Introduction

Multiple Sclerosis (MS) causes brain atrophy and damage to the gray and white matter of the central nervous system, leading to cognitive deficits, including executive functioning impairments, which can result in a decreased ability to perform everyday life activities.

The Delis-Kaplan Executive Function System (D-KEFS) is a laboratory-based, cognitive assessment used to test executive functioning skills. This assessment is reliable and valid and has been used with various populations.

A new, performance-based cognitive assessment, the Weekly Calendar Planning Activity (WCPA), was recently developed. Although the ecologically valid and performance-based nature of the WCPA has the potential to accurately assess executive function in those with MS, its criterion validity has not been researched for the Multiple Sclerosis population.

By assessing performance on the WCPA and comparing it to performance on the D-KEFS, criterion validity can be established for the WCPA as a functional assessment of executive functioning. This will expand the use of the WCPA and will aid in assessing actual limitations of performance in everyday life activities, which often goes unaddressed in laboratory-based assessments.

Materials & Methods

Assessment Protocol:

All participants underwent testing to compare performance on the WCPA with performance on the D-KEFS Delis-Kaplan Executive Functioning System (D-KEFS):

- The D-KEFS is a neuropsychological assessment for measuring executive functioning.
- The Letter Sequencing and Number-Letter Switching subtests of the D-KEFS Trail Making Test and the Inhibition and Inhibition-Switching subtests of the D-KEFS Color Word Test were used. The dependent variables measured are number of errors and time to complete the task. Low scores on the D-KEFS indicate better performance.

Weekly Calendar Planning Activity (WCPA):

- Participants were provided with a randomized list of 17 appointments, some of which were conflicting, and were asked to input appointments into a paper weekly calendar.
- Participants were asked to follow five rules during the task which were available for reference throughout. The dependent variables tested included a.) # of appointments entered, b.) # of appointments accurately entered, c.) # of strategies used, d.) # of rules followed, e.) total time used.

Objective

- Establish criterion validity of the WCPA
  - Determine if performance on the WCPA is negatively correlated with performance on the D-KEFS such that lower scores on the D-KEFS indicate higher scores on the WCPA

Results

Correlations with WCPA and D-KEFS variables

<table>
<thead>
<tr>
<th>WCPA Appts Entered</th>
<th>WCPA Appts entered correctly</th>
<th>WCPA Rules Followed</th>
<th>WCPA Strategies Used</th>
<th>WCPA Total Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-KEFS Color Word Inhibition</td>
<td>.433*</td>
<td>.407*</td>
<td>.362*</td>
<td>.89</td>
</tr>
<tr>
<td>D-KEFS Color Word Inhibition/Switching</td>
<td>.504*</td>
<td>.484*</td>
<td>.445*</td>
<td>.257</td>
</tr>
<tr>
<td>D-KEFS Trails Letter Sequencing</td>
<td>.204</td>
<td>.573*</td>
<td>.488*</td>
<td>.233</td>
</tr>
<tr>
<td>D-KEFS Trails Number Letter Switching</td>
<td>.247</td>
<td>.660*</td>
<td>.433*</td>
<td>.056</td>
</tr>
</tbody>
</table>

Discussion

The results of this study demonstrate a significant relationship between performance on the WCPA with performance on the D-KEFS, providing preliminary support for the criterion validity of the WCPA as a functional-based assessment of executive function for those with Multiple Sclerosis. Strong correlations between the number of appointments entered and the number of rules followed on the WCPA with all four subsets of the D-KEFS suggest that both assessments measure executive functioning. The ecological validity of the WCPA is useful in determining the impact of executive functioning deficits on everyday life activities.

A larger sample size may lead to significant results in all five variables of the WCPA when measured against the D-KEFS. Further research should involve various populations to measure the WCPA against other validated assessments of executive functioning to further validate this newly developed assessment.

Acknowledgments

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