

Diagnosis and barriers of executive function



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Executive Function (EF) is the cognitive process that regulates an individual's ability to organise thoughts and activities, prioritise tasks, manage time efficiently and make decisions (American Heritage Medical Dictionary, 2007). EF enables individuals to initiate and stop actions, to monitor and change behaviour as needed, and to plan future behaviour when faced with new tasks and situations.

EF refers to the role of the brain's frontal lobes in organising, controlling impulses, learning from mistakes and assessing risks. Impairment of EF is seen in a range of disorders, including some Pervasive Developmental Disorders (PDD) and nonverbal learning disabilities (American Heritage Medical Dictionary, 2007). EF deficits are associated with a number of psychiatric and developmental disorders, including obsessive-compulsive disorder, Tourette's syndrome, depression, schizophrenia, Attention-Deficit Hyperactivity Disorder (ADHD), and autism; EF deficits also appear to play a role in antisocial behaviour (Encyclopedia of Mental Disorders, 2010).

Executive functions are important for successful adaptation and performance in real-life situations; they allow people to initiate and complete tasks and to persevere in the face of challenges (Encyclopedia of Mental Disorders, 2010).

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Remediation for Executive Functioning issues is relatively difficult, but brain-based learning and cognitive enhancement programs can increase skills such as auditory processing, visual discrimination, processing speed, phonological awareness, planning, sequencing, attention to detail, etc (Learning Abled Kids, 2010). The academic level of a child's achievement can be enhanced by increasing the functioning of any cognitive skill area.

Diagnosis

Executive functions are high-level abilities that influence more basic abilities like attention, memory and motor skills (Encyclopedia of Mental Disorders, 2010). Dr. Stixrud, a psychologist, described executive functioning as a set of processes that include “ planning, organisational skill, maintaining a mental set, selective attention, and inhibitory control – for which the prefrontal regions of the brain are specialised” (Eberle, 2003). The frontal lobes are the large portions of the brain cortex that lie near the front of the brain; the cortex is the site in the brain where lower level processes like sensation and perception are processed and integrated into thoughts, memories and abilities, and actions are planned and initiated (Encyclopedia of Mental Disorders, 2010). Executive dysfunction is also among the most common and disabling aspects of cognitive impairment following traumatic brain injury (TBI), and may include deficits in reasoning, planning, concept formation, mental flexibility, aspects of attention and awareness, and purposeful behaviour (McDonald, Flashman & Saykin, 2002).

Executive functioning skills are required to participate in everyday life activities to formulate goals, to plan strategies to achieve those goals and to self-evaluate during these activities (Lezak, 1982, as cited in Rocke, Hays, <https://assignbuster.com/diagnosis-and-barriers-of-executive-function/>

Edwards & Berg, 2008). In this way, EF contributes to success in work and school and allows people to manage the stresses of daily life. Examples of executive functions are planning what one will do tomorrow or deciding things in the environment to pay attention to or deciding how to respond to a challenging task, that is, students need to learn how to plan ahead, how to gather appropriate materials for school tasks, how to prioritise the steps to complete an assignment and how to keep track of their work (Lerner & Johns, 2009). EF also enables people to inhibit inappropriate behaviours. Children and adolescents with EF deficits often experience difficulties with participation in everyday and meaningful activities (Biederman, Monuteaux, Doyle, Seidman, Wilens, & Ferrero, 2004, as cited in Rocke et al., 2008). People with poor executive functions often have problems interacting with other people since they may say or do things which are bizarre or offensive to others. Most people experience impulses to do or say things that could get them in trouble, such as commenting negatively on someone's appearance, or insulting an authority figure like a boss or police officer; executive functions are thus an important component of the ability to fit in socially (Encyclopedia of Mental Disorders, 2010).

Children with learning disabilities often have executive functioning disorders as well, psychologists used the term EF to describe how the brain performs to think, act, and solve problems and executive functioning includes tasks that help to learn new information, remember and retrieve information learned in the past, and use this information to solve problems of everyday life (Logsdon, 2010). Assessing EF can help determine a patient's capacity to

execute healthcare decisions and discharge plans and to live in the community without assistance (Kennedy, 2010).

