

How Does Early-Life Educational and Socioeconomic Resources Shape Racial and Ethnic Variation in Episodic Memory after age 50?

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INTRODUCTION

- Before age 18, U.S. children spend approximately 15,000 hours in K–12 education, yet cognitive outcomes vary among similarly schooled individuals
- Beyond formal schooling, children spend more than 30 hours per week with parents.
- Exposure to heterogeneous family-based educational and socioeconomic resources may impact brain development across the life course.

STUDY QUESTIONS:

1. Do parental education and socioeconomic environments in early-life impact mid- to late-life episodic memory?
2. Does the impact vary among diverse older adults?

METHODS

- Data from the Health and Retirement Study (HRS): Childhood Health and Family, Life History Mail Survey (LHMS), and 2018 cognitive panel data.
- Parental education for both mothers and fathers, categorized as low (<12 years), moderate (12 years), or high (13–17 years).
- Father's occupation classified as Armed Services, White Collar, or Blue Collar.
- Cognitive functioning was assessed using the 2018 total word recall summary score (sum of immediate and delayed recall); Range (0-20).

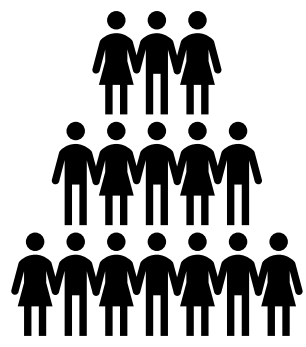
ANALYTIC STRATEGY:

- Latent Class Analysis (LCA) was used to identify distinct patterns of parental education and early life socioeconomic status (Fig. 1).
- Linear regression analyses were conducted to examine how early-life parental education and father's occupation impact episodic memory, stratified by race and ethnicity.
- Analysis accounted for age, gender, childhood SES, and childhood health status.

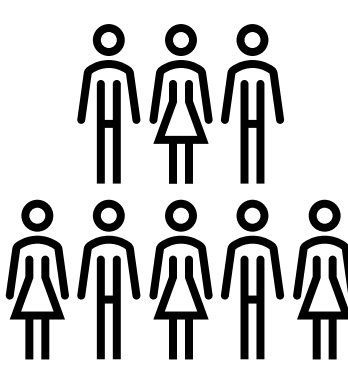
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RESULTS

Sample Characteristics



Total Sample Size: (n = 8,006)

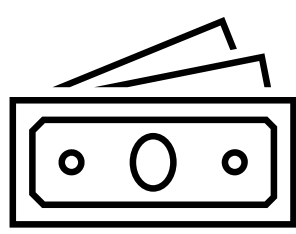


Race/Ethnicity:

White Non-Hispanic (NH)=5,429 Black NH=1,271
Hispanic =1,002
Other =301



Age: 51-102; **Mage:** 67.20 (SD: 9.77)



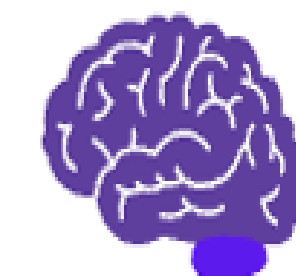
Childhood SES:

Pretty Well Off Financially(10.3%)
About Average (68.1%)
Poor/It Varied (21.6%)



Childhood Health Status:

Excellent/Very Good (82.8%)
Good (12.4%)
Fair/ Poor (4.8%)

