

Clinical Profile and Natural History in Vascular Cognitive Impairment and Dementia

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- Individuals with vascular cognitive impairment and dementia (VaCID) had better cognition and function at baseline and slower rate of decline over time than those with AD
- VaCID cohort is more diverse than AD, with disproportionally more Black/African American participants

INTRODUCTION

- We have made significant strides in the detection and treatment of Alzheimer's disease (AD), but less in identifying and treating the ~40% of patients with other causes of cognitive impairment and dementia.
- Vascular disease, the second most common cause of dementia, has few biomarkers to confirm diagnosis and possibly direct and design effective treatment trials.
- Trajectories of decline in vascular cognitive impairment and dementia (VaCID) are less well-established.
- Here we use a national cohort to examine the clinical profile and natural history in VaCID.

METHODS

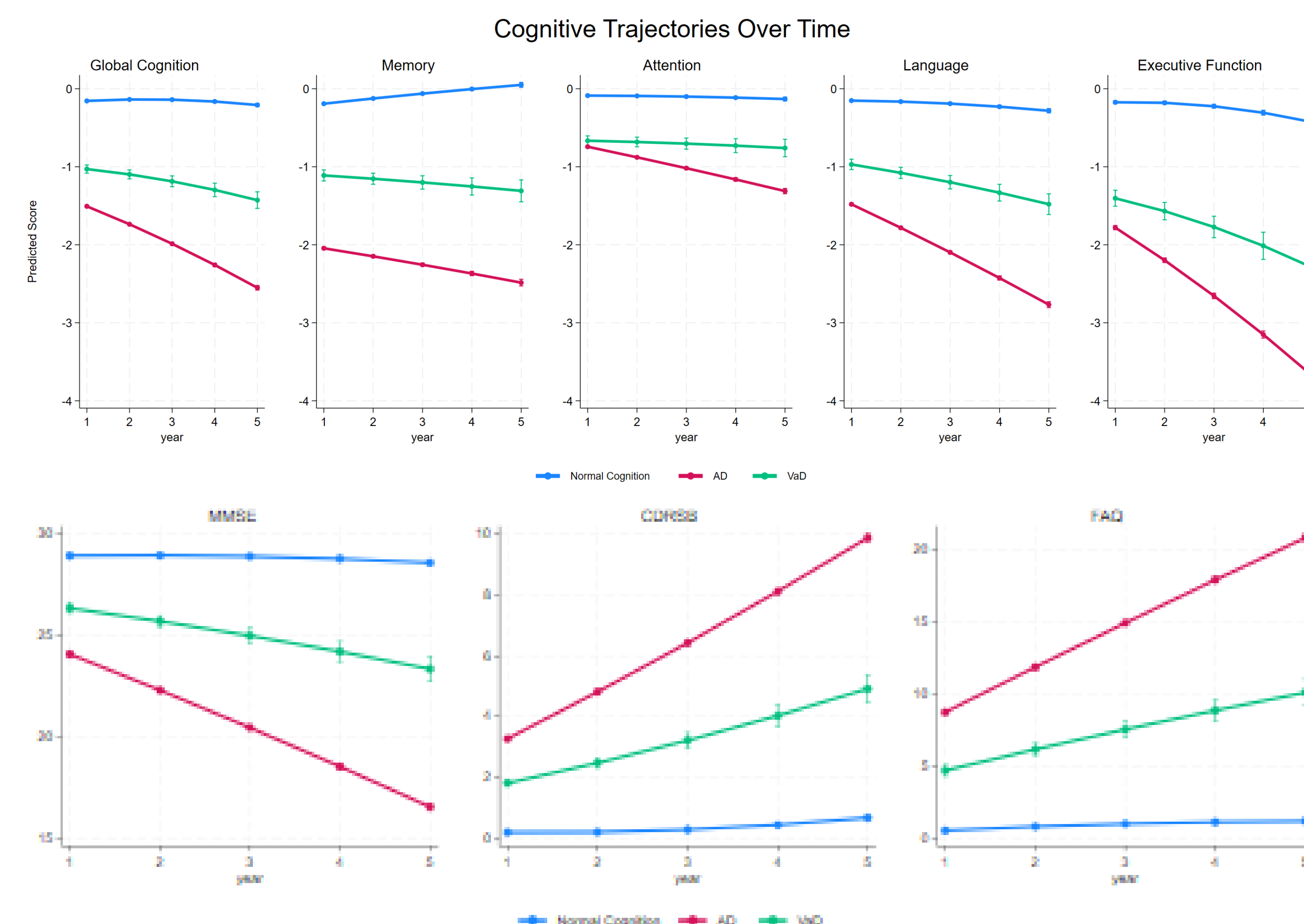
- Data:** National Alzheimer's Coordinating Center Uniform Data Set (NACCUDS, 9/2005-10/2025)
- Measures**
 - Outcomes: Cognitive composite and domain scores of episodic memory, language, attention, and executive function, Functional Assessment Questionnaire (FAQ)
- Main independent variables:**
 - Etiological dx of AD, VaCID, (reference=Normal Cognition)
 - Demographics: age, sex, education, race/ethnicity
 - Clinical characteristics: BMI, hypertension, high cholesterol, diabetes
 - Genetics: Any APOE e4, any APOE e2
- Analysis Methods**
 - Multivariable linear mixed models to estimate trajectories of cognitive and functional outcomes in those with baseline NC, VaCID, and AD
 - Subsample analysis in Black/African American (AA) cohort

