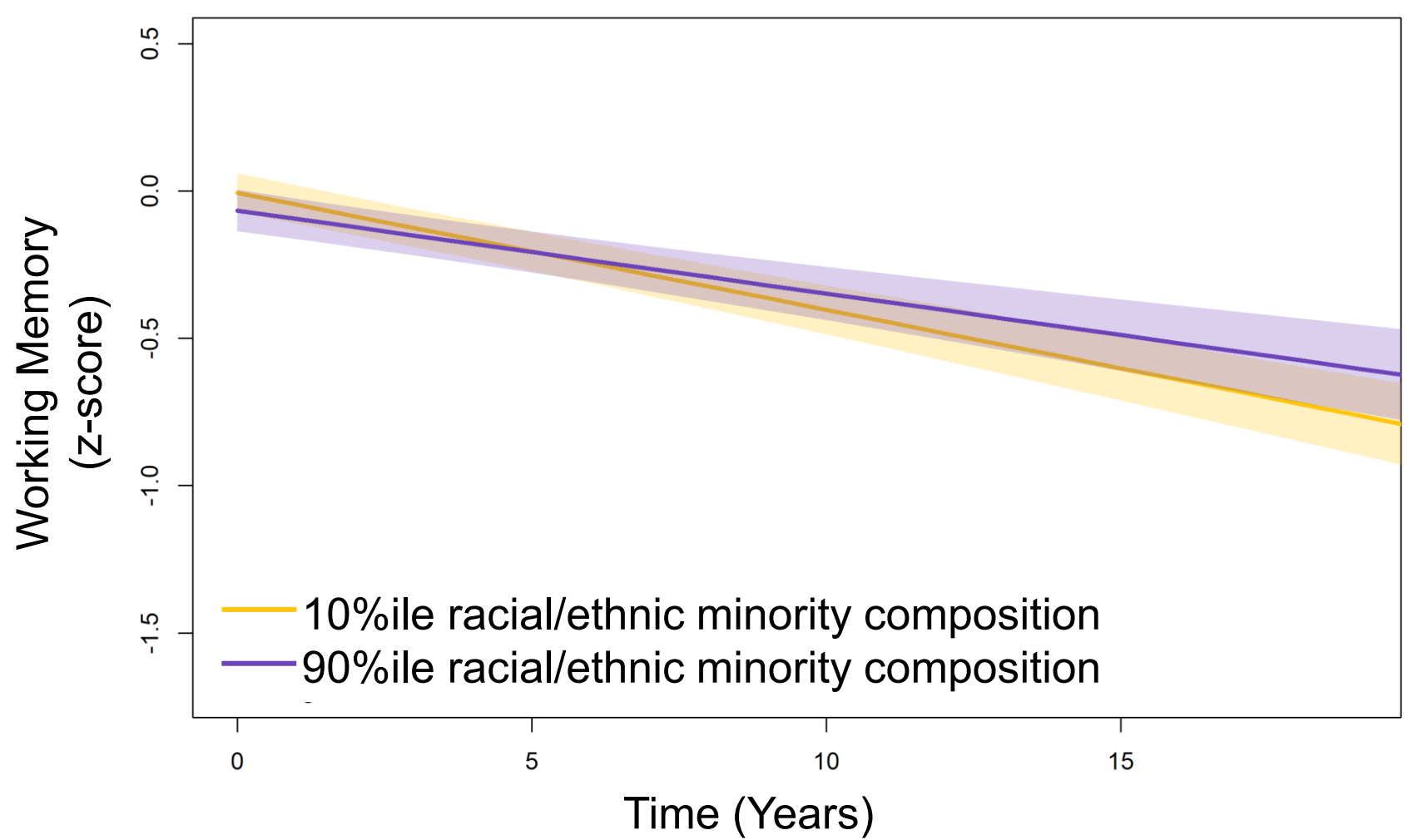
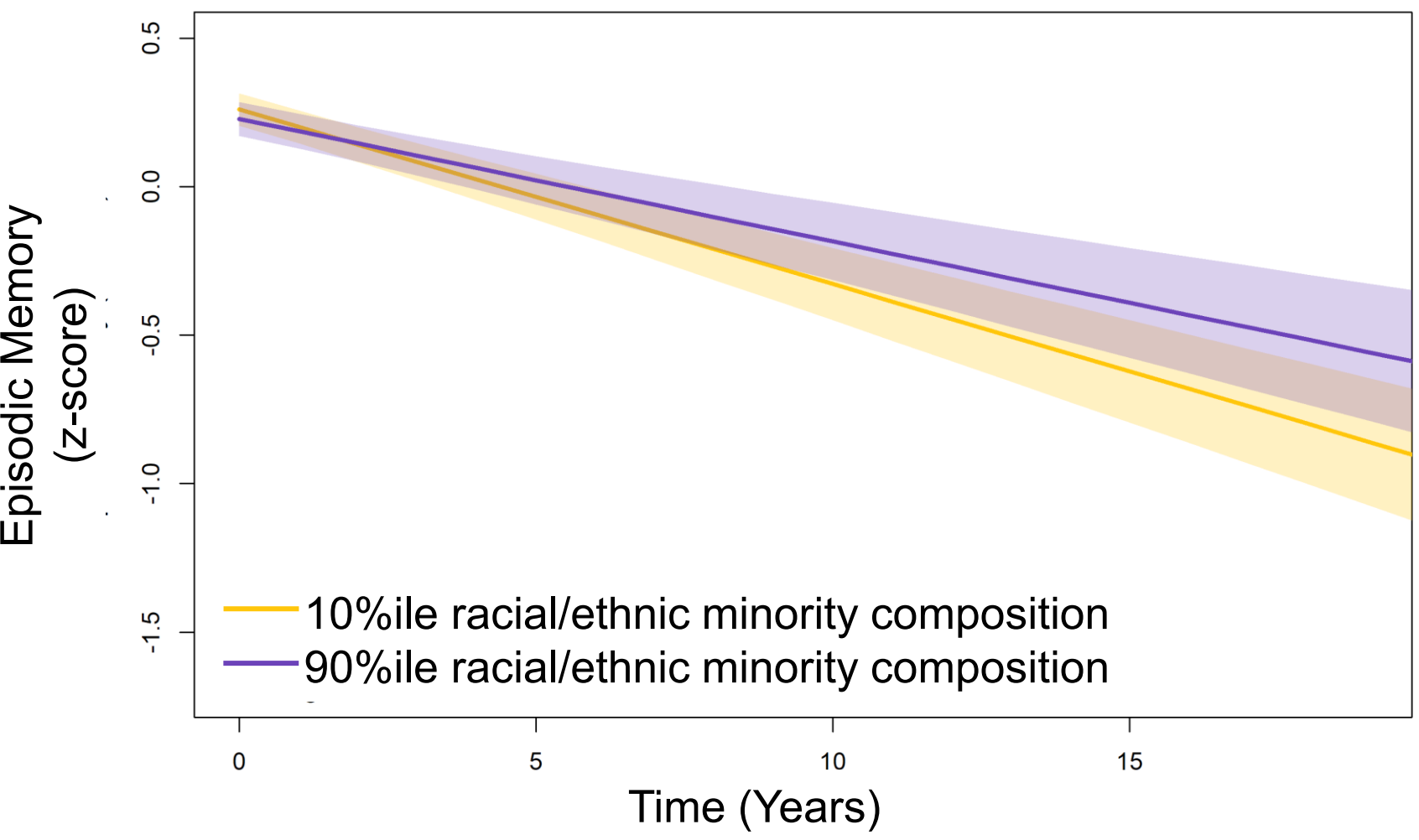
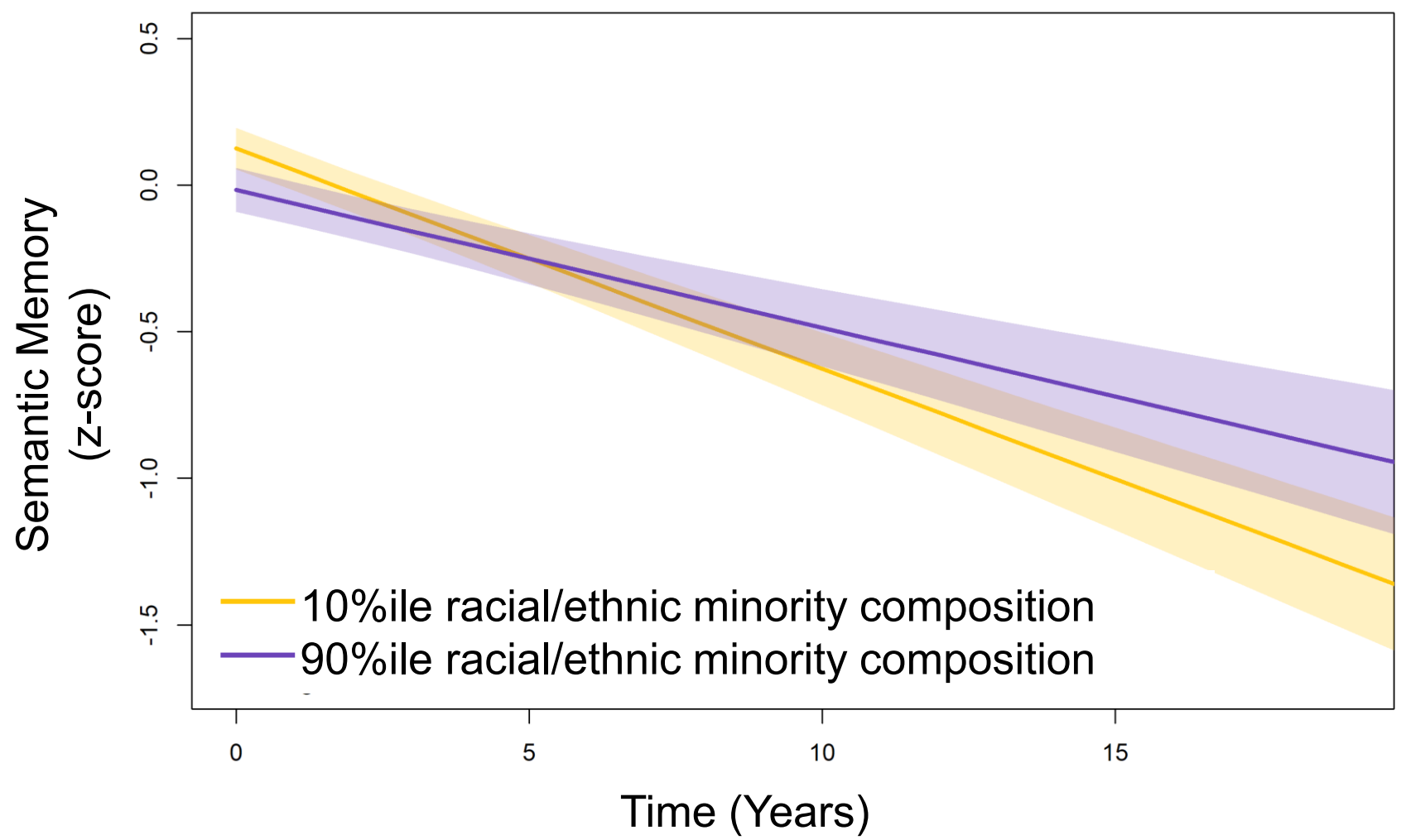
- SVI domains at baseline were first examined in separate models and then with all four SVI domains in the same model to examine independent effects
- Changes in global cognition and each cognitive domain were modeled using linear mixed-effects models with correlated random intercepts & slope
- Interaction terms with time for SVI domains & covariates