Barriers

A child with poor EF will require lots of outside help in keeping track of homework assignments and completed work, transitioning between activities, recalling rules, and staying safe. Although they may occasionally appear capable, they will not be able to show consistent competence in those areas by themselves. This brain function is often impaired in children with behavioural disorders like ADHD and can lead to risky, ill-considered, and illogical actions (Mauro, n. d.).

“ Children with ADHD exhibit deficits on numerous experimental and neuropsychological tasks that are interpreted as difficulties in executive functions (Hinshaw et al., 2002; Nigg et al., 2006; Pennington & Ozonoff, 1996, as cited in Wicks-Nelson and Israel, 2009, p. 236)”. Many students with ADD or ADHD have impaired working memory and slow processing speed, which are important elements of EF, these skills are critical for writing essays and working math problems (Dendy, 2004). Consequently, writing essays for example, is often very challenging for these students; they often have difficulty holding and organising ideas in mind, quickly retrieving grammar, spelling and punctuation rules from long-term memory, manipulating all these informations in a logical sequence, and then reviewing and correcting errors (Dendy, 2004).

These children also have difficulties in memorising multiplication tables or working a math problem; they must fluidly move back and forth between

analytical skills and several levels of memory; with word problems, they must hold several numbers and questions in mind while they decide how to work a problem; next they must delve into long-term memory to find the correct math rule to use for the problem; then they must hold important facts in mind while they apply the rules and shift information back and forth between working and short-term memory to work the problem and determine the answer (Dendy, 2004).

Over the past two decades, the theory of EF has been evolving and gaining prominence among psychologists and other professionals who treat individuals with cognitive disabilities, especially ADHD (Solarz, n. d).

Executive skills are viewed as impaired in children and adults diagnosed with learning differences such as ADHD, compared to others of the same age and developmental level; for example, a child's difficulty completing class work independently may be the first signal that such difficulties exist (Solarz, n. d).

Brown (2000, as cited in Solarz, n. d.) has developed a model (appendix) that includes six clusters of cognitive function involved in Executive Function: Activation, Focus, Effort, Emotion, Memory and Action. These functions actually work simultaneously and in an integrated way to help manage daily tasks (Solarz, n. d.). Dr. Brown, who studied children, adolescents and adults diagnosed with ADHD, found that each age group experienced impairments in all the six clusters of his model (appendix) (Solarz, n. d.).

According to Brown's (2001) the six clusters of cognitive function involved in EF are explained as follows (Solarz, n. d.):

Activation has to do with organising tasks and materials, prioritising tasks, estimating the time required and getting started on the work. Many people with ADHD describe chronic procrastination, often beginning a project only when time is seriously limited and completion is perceived as an emergency.

Focus has to do with establishing, sustaining and shifting focus on tasks. Some people describe being easily distracted by things going on around them, as well as by their own thoughts. This lack of focus also can impair reading comprehension.

Effort refers to regulating alertness, sustaining effort and processing speed. Many people with ADHD can perform short-term projects well but have more difficulty sustaining effort over long periods of time. Deficits in this area may interfere with expository writing, as well as sleep and alertness. Some people stay up too late because their minds are hard to shut off and when they finally do get to sleep, they may sleep so deeply that it is hard to wake up in the morning.

Emotion indicates difficulty modulating an array of emotions. Many people with ADHD report chronic difficulties managing frustration, anger, anxiety, disappointment, desire and other emotions. These emotions may take over their thinking, making it hard to focus on anything else.

Memory has to do with utilising working memory and accessing recall. People with ADHD often report that they have a good memory for things that happened long ago, but have great difficulty remembering where they just put something, what someone just said to them or what they were about to

say. Sometimes they have difficulty drawing out of memory information they have learned when they need it.

Action refers to monitoring and regulating self-action. Individuals with ADHD are often too impulsive in what they say or do, and in the way they think, jumping too quickly to conclusions which may not be well thought out. Many people struggling ADHD also fail to notice when someone is hurt or annoyed by their words or actions, so they may fail to modify their behaviour and fit a particular circumstance.

