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INTRODUCTION

- Cognitive aging during midlife (aged 40-65) has been underexplored in diverse populations
- Objective:** To investigate the average cognitive change during midlife, its predictors, and whether these associations differ by race/ethnicity

METHODS

- Cohorts:** **3,750 participants** were pooled from three US cohorts: Wisconsin Registry for Alzheimer’s Prevention, Health and Aging Brain Study-Health Disparities, and Coronary Artery Risk Development in Young Adults Study
 - 62% non-Hispanic White (NHW), 28% Black, 10% Hispanic; 65% female
 - The median age was 56 (Q1-Q3: 52-59) at baseline, with a median follow-up of 5 (Q1-Q3: 4.0-6.1) years
 - Cardiovascular risk factors (CVRFs):** Hypertension, diabetes, obesity, high cholesterol, and smoking status at baseline identified through objective measures, laboratory values, medical history, and self-reports
 - Cognition:** We harmonized cognitive scores across three domains (executive function, memory, and language) using confirmatory factor analysis, accounting for differential item functioning by interview language.
- Cognitive change was measured as the yearly change in standardized cognitive scores between two visits
- Analysis:** We evaluated the associations of sociodemographic and baseline CVRFs with standardized annual cognitive change by linear regression, with racial/ethnic differences assessed through interactions and stratified analyses

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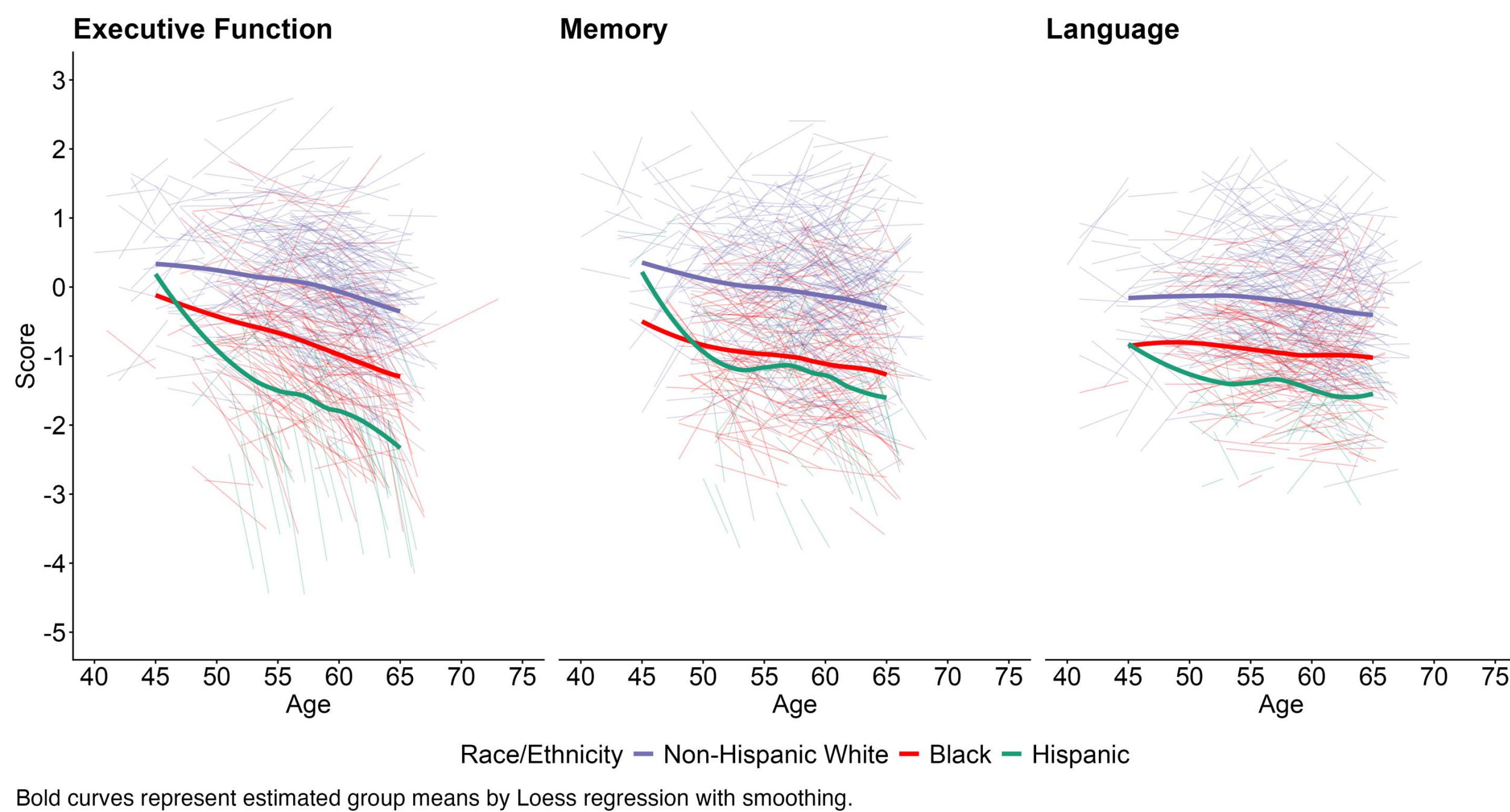
RESULTS

