that SWA may be related to pre-sleep learning and subsequent overnight memory consolidation processes. LTF testing may be useful in selecting individuals for preclinical AD trials. Future research on the impact of slow wave activity on LTF may be useful in identifying ways to enhance short- and long-term memory consolidation in individuals at greater risk for dementia.

Categories: Dementia (Alzheimer's Disease)
Keyword 1: dementia - Alzheimer's disease
Keyword 2: sleep
Keyword 3: neuropsychological assessment
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34 Machine Learning Predicts Time to Dementia Conversion in Cognitively Normal Subjects

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Objective: Identification of pre-clinical Alzheimer's disease (AD) is necessary for the development of future disease-modifying treatments, which would ideally target pre-clinical stages to mitigate functional loss. Despite advanced in biomarker development, clinical trials are still without a non-invasive and cost-effective means of identifying pre-symptomatic subjects who are at high risk for eventual conversion to AD. In previous work, we developed a machine learning algorithm using neuropsychological test scores and health history to identify subjects at high risk for eventual conversion. Here, we examine the performance of a similar algorithm in predicting the timing of that conversion in years.
Participants and Methods: Data were obtained from the National Alzheimer's Coordination Center (NACC) Uniform Data Set (UDS) version 3.0. Subjects with normal cognition at baseline were used to train a multi-class Random Forest classifier to predict conversion to AD . Each subject could be classified as a short-, mid-, or long-term converter (0-3 years, 4 to 6 years, and 7 to 9 years, respectively) or as a non-converter, if no dementia diagnosis was given within ten years of baseline. Predictors included baseline demographics, basic medical history, and neuropsychological test results. Algorithms were evaluated using standard, cross-validated performance metrics.
Results: Multi-class Matthews correlation coefficient between predicted time to diagnosis and the ground truth averaged 0.26 +/- 0.06 across 100 cross validation splits. Prediction accuracy exceeded 0.67 in all cases, when computed for each class individually, and was greatest for the short-term (0.75) and non-converter (0.78) classes.
Conclusions: Machine-learning algorithms applied to neuropsychological, demographic, and medical history information were able to predict the eventual timing of conversion to dementia in cognitively healthy adults significantly better than chance. Results were most accurate when predicting shorter time to conversion. Results illustrate the potential of this data analytic approach for targeted recruitment in clinical trials.

Categories: Dementia (Alzheimer's Disease)
Keyword 1: dementia - Alzheimer's disease
Keyword 2: neuropsychological assessment
Keyword 3: technology
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35 The Effect of Diagnostic Method on Racial Disparities in Mild Cognitive Impairment and Dementia Diagnosis Using the NACC Database.

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Objective: Population studies have shown that Black individuals are at higher risk for MCI and dementia than White individuals but are more likely to be underdiagnosed or misdiagnosed. Although multiple contributory factors have been identified in relation to neurocognitive diagnostic disparities among persons of color, few studies have investigated race-associated differences in MCI and dementia classification across diagnostic methods. The current study examined the agreement of cognitive classification made via semi-structured interview and neuropsychological assessment.
Participants and Methods: Only participants assigned normal cognitive status or cognitive impairment with presumed Alzheimer's etiology were included in the study. Baseline visit data in the National Alzheimer's Coordinating Center (NACC) dataset was collected to compare correspondence of cognitive classification (normal cognition, MCI, dementia) via semi-structured interview (Clinical Dementia Rating; CDR) with formal NACC diagnostic determination. NACC diagnostic determination was further separated by single clinician and consensus diagnostic methods. Inter-rater agreement was evaluated using chi-squared tests, and respective analyses were stratified for race (Black vs White), ethnicity (Hispanic vs Non-Hispanic), and education (≤12 years vs. >12 years).
Results: The sample size included 4,739 Black and 26,393 White participants across 43 Alzheimer's Disease Research Centers (ADRCs). Inter-rater analyses between CDR (semi-structured interview) versus single-clinician and formal consensus NACC diagnostic methods showed strong (all φc>.70) consistency in cognitive diagnoses overall, irrespective of race, ethnicity, and education. The percentage of agreement between diagnostic methods was nearly 100% for those categorized as cognitively normal or with dementia. However, the agreement for MCI was considerably lower (ranging from 28-74%) and revealed a disparity in diagnostic method between Black and White individuals. White individuals diagnosed with MCI via CDR (CDR total =0.5) were more likely to be labeled as having dementia regardless of NACC diagnostic method. However, Black individuals diagnosed with MCI via CDR were equally likely to be diagnosed as cognitively normal or with dementia via the formal consensus method.
Conclusions: Irrespective of race and other demographic variables, diagnostic methods had high agreement for groups labeled with normal cognition and dementia. Agreement was consistently lower for the group labeled with MCI, with Black individuals having greater variability in diagnostic differentials when diagnosed via formal consensus method. The results of the study suggest that neuropsychological assessment continues to be an integral component of diagnosing individuals with MCI, reducing possible sources of bias.

Categories: Dementia (Alzheimer's Disease)
Keyword 1: demographic effects on test performance
Keyword 2: dementia - Alzheimer's disease
Keyword 3: diversity
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36 Impact of Neuropsychological Performance and Anxiety on Meditation in Drug Resistant Epilepsy (DRE) Patients Implanted with a Responsive Neurostimulation (RNS) Device

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Objective: Responsive neurostimulation (RNS) is a surgical intervention to reduce the frequency of seizures as an adjunctive therapy for patients with drug-resistant epilepsy (DRE). Presurgical neuropsychological evaluations capture symptoms of anxiety and depression, which occur in higher rates within the epilepsy population than in the general population; however, the effects of mood are commonly overlooked or underappreciated in the conceptualization of cognitive functioning and overall quality of life. Previous studies have shown the effects of attentional control and executive functioning on engagement in meditative states. The present study examines pre and post-meditation self-reported anxiety symptoms and the electrophysiological changes captured intracranially during meditation sessions in patients implanted with an RNS

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