

49 as MCI [ $M_{MMSE} = 25.65 (2.94)$ ], and 21 as all-cause dementia [ $M_{MMSE} = 22.52 (2.06)$ ]. Participants were recorded performing various verbal tasks [Animal fluency, phonemic (F) fluency, Cookie Theft Description, and CERAD list learning task]. Recordings were processed via text-transcription and sound signal processing techniques to capture neuropsychological variables and audio characteristics. Features from each task were used in the development of an algorithm (for that task) to compute a score between 0 or 1 (healthy to more impairment), and a fifth algorithm was constructed using audio characteristics from all tasks. These five classifiers were combined algorithmically to provide the final algorithm. Receiver Operating Characteristic (ROC) analysis was conducted to determine sensitivity and specificity of predicted algorithm performance [CN vs. impaired (MCI or dementia)] against clinical diagnoses, and additional general linear modeling was used to test whether age, sex, education, and multilingualism significantly predicted logistically transformed weighted algorithm scores.

**Results:** Scores were transformed to logit scores, with significant differences in mean logit scores between all groups ( $p < .001$ ). Logit-inverse transformation of mean logit scores (possible range 0–1) resulted in values of 0.06 for CN, 0.90 for MCI, and 0.99 for all-cause dementia groups. ROC curve analyses revealed the algorithm obtained a total area under the curve of 0.92, with an overall accuracy of 86.8%, a sensitivity of 0.92, and specificity of 0.82. Age was identified as a significant predictor ( $\beta = 0.22$ ;  $p < 0.01$ ) of algorithm output, whereas years of education ( $\beta = -0.04$ ;  $p = 0.64$ ), sex ( $\beta = 0.38$ ;  $p = 0.02$ , did not survive correction for type-1 error), and multilingualism ( $\beta = -0.24$ ;  $p = 0.22$ ) were non-significant.

**Conclusions:** These findings provide initial support for the utility of an automated speech analysis algorithm to detect cognitive impairment quickly and efficiently in a Spanish-speaking population. Although sociodemographic variables were not included in the algorithm, age significantly predicted algorithm output, and should be further explored to determine if age-adjusted formulas would improve algorithm accuracy for younger versus older individuals. Additional research is needed to validate this novel methodology in other languages, as this may represent a promising cross-cultural screening method for MCI and dementia detection.

**Categories:** Teleneuropsychology/ Technology

**Keyword 1:** technology

**Keyword 2:** cognitive screening

**Keyword 3:** mild cognitive impairment

**Correspondence:** Alyssa N. Kaser, University of Texas Southwestern Medical Center, alyssa.kaser@utsouthwestern.edu

## 80 Ecological Momentary Assessment of the Fluctuations in Cognitive Performance and Contextual States of Community-Dwelling Older Adults

CATHERINE M LUNA<sup>1</sup>, Shenghai Dai<sup>1</sup>, Sarah Tomaszewski Farias<sup>2</sup>, Diane J Cook<sup>1</sup>, Maureen Schmitter-Edgecombe<sup>1</sup>

<sup>1</sup>Washington State University, Pullman, WA, USA. <sup>2</sup>University of California, Davis, Davis, California, USA

**Objective:** Ecological momentary assessment (EMA) allows for tracking participant responses across multiple timepoints within the context of typical daily experiences. This study used EMA delivered via smartwatches to investigate dynamic associations between older adults' fluctuations in cognitive performance as measured by an n-back test and self-reports of current internal (i.e., mental sharpness, fatigue, stress) and external (i.e., environmental distractions, time of day) contextual states over seven days. We hypothesized that 1) cognitive test fluctuations throughout the week would be meaningful beyond average cognitive test scores and 2) cognitive test scores would fluctuate in response to internal and external contexts.

**Participants and Methods:** Participants were 28 community-dwelling older adults recruited for a larger clinical trial assessing the influence of lifestyle factors and compensatory strategy use on cognitive health. During week one of the trial, participants received a smartwatch which sent prompts four times a day for seven consecutive days. The prompts included a 45-second one-back shape test, along with Likert-style questions about their current experience. Questions assessing participants' internal contexts asked about participants' experience "right now" of mental sharpness, physical fatigue, and stress. External context was assessed via the EMA prompt, "Right now my

environment is distracting," and time of day of the response.

