Results: The results showed that all children got benefits from 20 hours of INTM and most of the EF aspects remained improved at follow-up. A total of 8 VLBW children with an average of 3.4 aspects EFs deficits had an average of 1.4 aspects of EFs deficits left at the follow-up. More precisely, 5 of them had 1 aspects of EFs deficits and 3 of them had 2 aspects of EFs deficits.
Conclusions: This study revealed that such a short-term INTM had long-term effects in enhancing the EFs of those VLBW children who had normal early development but later grew into EFs deficits at school-age. Besides, their EFs are still improving even after two years of intervention. Further study on more subjects with longer follow-up might help VLBW children to achieve better neuropsychological function.

Categories: Executive Functions/Frontal Lobes
Keyword 1: executive functions
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77 Performance on Tests of Attention and Mental Flexibility Predicts Metacognitive Accuracy

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Objective: The process of metacognitive monitoring refers to one's ability to incorporate rapid in-the-moment self-assessments of their cognitive performance. An area of interest within this literature concerns metacognitive accuracy (MA), or the extent to which an individual can discern when their own judgments are incorrect/correct. Much of the work in this area has either focused on school-aged samples or clinical samples, with findings of impairment in metacognitive processes associated with traumatic brain injury, Schizophrenia, cerebrovascular accidents, and Alzheimer's disease. Notably, decreased working memory and executive functioning are frequently reported in samples with low MA, suggesting a possible reliance on basic cognitive resources in the facilitation of metacognitive processes. Thus, the goal of this investigation was to elucidate potential relationships between individual domains of cognition and higher-order MA. We hypothesized that performance on measures of working memory and executive function would be positively associated with measures of MA.
Participants and Methods: Data from 87 undergraduate students who volunteered in research for class credit were used. All participants completed a computerized metamemory task where six lists of 12 words each paired with varying point values were first presented to the participants. After each list, participants were instructed to score as many points as possible by recalling words they could remember. After a brief delay, participants completed a recognition task using the words presented earlier and provided a retrospective confidence judgement (RCJ) following each item. A metric for MA, *meta d'*, was calculated using signal-detection theory analysis from the reported RCJs and recognition task performance. Participants also completed neuropsychological tests of attention (Trails A), working memory (WM; Backward Digits), executive function (EF; Trails B), mental flexibility (MF; Trails B/A Ratio), and processing speed (Symbol Digit Modalities). A sequential multiple regression was performed with *meta d'* serving as the criterion, with education, age, and performance on neuropsychological measures entered as predictors.
Results: The model indicated that a moderate percentage of the variability (R^2 = .201) in metacognitive accuracy could be attributed to the combination of predictors in the model (F (7,79) = 2.843, p = .011). Examination of the regression coefficients indicated that only measures of attention (β = .638, p = .01), MF (β = .473, p = .041), and WM (β = .244, p = .024) were significantly related to MA after controlling for all other variables in the model.
Conclusions: The model suggests that working memory, attention, and mental flexibility increased in a linear fashion as MA increased. Our hypotheses were partially supported, while working memory predicted MA, its contribution to the overall model was the smallest among the significant predictors. While executive function was not a significant contributor to the model, MF (a component of EF) was. The largest contributor to the model was attention, which supports prior findings in the literature. This outcome would suggest that while separate from EF, metacognitive processes in neurotypical

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students may rely on other, more basic cognitive processes. These results may prove beneficial in guiding the development of rehabilitative interventions for MA in clinical samples.

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78 Examining the Association Between a Patient's Diagnosis and Occurrence of The First Error on Trails B

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Objective: Clinical and experimental neuropsychology patients are not always able to complete a given test due to limitations in their functioning and it can lead to frustration and time wasted, leading researchers to examine the value of metrics that can be derived earlier in a test so as to ascertain and salvage useful information. The Trail Making Test (TMT) is an oft-utilized test of executive function and has been the focus of such exploration (e.g., first error vs. time to complete Trails B which can be lengthy in dementia cases and lead to discontinuation and loss of scorable data; Christidi et al., 2013; Correia et al., 2015). The present retrospective study utilized archival chart review to examine the association between a patient's diagnosis and occurrence of the first error on Trails B (TB1err).
Participants and Methods: De-identified data was culled from adult private practice records (n=137) in the northeastern United States (the study was conducted in compliance with local IRB review). Trails A and B times, as well as Digit Span scores (for checking construct validity) were pulled from reports, and Trails B record forms were scored to extract the enumerated stimulus where any first error was observed in the patient's rendering of the trail connecting alternating numbers and letters. Paired t-tests compared the average TB1err of normative individuals (no diagnosis) with patients with a primary diagnosis of mood disorder, traumatic brain injury (TBI), mild cognitive impairment (MCI), or dementia. Additionally, Pearson's correlations were computed comparing TB1err with Trails B time, and another test of executive function (Digit Span backwards).
Results: The order of diagnoses according to the average occurrence of the first error on Trails B (from later, to sooner occurrence) was as follows: normative (no diagnosis), mood disorder, TBI, MCI, and finally dementia. There was a significant difference on this first error metric (TB1err) when comparing normative and dementia patients ($p = .03$; 8.3 vs 4.2 for the average enumeration of 1st error on Trails B). Furthermore, significant correlations were found between this derived TB1err metric and Digit Span backwards ($r = .31$; $p < .001$) as well as overall TrailsB performance ($r = -.39$; $p < .001$).
Conclusions: The present study adds to a growing literature on the utility of deriving test metrics to maximize useful data for clinical and experimental neuropsychology. Results from this retrospective chart review indicate additional validity data to support the use of extracting the first error on Trails B as a way to salvage useful data even when a patient may not be able to complete the full TMT as designed. In this preliminary sample there was a significant difference found for normative vs. dementia patients on this derived TB1err metric and suggests it is worthy of additional research to see if it can reliably differentiate various diagnoses. We expect this finding will also be useful in experimental designs wherein time is often limited and loss of data due to incomplete testing might be avoided by extracting the first error on TrailsB.

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