

Socioculturally generalizable speech biomarkers of Alzheimer's and frontotemporal dementia in Latinos

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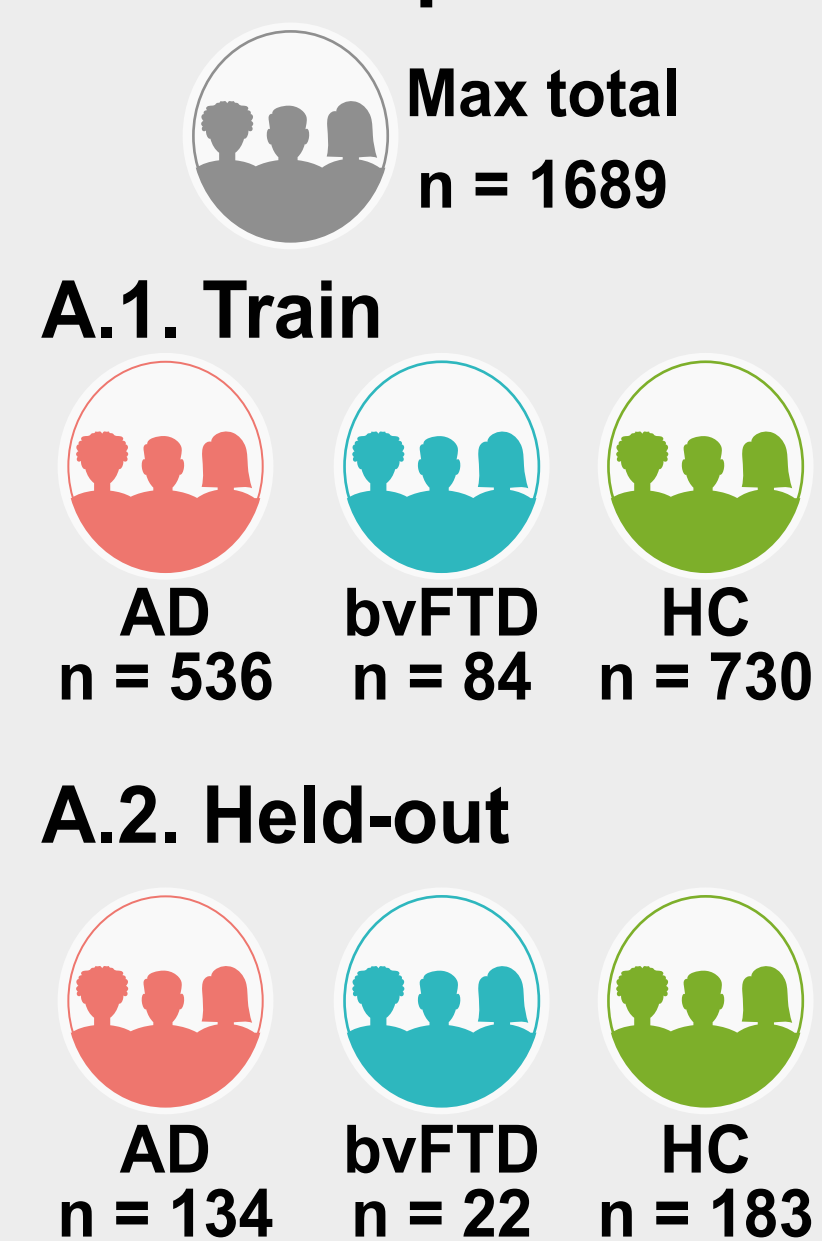
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Introduction