**Results:** Data was screened such that all data points outside the 7-day prompt window were removed, one participant who did not respond to any prompts was removed, and participants who responded to less than 60% of the shape test prompts were removed ( $n = 10$ ). The sample used for this preliminary analysis included 17 participants (Age,  $M = 71.94$  years; Education,  $M = 14$  years; 88% Female; 88% White) with an average compliance of 75% (Range = 17 – 26 shape test responses) and an average shape test accuracy of  $> 92\%$ . Hypothesis 1 was supported by the large fluctuations of the average cognitive test scores across timepoints ( $M = 24.35$ ,  $Min = 16$ ,  $Max = 27$ ,  $SD = 2.54$ ) and by repeated-measures ANOVA of average cognitive test scores by day ( $F(1,7) = 5.24$ ,  $p < 0.01$ ). Hypothesis 2: Cross-correlation lags 0 to 4 were assessed. For internal contexts, cross-correlation showed a medium correlation between mental sharpness and cognition for lags 0 ( $r = 0.46$ ) and 1 ( $r = 0.4$ ); a small to medium correlation between physical fatigue and cognition for lags 0 ( $r = -0.51$ ) and 1 ( $r = -0.31$ ); and no correlation between stress and cognition ( $r < 0.2$ ). For external contexts, cross-correlation revealed no correlation between environmental distraction and cognition ( $r < 0.3$ ), and repeated measures ANOVA revealed no effect of time of day on cognition scores ( $p > 0.05$ ).

**Conclusions:** Older adults' cognitive performance on an n-back shape test varied over time with internal contextual states. Cognitive performance was positively associated with feelings of mental sharpness and negatively associated with physical fatigue. Current external environmental distractions and time of day were less influential on cognitive performance. As more data is collected, influences of individual fluctuations in cognitive performance will be investigated.

**Categories:** Teleneuropsychology/ Technology

**Keyword 1:** technology

**Keyword 2:** cognitive functioning

**Keyword 3:** everyday functioning

**Correspondence:** Catherine Luna Washington State University, Pullman, Washington, USA  
catherine.luna@wsu.edu

## 81 Test-retest Reliability of the Oral Trail Making Test Administered on the Telephone

Daniel G Saldana<sup>1,2</sup>, Jesús Barreto Abrams<sup>1,2</sup>, Yessica Rodríguez<sup>1,2</sup>, Safa Shehab<sup>3</sup>, Joel R Sneed<sup>4,5</sup>

<sup>1</sup>Department of Psychiatry at the Geffen School of Medicine, Los Angeles, California, USA.

<sup>2</sup>HNCE, Semel Institute, UCLA, Los Angeles, California, USA. <sup>3</sup>NYU Langone Health

Comprehensive Epilepsy Center, NYC, NY, USA. <sup>4</sup>The Graduate Center, City University of New York, NYC, NY, USA. <sup>5</sup>Queens College,

City University of New York, NYC, NY, USA

**Objective:** In the aftermath and continuance of the COVID-19 pandemic, the field of neuropsychology has experienced a burgeoning literature base on remote telehealth practices. These practices include both videoconference and telephone modalities. Several studies to date have proposed evidence suggesting that in-person and remote telehealth assessments demonstrate comparable results. One of the major limitations to telehealth practices is the scarcity of measures of processing speed. A widely used measure is the Oral Trail Making Test, which has two trials (A & B). Oral Trails B is often conceptualized as a measure of set-shifting and cognitive flexibility. And validity studies support Oral Trails B having strong test-retest reliability and correlation to its written counterpart. In contrast, there is contention as to whether Oral Trails A can be conceptualized as a measure of basic attention and speed versus simple numerical automaticity. Importantly, to our knowledge, the test-retest reliability of Oral Trails A administered specifically via telephone has never been reported in a healthy sample. The following study presents test-retest reliability for the Oral Trails A and B (in a healthy control group) administered as part of a larger study investigating the effects of deep diaphragmatic breathing on cognitive functioning.

**Participants and Methods:** Eighty healthy young adults with elevated stress levels were recruited from a major metropolitan city at a major university. The subjects had to be between the ages of 18 to 29 and self-reported Perceived Stress Scale score  $> 13$ . The subjects could not practice any form of meditation, yoga, or breathing exercise regularly. Additionally, they could not have any severe medical or psychiatric