



Cognitive evaluation in a large community setting: Insights from the pilot phase of the P-CARRS-BRAIN Study

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KEY TAKEAWAYS: 1. Established a harmonized cognitive phenotyping framework integrating paper-pencil, digital, and functional assessments across diverse linguistic, cultural, and literacy backgrounds. 2. Standardized adaptations, training, and REDCap-enabled workflows ensured reliable, high-quality data collection across sites. 3. Provides the foundation for multimodal phenotyping of cognitive ageing and Alzheimer's disease and related dementias (AD/ADRD) in the CARRS-BRAIN cohort.

Background

- CARRS-BRAIN is a sub-study within the Precision-CARRS ongoing population-based longitudinal investigation conducted in Chennai and Delhi, India.
- The project integrates multimodal phenotyping of AD plasma biomarkers, whole-genome sequencing, neuroimaging, and cognitive measures with longitudinal genetic, cardiometabolic, socio-behavioural, and environmental exposures to identify risk profiles and predictive models of cognitive impairment along the AD/ADRD continuum in South Asians.
- Participants > 40 years (n=8,242) receive computer-administered cognitive tools. Those ≥ 50 years (n = 4,132) complete paper-and-pencil cognitive testing and self-report inventories, reflecting India's linguistic, cultural, and educational diversity.

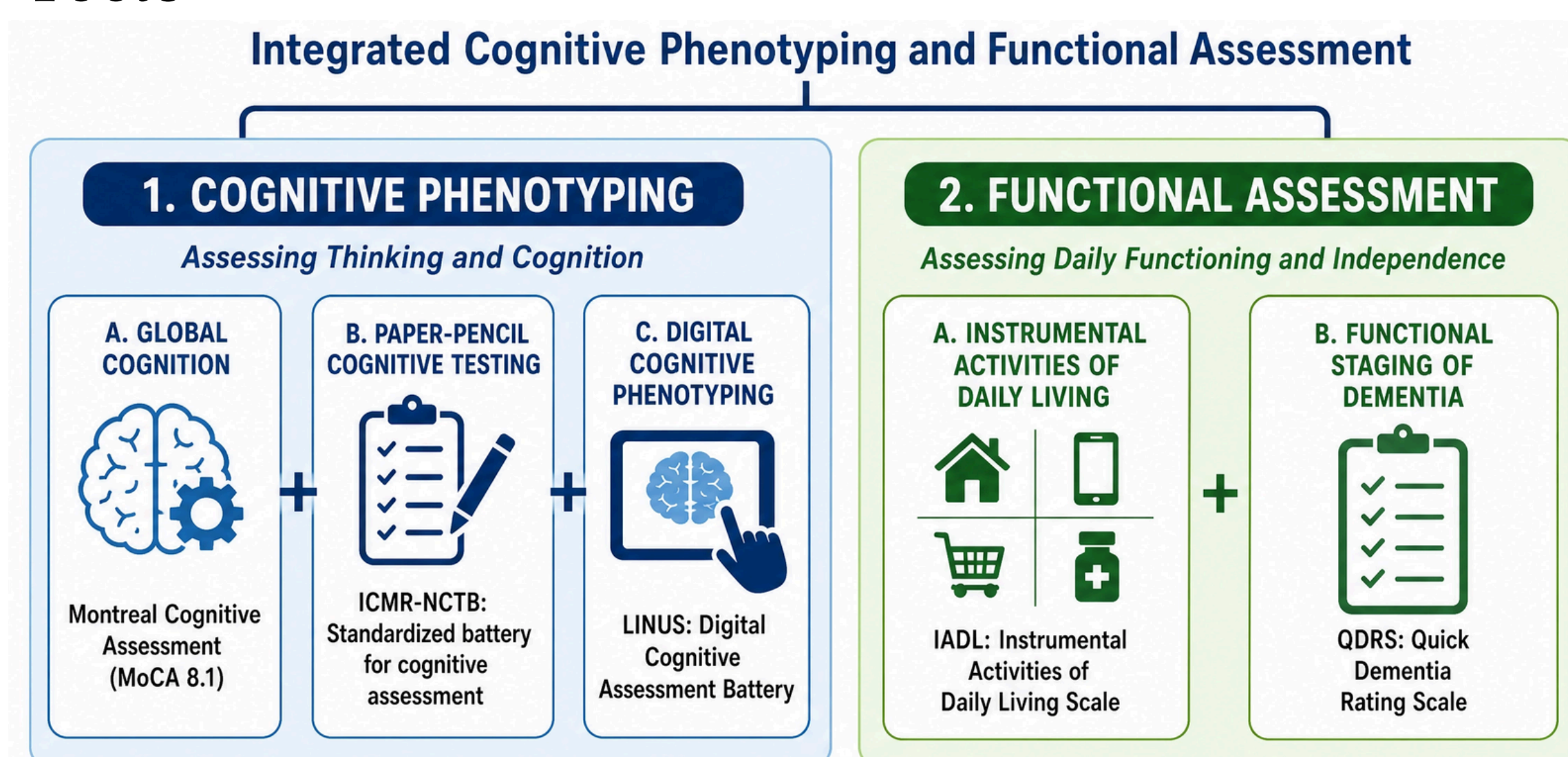
We aim to describe the development and implementation of standardised cognitive assessment protocols in the CARRS-BRAIN study and to summarise insights from the pilot phase.

