Exploring the Executive Function Performance Test (EFPT): An alternative cognitive assessment

By: Katelyn Brady, OTD, OTR/L
Overview of Executive Function

- Specific skills include:
  - Realistic goal setting
  - Planning and organization
  - Self-directing and initiating
  - Metacognition (commonly referred to by therapists as “insight”)

- Essential for IADL performance
Why Screen Cognition?

- Seventy-four percent of people with stroke demonstrate acute cognitive impairment, with disorders in executive functioning being most common (Nys et al., 2007).

- Impairments which can range from mild to severe

- In addition, Stress, nutritional deficiency, alterations in sleep patterns, deconditioning from bed rest and medication side effects can all lead cognitive impairments with return home after hospitalization not restricted to those diagnosis typically associated with altered mental status.
Cognition has been assessed in many ways:

- Psychometric measures that do not always apply to real-world performance (Alderman, ).

- More traditional OT screens (MMSE, MOCA, SLUMs) typically only capture severe deficits and fail to identify executive function deficits associated with return to living independently (Giles, et al. 2017).

Therefore, performance-based tests have been found to better predict real-world functioning.
The American Occupational Therapy Association (AOTA; 2013) statement on cognition asserts that “cognitive functioning is always embedded in occupational performance and cannot be accurately understood in isolation” and “occupational therapy practitioners believe that cognitive functioning can only be understood and facilitated fully within the context of occupational performance” (p. S11).
EFPT

Serves 3 purposes:

1) “to determine which executive functions are impaired”
2) “to determine an individual’s capacity for independent functioning”
3) “to determine the amount of assistance necessary for task completion”

Standardized for

1) Stroke
2) Multiple Sclerosis
3) Schizophrenia
4) Ages 13+

(C.M. Baum & T.J. Wolf)
Examines four basic tasks:
- Simple cooking
- Telephone use
- Medication management
- Bill payment
Within each task, the following components are assessed:
- Initiation
- Execution
- Organization
- Sequencing
- Judgement and Safety
- Completion
## Executive Function Components

<table>
<thead>
<tr>
<th>Executive Function Component</th>
<th>Definition</th>
<th>Expected Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation</td>
<td>The start of motor activity that begins a task.</td>
<td>The individual moves to the materials table to collect items needed for the task.</td>
</tr>
<tr>
<td>Execution</td>
<td>The proper completion of each step, consisting of three requirements: organization, sequencing, and safety and judgment (see below).</td>
<td>The individual carries out the steps of the task.</td>
</tr>
<tr>
<td>Organization</td>
<td>The physical arrangement of the environment, tools, and materials to facilitate efficient and effective performance of steps.</td>
<td>The individual correctly retrieves and uses the items that are necessary for the task.</td>
</tr>
<tr>
<td>Sequencing</td>
<td>The coordination and proper ordering of the steps that comprise the task, requiring a proper allotment of attention to each step.</td>
<td>The individual carries out the steps in an appropriate order, attends to each step appropriately, and can switch attention from one step to the next.</td>
</tr>
<tr>
<td>Judgment and Safety</td>
<td>The employment of reason and decision-making capabilities to intentionally avoid physically, emotionally, or financially dangerous situations.</td>
<td>The individual exhibits an awareness of danger by actively avoiding or preventing the creation of a dangerous situation.</td>
</tr>
<tr>
<td>Completion</td>
<td>The inhibition of motor performance driven by the knowledge that the task is finished. The person does not perseverate and keep going</td>
<td>The individual indicates that he/she is finished or moves away from the area of the last step.</td>
</tr>
</tbody>
</table>
## Level of Cues

<table>
<thead>
<tr>
<th>Cue Type</th>
<th>Cue Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Cues Required</td>
<td>The participant requires no help or reassurance, does not ask questions for clarification, goes directly to the task and does it. Self-cueing is acceptable. Ex. speaking to oneself.</td>
</tr>
<tr>
<td>Indirect Verbal Guidance</td>
<td>The person requires verbal prompting, such as an open-ended question or an affirmation that will help them move on. Indirect cues are also not task specific and should come in the form of a question. Do you need anything else? Is there anything you need to do first? Do you need another item? What do you need to do next? Is there another way to do that? Is there anything you forgot? Anything else you need to consider? Avoid direct phrases such as “read the instructions” or “turn on the stove.”</td>
</tr>
<tr>
<td>Gestural Guidance</td>
<td>The person requires gestural prompting. At this level, you are not physically involved with any portion of the task. Instead, you should make a gestural cue that mimics the action that is necessary to complete the subtask, or make a movement that guides the participant, e.g., you may move your hands in a stirring motion, point to where the participant may find the item, point to the appropriate level on the measuring cup, etc. You may not physically participate, such as handing the participant an item.</td>
</tr>
<tr>
<td>Direct Verbal Assistance</td>
<td>You are required to deliver a one-step command, so that you are cueing the participant to take the action. For example, say, “pick up the pan” or “pour the water into the pan.”</td>
</tr>
<tr>
<td>Physical Assistance</td>
<td>You are physically assisting the participant with the step, but you are not doing it for him/her. You may hold the cup while he/she pours, hold the checkbook while he/she writes, loosen the cap on the medicine container, etc., but the participant is still attending to and participating in the task.</td>
</tr>
<tr>
<td>Do for the Subject</td>
<td>You are required to do the step for the subject.</td>
</tr>
</tbody>
</table>
Cues Defined

- Verbal Prompt - should be a question – but do not give an action or tell them what to do
- Gestural Cue - point, but no words with the point
- Direct Verbal cues - a direct statement that tells them what to do and if necessary tell and point to the item
- Physical assistance - you have to do part of the task for them (unless this is due to physical or visual limitation and they have asked for the help)
- Cannot do – the person does not go back to task after you have helped them
**Scoring**

<table>
<thead>
<tr>
<th>TASKS</th>
<th>Total Task Score</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telephone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CONSTRUCTS**

Must relate all task scores to reflect total the highest is both construct given on the form.

