

## **The Digital Executive Function Test of Complex Occupations (DEFT™)**

### **What is the DEFT™?**

The DEFT™ (Digital Executive Function Test of Complex Occupations) is an instrument developed by the BCAT® Research Center to measure executive function for 3 complex occupations – community mobility, medication management, and financial management. While the DEFT™ measures executive function as a component skill, it is primarily designed to measure an individual’s risk for unsafe occupational performance due to executive function deficits. For each occupational subtest, the examinee is asked view an illustration and respond to questions and prompts to complete tasks using “real world” scenarios (e.g., navigating a map, budgeting monthly expenses, establishing a medication routine). Initial items in each subtest are basic. Subsequent items surpass the basic demands of “everyday” tasks and assess the examinee’s ability to handle the nuanced, unexpected situations that may arise related to community mobility, medication management and/or financial management.

### **Development of the DEFT™**

The DEFT™ was developed in response to the need for a complex occupation-based executive function assessment that satisfies important needed criteria (as noted in the literature and in a national survey), including:

- being time efficient, requiring no equipment, and requiring low clinician burden
- being appropriate for administration in all practice settings, including telehealth
- being sensitive to all levels of impairment
- measuring highly complex tasks
- being ecologically valid
- excluding outdated tasks

Community mobility, medication management and financial management were chosen for the DEFT™, as they have a high executive function demand and are critical to independent living. Additionally, they are considered high-risk complex occupations due to the significant repercussions of errors or performance degradation.

DEFT™ subtests were developed and refined using an iterative process that included focus groups of occupational therapists and beta testing. A psychometric study on the DEFT™ included community-dwelling older adults aged 50-90 in Maryland, Ohio and Virginia. Participants were administered the three DEFT™ subtests, the BCAT® cognitive assessment, the VPJ® judgment assessment, and a test of mood functioning (BADS®, Mood-5®). Normal cognition was established by BCAT® scores, and participants that scored below 34/50 on the BCAT® were excluded from the study. One sample consisted of cognitively normal community dwelling older adults (total BCAT® score of 44 and higher). A second sample included patients with Stage 1 Mild Cognitive Impairment (MCI) who presented to a brain health and psychiatry clinic for neuro-cognitive evaluation.

### Abbreviated Results (key findings)

- Study consisted of participants with normal cognition or Stage 1 MCI.
- Convergent validity was established by significant correlations between the DEFT and the VPJ® ( $r = .88$ ,  $p < .001$ ).
- Discriminant validity was established by a non-significant correlation between the DEFT and the BADS® ( $r = -.08$ ).
- Strong inter-rater reliability was demonstrated by a Kappa value of .70.
- Deficit ranges were determined by means and standard deviations.

### Using the DEFT™

In order to fully assess an individual's cognition, the DEFT™ should be administered in conjunction with a global cognitive assessment, such as BCAT®. The 3 DEFT™ subtests stand alone; a clinician can choose to administer 1, 2, or all 3. Each subtest will yield an overall score, which correlates with a risk level for that occupation, an executive tasking index score, and a working memory score. During administration, DEFT™ responses can be recorded on paper or directly into the online portal. If responses are initially recorded on paper, the clinician should then input the responses into the online portal to receive scoring and interpretive information.

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