cases showed significantly more commission errors and slower reaction times on the CPT3 at Time 2 compared to Time 1 ($p < 0.05$). Cases also showed a slowing in time to completion on Trails A at the second time point ($p<0.05$). On the other hand, controls only showed significantly slower reaction times on the CPT3 at Time 2 ($p<0.05$).
Conclusions: These results showed that veterans with GWI are showing more decline over time in cognitive functioning particularly on psychomotor slowing and impulsivity than control veterans. It is important to document illness trajectories for veterans with GWI in order to devise strategies for interventions and treatments. The importance of studying longitudinal cohorts is to document changes in the same individuals over time. The next steps are to assess if this accelerated aging develops into neurodegenerative conditions by using brain imaging and other biomarkers in addition to cognitive evaluations. This could identify individuals who should be the focus of targeted treatment strategies while there is still time to intervene.

Categories: Cognitive Neuroscience
Keyword 1: environmental pollutants / exposures
Keyword 2: cognitive functioning
Keyword 3: motor speed
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17 Norming for the reverse-translated 5-choice continuous performance test (5C-CPT) of attention and cognitive control

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Objective: Translatability of preclinical results remains a major obstacle in neuropsychiatric research. Even when cognitive tests in preclinical models show translational validity for human testing, with sensitivity to clinical deficits, there remains the issue of heterogeneity among human participants. Norming of performance on cognitive tasks enable corrections for any differences in performance that may arise from the influence of socioeconomic factors, and thus a more direct comparison with preclinical testing results. The 5-choice continuous performance task (5C-CPT) is a test sensitive to changes in sustained attention and cognitive control in rodent manipulations and clinical populations, including schizophrenia and bipolar disorder. Herein, we present normed results of 5C-CPT data from a cohort of human participants, enabling greater comparison to future clinical and rodent testing.
Participants and Methods: 5C-CPT data were generated from a range of participants from the Translational Methamphetamine AIDS Research Center (n=82) and a study of bipolar disorder (n=45). Participant demographics were as follows: Age M=38.5, SD=16.7, Education: M=14.5, SD=1.9, 45% female, 10% Asian, 17% African American, 27% Hispanic, and 46% non-Hispanic White. We used the test2norm R-package to create norms for each of the major outcomes from the 5C-CPT. Non-normally distributed raw scores were transformed to generate more normally distributed data needed for the norming process. Raw scores were first converted into uniform scaled scores that range from 0-20 where a higher score indicated better performance. We then generated T-score formulas, which are standardized residuals and scaled to have a mean of 50 and standard deviation of 10. The residuals are obtained from regressions, modeled using multiple fractional polynomial method (MFP), which regresses scaled scores on demographic variables, which a user wishes to control for (gender, age, education, ethnicity, etc.). MFP models allow to fit non-linear effects for numeric demographic factors (e.g., age), if such effects exist.
Results: New, demographically corrected T-score formulas were calculated for each major outcome of the 5C-CPT: reaction time (MCL), reaction time variability (VarRT), dprime, hit rate (HR) and false-alarm rate (FAR). MFP models showed that age had a significant effect on MCL, VarRT, dprime, and HR (all $p<0.01$), while gender only showed a significant effect for MCL and VarRT (all $p<0.05$). Interestingly, education and ethnicity did not show a significant effect for any MFP model and none of the demographic factors (age, education, gender, ethnicity) were significant in the model for FAR. As defined in the test2norm package, all scaled scores had a mean of 10 and SD of 3 and all T-scores had a mean of 50 and SD of 10.

https://doi.org/10.1017/S1355617723010032 Published online by Cambridge University Press

Conclusions: The 5C-CPT is a test of attention and cognitive control available for human testing, reverse-translated from rodent studies. The normative data generated here will enable future comparisons of data without the need for additional control studies. Furthermore, comparing these normative data to manipulations will enable further comparisons to rodent testing, with manipulations relative to baseline becoming more meaningful. Thus, the 5C-CPT is a viable tool for conducting cross-species translational research toward developing novel therapeutics that treat dysfunctional attentional and cognitive control.

Categories: Cognitive Neuroscience
Keyword 1: attention
Keyword 2: schizophrenia
Keyword 3: bipolar disorder
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18 Which cognitive complaints among older adults are more concerning than others? Analysis of items in a Subjective Cognitive Decline Questionnaire

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Objective: Subjective Cognitive Decline (SCD) is the self-reported experience of one's own declining cognition prior to objective impairment on clinical neuropsychological testing. While SCD is a promising marker of preclinical Alzheimer's disease (AD), information is needed to determine which cognitive complaints reflect typical aging versus prodromal degenerative disease. The objective of the current study was to examine the extent to which specific cognitive complaints were associated with two clinical outcomes including: 1) lower performance on cognitive tasks sensitive to preclinical AD; and 2) seeking help (i.e., medical attention) for cognitive difficulties.
Participants and Methods: The current sample consisted of 175 healthy older adults (56 Male, 119 Female), aged 51 to 90 (M=72.67, SD=7.12) with a mean education of 16 years (SD=2.3 years) who performed > -1.5 SD on clinical neuropsychological testing. 26.8% of the sample self-reported as race/ethnic minorities (e.g., Hispanic or Non-Hispanic, Black, Asian, Other.) Participants completed a 20-item SCD questionnaire assessing perceived cognitive difficulties in comparison to same aged peers, and tests shown to be sensitive to preclinical AD including the Face Name Associative Learning Test and the Loewenstein-Acevedo Scales for Semantic Interference and Learning. Participants were coded as having sought help for SCD (39%) if they entered the current study from a clinical referral source, OR if they entered through a non-clinical referral stream but indicated that they had previously seen a doctor specifically for memory concerns or spoken to their doctor about memory concerns. Chi square tests were used to examine relationships between SCD item endorsement and help-seeking; ANOVAs were used to the extent to which item endorsement was associated with performance on cognitive tests. Results were considered significant at $p < .05$.
Results: Three SCD items were associated with both lower cognitive test scores and having sought help for SCD (p values ranged from < .001 to .02). Items included difficulty remembering the date or day of the week and remembering a few shopping items without a list. One non-memory item was also associated with both outcomes including difficulty thinking ahead. In contrast, six items were not related to either outcome of interest. Such items included difficulty remembering appointments, remembering where you put things like keys, following a map to a new location, doing two things at once, understanding what you read, or understanding what people say to you. The remaining eleven items explore the extent to which selective associations exist with either help-seeking or cognitive performance.
Conclusions: Patients and clinicians alike are often unsure about which cognitive difficulties are typical for aging and which may be the cause for further workup. Current results suggest that certain complaints among cognitively healthy older adults may be cause for more thorough evaluation or monitoring. These

https://doi.org/10.1017/S1355617723010032 Published online by Cambridge University Press