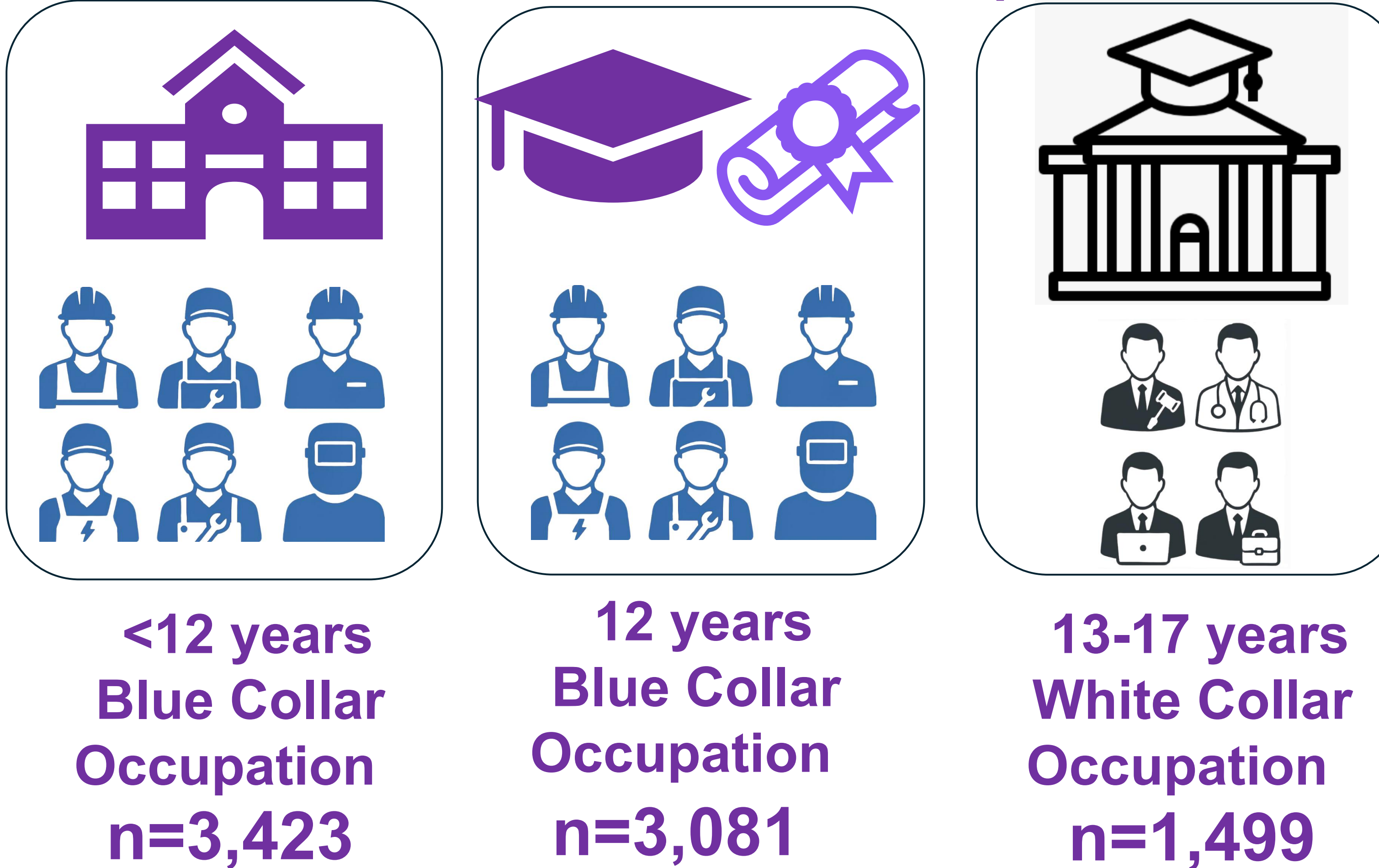


Mean Episodic Memory Scores:(Range: 0-20)

White NH=10.99 (SD 3.0)
Black NH=9.61 (SD 5.0)
Hispanic=9.98 (SD 4.2)
Other=10.98 (SD 3.1)

Figure 1: Latent Class Analysis at a Glance

Parental Education and Father's Occupational Status



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RESULTS CONT.

Study Question 1

- Compared to high parental education/white-collar fathers, paternal blue-collar occupation was associated with lower episodic memory, with stronger effects at lower paternal education levels (moderate-education: $\beta = -0.76$; low-education: $\beta = -2.13$, $p < .001$)

Study Question 2

- **White NH:** Paternal blue-collar occupation was associated with lower episodic memory, with effects increasing at lower paternal education levels (moderate-education: $\beta = -0.53$, $p = .002$; low-education: $\beta = -0.98$, $p < .001$)
- **Black NH:** Both moderate- and low-paternal-education/blue-collar classes were associated with lower episodic memory ($\beta = -1.53$, $p < .001$ vs. $\beta = -1.67$, $p < .01$)
- **Hispanic:** Low paternal education/blue-collar occupation was associated with lower episodic memory ($\beta = -1.23$, $p = .03$)

CONCLUSIONS

- Early-life family socioeconomic environments represent a modifiable target for dementia prevention across population subgroups, with paternal occupation and education jointly shaping cognitive outcomes across the life course.
- Stratified findings revealed race/ethnicity-specific patterns, ranging from a dose-response gradient among White non-Hispanic adults, uniform disadvantage across education strata among Black non-Hispanic adults, to risk concentrated only under the most disadvantaged conditions among Hispanic adults.
- These variations highlight that the strength and patterning of early-life socioeconomic effects on episodic memory differ by race/ethnicity, underscoring the need for targeted, culturally informed interventions.
- Targeting early educational experiences and family-based socioeconomic resources may strengthen cognitive reserve and reduce Alzheimer's risk across the life course.