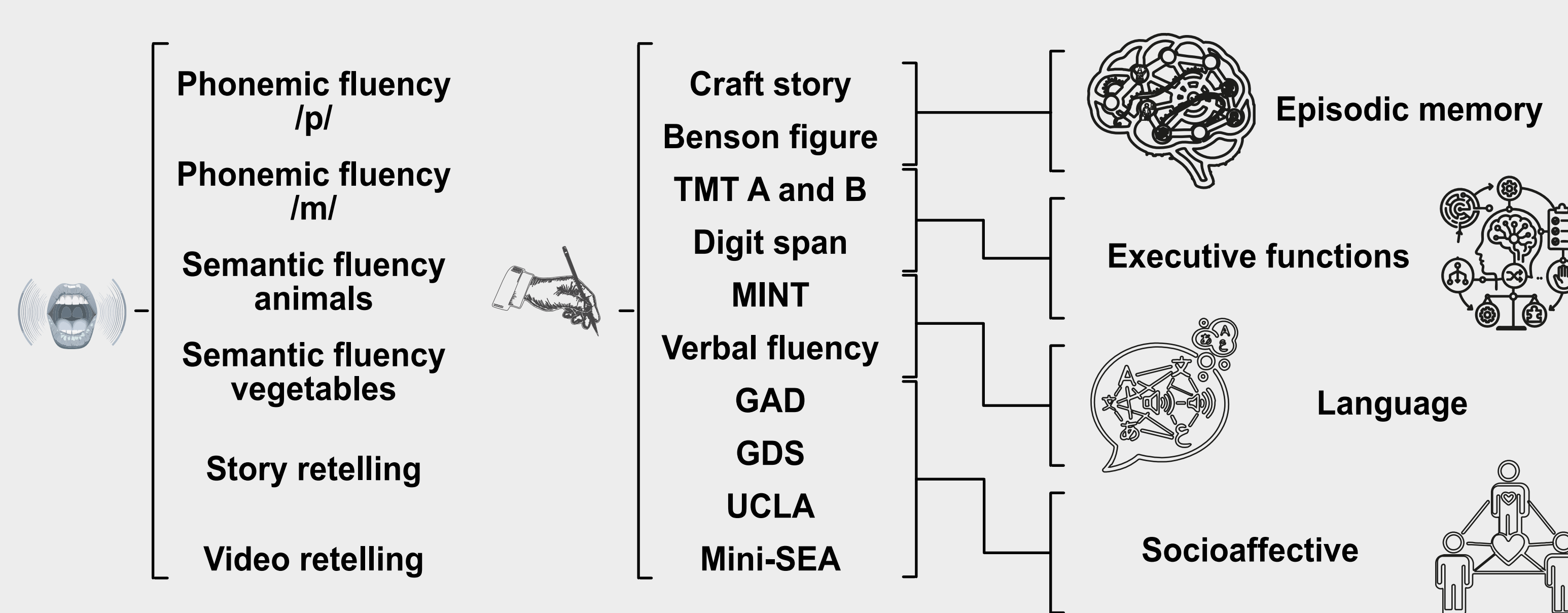
Automated speech-and-language analysis (ASLA) is emerging as a scalable approach to capture markers of Alzheimer's disease (AD) and behavioral variant frontotemporal dementia (bvFTD)^{1,2}. Prior work shows these markers aid differential diagnosis, preclinical detection, symptom-severity prediction, and conversion risk in unimpaired individuals^{1,3}. Yet few studies test marker robustness to key speech and language modulators such as sex, age, education, dialect, languages, and social determinants of health (SDH)⁴. Here we evaluated whether well-established ASLA features withstand socio-cultural heterogeneity in a large, diverse Latin American cohort.

