

Christina S. Dintica,^a Julia Cheunkarndee,^b R. Nick Bryan,^c Lenore J. Launer,^d Kristine Yaffe^a

^a University of California, San Francisco, San Francisco, CA, USA; ^b Northern California Institute for Research and Education, San Francisco, CA, USA ^c Department of Radiology, University of Pennsylvania, Philadelphia, PA, USA; ^d Laboratory of Epidemiology and Population Sciences, National Institute on Aging Baltimore, MD, USA

BACKGROUND & AIM

- SDOH burden is linked to cognitive inequities, yet most evidence relies on individual SDOH components in older adults.
- We examined associations between a midlife SDOH index and longitudinal cognitive and brain outcomes.**

METHODS

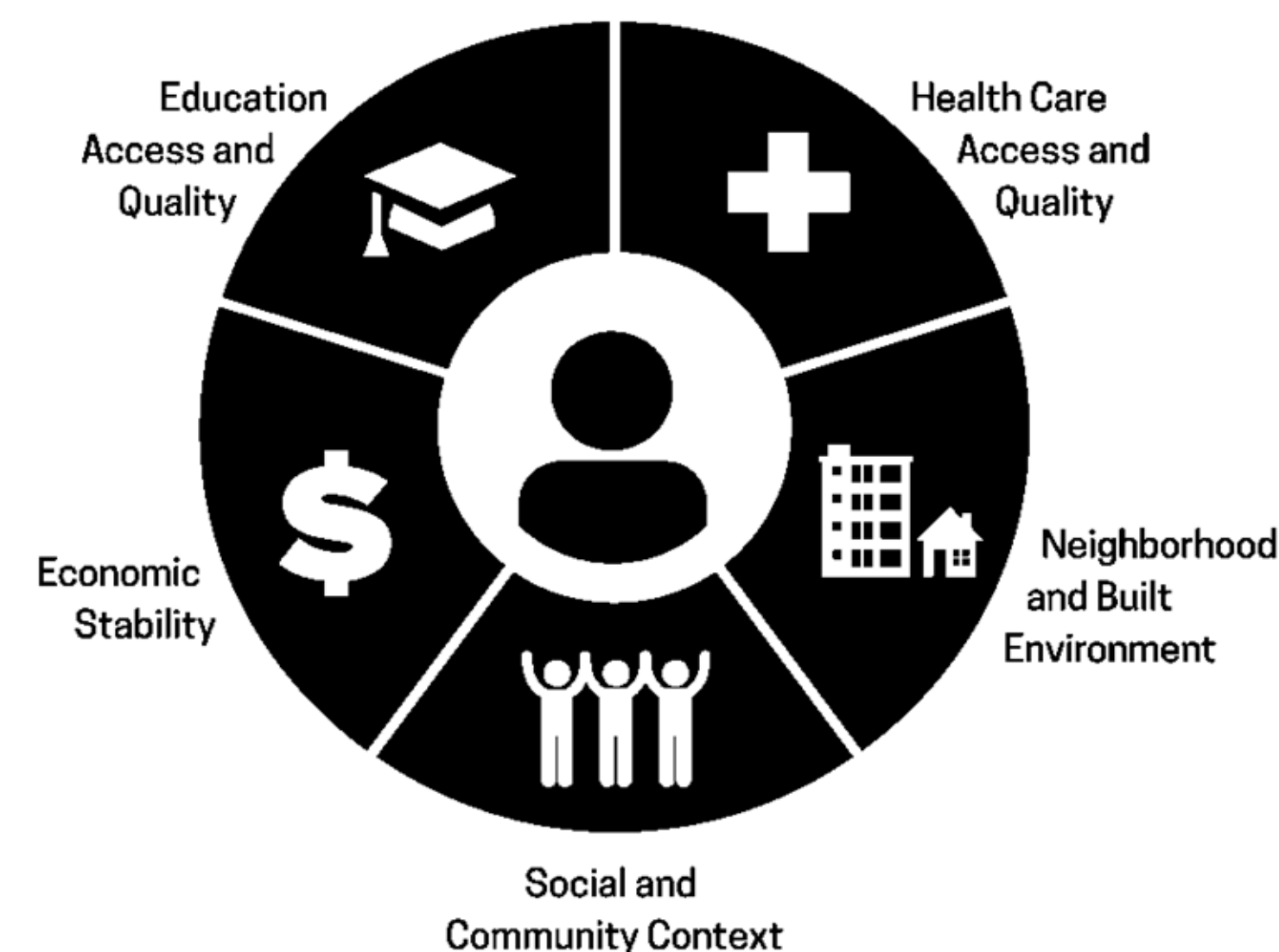
Design & Participants

Prospective cohort Coronary Artery Risk Development in Young Adults (CARDIA).

n= 3,488 with SDOH and cognitive data, 645 subsample with MRI, (mean age 40.0 ± 3.6 yrs).

