

BACKGROUND

Autopsy evidence has revealed that Alzheimer's disease (AD) pathology is often accompanied by comorbid vasculopathy. Our aims were to:

1. Determine **which specific pathologies tend to co-occur** post-mortem in clinical AD patients;
2. Describe the **cognitive characteristics** associated with different pathological clusters.

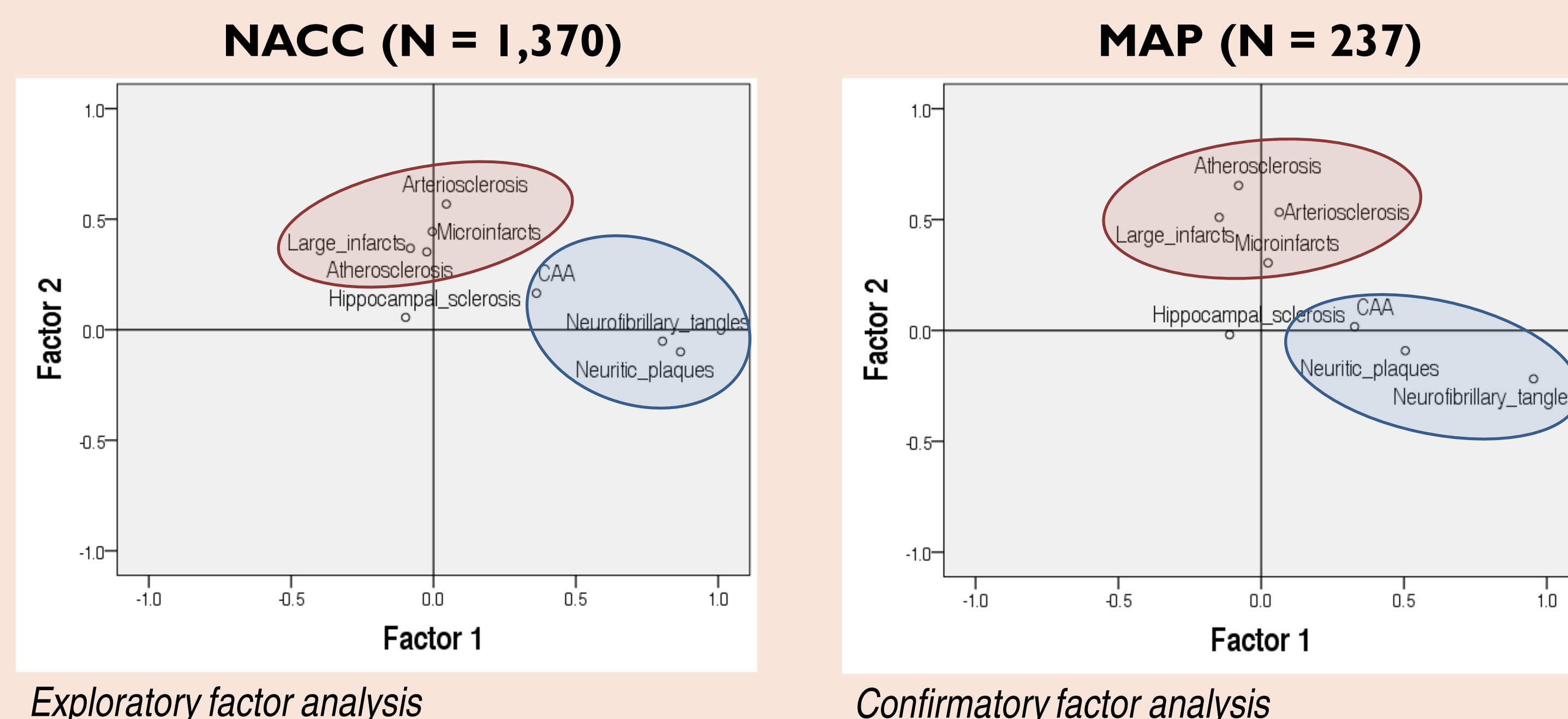
METHODS

1. Which specific pathologies tend to co-occur post-mortem in clinical AD patients?
 - **Exploratory factor analysis** on autopsy data from 1,370 participants from the National Alzheimer Coordination Centre (NACC).
 - **Confirmatory factor analysis** on 237 participants of the Rush Memory and Aging Program (MAP).
2. What cognitive characteristics are associated with different pathological clusters?
 - **One-way ANOVA**: Compare attention, memory, language and executive performance 1-7 years pre-mortem, clustered along each factor.
 - **Logistic regression**: Determine the nature and strength of the associations between cognition and pathological factor loadings.

Inclusion criteria: Ante mortem clinical diagnosis of AD & complete autopsy data.

RESULTS

1. Which specific pathologies tend to co-occur post-mortem in clinical AD patients?



2. What cognitive characteristics are associated with different pathological clusters?

Figure. Cognitive performance 1-7 years pre-mortem according to factor loadings.

