Home-Based vs Clinic-Based Cognitive Assessments in Community-Dwelling Older Adults: Validation Study

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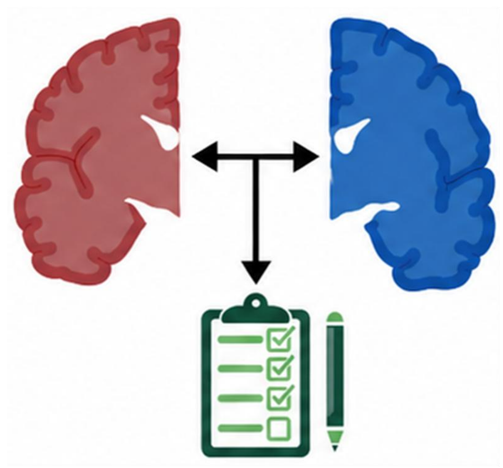
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Background & Objectives

- Remote digital cognitive assessment may enable scalable, repeated monitoring in aging populations.
- We used a remote digital cognitive assessment (Effectivate), and two supervised, clinic-based gold standard assessments: a computerized battery (NeuroTrax™), and the Montreal Cognitive Assessment (MoCA).
- **Objective:** Compare a remote app-based assessment with more standardized clinic-based cognitive assessments within the same cohort.

Assessment Modalities

Clinic-Based Assessment
NeuroTrax
Supervised
~45-60 min



Remote Digital Assessment
Effectivate
Self-administered
~15-20 min

Clinical Gold Standard
MoCA

Method

Study Sample

325 participants

- Community-dwelling adults, largely cognitively preserved
- Mean age: 62.1±7.7
- 56.9% females
- Mean MoCA: 26.2±2.2
- Sub-sample for ROC analysis: n = 200

Validation Framework

Association
Pearson's correlation coefficient

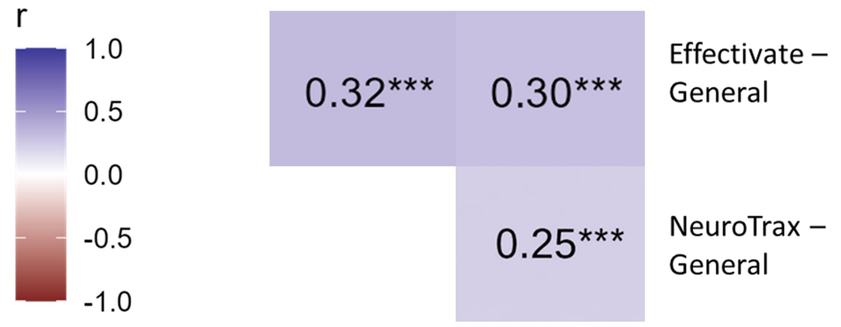
Agreement
Lin's Concordance Correlation Coefficient · Intraclass Correlation Coefficient

Screening accuracy
Receiver Operating Characteristic · Area Under the Curve · Incremental predictive value

Limits of agreement
Bland–Altman analysis with 95% limits of agreement

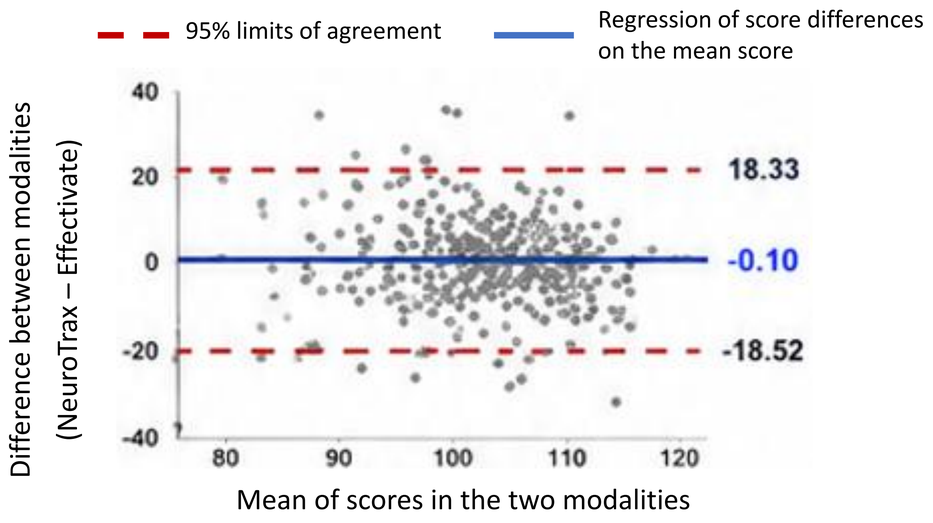
Core Findings

- **Association** between modalities was modest but consistent, strongest at the aggregated score level.

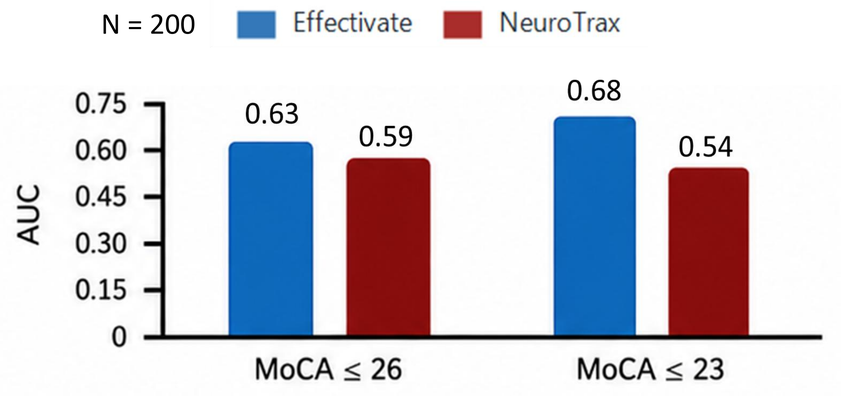


- **Agreement** Between Effectivate and NeuroTrax:
  - **CCC=0.32.**
  - **ICC(3,1)=0.32**, **ICC(3,k)=0.49.**

  Indicating modest and consistent correspondence.
- **Limits of Agreement** are represented by **Bland–Altman plots**, that indicated a negligible mean bias between instruments, but wide interindividual variability.



- The **diagnostic accuracy** of Effectivate general score for cognitive impairment was modest and slightly higher than that of NeuroTrax in this sample.



- Incremental models did not consistently improve classification beyond NeuroTrax and age, yet provided perliminary evidence that digital assessments may contribute complementary information.

Conclusion

- Home-based digital cognitive assessment showed modest but consistent correspondence with a clinic-based assessment, as well as a comparable diagnostic accuracy.
- These findings support remote digital assessment as a scalable complementary tool for population-level cognitive monitoring, while highlighting the need for further validation across broader cognitive ranges and longitudinal outcomes.

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