Executive Functioning in an ADHD/LD, Concussion, and Typical Sample
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INTRODUCTION

• Attention-deficit/Hyperactivity Disorder (ADHD) and learning disorders (LD) are often comorbid and there is debate whether these conditions are associated with a specific pattern of neurocognitive symptoms (Ackerman & Dykman, 1990; Stanford & Hynd, 1994; Wu, Anderson, & Castelli, 2002).
• Previous research shows that individuals with ADHD are more likely to endorse a history of concussion (Alosco, Fedor, & Gunstad, 2014).
• This research is examining Delis Kaplan Executive Functioning System (DKEFS): Trail Making Test (TMT) and Color Word Interference (CWI), performance differences among undergraduate students with ADHD/LD, those with a history of concussion, and healthy controls.

METHODS/PARTICIPANTS

• Undergraduate research participants were administered a full neuropsychological battery (N = 184, M(SD) = 19.02 (1.16)).
• 3 groups were identified: Self-reported ADHD/LD (ADHD/LD; n = 13), a history of prior concussion (Concussion; n = 39) and no diagnosis (No DX; n = 120).
• One-way ANOVAs investigated group differences across TMT and CWI trials.
• Tukey’s post hoc analyses further clarified performance differences between groups.

RESULTS

• Significant group differences were observed for TMT Trials 1 (Visual Scanning), 2 (Number Sequencing), and 4 (Number/Letter Switching; see Table 2).
• Post-hoc analyses revealed that performance on TMT Visual Scanning was significantly lower for the LD/ADHD group (M(SD) = 10.67(1.50)) when compared to the concussion group (M(SD) = 11.00(2.1), p = .008) and concussion group (M(SD) = 12.15(1.7)).
• Performance on TMT Number Sequencing was significantly lower in the LD/ADHD group (M(SD) = 10.25(3), p = .018) relative the healthy control group (M(SD) = 11.00(2.1), p = .008) and concussion group (M(SD) = 12.15(1.7)).
• Performance on TMT Number/Letter Switching was trending significantly lower for the LD/ADHD group (M(SD) = 9.58(2.27), p = .052) compared to the concussion group.

CWI

• Overall, no difference was found between groups on all trials of the CWI task (See Table 1).
• CWI Word Reading was trending significantly lower for LD/ADHD group (M(SD) = 9.462 (3.07), p = .053) compared to the concussion and no diagnosis group.

FIGURE 1. Trail Making Test means for No Dx, Concussion, and ADHD/LD groups across 5 trials.

FIGURE 2. Color Word Interference means for No Dx, Concussion, and ADHD/LD groups across 4 trials.

DISCUSSION

• This goal of this project was to see any differences among these groups in terms of their cognitive functioning.

TMT

• Surprisingly, participants with a history of concussion demonstrated higher scores on the TMT visual scanning, number sequencing, and number letter switching task than LD/ADHD group.

CWI

• No differences were reported between LD/ADHD, prior concussion and no dx groups on trials of CWI.
• This may indicate that the CWI used alone did not capture difference in executive function in these groups.

Limitations/Future Directions

• These results cannot be generalized to the population because of the collegiate/highly educated sample group.
• LD/ADHD group was significantly smaller compared to the other groups.

REFERENCES