Exposure

Weighted SDOH index 12 items; across 5 domains:



Outcomes

Cognition: digit symbol substitution (DSST), Stroop, Rey auditory verbal learning test (RAVLT).

Brain MRI: white matter hyperintensities, total gray matter volume) measured 5 and 10 years after baseline.

Analysis

Mixed linear regression, adjusted for demographics, vascular risk factors, depression, and intracranial volume.

RESULTS

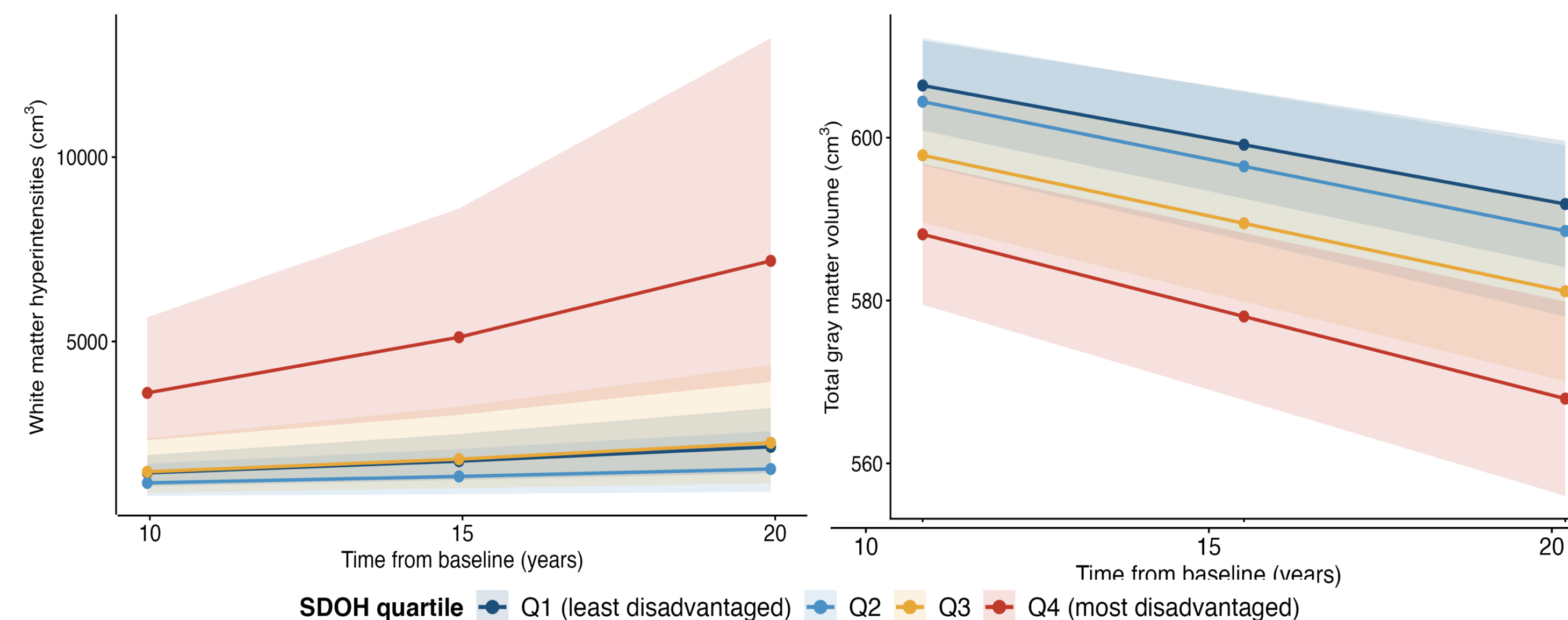
Brain measures:

At baseline, there was no difference among the SDOH quartile in WMHs or total GM ($p>0.05$ for all); over time, most disadvantaged quartile showed more WMH accumulation and steeper GM volume decline compared to the least disadvantaged SDOH quartile (**Figure 1**).

Cognition:

The most disadvantaged SDOH quartile performed worse across all cognitive tests compared with the least disadvantaged quartile ($p<0.001$) at baseline and had steeper decline in the DSST compared to the least disadvantaged SDOH quartile (**Figure 2**).

