simulation study, where the simulated distribution of data implied by this model is compared to the empirical distribution of total number of moves observed in real datasets. Data were simulated for 10 items with a sample size of 200 participants.
Results: Our simulation study shows that with our model the empirical distribution of total number of moves is successfully replicated in the distribution of the simulated data.
Conclusions: Computational modeling provides a new window into Tower of London performance by identifying different processes. Modeling thus allows us to go beyond aspecific descriptions of planning ability. Furthermore, using the high-resolution data of computerized testing allows us to estimate these parameters reliably without requiring "big data", keeping participant burden low.
This study will be followed up in three ways. First, predictions will be preregistered and tested for these new cognitive outcomes in several large oncological patient samples. Second, the model will be extended to include reaction times, to include an additional metric of cognitive computation. Third, the new cognitive process outcomes will be analyzed in conjunction with cognitive process outcomes on other tests to establish process communalities.

Categories: Executive Functions/Frontal Lobes
Keyword 1: planning
Keyword 2: computerized neuropsychological testing
Keyword 3: psychometrics
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84 Preliminary Psychometric Examination of a Short Questionnaire of Executive Functions

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Objective: The behavioral assessment of executive functions has become increasingly common in clinical practice, with a self-report measure of executive functions becoming one of the most commonly administered assessment instruments of the construct in clinical practice. These subjective measurements serve as an alternative to objective tests of executive functions, which have been criticized for poor ecological validity. Many behavioral measures of executive functions are now available, but there are some issues with those currently in use, in that many are lengthy, proprietary, and/or do not measure executive functions that align with a theoretical framework of the multidimensional construct. This study aimed to examine the psychometric properties of a new short questionnaire of executive functions designed to be concise, theoretically based, and ultimately freely available for use in research and clinical practice.
Participants and Methods: Participants included 575 college undergraduate students who completed an online questionnaire to earn credit in psychology courses. They were, on average, 18.9 years-old (SD=1.0, range: 18-22), 82.4% female, and 78.8% White. All participants completed 20 self-report items on a four-point ordinal scale measuring five theorized executive function constructs of Planning, Inhibition, Working Memory, Shifting, and Emotional Control. The 20 items were analyzed using confirmatory factor analysis and factor reliabilities were estimated using omega. As a validity analysis, correlations between the total score with measures of subjective cognition and ADHD symptoms were compared to correlations between the total score with measures of anxiety and depression, hypothesizing stronger correlations of executive functions with cognition and ADHD than negative affect.
Results: The initial 20-item model did not fit well, χ^2=1560.10, df=160, p<.0001, CFI=0.822, TLI=0.788, RMSEA=0.130 (90% CI: 0.124-0.136). The polychoric inter-item correlations were examined for high cross-factor correlations and low intra-factor correlations. This process resulted in the removal of one item from each factor, The modified model, inclusive of 15 items, presented with adequate fit to the data, χ^2=470.56, df=80, p<.0001, CFI=0.936, TLI=0.916, RMSEA=0.097 (90% CI: 0.089-0.106). The total score has good reliability (Ω=.82), whereas estimates for each factor ranged from .56 to .79. The total score showed a stronger correlation with ADHD symptoms (r=-.59) and subjective cognition (r=.59) than depression (r=.46, z=4.05, p<.001) and anxiety symptoms (r=.38, z=6.29, p<.001).
Conclusions: These preliminary findings provided modest psychometric support for this short 15-item self-report questionnaire of executive functions. The questionnaire had

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acceptable fit and evidence for validity, in that the total executive function score had a stronger correlation with subjective cognitive complaints and ADHD symptoms than negative affect. The reliability of some individual factors fell below conventional cutoffs for acceptable reliability, indicating a need for further refinement of this new questionnaire.

Categories: Executive Functions/Frontal Lobes
Keyword 1: executive functions
Keyword 2: psychometrics
Keyword 3: self-report
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85 Performance Consistency on a Measure of Sustained and Selective Attention

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Objective: Attention concerns, particularly difficulties with focusing and regulating attention, are reported in diverse clinical contexts. The Ruff 2&7 Selective Attention Test (Ruff 2&7; Ruff & Allen, 1996) is a measure of sustained and selective attention that assesses automatic detection and effortful processing. The goal of this study was to create an internal consistency metric within this test and to determine cognitive predictors by evaluating associations with executive control of attention and other cognitive skills. It was hypothesized that those who are more consistent across Ruff 2&7 performance would have more robust executive functioning skills, particularly those related to regulating and directing attention and the planning and utilization of cognitive resources.
Participants and Methods: The current study examined a clinical sample of 98 United States veterans with a history of mild traumatic brain injury. After excluding invalid cases (*n*=24), the final sample consisted of 74 veterans (Age=38.5 (8.9) years old; 13.9 (2.2) years of education; 78% male; 82% white, 7% Black, 8% Hispanic, 2% Asian). A consistency score was defined as the absolute value of the intertrial change in target hits plus errors across each pair of trials of the same stimulus type (Automatic Detection, AD, and Controlled Search, CS). Hierarchical linear regression modeling was used to evaluate the relative contributions of memory and executive functions (Rey Auditory Verbal Learning Test, Delis-Kaplan Executive Function System Tower Test, phonemic fluency, Trail Making Test B) and subjective symptom report (PTSD Checklist for DSM-5, Barkley Adult ADHD Rating Scale for DSM-IV).
Results: The mean deviation scores for the two trial types were similar (AD mean=13.6, SD=5.9; CS mean=13.6, SD=5.3). In predicting consistency across AD trials, delayed recall contributed 11% unique variance (p=.013), while no other block was statistically significant. For CS trials, self-reported PTSD and inattention symptoms contributed a combined 20% of unique variance to the model (p=.007), while there were no statistically significant cognitive predictors in this model.
Conclusions: Contrary to expectation, executive function measures did not explain statistically significant variance in performance across either trial type. Less consistent performance on AD trials was associated with weaker verbal memory. Less consistent performance on CS trials, which theoretically require greater executive control, was not associated with any cognitive scores, but was associated with more severe self-reported psychological and inattention symptoms. These findings buttress the conceptual distinction between AD and CS trial types, and they point to both cognitive and non-cognitive underpinnings of performance consistency.

Categories: Executive Functions/Frontal Lobes
Keyword 1: attention
Keyword 2: everyday functioning
Keyword 3: psychometrics
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86 COVID-19 Coping Style Predicts Executive Dysfunction in University Students

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