for People Living with Younger Onset Neurocognitive Disorders

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Objective: People living with younger onset neurocognitive disorders (YOND) experience significant delays in receiving an accurate diagnosis. Although neuropsychological assessment can help assist in a timely diagnosis of YOND, several barriers limit the accessibility of these services. Utilising teleneuropsychology may assist with the service access gap. This study aimed to investigate whether similar results were found on neuropsychological tests administered using videoconference and in person in a sample of people living with YOND.
Participants and Methods: Participants with a diagnosis of YOND were recruited from the Royal Melbourne Hospital (RMH) Neuropsychiatry inpatient ward and outpatient clinic, and through community advertising. A randomised counterbalanced cross-over design was used where participants completed 14 tests, across two administration sessions: one in person and one using videoconference. There was a two-week interim between the administration sessions. The videoconference sessions were set up across two laptops using the Healthdirect Video Call platform and Q-Global. Repeated measures t-tests, intraclass correlation coefficients (ICC) and Bland-Altman plots were calculated to compare results across the test administration sessions.
Results: Thirty participants (M_{age} = 60.23, SD = 7.05) completed both sessions. Huntington's disease was the most common YOND diagnosis (n = 8), followed by Alzheimer's disease (n = 6), mild cognitive impairment (n = 6) and frontotemporal dementia (n = 4). Preliminary results from the current study indicate no statistically significant differences, and small effect sizes, between the in-person or videoconference sessions. ICC estimates range from .69 to .97 across neuropsychological tests.
Conclusions: This study provides preliminary evidence that performances are comparable between in-person and videoconference-mediated assessments for most neuropsychological tasks evaluated in people living with YOND. Should further research confirm these preliminary results, findings will support the provision of teleneuropsychology to address the current service gaps experienced by people with YOND.

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78 Preliminary Exploration of a Novel Speech Analysis Algorithm to Detect Cognitive Impairment in a Spanish Population

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Objective: Early detection of mild cognitive impairment (MCI) and dementia is crucial for initiation of treatment and access to appropriate care. While comprehensive neuropsychological assessment is often an intrinsic part of the diagnostic process, access to services may be limited and cannot be utilized effectively on a large scale. For these reasons, cognitive screening instruments are used as brief and cost-effective methods to identify individuals who require further evaluation. Novel technologies and automated software systems to screen for cognitive changes in older individuals are evolving as new avenues for early detection. The present study presents preliminary data on a new technology that uses automated linguistic analysis software to screen for MCI and dementia.
Participants and Methods: Data were collected from 148 Spanish-speaking individuals recruited in Spain (M_{Age}=74.4, $M_{Education}$=12.93, 56.7% females) of whom 78 were diagnosed as cognitively normal [CN; M_{MMSE} = 28.51 (1.39)],

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.

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

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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