

Links between subjective cognitive decline and remote cognitive performance using the Mobile Toolbox

P-0787

Elizabeth M. Dworak¹, Jiwon Kim¹, Y. Catherine Han¹, Augusta Zukauskas¹, Aaron J. Kaat¹, Cindy J. Nowinski¹, Stephanie Ruth Young¹, Miriam A. Novack¹, Courtney K. Blackwell¹, Jerry Slotkin², Michael Weiner^{3,5}, Joseph Eichenbaum³, Bernard Landavazo^{4,5}, Monica R. Camacho⁵, Richard C. Gershon¹, & Rachel L. Nosheny^{4,5}

¹Department of Medical Social Sciences, Northwestern University Feinberg School of Medicine, Chicago, IL ²Center for Health Assessment Research and Translation, University of Delaware, Newark, DE ³Department of Radiology and Biomedical Imaging, University of California, San Francisco, San Francisco, CA ⁴Department of Psychiatry and Behavioral Sciences, University of California, San Francisco, San Francisco, CA ⁵Northern California Institute for Research and Education, Department of Veterans Affairs Medical Center, San Francisco, CA

WHILE SUBJECTIVE AND OBJECTIVE COGNITIVE PERFORMANCE ALIGN, SUBJECTIVE COGNITION DOES NOT FULLY EXPLAIN OBJECTIVE PERFORMANCE, HIGHLIGHTING THE NEED FOR BOTH TOWARD DETECTION OF AD/ADRD

INTRODUCTION

- Remote cognitive assessment enables large-scale studies of cognition across aging populations, but its alignment with **subjective cognitive decline (SCD)** remains unclear
- The **Mobile Toolbox (MTB)**¹ offers brief, sensitive, remotely administered measures of functioning across multiple cognitive domains, and supports scalable research of Alzheimer’s disease and related dementias (AD/ADRD)
- Examining links between domain-specific complaints and objective, remotely assessed cognition provides validity evidence for MTB and **clarifies whether objective mobile assessments capture information beyond self-report**

Figure 1. The Mobile Toolbox (MTB) Workflow and Measures

METHODS

Sample

- 5,346 adult participants enrolled in the Brain Health Registry (BHR)²
- Mean Age (SD) = 63.4 (11.3)
- 77.5% female, 91.2% White, 92.8% Not Hispanic/Latino

Measures

- Mobile Toolbox (n = 5,097)
 - Using personal smartphones, participants completed objective cognitive measures of executive function,³ processing speed,³ verbal ability,^{4,5} episodic memory,⁶ associative memory,⁷ and working memory⁸
- Subjective Cognitive Decline Measures:
- Everyday Cognition Scale (**ECog**)⁹
 - n = 5,078
 - Memory, Language, Visuospatial, Planning, Organization, Divided Attention
- Cognitive Functioning Index (**CFI**)¹⁰
 - n = 1,584
 - Memory, Cognition, and Activity

Note higher scores indicate greater perceived SCD

Analysis

- Regression models adjusted for age and education were used, with the dependent variable as MTB scores, and measures of SCD (ECog, CFI) as predictors

RESULTS

ECog and MTB

- ECog total scores were mostly negatively associated with all MTB scores except for Arrow Matching (inhibitory control)
- ECog domain scores showed a consistent negative association with domain-matched MTB performance, except for Arrow Matching

CFI and MTB

- CFI total scores were negatively associated with MTB scores except for
- CFI domain scores displayed a similar trend

Ecog, CFI, and MTB

- ECog and CFI were moderately correlated (Spearman $\rho = .54$)
- When ECog and CFI Total scores were modeled jointly, ECog was still negatively and significantly associated with most MTB measures
- On the other hand, CFI total scores showed weaker associations when modeled jointly with ECog compared to being modeled without ECog

Figure 2. Associations between MTB scores and ECog and CFI domain and total scores

Note. $p < .05^*$, $p < .01^{**}$, $p < .001^{***}$

Figure 3. Joint model coefficients with Total ECog and Total CFI

REFERENCES

CONCLUSIONS

- Subjective reporting aligns with objective performance** on remote cognitive tasks, but measures distinct and valuable information
- Findings support the **utility of self-report** cognitive functioning measures and the **sensitivity of the MTB in detecting impairments** across multiple cognitive domains
- Future work should examine additional factors influencing subjective and objective cognitive performance, including fatigue, anxiety, and medical history

CONTACT

This work is supported by NIA grant #1U2CAG060426. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

For more information, please contact Dr. Elizabeth Dworak at elizabeth.dworak@northwestern.edu

ALZHEIMER'S ASSOCIATION | **AAIC 26**