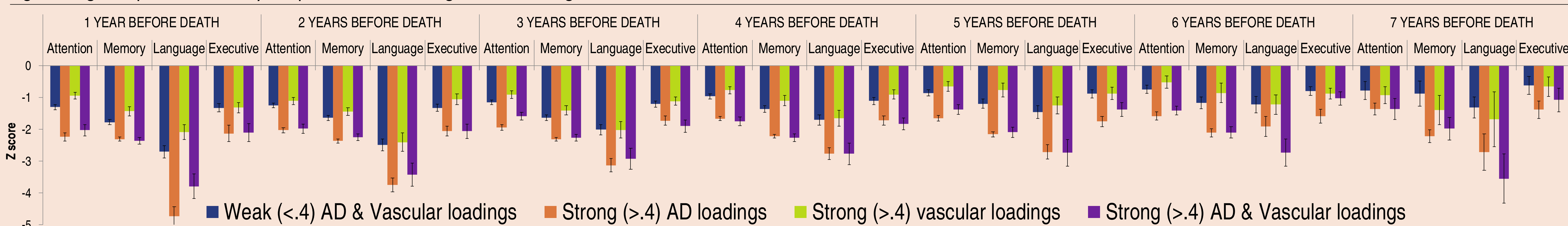


Table. Results of regression models, corrected for age, sex, education and ApoE4 status.

	Factor 1 loadings		Factor 2 loadings	
	Standardized Beta	p value	Standardized Beta	p value
Model: 1 year before death F = 3.962, p < .001	Attention: -.176 Memory: -.170 Language: -.035 Executive: -.019	.103 .073 .700 .837	Attention: .011 Memory: .200 Language: .126 Executive: -.237	.921 .037 .166 .012
Model: 2 years before death F = 5.184, p < .001	Attention: -.055 Memory: -.182 Language: -.056 Executive: -.078	.508 .027 .438 .318	Attention: -.001 Memory: .014 Language: .026 Executive: -.068	.987 .860 .713 .380
Model: 3 years before death F = 5.208, p < .001	Attention: -.108 Memory: -.202 Language: -.065 Executive: .038	.184 .013 .322 .581	Attention: .159 Memory: -.108 Language: .136 Executive: -.086	.052 .186 .041 .217
Model: 4 years before death F = 8.838, p < .001	Attention: -.113 Memory: -.174 Language: -.108 Executive: -.065	.205 .037 .108 .358	Attention: -.084 Memory: .012 Language: .051 Executive: -.018	.377 .895 .473 .813
Model: 5 years before death F = 6.635, p < .001	Attention: .007 Memory: -.247 Language: -.079 Executive: -.049	.950 .013 .280 .570	Attention: .147 Memory: -.030 Language: .038 Executive: -.134	.230 .776 .625 .139
Model: 6 years before death F = 2.293, p = .024	Attention: -.077 Memory: -.180 Language: .112 Executive: -.064	.528 .125 .272 .527	Attention: .137 Memory: -.171 Language: .065 Executive: -.067	.264 .147 .527 .513
Model: 7 years before death F = 3.899, p = .002	Attention: .104 Memory: -.105 Language: -.422 Executive: .174	.630 .579 .016 .302	Attention: Model n.s. Memory: Model n.s. Language: Model n.s. Executive: Model n.s.	

Note. Bold indicates statistical significance.

CONCLUSION

Our results suggest that:

- Different pathologies tend to co-occur predictably in the brains of AD individuals
- AD pathology appears to contribute more strongly than vascular pathology to in vivo cognitive impairment
- Persistent memory impairment is suggestive of predominant underlying AD pathology

Note. Results remained largely unchanged when data were re-analyzed using exploratory and confirmatory latent class analyses.

Acknowledgements: The NACC database is funded by NIA/NIH Grant U01 AG016976. NACC data are contributed by the NIA funded ADCs: P30 AG019610 (PI Eric Reiman, MD), P30 AG013846 (PI Neil Kowall, MD), P50 AG008702 (PI Scott Small, MD), P50 AG025688 (PI Allan Levey, MD, PhD), P50 AG047266 (PI Todd Golde, MD, PhD), P30 AG010133 (PI Andrew Saykin, PsyD), P50 AG005146 (PI Marilyn Albert, PhD), P50 AG005134 (PI Bradley Hyman, MD, PhD), P50 AG016574 (PI Ronald Petersen, MD, PhD), P50 AG005138 (PI Mary Sano, PhD), P30 AG008051 (PI Steven Ferris, PhD), P30 AG013854 (PI M. Marsel Mesulam, MD), P30 AG008017 (PI Jeffrey Kaye, MD), P30 AG010161 (PI David Bennett, MD), P50 AG047366 (PI Victor Henderson, MD, MS), P30 AG010129 (PI Charles DeCarli, MD), P50 AG016573 (PI Frank LaFerla, PhD), P50 AG016570 (PI Marie-Francoise Chesselet, MD, PhD), P50 AG005131 (PI Douglas Galasko, MD), P50 AG023501 (PI Bruce Miller, MD), P30 AG035982 (PI Russell Swerdlow, MD), P30 AG028383 (PI Linda Van Eldik, PhD), P30 AG010124 (PI John Trojanowski, MD, PhD), P50 AG005133 (PI Oscar Lopez, MD), P50 AG005142 (PI Helena Chui, MD), P30 AG012300 (PI Roger Rosenberg, MD), P50 AG005136 (PI Thomas Montine, MD, PhD), P50 AG033514 (PI Sanjay Asthana, MD, FRCP), P50 AG005681 (PI John Morris, MD), and P50 AG047270 (PI Stephen Strittmatter, MD, PhD).

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