Method

Study sample

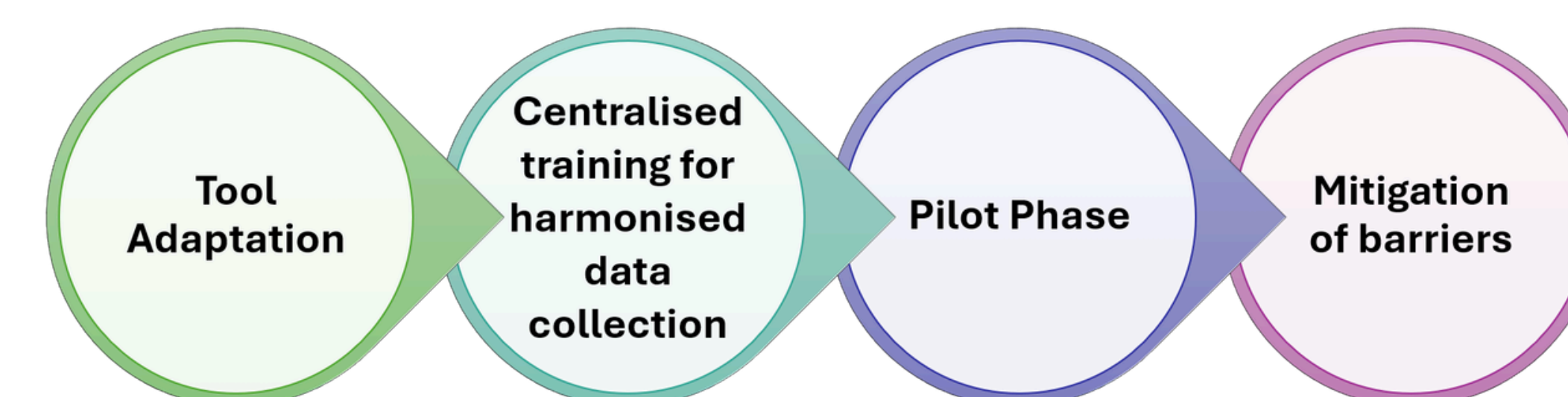
60 volunteers (30 per site; mean age=62.6, SD=9.18; 59% female) recruited from Chennai and Delhi. 22% obtained a graduate degree; 22% were illiterate.