Methods

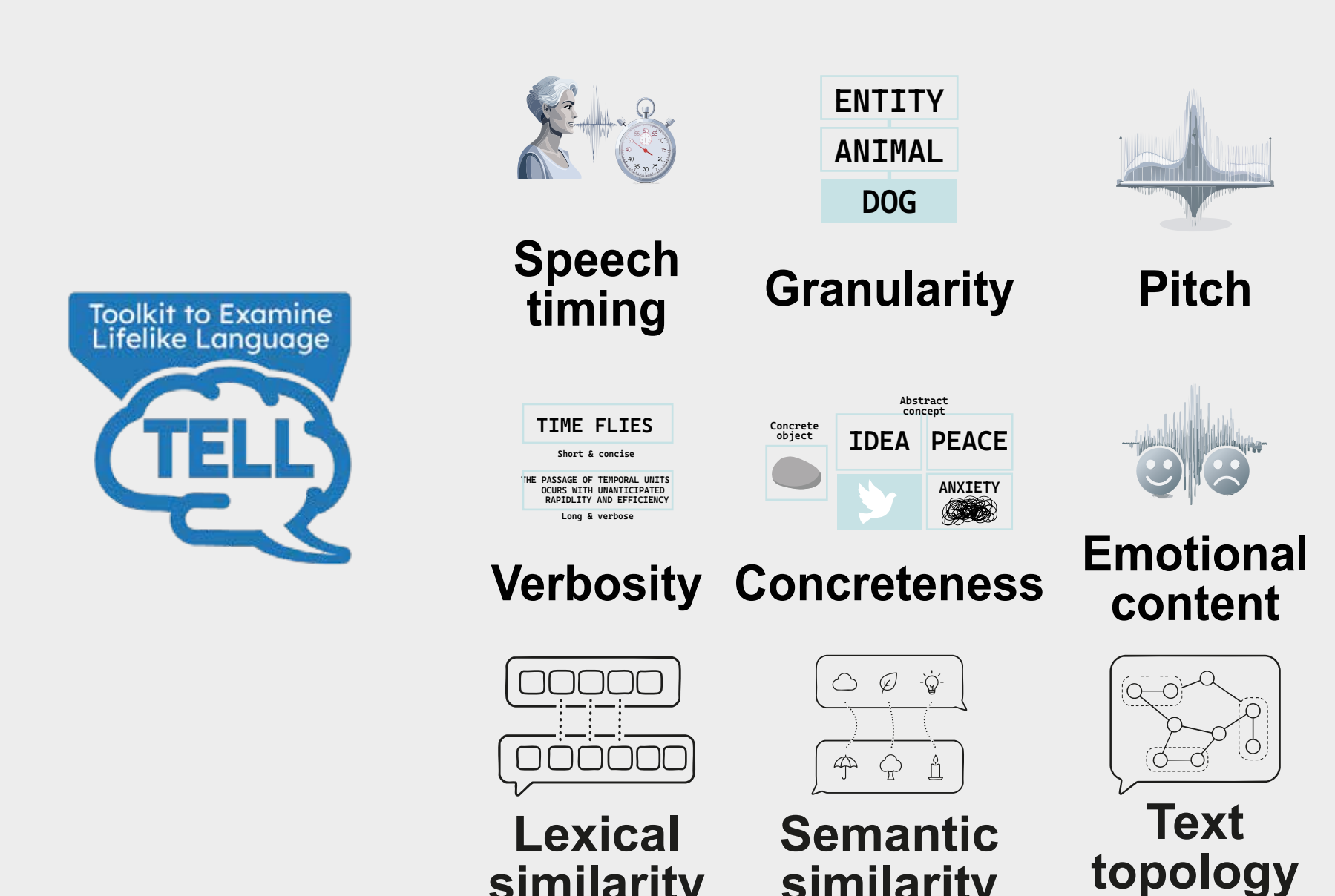
A. Participants



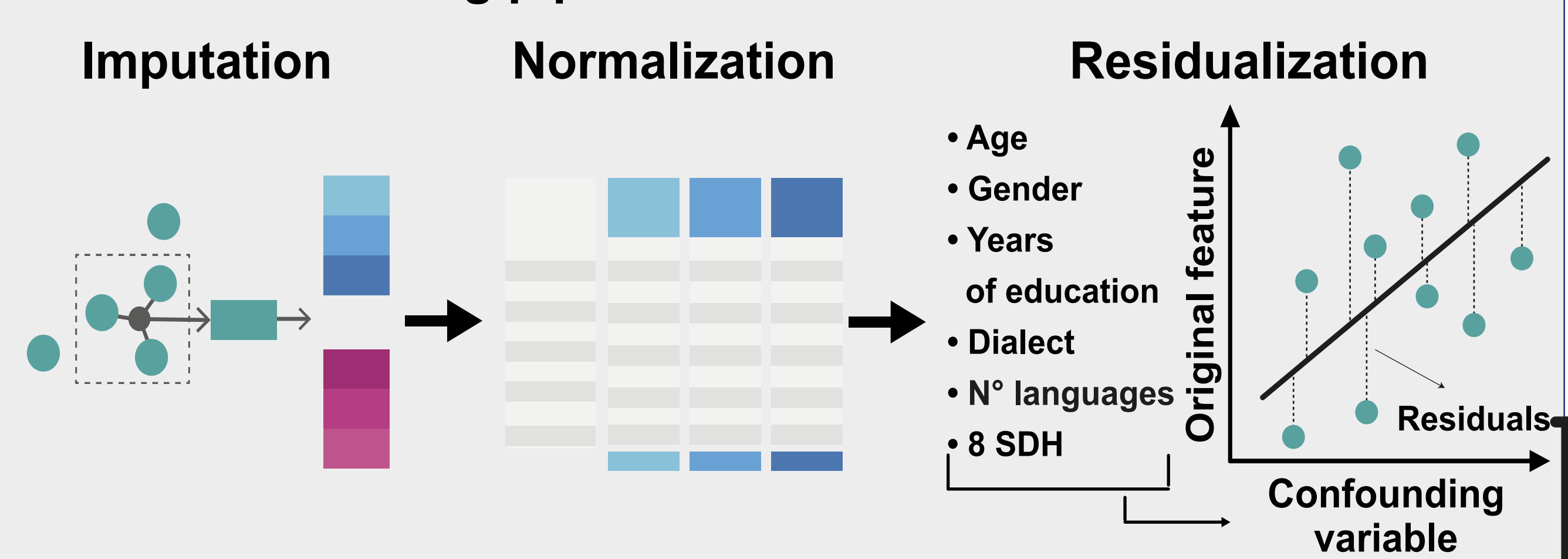
B. Tasks and domains



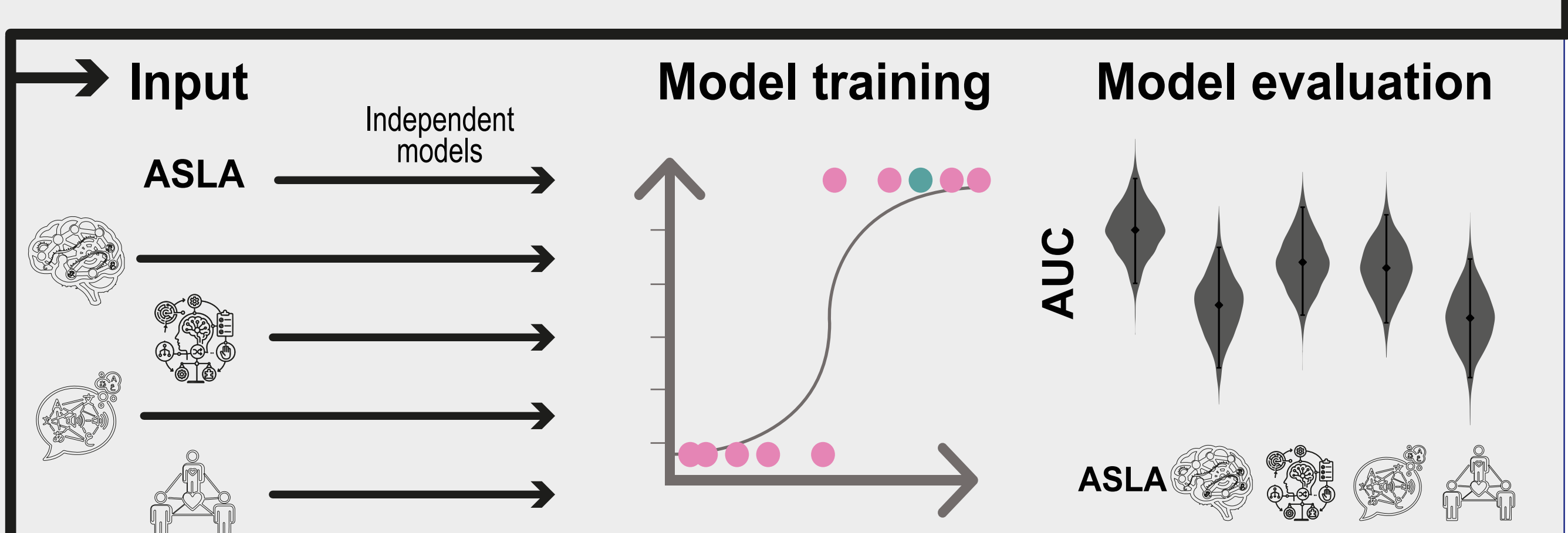
C. Feature extraction



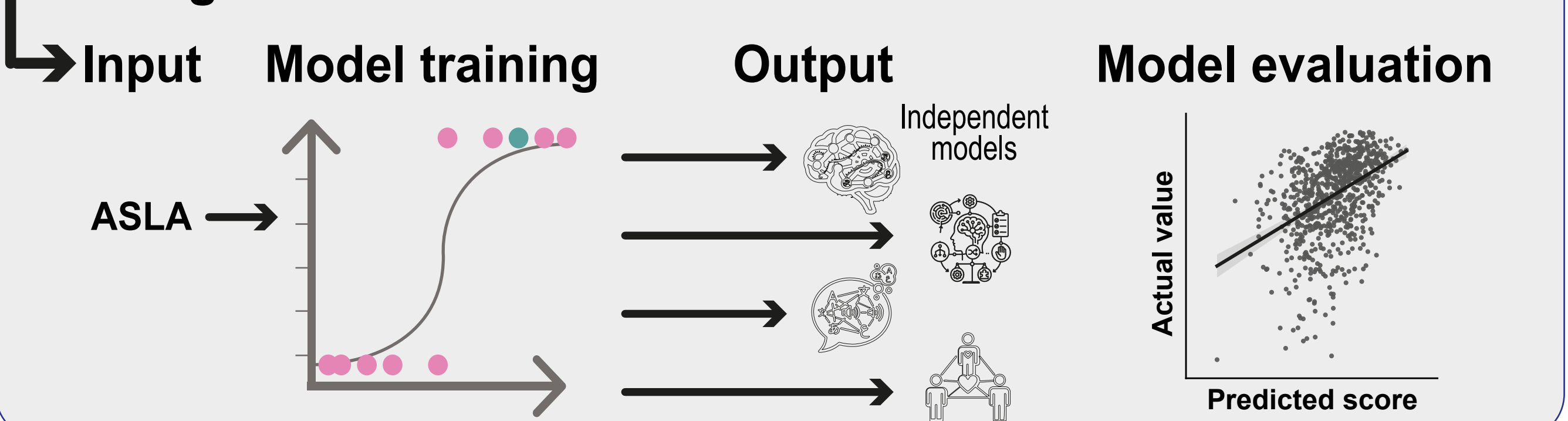
