The MAPP Remote Battery©: Expanding Access For Early Detection of Cognitive Impairment Through a Novel, Web-Based Assessment
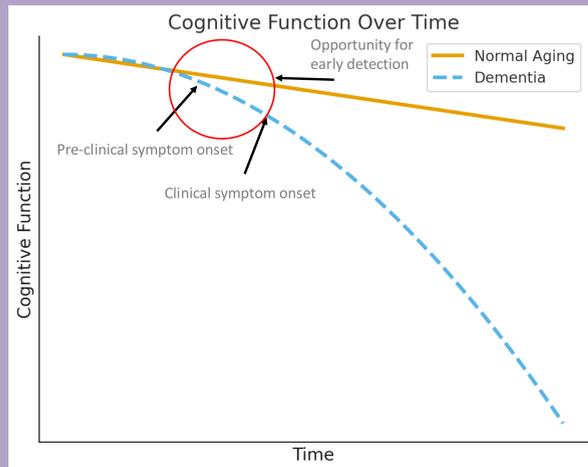
Meredith C. Rowe, MA

Other Co-authors: Yakeel T. Quiroz PhD, Clara Vila-Castelar PhD, Ana Baena MA, Joshua Fox-Fuller PhD, Paula Aduen PhD, and Averi Giudicessi MA

BOSTON UNIVERSITY

MAPP Multicultural Alzheimer's Prevention Program

The Problem & The Research Gap

Early detection of subtle cognitive changes in Alzheimer's disease (AD) is essential for slowing decline and maximizing prevention efforts.

Cognitive Function Over Time — Opportunity for early detection — Normal Aging — Dementia — Pre-clinical symptom onset — Clinical symptom onset — Cognitive Function — Time

Current neuropsychological assessments are resource-heavy, culturally limited, and time-intensive.

• Most cognitive tests require in-person administration and high literacy levels.

• Current early detection tools are often **inaccessible or inequitable across diverse populations.**

This lack of accessibility **limits our ability to detect early disease, especially in diverse communities**. This is where technology can play a role in helping make the future of neuropsychological testing more accessible to all.

Proof of Concept

Our team has developed the Multicultural Alzheimer's Prevention & Protection (MAPP) Remote Cognitive Battery, an innovative web-based set of three memory tests designed for administration on the computer.
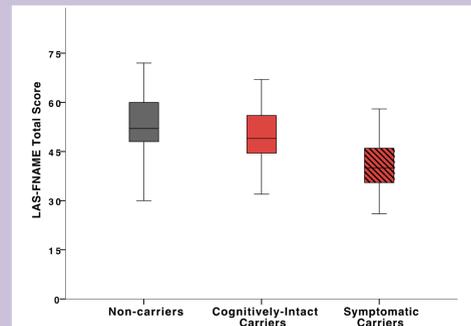
Performance differences on the Face Name Associative Memory Test in Non-carriers, cognitively-intact carriers, and symptomatic carriers. (Vila-Castelar et al., 2020)

• Tau accumulation in the brain is a hallmark biomarker of AD and is closely linked to memory loss.

• PSEN1 E280A carriers, who are genetically certain to develop AD, provide a unique window to study **preclinical changes** in memory and brain biomarkers before symptoms emerge.
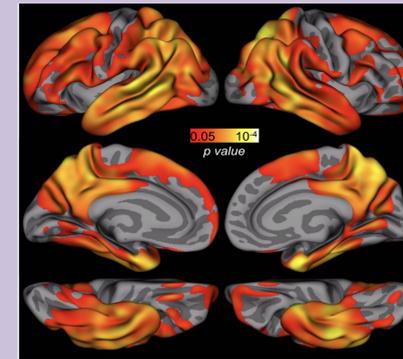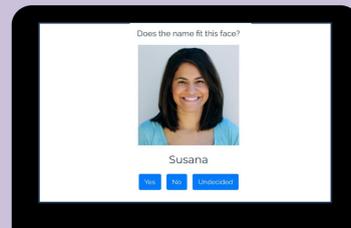

Whole brain relationships between tau PET and FNAME performance (Vila-Castelar, 2020)

MAPP Remote Battery performance shows associations not just with *PSEN-1* E280A carrier-status, but also with key AD biomarkers.
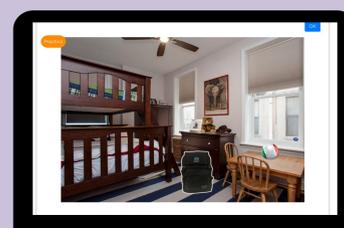
The Innovation: The MAPP Remote Battery

A test of **ASSOCIATIVE** memory

Does the name fit this face? — Susana

The Face Name Associative Memory Test (FNAME)

Individuals are asked to remember names and faces. There is an immediate recall, recognition, and delayed recall stage.
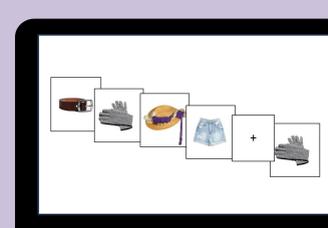
A test of **CONTEXTUAL** memory

The MAPP Room Test

Individuals are asked to remember rooms and where objects are placed within each room. There is an immediate recall, recognition, and delayed recall stage.

A test of **SEMANTIC** memory

The Memory for Semantically Related Objects Test (MESERO)

Individuals are shown a series of objects and asked to recall what they saw. Trials include semantically related objects and semantically unrelated objects.

Impact: Who Benefits?

Researchers — Efficient tool for early detection and longitudinal monitoring.

Clinicians — Rapid, remote screening for subtle cognitive changes.

Communities — Accessible, culturally informed assessments in multiple languages.

Global Health — Expands inclusion in AD prevention and intervention efforts.

Future Steps

1. Validate tasks for use with smartphones to further increase accessibility

2. Expand multilingual validation (Portuguese, Mandarin, and other languages)

3. Establish normative benchmarks in healthy older adults

4. Build partnerships for implementation and dissemination

Contact Information

Meredith C. Rowe, MA
mererowe@bu.edu

Yakeel T. Quiroz, PhD
yquiroz@bu.edu

MAPP Lab Website →

More Information

• **FNAME Test** – (Vila-Castelar et al., *Clin Neuropsychol*, 2020)
• **Room Test** – (Giudicessi et al., *J Prev Alzheimers Dis*, 2024)
• **MESERO Test** – (Fox-Fuller et al., *J Prev Alzheimers Dis*, 2023)

MAPP Remote © Multicultural Alzheimer's Prevention Program, Massachusetts General Hospital, 2020