

Introduction

- Pulmonary function is associated with cardiovascular health and later life cognition [1]. Additionally, midlife cardiovascular health (mCVH) measures can be indicative of lifelong vascular health problems [2].
- Associations between pulmonary function and cognition have not been studied in ethnoracially heterogeneous populations which have differing cardiovascular health risks [3]. Further, mCVH factors have not been investigated as potential moderators to these associations

Research Questions

- How do pulmonary function and cognition relate in different ethnoracial groups?
- Do mCVH factors moderate the effects from pulmonary function on cognition?

Methods

Study Population: 717 KHANDLE participants

- KHANDLE is a lifecourse study of ethnic disparities in dementia epidemiology which includes midlife vascular health measures and cognitive test scores assessed for participants ≥ 65 years old without dementia in their medical record at enrollment.

Exposure: Baseline pulmonary function

- Measured as peak expiratory flow or PEF (L/min)

Effect Modifiers: Ethnoracial group & Midlife Cardiovascular Health

- Groups categorized as Black, White, Asian, or Latino
- mCVH factors: blood pressure (mm Hg), BMI, and smoking (binary)

Outcome: Z-scored cognitive function scores

- Baseline semantic memory, executive function, and verbal episodic memory were derived from the Spanish and English Neuropsychological Assessment Scales (SENAS)

Statistical Analysis

- Multivariable linear models tested associations of PEF with each SENAS domain
- We tested moderation by ethnoracial subgroup using interactions and stratified models
- mCVH factors were tested as moderators of full cohort PEF-cognition associations

References

- Griffith et al. *American Journal of Respiratory and Critical Care Medicine*, 163(1), 2001. <https://doi.org/10.1164/ajrccm.163.1.9906089>
- Sedaghat et al. *Stroke*, 54(5), 2023. 10.1161/STROKEAHA.122.041374.
- Duggan et al. *The Journals of Gerontology: Series A*, 74(11), 2019. <https://doi.org/10.1093/gerona/glz057>

Contact

alberg@health.ucdavis.edu

Takeaways

- Greater pulmonary function is associated with greater baseline cognition in an ethnoracially diverse aging cohort
 - There was no significant moderation of associations of PEF with cognition by ethnoracial group
- Midlife cardiovascular health measures did not modify associations of pulmonary function on baseline cognition

Figure 1. Conceptual framework for testing associations between pulmonary function and cognition

