Introduction

- Individuals with traumatic brain injury (TBI) often experience varying executive function impairment (Serino et al., 2006).
- Executive functions are higher level cognitive abilities which allow individuals to plan, problem-solve, make decisions, initiate and terminate behaviors (Zoltnan, 2007).

Methods

Participants: Eight participants, between ages of 39-79 (5 males and 3 females) completed the study. All had been diagnosed with a TBI, were over 18 years of age, primary language was English, and had a history of grocery shopping. Individuals with deafness, vision loss, psychiatric disorder and active drug/alcohol abuse were excluded from study.

Setting: Two settings were utilized: a medium size grocery store for administration of TOGSS and a well lit room with table and chairs for administration of executive function tests.

Measures: Participants were administered a demographic survey, the Montreal Cognitive Assessment (MoCA) as an overall cognitive function exam; Wisconsin Card Sorting Test (WCST) and Delis-Kaplan Executive Function System Tower Test (D-KEFS) as measures of the executive functions of problem-solving and planning; and the Test of Grocery Shopping Skills (TOGSS) as a real-world measure of IADL performance.

Procedure:
- Interrater reliability established amongst researchers (Interclass Correlation=1.000)
- Participants recruited and informed consent obtained.
- Study measures (TOGSS and Executive Function Tests) were administered with the order alternating between subjects. Researchers were blind to the results of each test to eliminate bias.
- Data analysis completed using SPSS version 20.

Results

Research Question 1: Performance on the TOGSS
A significant difference was found between age groups on the TOGSS accuracy outcome as calculated by an independent measures t-test. Those 51 years of age and younger were more accurate shoppers than those 52 years of age and older (t(6)= 2.988, p = 0.024). No other significant differences were found between groups (gender, years since diagnosis, and race).

Research Question 2: Patterns of Association between Executive Function and Grocery Shopping
Using Pearson correlation analysis significant associations were found for:
- Non-persistent errors (WCST) and efficiency (TOGSS) (r(6) = -0.740, p < .05)
- Time per move (D-KEFS) (r(6) = -0.712, p < .05)
- Total time (TOGSS) and efficiency (TOGSS) (r(6) = 0.715, p < .05)

Discussion

- As measured by the TOGSS individuals with TBI were not efficient or accurate grocery shoppers.
- The results yielded three patterns of association between executive function performance and grocery shopping performance: (1) problem-solving and efficiency, (2) problem-solving and accuracy, and (3) time and efficiency. These patterns of association correspond with associations found by Zayat et al., 2011.
- The TOGSS captures executive function performance, specifically the ability to problem-solve. Problem-solving abilities impact the efficiency and accuracy of grocery shopping performance.
- Occupational therapists working with the TBI population can use the TOGSS to evaluate a person’s ability to problem-solve as well as grocery shop. The use of performance-based assessment tools like the TOGSS is critical for modern occupational therapy practice (Gillen, 2013).
- Limitations to this study include small sample size and a limited geographical area. We recommend the collection of normative data on the TOGSS as well as further investigation into the use of the TOGSS as an executive function measure of planning.

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