

## Objective

To evaluate the sensitivity of the Test of Everyday Cognitive Ability (TECA) to individuals with multiple sclerosis (MS).

## Background

Cognitive impairment is a common symptom of MS, affecting more than half of all patients. While many cognitive measures have been established to be sensitive to the measurement of MS-related deficits, there is a need for a measure that is linked to the real-world experience of cognitive impairment. Previous research has standardized the performance of instrumental activities of daily living in aging and dementia as well as in one study of adults with MS. However, the application of these measures to MS participants was limited by a small number of items and a mild degree of difficulty. To address these limitations, the TECA is an expanded assessment of 10 items with adequate difficulty to reflect a range of performance. Using a set up similar to a grocery shelf with food items, coin currency, and a prescription bottle, TECA addresses the cognitive domains, including processing speed, visual scanning, and working memory, that are involved in the daily living tasks of communication, finances, food, shopping, and planning (Fig. 1).

**Figure 1.** The TECA's tasks involves a group of props, including a simulated grocery shelf.



## Methods

As part of a larger cognitive testing battery, the TECA was administered to 167 adults with MS and at least mild cognitive impairment (defined by SDMT performance 1 SD below norms) and a group of 31 healthy control participants (see Table 1). Each test item is timed within a preset time limit. Completion time is modified by accuracy of task completion (no error, mild error, major error). To provide a standard, TECA's accuracy and time scores were transformed to sample-based z scores using the means and standard deviations of the group at baseline. A composite score was then created by adding the z scores across items (higher score indicating poorer performance).

## Results

**Sample Characteristics:** The MS participants were diagnosed with relapsing remitting (66%), secondary (28%) or primary progressive (5)% disease and ranged from minimal to severe neurologic disability (Expanded Disability Status Scale median score of 3.0, range of 0.0 to 8.0).

Table 1: Sample Demographics

	MS (n=167)		Healthy Controls (n=31)	
Gender	Male	26% (124)	Male	57% (18)
	Female	74% (43)	Female	43% (13)
Age (years)	Mean	46 ± 14	Mean	28.7 ± 10.2
	Range	18 to 69	Range	18 to 64

WRAT Reading Mean 103.9 ± 9.37 -

**Relation to Cognitive Testing:** Performance on standard neuropsychological tests predicted TECA performance, with the TECA providing a link between clinical measurement and real-world functioning.

Table 2: Test Performance and correlation to TECA performance.

TEST	Domain	Mean Normative Score	Impairment	Correlation to TECA Performance (r)	Sample Size (n)
SDMT	Information Processing	z score= -0.95 +/- 1.19	Low average	-0.59*	173
BVMT-R Total Trials	Visual Learning	t score=44.45 +/- 13.0	Low average	-0.39*	169
SRT Total Trials	Verbal Learning	z score= -0.68 +/- 1.34	Low average	-0.32*	146
PASAT (2 second)	Auditory working memory	z score=- -1.05 +/- 1.27	Mildly impaired	-0.33*	139

\*p<.01

## References

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