E. Machine learning pipeline



E.1. Classification



E.2. Regression

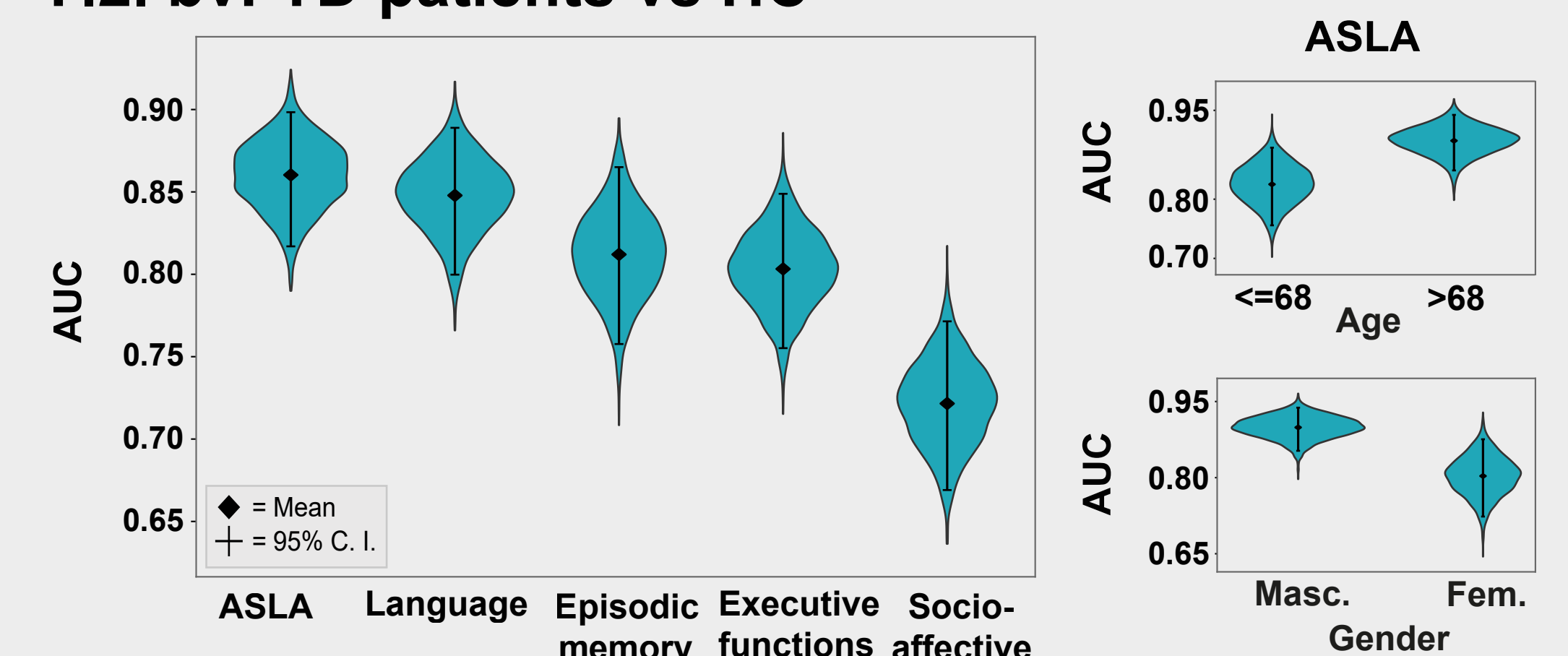


F. Classification results on held-out

F.1. AD patients vs HC

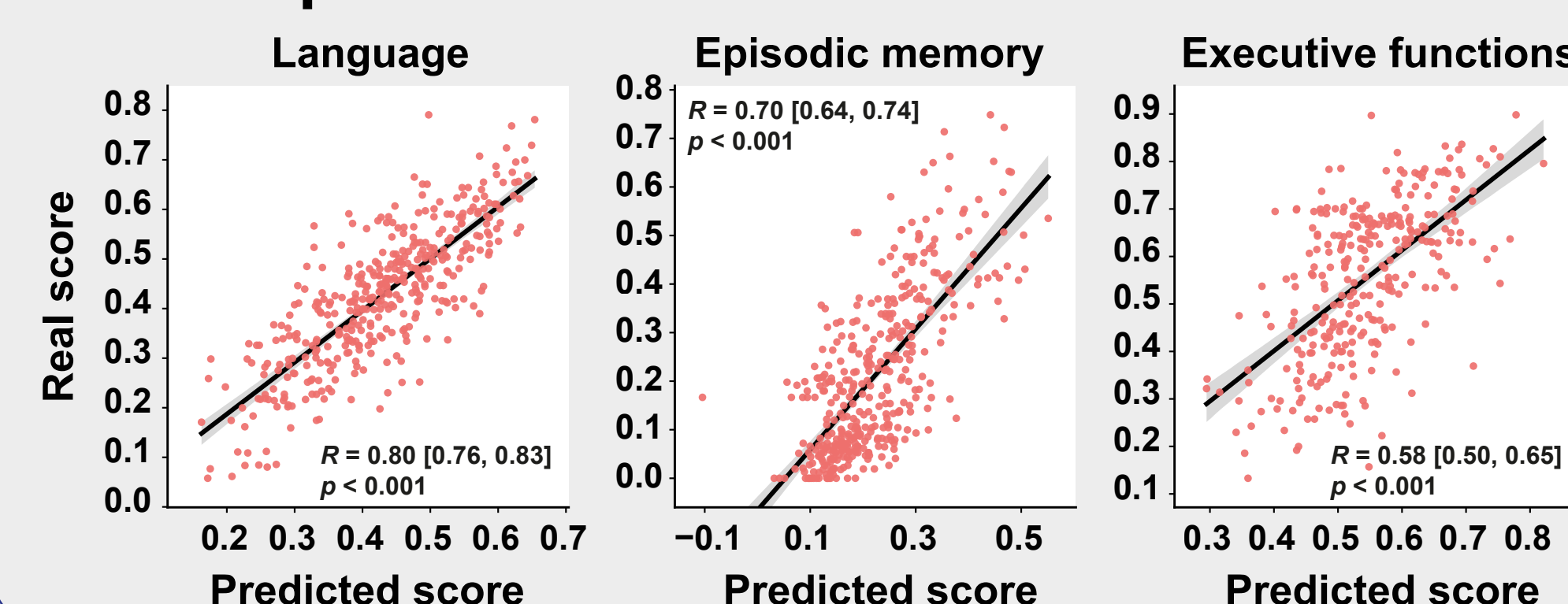


F.2. bvFTD patients vs HC