RESULTS

Higher vulnerability in housing & transportation access was associated with worse baseline semantic memory.



Living among higher proportions of racial/ethnic minorities was associated with worse baseline semantic memory but slower decline in semantic, episodic, and working memory.



RESULTS, CONTINUED

Table. Participant characteristics (N=911)	
Variable	Mean (SD) or % (n)
Age (years)	73.3 (6.3)
Education (years)	15.0 (3.3)
Sex (% female)	76.7% (699)
Income ^a	6.7 (2.6)
Follow up years	8.9 (5.0)
Baseline global cognition (z-score)	-0.1 (0.5)
SVI ^b (global)	0.7 (0.2)
SVI-Socioeconomic status	0.7 (0.2)
SVI-Household characteristics	0.7 (0.3)
SVI-Racial/ethnic minority status	0.6 (0.2)
SVI-Housing & transportation	0.5 (0.3)

Note. ^aAnnual income binned into 10 categories. Sample mean represents an annual income range of \$25,000-\$29,999.
^bSVI=Social Vulnerability Index. The sample mean SVI of 0.7 indicates that participants' census tracts are 70% more socially vulnerable than other census tracts.

- In separate models:
 - Higher vulnerability in **housing and transportation access** ($B=-0.21$, $SE=0.09$, $p=.02$) and living among **higher proportion of racial/ethnic minorities** ($B=-0.35$, $SE=0.13$, $p=.01$) were associated with **worse baseline semantic memory**.
 - Living among **higher proportion of racial/ethnic minorities was associated with slower decline in semantic, episodic, and working memory** (B s: 0.03-0.07, SE s: 0.01-0.02, $ps\leq .03$).
- When entered into the same model, associations remained only for higher proportion of racial/ethnic minorities and worse baseline semantic memory ($B=-0.29$, $SE=0.13$, $p=.03$) and with slower decline in semantic memory ($B=0.07$, $SE=0.02$, $p=.001$) and working memory ($B=0.03$, $SE=0.02$, $p=.03$).

CONCLUSION

- Results demonstrate both risk and protective neighborhood-level factors associated with cognitive aging among Black older adults, particularly for those in census tracts with greater proportions of racial/ethnic minorities. This suggests the possibility of a protective enclave effect on cognitive aging for older Black adults.
- **Limitations:** Not population representative. SVI only obtained at study enrollment.
- **Strengths:** Large sample size; average of ~9 years of follow-up; analyses controlled for individual income.
- **Future studies** should investigate mediators explaining protective associations between living amongst greater proportions of racial/ethnic minorities and slower cognitive decline.

