battery of memory and executive functions, including the Rey Auditory Verbal Learning Test, Trail Making Test Parts A and B, Controlled Oral Word Association Test, Digit Span, and Letter-Number Sequencing, and underwent structural MRI. MR images were analyzed for frontoparietal network volume, thickness, and connectivity.
Results: Participants with and without SCC were compared on the number of low test scores (i.e., at or below the 16th percentile) and high test scores (i.e., at or above the 75th percentile), finding a comparable number of low scores, t=1.66, p=.103, d=.40, but a lower number of high scores among participants with SCC, t=2.95, p=.004, d=.71. Participants with SCC had lower bilateral mean frontoparietal network volumes (left: t=2.98, p=.004, d=.74; right: t=2.63, p=.011, d=.66) and cortical thickness (left: t=2.65, p=.010, d=.66; right: t=2.18, p=.033, d=.54), but did not differ from those without SCC in terms of network connectivity.
Conclusions: SCC have been reported as a potential risk factor for dementia in older adults. High-functioning older adults with SCC presented with fewer high scores than those without SCC but had a comparable number of low scores. Among high-functioning older adults, subjective cognitive decline may correspond with objective cognitive change not detected by the traditional emphasis on low scores, but rather the absence of high scores. SCC were also related to underlying changes in the volume and thickness of the frontoparietal network, but not connectivity. In high-functioning older adults, subjective cognitive decline may correspond with a reduction from high average functioning in some domains and underlying neurological changes.

Categories: Aging
Keyword 1: aging disorders
Keyword 2: neuropsychological assessment
Keyword 3: neuroimaging: structural
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2 Cognitive Heterogeneity and Risk of Progression in Data-Driven Subtle Cognitive Decline Phenotypes

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Objective: There is increasing recognition of cognitive and pathological heterogeneity in early-stage Alzheimer's disease and other dementias. Data-driven approaches have demonstrated cognitive heterogeneity in those with mild cognitive impairment (MCI), but few studies have examined this heterogeneity and its association with progression to MCI/dementia in cognitively unimpaired (CU) older adults. We identified cluster-derived subgroups of CU participants based on comprehensive neuropsychological data and compared baseline characteristics and rates of progression to MCI/dementia or a Dementia Rating Scale (DRS) of ≤129 across subgroups.
Participants and Methods: A hierarchical cluster analysis was conducted using 11 baseline neuropsychological test scores from 365 CU participants in the UCSD Shiley-Marcos Alzheimer's Disease Research Center (age M=71.93 years, SD=7.51; 55.9% women; 15.6% Hispanic/Latino/a/x/e). A discriminate function analysis was then conducted to test whether the individual neuropsychological scores predicted cluster-group membership. Cox regressions examined the risk of progression to consensus diagnosis of MCI or dementia, or to DRS score ≤129, by cluster group.
Results: Cluster analysis identified 5 groups: All-Average (n=139), Low-Visuospatial (n=46), Low-Executive (n=51), Low-Memory/Language (n=83), and Low-All Domains (n=46). The discriminant function analysis using the neuropsychological measures to predict group membership into these 5 clusters correctly classified 85.2% of the participants. Subgroups had unique demographic and clinical characteristics. Relative to the All-Average group, the Low-Visuospatial (hazard ratio [HR] 2.39, 95% CI [1.03, 5.56], p=.044), Low-Memory/Language (HR 4.37, 95% CI [2.24,

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8.51], p<.001), and Low-All Domains (HR 7.21, 95% CI [3.59, 14.48], p<.001) groups had greater risk of progression to MCI/dementia. The Low-Executive group was also twice as likely to progress to MCI/dementia compared to the All-Average group, but did not statistically differ (HR 2.03, 95% CI [0.88,4.70], p=.096). A similar pattern of results was found for progression to DRS score ≤129, with the Low-Executive (HR 2.82, 95% CI [1.26, 6.29], p=.012), Low-Memory/Language (HR 3.70, 95% CI [1.80, 7.56], p<.001) and Low-All Domains (HR 5.79, 95% CI [2.74, 12.27], p<.001) groups at greater risk of progression to a DRS score ≤129 than the All-Average group. The Low-Visuospatial group was also twice as likely to progress to DRS ≤129 compared to the All-Average group, but did not statistically differ (HR 2.02, 95% CI [0.80, 5.06], p=.135).
Conclusions: Our results add to a growing literature documenting heterogeneity in the earliest cognitive and pathological presentations associated with Alzheimer's disease and related disorders. Participants with subtle memory/language, executive, and visuospatial weaknesses all declined at faster rates than the All-Average group, suggesting that there are multiple pathways and/or unique subtle cognitive decline profiles that ultimately lead to a diagnosis of MCI/dementia. These results have important implications for early identification of individuals at risk for MCI/dementia. Given that the same classification approach may not be optimal for everyone, determining profiles of subtle cognitive difficulties in CU individuals and implementing neuropsychological test batteries that assess multiple cognitive domains may be a key step towards an individualized approach to early detection and fewer missed opportunities for early intervention.

Categories: Aging
Keyword 1: aging disorders
Keyword 2: mild cognitive impairment
Keyword 3: cognitive functioning
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3 Type 2 Diabetes Moderates the Association between Amyloid PET and Attention/Executive Functioning in Older Veterans

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Objective: Type 2 diabetes (T2D) is a risk factor for cognitive impairment/dementia and has been shown to modify the impact of Alzheimer's disease (AD) biomarkers on cognition and everyday functioning. Studies examining amyloid-β (Aβ), one of the hallmark AD pathologies, have shown mixed results regarding associations of Aβ biomarkers with cross-sectional cognition as well as T2D, though Aβ is generally associated with future cognitive declines. The purpose of the present study is to examine whether T2D impacts the associations between amyloid positron emission tomography (PET) and cognition in older Veterans.
Participants and Methods: The current study included 202 mostly male Vietnam-Era Veterans from the Department of Defense-Alzheimer's Disease Neuroimaging Initiative (DOD ADNI) study (age M=69.38 years, SD=4.37; 40% with self-reported T2D) who completed neuropsychological testing and florbetapir PET imaging. The Aβ PET standardized uptake variable ratio (SUVR) was measured using a previously-validated summary SUVR calculated by dividing the mean uptake across 4 AD-vulnerable cortical regions by whole cerebellar uptake. General linear models examined whether T2D moderated the relationship of Aβ PET with memory, attention/executive functioning, and language composite scores. Models adjusted for age, education, apolipoprotein E ε4 carrier status, vascular risk burden, depressive symptoms, post-traumatic stress disorder (PTSD) symptom severity, and history of traumatic brain injury (TBI).
Results: There was no main effect of diabetes on memory, attention/executive functioning, or language performance, and higher Aβ PET SUVR was only associated with worse attention/executive functioning performance (β=-.146, 95% CI [-.261, -.031], p=.013). The Aβ PET x T2D interaction was significant for attention/executive functioning such that higher Aβ PET SUVR was associated with lower

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