Tools

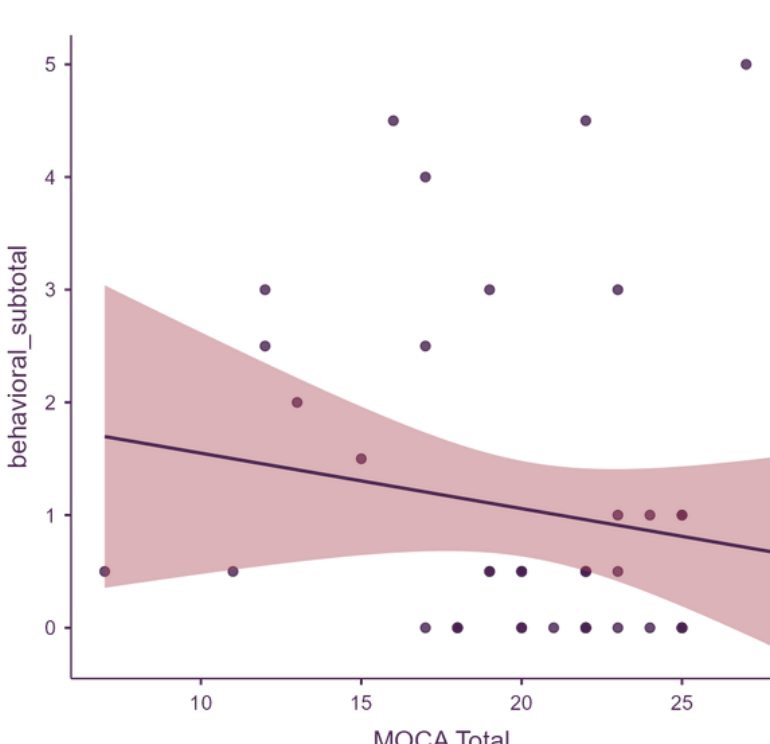
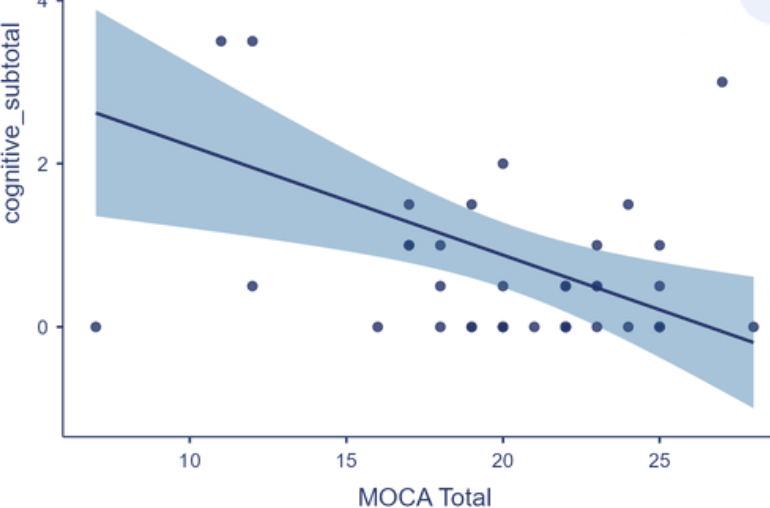
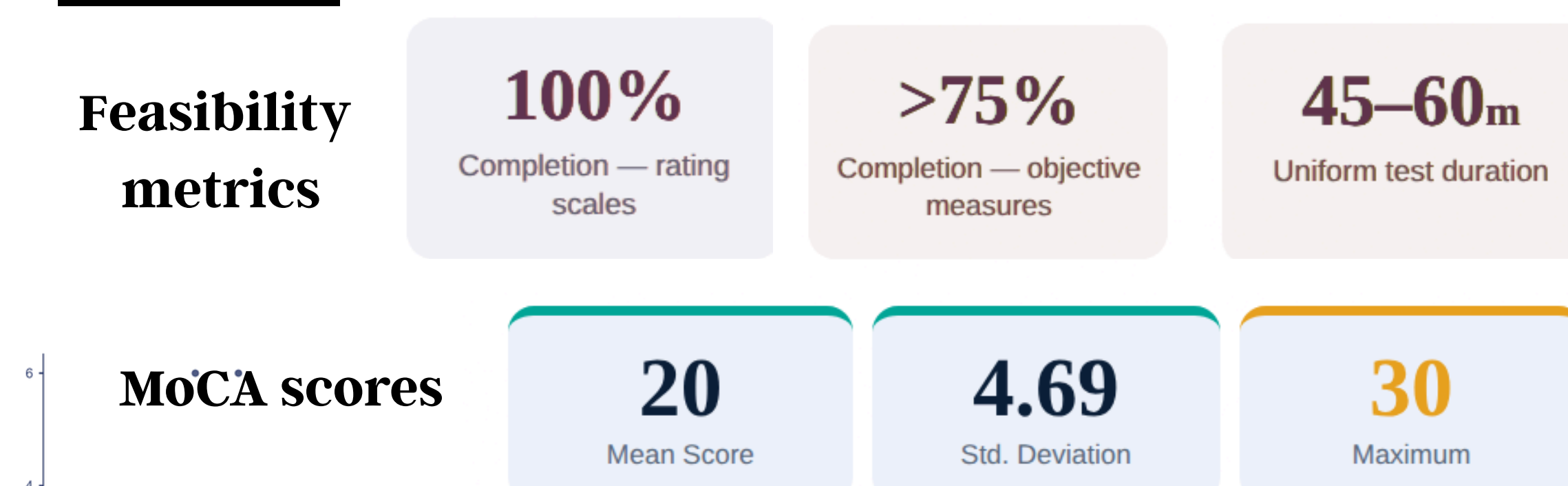


ICMR-NCTB- Indian Council of Medical Research-Neurocognitive toolbox; QDRS- Quick Dementia Rating Scale; IADL-E: Instrumental Activities of Daily Living for the Elderly