Baseline characteristics

Variable	Normal	AD	VaCID
N	21837	15,115	935
Age, years, mean (SD)	70.7 (8.9)	73.5 (9.0)	75.0 (8.5)
Male (%)	34.3	46.7	48.4
Race (%)			
White	75.9	81.3	61.7
Black	17.9	12.8	29.0
All others	6.2	5.9	9.3
Hispanic (%)	8.9	8.7	11.7
Education, years, mean (SD)	15.9 (3.0)	15.0 (3.5)	14.4 (3.6)
MMSE, mean (SD)	29.0 (1.4)	23.6 (4.7)	25.6 (3.9)
FAQ, mean (SD)	0.4 (1.5)	9.4 (7.8)	5.9 (7.4)
GDS, mean (SD)	1.4 (2.1)	2.4 (2.5)	2.8 (2.8)
NPIQ, mean (SD)	0.9 (2.0)	3.8 (4.1)	3.4 (4.2)
Any APOE e2 (%)	9.1	4.4	5.8
Any APOE e4 (%)	23.7	42.3	22.7
# meds, mean (SD)	5.6 (4.1)	6.4 (4.0)	7.5 (4.3)
Diabetes (%)	12.5	12.6	29.0
Hypertension (%)	45.9	48.3	73.4
High cholesterol (%)	47.0	50.8	68.8
Stroke (%)	2.5	4.4	43.5
TIA (%)	3.5	4.5	15.9
TBI (%)	11.3	12.9	14.0
BMI, mean (SD)	27.7 (5.6)	26.4 (4.9)	28.2 (6.0)

RESULTS

Predicted Outcomes Trajectories Over time



CONCLUSIONS

- Compared to those with normal cognition at baseline, VaCID had worse cognition and function at baseline, with faster rate of decline over time
- Compared to those with AD at baseline, VaCID had better cognition and function at baseline, with slower rate of decline.
- The group is distinguished by demographic features (e.g. more diverse race /ethnicity, lower education), comorbidities (higher cardiovascular risks factors) and genetic differences, suggesting more disease specific studies are needed.
- Analyses in Black/AA subsamples showed similar results
- Limitations: Data from the NACCUDS are collected in Alzheimer's Disease Research Centers which may not include the full breadth of VaCIDs and may limit our ability to detect its effects