



EPICREHAB

CLINICAL RESEARCH CONSORTIUM

An Introduction to Executive Dysfunction, Work Disability, and Work Capacity Evaluation



January 5, 2011

WORK CAPACITY EVALUATION

- Work capacity includes both physical capacity and cognitive capacity.
- WCE's focus on physical work must be expanded to include cognitive work.

EXPANDED WCE FOCUS

- What are the cognitive analogs of physical capacity and how can they be measured?
- Executive function harnesses and directs intelligence and other cognitive processing capacities.

DEFINITIONS

- Executive function is the ability to integrate various component cognitive abilities to produce meaningful task performance.
- Executive dysfunction is the relative inability to devise novel responses, suppress habitual responses, identify and correct errors, and plan, organize, and initiate new solutions to challenging tasks.

DISTINCTION

- Executive functions are distinguished from basic cognitive functions such as auditory and visual processing and long-term memory.
- Executive functions are “higher order” abilities that control emotional responses and provide coordination and integration of the basic cognitive processes.

TYPES OF EXECUTIVE FUNCTION

- There are two groups of executive functions:
 - Emotional / behavioral self-control.
 - Metacognitive coordination of individual cognitive components.
- Both are necessary to consider as we assist the client to return to work.

EMOTIONAL-BEHAVIORAL

- Getting along with co-workers and customers, clients, or patients is necessary in almost every job.
 - Impulse Inhibition
 - Cognitive Flexibility
 - Emotional Control
 - Self-Awareness

METACOGNITIVE COORDINATION

- Directing attention to select short-term and procedural memories and integrate with long-term memory and sensory input to perform a task.
 - Initiation
 - Working Memory
 - Plan / Organize
 - Task Monitoring
 - Organization of Materials

SCOPE OF THE PROBLEM

- We are not sure of the incidence of executive dysfunction, but awareness is growing.
 - Emerging technologies such as magnetoencephalography and the UCH-L1 biomarker provide more sensitive indicators of TBI, allowing fewer false-negative tests of ED.
 - Increased visibility of post-traumatic ED problems in otherwise-healthy returning veterans creates public awareness.

ANNUAL INCIDENCE

- Estimates of the proportion of persons who have problems with executive function after stroke or TBI range from 15% to 25%.
 - 1.4 to 1.7 million Americans experience a traumatic brain injury every year.
 - 795,000 Americans experience a cerebrovascular stroke every year.

U.S. PREVALENCE

- Chronic ABI (TBI + stroke) impairments
 - TBI = at least 5.3 million Americans.
 - Stroke = 5.8 million Americans, with 48% being younger than 65 years of age.
- Executive dysfunction is also experienced by many people with Asperger's syndrome, schizophrenia, multiple sclerosis, and Parkinson's disease.

COGNITIVE CAPACITY & WORK DISABILITY

- Can current neuropsychological, occupational therapy, and speech and language findings be interpreted in terms of work disability?
- Not as well as is presumed by the public.
 - For example, let's look at IQ ...

IS IQ = COGNITIVE CAPACITY?

- IQ is attractive because it ...
 - Is simple.
 - Is analogous to fitness as measured by a cardiac stress test, or performance potential measures.
 - Has been widely studied in relation to minimum demands of certain occupations.
 - Is measurable with standardized tests that have normative data.

IS IQ = COGNITIVE CAPACITY?

- IQ is inadequate because it ...
 - Is narrow, based on what can be measured briefly in a controlled environment.
 - Describes what a person can do in unusual circumstances, not what a person will do in normal situations.
 - Is culturally-biased.
 - Is controlled by one profession, creating service delivery bottlenecks and unnecessary expense.

WORK-ORIENTED EXECUTIVE DYSFUNCTION

- Executive dysfunction limits how inherent cognitive capacity is displayed.
- Performance in response to simulated work reflects the consequences of executive dysfunction on inherent cognitive capacity.

COGNITIVE *FUNCTIONAL* CAPACITY

- Cognitive Functional Capacity Evaluation:
 - Is analogous to physical FCE.
 - Is broad-based, described by factor analysis of occupational demands.
 - Allows comparison of the person to the demands of the job.
 - Focuses on what the person can do in a work environment.

COGNITIVE FCE TESTING

- Comprehensive Aptitude Batteries
 - Armed Services Aptitude Battery
 - Differential Aptitude Test Battery
 - Employee Aptitude Survey Test Battery
- Broad Employment Ability Tests
 - Wonderlic Personnel Test
 - Personnel Tests for Industry
 - Bennett Mechanical Comprehension Test
- Work Samples
- Situational Assessments

CRC STUDY #1

- Situational Assessment as a Measure of Work-Related Executive Function
- Research Questions:
 - Is the POD 1a situational assessment a valid measure of executive function?
 - Does performance on the POD 1a predict return to work?
- Abstract available at www.EpicRehab.com

NEXT MONTH ...

- Methods to Evaluate Vocationally-Relevant Executive Dysfunction
 - Behavior Rating Inventory of Executive Function
 - Excel Spreadsheet for CRC Project Participants
 - Behavioral Assessment of Vocational Skills (BAVS) “Wheelbarrow Task”
 - Doll Chair Assembly Task (DCAT) - Goldilocks Chair Company
 - Structured Work Activity Group #1 (SWAG) - St. Francis International Library