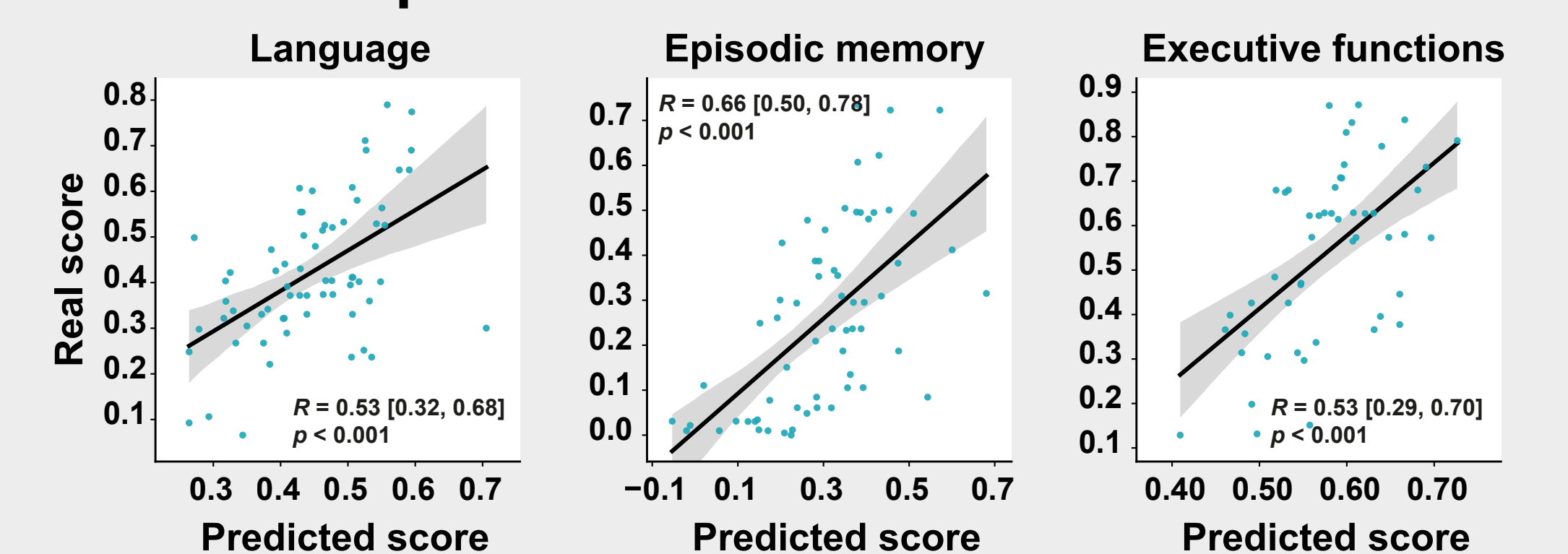


G. Regression results on held-out

G.1. AD patients



G.2. bvFTD patients



- ASLA robustly discriminates AD and bvFTD irrespective of sociocultural factors.
- It further tracks language, memory, and executive outcomes, underscoring its utility for patient phenotyping and monitoring.
- ASLA could support scalable screening and monitoring in low-resource or remote settings.
- Its automated format may ease cross-site implementation and reduce examiner-dependent variability.

Conclusions

Acknowledgements

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4. Gonzalez-Gomez R et al., *eClinicalMedicine* 82, 103187 (2025).

Interested in this research?
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References