Procedure



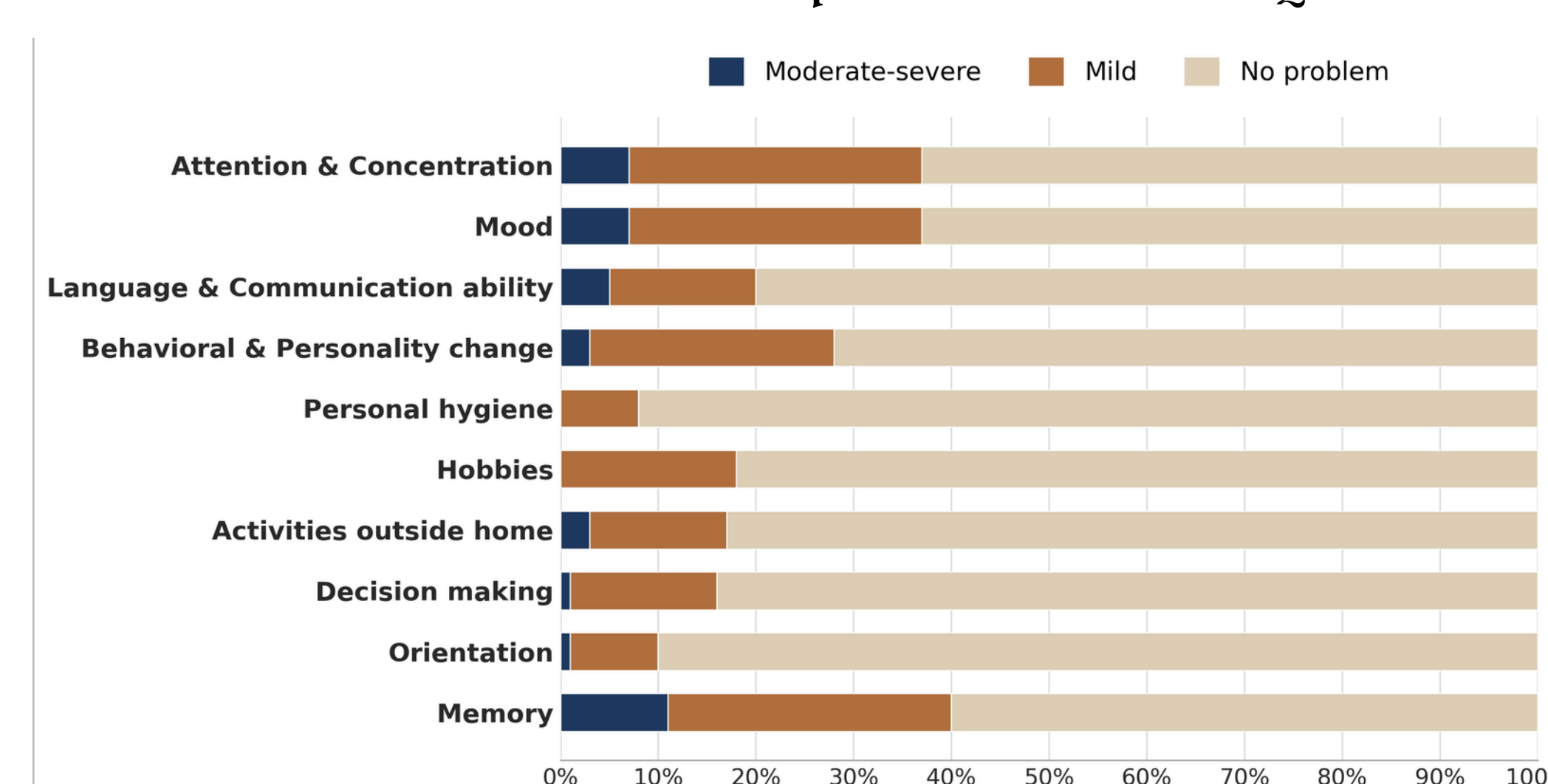
Results



Age- and education-adjusted associations between

- MoCA and QDRS cognitive domain ($\beta = -0.179$, $R^2 = 0.330$, $p = 0.003$)
- MoCA and QDRS Total score ($\beta = -0.209$, $R^2 = 0.232$, $p = 0.032$)
- MoCA and QDRS behavioral domain ($\beta = -0.03$, $R^2 = 0.051$, $p = 0.646$)

Distribution of self reported difficulties on QDRS



Mitigation of barriers

Barriers	Solutions
Task difficulty, varied literacy levels	Illiterate & Low-literate versions (E.g. 100-7 replaced by 20-3)
Sensory motor impairments	Reliability codes (REDCap)
Behavioral & Motivation	Psychoeducation, adequate breaks
Digital literacy, gadget use	Instruction modification & adequate practice
Examiner related fluctuations – completion time, administration	Workshops and demonstrations, Periodic inter-rater reliability checks.



Pictures from the field data collection



Adaptation of the LINUS picture description test

Study expansion : Current data from India



References

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Conclusion

Established a culturally and linguistically adapted cognitive assessment protocol for large-scale evaluation, with enhanced reliability and data quality through iterative refinements, standardized training, and REDCap integration.

