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Critical Appraisal Form-Quantitative Study

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 Morrison, T., Guiles, G., Ryan, J., Baum, C., Dromerick, A., Polatajko, H., & Edwards, D.
    (2013). Multiple Errands Test-Revised (MET-R): A performance-based measure of
    executive function in people with mild cerebrovascular accident. *The American Journal
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Study Level of Evidence, What Type of Study?
Level I: ___RCT
Level II: X Cohort trial ___Case-control trial ___Non-randomized control trial
Level III: ___Case-control ___no pre-post test
Level IV: ___Single case study ___Case series ___No comparison group
Level V: ___Descriptive study ___Narrative review ___Expert opinion

Purpose of Study: Is purpose clear? X yes ___no
Describe researchers question/purpose:
        Researchers question: Can a real-world Performance Based Test (PBT) of executive
function (EF) distinguish between people with mild cerebrovascular accident (mCVA) and
matched neurologically healthy control participants?
        Purpose: "Our goal was to determine whether a real-world PBT of EF, the Multiple
Errands Test-Revised (MET-R), could distinguish between people with mCVA and matched
neurologically healthy control participants.".

METHODS
Were there any biases or ethical concerns in the study design?
        The fact that the participants were all female, and majority of the participants were
Caucasian could be a bias in the study design.

POPULATION
Who was the sample, how many subjects?
- Hospital patients who were first-time post mild ischemic stroke
- 1st phase: Baseline assessment N=50, 6 month follow-up N= 45 participants (1st phase)
- Of above N=45, 25 participants recruited for 2nd phase N=25 (mCVA), control group n=21 (matched healthy participants)
- Control group and mCVA gr no significant difference age, sex, race, or yrs education

Inclusion Criteria:

First-time ischemic stroke with scores of less than or equal to 5 on the National Institutes of Health Stroke Scale with informed consent.

Exclusion Criteria:

History of prior CVA, depression, dementia, psychosis, or premorbid functional impairment were excluded.

What was the intervention? Frequency, setting?

The MET–R was administered on the main floor of a large, consistently busy hospital. Participants were taken to a central location in the hospital lobby and asked to establish their location by examining a map of the main hospital floor and marking an "X" on the map indicating their starting location. Next, participants were asked to read both the MET–R task instructions and the list of rules to the examiner. The examiner gave standardized responses to all inquiries. Participants were given a clipboard, a task list, a map, money, a pen, and a backpack and instructed to self-initiate the test without prompting. During testing, the examiner followed participants through the hospital and used the scoring template to document participant performance. Participants had a 45-minute time limit.

Relevant outcomes to OT? How measured?

Performance Based Evaluation of executive functioning using real life activities is vital to build on occupational therapy research. In the study executive functioning the scoring method is sensitive to differences between a group of people with a mCVA and a group of healthy people.

Were the tests valid? Explain

Yes, the control participants on average completed only about 15 of the 17 tasks, and some broke rules during testing. Differences between the control participants and the mCVA group were significant for the majority of MET–R component scores, including total tasks completed ($p < .001$), rule breaks ($p < .001$), and performance efficiency ($p < .002$; see Table 3). These results support the discriminant validity of the MET–R. The MET–R demonstrated concurrent validity with the EFPT, which is a validated measure of a person's EF after a CVA.

Were the tests reliable? Explain

The MET-R's scoring method is highly reliable. They compared the two independent raters' scores for all MET–R sections (i.e., tasks completed, total rule breaks, total locations, number of passes, and total time) and found the scores to be identical, resulting in ICCs of 1 for all test sections.

RESULTS, CONCLUSIONS, CLINICAL IMPLICATIONS:
What were the findings? Was there:

Statistically significant change?

The authors used p values <.05 that were then corrected to <.01 based on Bonferroni corrections for multiple comparisons as the criteria for significance. Differences between the control participants and the mCVA group were significant for the majority of MET–R component scores, including total tasks completed (p < .001), rule breaks (p < .001), and performance efficiency (p < .002; see Table 3).

Clinically significant change? Explain.

The MET-R's refinements enhanced the ease of use and relevance in various clinical practice. The study shows how the new scoring method is sensitive to differences between the group of people with mCVA and the group of health people. Performance efficiency was also reflected in group differences: 69% of control group performed more efficiently than an average person in the mCVA group. The MET-R remains consistent with the author's intent that it emphasizes the real-world task performance deficits in people who experience functional disability in real-world environments, even if they appear unimpaired on routine testing.

What did the author conclude?

The authors conclude that the MET–R is a valid and reliable measure of executive functions. The MET-R is suitable for evaluation of clients with mild executive function insufficiencies. These clients need occupational therapy to fully participate in community living.

My Brief Summary:
What I see as study strengths:

MET-R can be used for clients who are in an acute setting and may not fully understand the implications of their impairments, for those who have high task demands in their lives, and for those who are not demonstrating deficits on traditional motor- and language-oriented assessments. This can also function as a final assessment for anyone who does not otherwise show impairments and can help clients who are returning to daily life activities attain a better understanding of the types of difficulties that might appear during the recovery process. The MET-R can also be useful in assessing a person who reports challenges with execution of complex tasks during a routine clinical follow-up after a mCVA.

What I see as limitations:

In this study the authors talked about two limitations, which are the small sample size and the scoring system. Right now they are in a new study with a bigger group of participants and taking the knowledge they have from this study for the new scoring system. The scoring system was unable to cutoff scores for neurologically healthy participants versus CVA to create normative values.

How is the study's findings relevant to OT?

In order to improve the original MET assessment for clinical utility they have created the MET-R that is revised to create an ecologically valid standardized index and decrease the amount of subjective concepts to increase its validity. This study seeks to determine whether the MET-R is beneficial for determining executive function impairments in individuals with mild cognitive impairments within the clinical setting. This population runs the risk of being overlooked by occupational therapists because they may not meet the current routine rehabilitation criteria and their need for services may be unidentified.

Occupational Therapists have a vital role in treating patients post mCVA and supporting their recovery. The MET-R strengthens OT's ability to identify clients with executive functioning difficulties. The MET-R also identifies executive functioning deficits that can be missed by an OT doing paper and pencil and office-based measures. The MET-R will be used in an acute care setting and its population does not currently meet routine rehabilitation criteria and can often be overlooked by the occupational therapists. The MET-R could be a final assessment for those who are returning to returning to daily life activities but whose difficulties may be tough to recognize.

How do I intend to use these results?

The MET–R's refinements enhance its ease of use and its relevance in clinical OT practice. The study results show that this new scoring method is sensitive to differences in a group of people with mCVA and a group of healthy people. The results show that the MET-R is a reliable and valid assessment method that emphasizes real-world task performance deficits in people who, although they appear unimpaired on routine testing, experience functional disability in real-world environments. The MET–R could function as a final assessment for those who are not otherwise showing impairment and could help clients who are returning to their daily life activities gain a better understanding of the types of difficulties that might surface during this recovery process. Additionally, the MET–R might be useful in assessing any person who, on a routine clinical follow-up after a mCVA, reports challenges with the execution of complex tasks.