Table 1. Baseline characteristics of 3,750 participants

Median (Q1-Q3); N (%)	Overall (N = 3,750)	NHW (N = 2,333)	Black (N = 1,034)	Hispanic (N = 383)	p-value*
Age	56 (52-59)	56 (52-59)	55 (52-58)	58 (54-61)	<0.001
Female	2,452 (65.4)	1,502 (64.4)	667 (64.5)	283 (73.9)	0.001
Education	16 (13-17)	16 (14-18)	14 (12-16)	12 (9-14)	<0.001
Hypertension	2,169 (57.9)	1,170 (50.2)	708 (68.6)	291 (76.0)	<0.001
Diabetes	463 (12.4)	144 (6.2)	203 (19.9)	116 (30.9)	<0.001
High cholesterol	426 (11.5)	312 (13.4)	82 (8.1)	32 (8.6)	<0.001
Obesity	1,639 (43.9)	828 (35.6)	628 (61.1)	183 (48.0)	<0.001
Current smoker	377 (10.1)	162 (7.0)	178 (17.4)	37 (9.7)	<0.001
Standardized annual cognitive change					
Executive Function	-0.06 (-0.17 to 0.03)	-0.02 (-0.11 to 0.05)	-0.09 (-0.19 to -0.01)	-0.50 (-0.77 to -0.26)	<0.001
Memory	-0.02 (-0.12 to 0.07)	-0.01 (-0.10 to 0.09)	-0.04 (-0.13 to 0.04)	-0.16 (-0.39 to 0.07)	<0.001
Language	-0.01 (-0.09 to 0.07)	-0.01 (-0.08 to 0.07)	-0.02 (-0.08 to 0.05)	-0.04 (-0.19 to 0.09)	<0.001

Number of participants with missing value: education (N = 2), hypertension (N = 5), diabetes (N = 29), high cholesterol (N = 34), obesity (N = 15), smoking status (N = 24), annual change in executive function (N=2), memory (N=2), and language (N=4). *Kruskal-Wallis test for continuous variables, Chi-squared test for categorical variables.

