efficiency, processing speed, and spatial reasoning. We compared latency measures (i.e., process efficiency, clock face speed, average latency, and processing speed) and spatial reasoning of the DCTclock™ to z-scores of TMT-A and TMT-B to detect any overlapping psychometric properties. Verbal fluency was included for discriminant validity. We then ran logistic regressions on a subset of the sample to compare neuropsychological tests (DCTclock™ total score [score that captures overall performance], TMT-A/B, and verbal fluency) to the MoCA, a commonly used cognitive screening tool, in determining PET status.
Results: Highly correlated (r > .7) DCTclock™ variables were excluded. We found statistically significant correlations between some DCTclock™ measures and TMT-A/B, like DCTclock™ drawing process efficiency and TMT-A and TMT-B (r= .45, p< .001, r=.29, p< .026, respectively), and DCTclock™ average latency and TMT-A and TMT-B (r=.3, p< .024, r= .26, p< .044, respectively). No statistically significant associations were found between any DCTclock™ measures and verbal fluency, or between DCTclock™ spatial reasoning and TMT-A/B. We then investigated the effect of these neuropsychological tests (DCTclock™ total score, TMT-A/B, verbal fluency) and age on the likelihood of PET positivity (subset of sample, total PET, n=31). The model was statistically significant ($\chi 2$ (5) = 15.35, p< .01). The model explained 53% (Nagelkerke R^2) of the variance in PET status and correctly classified 74.2% of cases. DCTclock™ was the only significant predictor (p< .02), after controlling for TMT-A, TMT-B, verbal fluency, and age. Comparatively, there was no effect of MoCA and age (total PET, n= 29) on the likelihood of PET positivity.
Conclusions: Overall, these results suggest psychometric convergence on elements of DCTclock™ and TMT-A/B, while there was no association in spatial operations between DCTclock™ and TMT measures. Further, when compared to the MoCA, DCTclock™ and these commonly used neuropsychological tests (verbal fluency and TMT-A/B) were better predictors of PET status, primarily driven by the DCTclock™. Digitized neuropsychological tools may provide additional metrics not captured by pen-and-paper tests that can detect AD-associated pathology.

Categories: Dementia (Alzheimer's Disease)
Keyword 1: reaction time
Keyword 2: dementia - Alzheimer's disease
Keyword 3: technology
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49 Examining Associations Between Intelligence and Adaptive Functioning in Adults with Down Syndrome at Risk for Alzheimer's Disease

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Objective: Individuals with Down syndrome (DS) experience intellectual disability, such that measures of cognitive and adaptive functioning are near the normative floor upon evaluation. Individuals with DS are also at increased risk for Alzheimer's disease (AD) beginning around age 40; and test performances and adaptive ratings at the normative floor make it difficult to detect change in cognition and functioning. This study first assessed the range of raw intelligence scores and raw adaptive functioning of individuals with DS at the normative floor. Next, we assessed whether those raw intelligence scores were predictive of raw adaptive functioning scores, and by association, whether they may be meaningful when assessing change in individuals with a lower baseline of cognitive functioning.
Participants and Methods: Participants were selected from a cohort of 117 adults with DS in a longitudinal study examining AD risk. Participants (n=96; M=40.9 years-old, SD=10.67; 57.3% female) were selected if they had both a completed measure of IQ (Kaufmann Brief Intelligence Test; KBIT2) and informant ratings of adaptive functioning (Vineland Adaptive Behavior Scales; VABS-II). Multiple regression was conducted predicting VABS-II total raw score using K-BIT2 total raw score, while controlling for age.
Results: A slight majority (57.3%) of the sample had a standardized IQ score of 40 with the majority (95.7%) having a standardized score at

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or below 60. Additionally, 85.3% of the sample had a standard VABS-II score at or below 60. Within the normative floor for the KBIT2 (IQ=40), there was a normal distribution and substantial range of both KBIT2 raw scores (M = 31.19, SD = 13.19, range: 2 to 41) and VABS-II raw scores (M = 406.33, SD = 84.91, range: 198 to 569). Using the full sample, age significantly predicted raw VABS-II scores (β = -.283, p = .008). When KBIT2 raw scores were included in the model, age was no longer an independently significant predictor. KBIT2 raw scores significantly predicted raw VABS-II scores (β = .689, p < .001). Age alone accounted for 8.0% of variance in VABS-II raw scores and KBIT2 raw scores accounted for 43.8% additional variance in VABS-II raw scores. This relationship was maintained when the sample was reduced to individuals at the normative floor (n = 51) where KBIT2 raw scores accounted for 23.7% of the variance in raw VABS-II scores (β = .549, p < .001).
Conclusions: The results indicate that meaningful variability exists among raw intelligence test performances that may be masked by scores at the normative floor. Further, the variability in raw intelligence scores is associated with variability in adaptive functioning, such that lower intelligence scores are associated with lower ratings of adaptive functioning. Considering this relationship would be masked by a reduction of range due to norming, these findings indicate that raw test performances and adaptive functioning ratings may have value when monitoring change in adults with DS at risk for AD.

Categories: Dementia (Alzheimer's Disease)
Keyword 1: dementia - Alzheimer's disease
Keyword 2: adaptive functioning
Keyword 3: cognitive functioning
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50 Self-Reported Everyday Cognition Scale Memory, Attention, and Spatial Navigation Subsections Demonstrated Significant, but Limited, Diagnostic Accuracy in Identifying Preclinical Alzheimer Disease

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Objective: Preclinical Alzheimer disease (AD) has been associated with subtle deficits in memory, attention, and spatial navigation (Allison et al., 2019; Aschenbrenner et al., 2015; Hedden et al., 2013). There is a need for a widely distributable screening measure for detecting preclinical AD. The goal of this study was to examine whether self- and informant-reported change in the relevant cognitive domains, measured by the Everyday Cognition Scale (ECog; Farias et al., 2008), could represent robust clinical tools sensitive to preclinical AD.
Participants and Methods: Clinically normal adults aged 56-93 (n=371) and their informants (n=366) completed memory, divided attention, and visuospatial abilities (which assesses spatial navigation) subsections of the ECog. Reliability and validity of these subsections were examined using Cronbach's alpha and confirmatory factor analyses (CFA). The hypothesized CFA assumed a three-factor structure with each subsection representing a separate latent construct. Receiver operating characteristics (ROC) and area under the curve (AUC) analyses were used to determine the diagnostic accuracy of the ECog subsections in detecting preclinical AD, either defined by cerebrospinal fluid (CSF) $ptau_{181}/A\beta_{42}$ ratio >0.0198 or hippocampal volume in the bottom tertial of the sample. Hierarchical linear regression was used to examine whether ECog subsections predicted continuous AD biomarker burden when controlling for depressive symptomatology, which has been previously associated with subjective cognition (Zlatar et al., 2018). Lastly, we compared the diagnostic accuracy of ECog subsections and neuropsychological composites assessing the same or similar cognitive domains (memory, executive function, and visuospatial ability) in identifying preclinical AD.
Results: All self- and informant-reported subsections demonstrated appropriate reliability (α range=.71-.89). The three-factor CFA models were an adequate fit to the data and were significantly better than one-factor models (self-report $\chi2(3)=129.511$, p<.001; informant-report $\chi2(3)=145.347$, p<.001), suggesting that the subsections measured distinct constructs. Self-reported memory (AUC=.582, p=.007) and attention (AUC=.564, p=.036) were significant

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