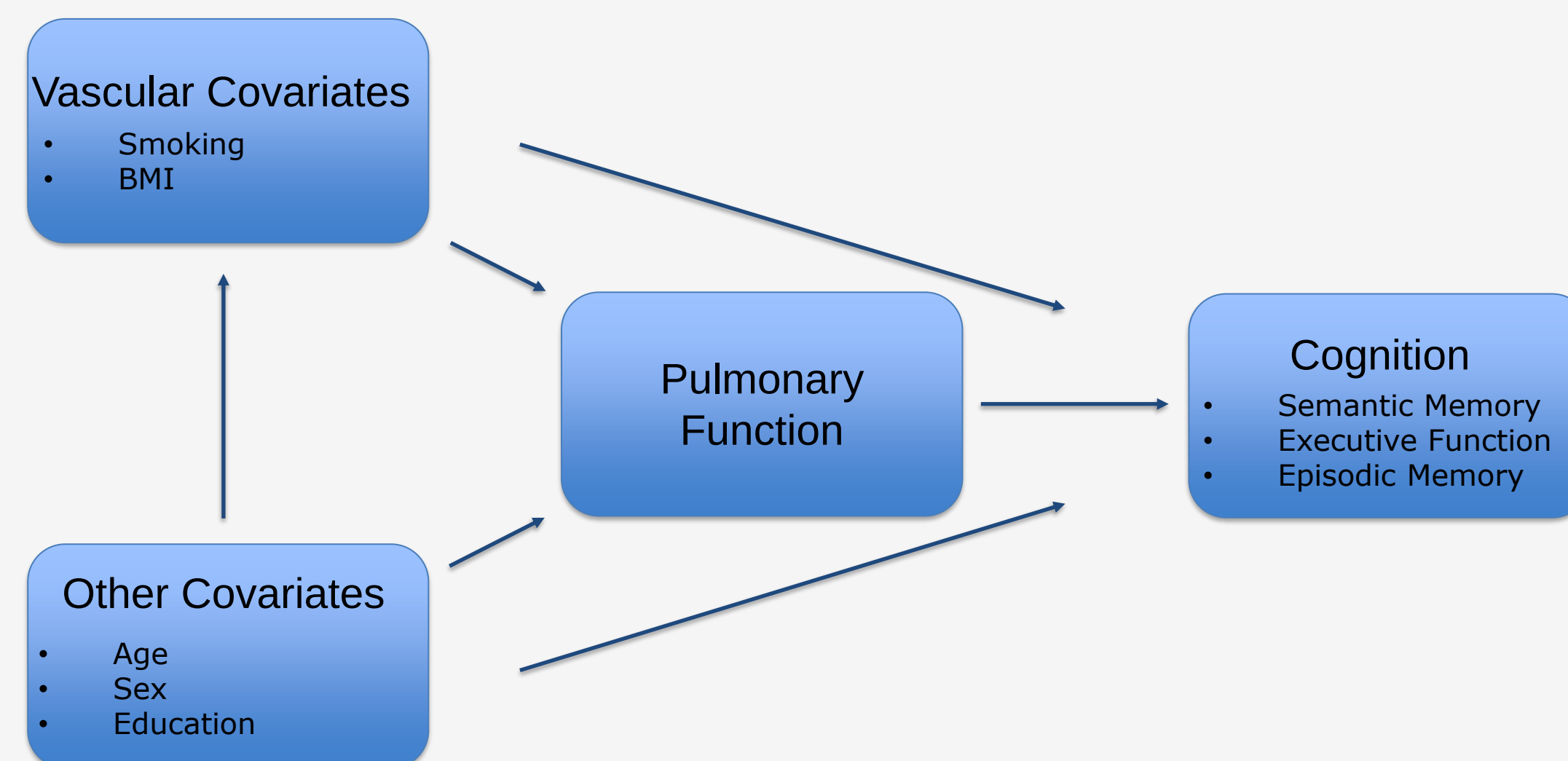
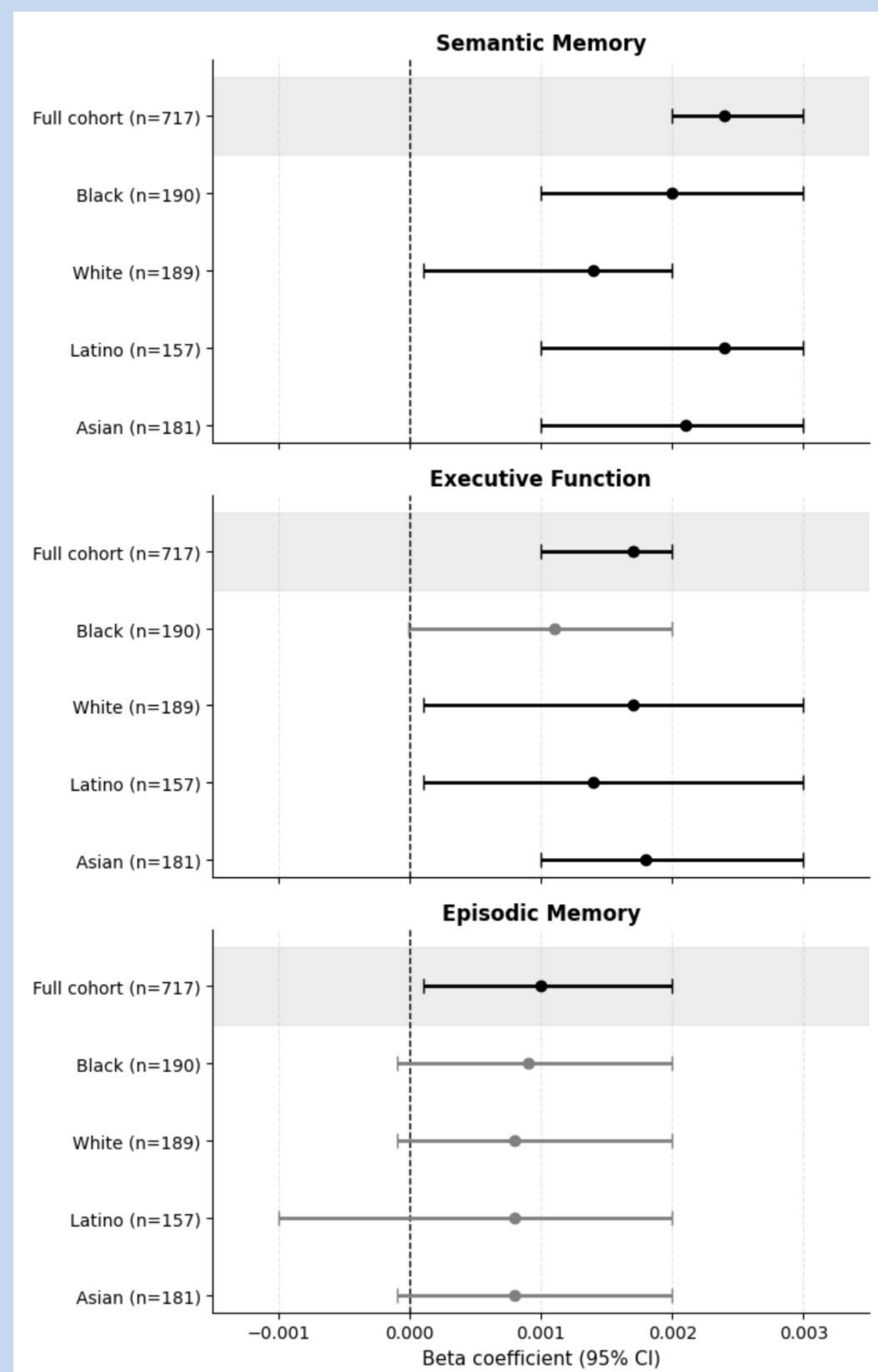