Figure 1. SDOH index quartile and level and change in brain measures over 10 years (n=645).

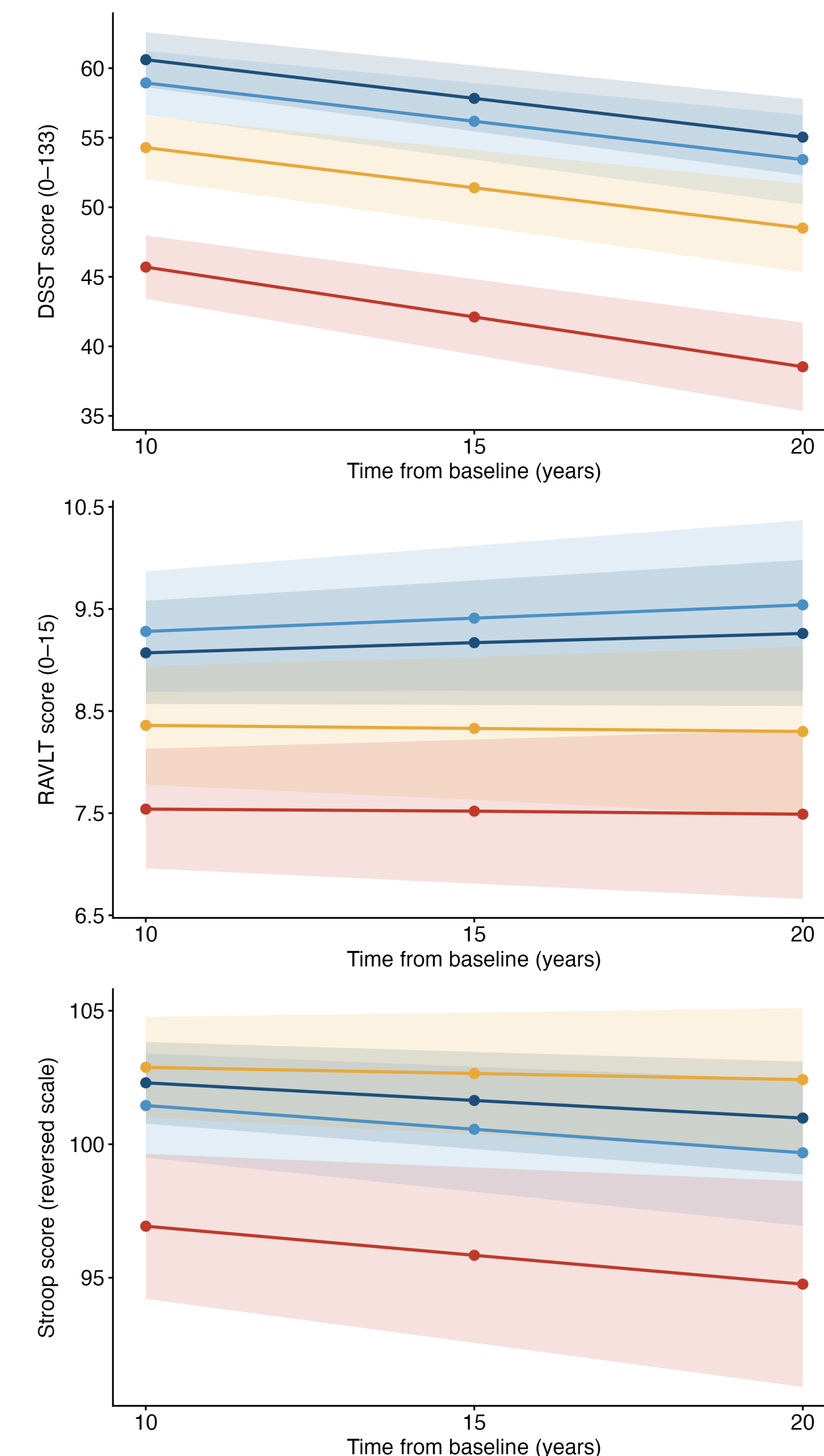


DISCUSSION

- Greater social disadvantage is associated with worse baseline cognition and accelerated decline in cognitive function and brain integrity.
- Social disadvantage already exerts influence before midlife, highlighting the need for studies tracing earlier life course divergence.

➤ **TAKEAWAY: These findings underscore SDOH as key determinants of brain health and suggest that mitigating social disadvantage may help preserve cognitive and brain health.**

Figure 2. SDOH index quartile and level and change in cognitive measures over 10 years (n=3,488).



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