<table>
<thead>
<tr>
<th>CONSTRUCT</th>
<th>Cook</th>
<th>Telephone</th>
<th>Mem</th>
<th>Bills</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequencing</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Judgment &amp; Safety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL Construct Score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PRE-TEST SELF EFFICACY**

**Person's Report**

<table>
<thead>
<tr>
<th>Cook</th>
<th>Telephone</th>
<th>Bills</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

**ACTUAL PERFORMANCE**

**Administrator's Expectation**

<table>
<thead>
<tr>
<th>Cook</th>
<th>Telephone</th>
<th>Bills</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Potential Awareness Problem</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy estimated need for help</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If 100% match between pre-test and actual performance, if no, please specify</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overestimated need for help</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underestimated need for help</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If estimated incorrectly: if 4 or greater than 3 of 4, mark yes below</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential Awareness Problem</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
Simple Cooking
Telephone Use
Medication Management
Bill Payment
What you will need

PREPARING THE TESTING ITEMS

(to be placed in a clear storage box 27"x16"x12" deep)

- Hand soap in dispenser (as one would find in a home)
- Paper Towels (if you use cloth they will need to be washed after each use)
- Pan (with handle that gets hot and requires a pot holder)
- Pot holder
- Measuring cup (glass) – 1 cup
- Dry measuring cups
- Spoon for stirring
- Rubber spatula
- Old-fashioned Oats
- Bowl
- Spoon for eating
- Salt shaker
- Timer – a timer with a dial rather than a digital timer
- Pencil
- Paper
- Phone book
- Magnifying Glass
- Medicine bottle with instructions with the person’s name on it – filled with sugar-free candy
- Medicine bottle with instructions with another person’s name on it filled with sugar-free candy
- Crackers
- Claritin (or other over the counter) bottle (non-prescription) as a distractor – filled with sugar-free candy
- Drinking cups
- Two bills (one cable due in 30 days), one phone (due immediately) with pre-addressed envelopes mixed with 5 other pieces of mail (letter from credit card company, postcard, flyer, letter in a plain white envelope, mail order catalog) in a Ziploc bag
- Checkbook with person’s name on the check
- Balance sheet (i.e., account book) with a balance $5.00 less than the bills total
- Pen
- Calculator
- Other distractor items
- Tong
- Pepper shaker
- Restaurant / apartment guide
- Catalog
- An enlarged direction sheet for the cooking task exactly as on the oatmeal box (they may not be able to read it in small print).
- A stop watch (or you may use your phone as a timer)
- Prepare a response card for the pre-test questions.
- Scissors
- Put Bills and distractor mail in a gallon plastic bag
- Put medications in a quart plastic bag
Reliability

- Interrater reliability: Excellent
  - EFPT .91; subtests cooking .94, paying bills .89, managing meds .87, using telephone .79
- Internal Consistency: Excellent
  - total .94; subtests cooking .86, paying bills .78, managing medications .88 and telephone .77
Validity

- Construct validity:
  - Cooking and Bill pay significant difference between control and mild stroke group
  - Cooking: not significant different in mild- moderate stroke

The control group had lowest scores, than those with mild stroke \((p < .05)\) and moderate stroke \((p < .0001)\). Mild scores were also significantly lower than moderate scores \((p < .0001)\).
Validity

- Concurrent Validity:
  - FIM .40
  - FAM .69
  - Short Blessed .39
  - Trial A .21; Trials B .39
  - Story Recall .59
Validity

- Criterion validity:
The correlations between the EFPT scores and the FIM ($r = -0.40$) and FAM ($r = -0.68$) scores reflect these differences. The higher correlation between the EFPT and FAM scores further supports the criterion validity of the EFPT.

(Baum, et al, 2008)
Alternative EFPT

- Small pilot study completed: no statistical difference between EFPT and aEFPT
- 4 additional subtests based on the original
  - Making pasta
  - Calling a doctor’s office
  - Sorting pills into a 7 day pill organizer
  - Ordering a specific items from a catalog
Practice Areas

- Acute Rehab
- Home Health Care
- Outpatient
- Skilled Nursing Facilities/ Transitional Care Units
- Acute Care (Bill pay)
Advantages:
- easily administered after brief training
- isolates components of cognition
- objectively assess one’s performance of an actual task
- measures level of support needed for independent living
Limitations of the test
- time consuming: 60 – 90 minutes to complete and score
- skilled cueing is very important
- Balancing check book is beginning to be out dated
- only standardized in English
- limited research due to newness of the test
- Is not standardized to be repeated
Benefits of Identifying EF deficits

- Aging in place with appropriate support
- Reducing hospital admissions and re-admissions
- Referrals to appropriate services, such as occupational therapy
In Summary

- The EFPT has been proven to be reliable to assess executive function more accurately than others.
- The EFPT tests functional skills in simulated real world environments.
- The EFPT can be an excellent resource to add to your tool box for cognition assessment.
Questions
Bill Pay Subtest


Shaheen, Faryal, "Effectiveness of Executive Function Performance Test (EFPT) in Stroke Population" (2015). Occupational Therapy Graduate Student Evidenced-Based Research Reviews. 1. [http://scholarworks.wmich.edu/ot_posters/1](http://scholarworks.wmich.edu/ot_posters/1)