



EXECUTIVE FUNCTION IN INDIVIDUALS WITH CEREBRAL PALSY, SPINA BIFIDA, AND BRAIN INJURY

Executive Function

Executive function (EF) is a set of brain skills that help you plan and get things done. It is a higher cognitive process that involves communication and organization across multiple brain sites and brings all aspects of brain functioning together. EF helps you manage time, pay attention, switch focus, plan and organize, remember details, avoid acting impulsively, use previous experience to guide you, think ahead and think flexibly, self-monitor, and be self-aware. Brain imaging techniques show striking changes in the developing brain between 11 and 25 years of age. When cognitive control and stimulus control is impaired, reasoning, problem solving, and planning can be affected. Depression, sleep deprivation, and lack of physical exercise can adversely affect these cognitive processes as can the typical conditions found in advanced aging. Individuals can show splinter skills with competency in some subcategories of EF but not others. This mixed picture can delay accurate diagnosis and appropriate interventions.

Some examples of daily living activities involving EF:

- Remembering a list of errands without writing it down
- Managing a checking account
- Organizing important papers and paying bills on time
- Counting the correct amount of money when making purchases
- Learning new task or instructions
- Handling an unfamiliar problem
- Planning an activity days in advance
- Remembering where things are put away
- Using a map to find a location
- Making and keeping appointments
- Driving
- Completing a complex or multi-step project in high school or college

When EF difficulties are not identified, individuals may feel they have a personal inadequacy and parents, caregivers, educators, and others may have unattainable expectations of performance therefore reinforcing the sense of failure within the individual. Individuals can learn to understand EF and begin to use strategies and accommodations that promote success in school, work, and community living.

Causes of Executive Functioning Difficulties

Scientists still are not sure what causes EF difficulties. Some studies show that genetic make up and neurological conditions or injuries affecting the prefrontal cortex (such as Cerebral Palsy or Spina Bifida) can produce a wide range of symptoms. Prenatal exposure to tobacco, alcohol, and drugs or severe head injury in childhood may result in underlying damage to grey matter and white matter tracts. These conditions may mask EF difficulties until the maturation phases of the adolescent brain begin and prove unable to meet the growing demands placed upon it.

Signs you might notice include:

- Difficulty getting started on a task
- Difficulty tracking time
- Doing things either quickly and messily or slowly and incompletely
- Finding it hard to incorporate feedback into work or an activity
- Sticking with a decision, even when it is clear it is not working out well
- Getting distracted easily



- Losing train of thought when interrupted
- Needing 1-2 step directions or directions repeated many times
- Difficulty making thoughtful decisions
- Difficulty switching gears from one activity to another
- Difficulty multi-tasking
- Being very concrete in thinking
- Difficulty seeing other options or solutions
- Difficulty organizing themselves and their space
- Difficulty relating consequences to choices or misbehavior
- Difficulty reading social cues
- Difficulty adapting behavior
- Lacking self-awareness of strengths and limitations
- Weak strategic thinking

What can be done to manage Executive Function?

1. Get a medical evaluation to rule out reversible medical causes (seizure disorders, hearing impairments, attention deficits, medication side effects, or mental illness) that may mimic EF difficulties.
2. See a specialist – a neurologist, psychologist, or neuropsychologist – for testing to identify and quantify the areas of EF difficulties.
3. Employ strategies that use individual strengths and capabilities to compensate for challenges.

Cognitive Behavioral Therapy

- *Educational strategies* to start self-monitoring thoughts or behaviors. Also, education for caregivers about EF.
- *Behavioral approaches* include skills training to learn appropriate ways to responds to social situations.

Accommodations

- Visual aids
- Checklists
- Organizational Tools
- Environmental modifications
- Assistance of another person to help with organization and regulation

Supports

- School/college academic supports office or disability services
- Job coaching or partnering to help with review of expected task performance, organization and task completion.

References

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