Figure 2. Full cohort and stratified associations of pulmonary function with cognition



The forest plots for each cognitive domain depict the differing associations of pulmonary function with cognitive function in the full cohort and stratified by ethnoracial group.

Results

- For the full cohort, greater PEF was associated with greater baseline semantic memory, executive function, and episodic memory
- There was no evidence of effect modification by ethnoracial group on the associations between PEF and cognition in the full cohort
 - Stratified models showed varying effect sizes for the association between PEF and executive function and semantic memory scores
 - There were no significant associations of PEF with episodic memory in ethnoracial subgroup models
- Full cohort models showed no evidence of moderation of the associations between PEF and cognition by mCVH factors

Table 1. Participant characteristics by ethnoracial group

Variable	Black	White	Asian	Latino	Total	p value
N	190	189	181	157	717	
Pulmonary Function (PEF mL)	286.16 ± 113.64	339.31 ± 142.18	331.96 ± 124.63	332.32 ± 131.10	321.84 ± 129.75	< 0.001***
Sex (male %)	65 (34.2%)	97 (51.3%)	92 (50.8%)	62 (39.5%)	316 (44.1%)	0.001**
Age (years)	77.30 ± 6.44	79.37 ± 6.87	78.40 ± 6.33	76.86 ± 6.64	78.03 ± 6.63	0.001**
Ever Smoked	84 (44.2%)	103 (54.5%)	62 (34.3%)	72 (46.2%)	321 (44.8%)	0.001**
BMI	29.51 ± 5.74	27.08 ± 5.34	25.12 ± 4.12	28.53 ± 5.55	27.55 ± 5.47	< 0.001***
ED:HS or less	42 (22.1%)	37 (19.6%)	18 (9.9%)	49 (31.2%)	146 (20.4%)	< 0.001***

Conclusions

- Greater pulmonary function was associated with greater baseline cognition in a diverse ethnoracial population
- Across ethnoracial subgroups, associations between PEF and domain-specific cognition remained similar and there was no evidence of effect modification
- These findings validate pulmonary health as an indicator of cognition, possibly linked to vascular health
- mCVH did not modify the effect of PEF on cognition
- In the future, alternative pathways of association such as cardiovascular efficiency should be studied as well as longitudinal analysis of the pathways described in the present research

Acknowledgments: We thank the participants and staff that made KHANDLE possible. Funding resources: R01AG052132