This study examined cerebrospinal fluid (CSF) amyloid β 1-42 (Aβ) and tau levels and performance on a computerized self-administered test battery, the Computer-Administered Neuropsychological Screen for MCI (CANS-MCI).

Methods: CSF was collected from participants who also completed the CANS-MCI near to the time of collection. CSF levels of Aβ (threshold = 250pg/ml) and tau (93pg/ml) were used to segment participants: Aβ-Tau-, Aβ+Tau-, and Aβ+Tau+, with positivity indicating increasing brain deposition and likely preclinical Alzheimer's disease (AD). ANOVAs and Chi-square tests were used to compare group demographics. Linear regressions were used to compare CANS-MCI performance between groups while controlling for age, sex, education, prior CANS-MCI, and processing speed.

Results: Participants were 81 adults, ages 65 to 94; 51.8% females. The Aβ+Tau- group (mean age = 78, SD = 6.8) was significantly older than Aβ-Tau- (mean age= 73.6, SD = 6.3), p = 0.032, but not Aβ+Tau+ (mean = 76.3, SD = 7.5); no other group differences in age. All participants were Caucasian except 3, who belonged to unique ethnic minority groups. Gender, education, depression, prior CANS-MCI administrations, and time between CSF collection and CANS-MCI completion were similar between groups. Processing speed significantly slowed with age (r = 0.27, p = 0.02). Compared to the Aβ-Tau- group, the Aβ+Tau- and Aβ+Tau+ groups evidenced CANS-MCI performance deficits in memory, visuospatial, and executive domains. The Aβ+Tau+ group performed below the Aβ-Tau- group on the test of language fluency.

Conclusions: Although the cohort was relatively homogeneous and other factors known to affect test performance were unaccounted for, this study demonstrated that performance on the CANS-MCI is sensitive to heightened Aβ and tau brain deposition. Future studies will examine CANS-MCI performance over time in relation to changes in Aβ and tau CSF levels.