Figure 1. Patterns of decline differed by race/ethnicity



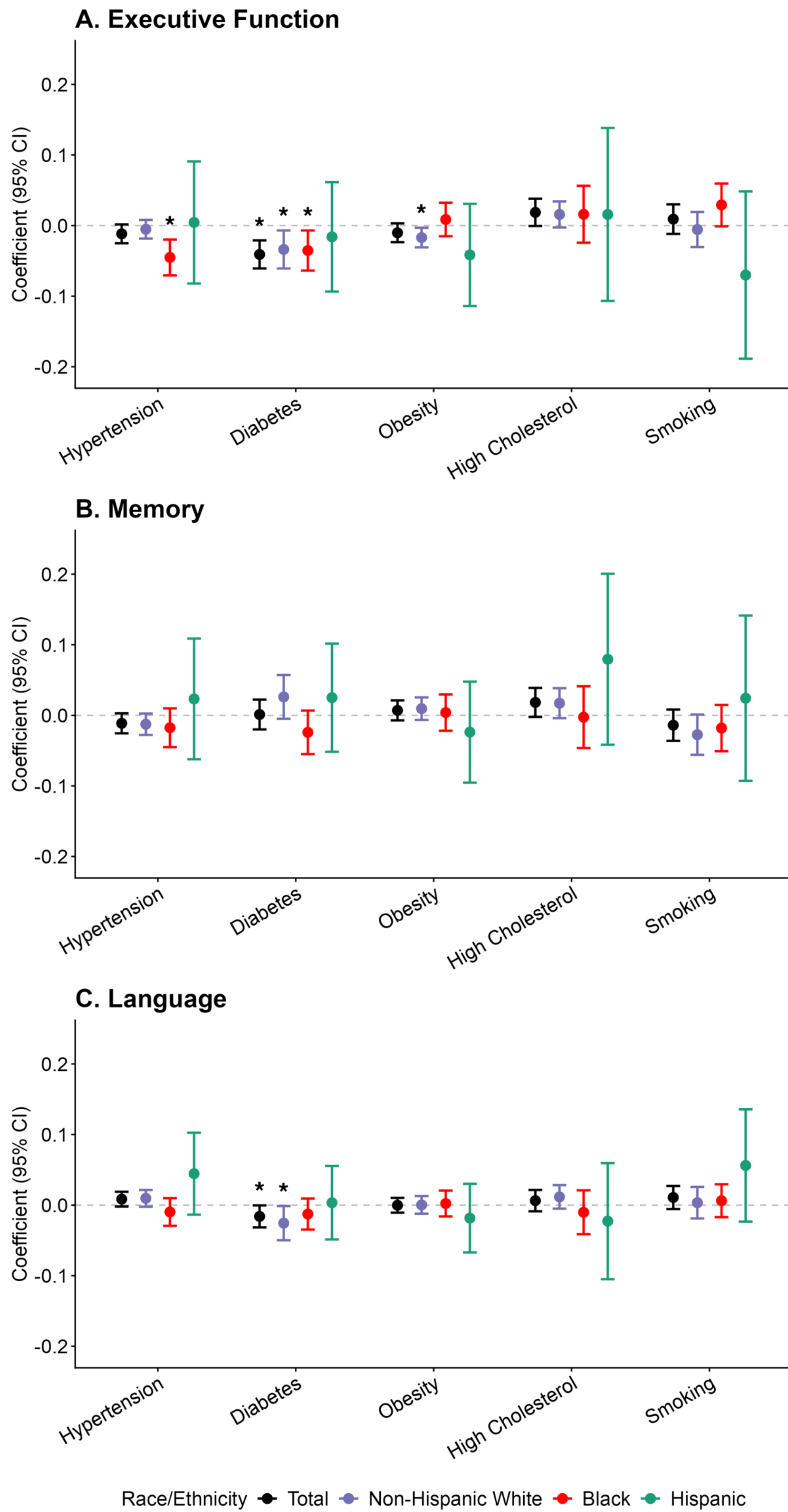
- Mean annual cognitive changes during midlife in executive function, memory and language were -0.11 ± 0.25 , -0.04 ± 0.21 , and -0.01 ± 0.15 SD, respectively
- Older adults had faster decline in all domains; females and those with higher education had slower decline in executive function and memory

CONCLUSIONS

- Racial/ethnic differences in cognitive trajectories emerge during midlife, particularly in executive function and memory. CVRFs may affect midlife cognitive change differently across racial and ethnic groups

RESULTS

Figure 2. Diabetes was associated with faster declines in executive function and language, particularly among NHW and Black participants



Stratified models adjusted for age, sex, education, hypertension, diabetes, obesity, high cholesterol and smoking. Models for the total study sample further adjusted for race/ethnicity. *p < 0.05 compared to the non-diagnosed group.