Logsdon (2010) suggests that EF affects learning in school, at home or in the workplace and some of the signs to look for are: the difficulty in planning and completing projects; problems in understanding how long a project will take to complete; struggling with telling a story in the right sequence with important details and minimal irrelevant details; trouble in communicating details in an organised, sequential manner; problems in initiating activities or tasks, or generating ideas independently; and difficulty in retaining information while doing something with it such as remembering a phone number while dialling.

Treatment

Treatment of ADHD probably needs to involve work with the family, use of medication and school based intervention; commencing intervention as early as possible is crucial, as is skilling parents, caregivers, teachers, siblings and peers (University of Southern Queensland, 2010).

There is no cure for ADD or any executive dysfunction; treatment must be continued for life (Jones, 2002). The most common treatment is stimulants, <https://assignbuster.com/diagnosis-and-barriers-of-executive-function/>

however due to side effects and dependence on drugs adults are encouraged to live without it; treatment of ADD as an EF disorder would mean teaching the person how to take advantage of the brain, that is, parents and schools will have to include special classes and controlled schedules (Jones, 2002). Disorders including brain injuries are treated in a more systematic way; rather than treating the symptoms, the person is encouraged to develop other parts of the brain (Jones, 2002).

If the damage is severe, there are computer systems similar to palm pilots that can help. These computers are easily carried; they have the ability to store complex schedules, the placement of items, and remind the user when it is time to do something. These machines even have a limited ability to make decisions for the user (Jones, 2002).

The evidence for the drugs helping among children is high and this does not mean the end of treatment with the use of drugs rather it means additional treatment, which will decrease the need for help as adults (Jones, 2002).

According to Murphy (2009, as cited in Solarz, n. d.) the purpose of utilising the EF model (appendix) with adults and children alike is to understand in which specific areas cognitive challenges occur in order to help them improve overall functioning and to gain a better understanding of areas of strength and ability, which should be encouraged and developed as one of the main focuses of treatment. The two highest levels of cognitive thought, according to Bloom, are synthesis and evaluation; in "synthesis," the individual is able to put ideas together, propose plans, form solutions, and create new information; and in the "evaluation" stage, the thinker is able to

make choices, select, evaluate and make judgments about information and situations (Munday, 2001).

Many special needs students have considerable difficulty moving very far beyond this concrete level of processing information, and they typically run into great frustration when asked to carry out higher levels of thinking on academic tasks (Munday, 2001). Therefore, parents, teachers and other professionals who work with children are guided to a greater understanding of a child's cognitive abilities and deficits, can move toward a more supportive and reflective stance in regard to parenting or teaching the child (Murphy, 2009, as cited in Solarz, n. d.). For these children, the true-false test, the matching tests, and the " fill-in-the-blank" tests are likely to be more " user friendly"; some elements of phonics can generalise their day to day experiences in learning; and drill-type teaching is a very essential component that lays solid foundations of information on which future learning can be built (Munday, 2001).

After reaching a fair level of mastery in a limited set of facts, whether in phonics or beginning math, or any subject, students should be moved " up" the level of difficulty on Bloom's taxonomy wherever possible. Children should be asked, as often as possible, to retell information in their own words. Allow them to make comparisons on what is similar from one object to another. Help them to notice attributes that are different so they can contrast the differences. Show them how to estimate. Use many concrete examples that reinforce their strength, but always try to help them stretch their boundaries at the same time (Munday, 2001).

According to Bloom's taxonomy "application" is a higher order thinking skill than simple recall or telling, therefore student must be able to relate what they already know; the complex working of the mind that allows this kind of "integration" to occur permits the learner to reach higher levels of accomplishment (Munday, 2001). Teaching parents should be asking the student to solve problems by using learned information, constructing projects or posters, writing plays or acting out mini-plays, making original portfolios or building models in order to help them with applying new learning; testing should be less involved with pencil and paper tests with short answers, and more directed towards essays, hands-on projects or presentations, or having the student writing his or her own test, to see how well they can target key concepts (Munday, 2001).

Here are some strategies from Logsdon (2010) to help individual with EF deficits:

To give clear step-by-step instructions with visual organisational aids.

Children with executive functioning disorders may not make logical leaps to know what to do. Be as explicit as possible with instructions. Adjust the level of detail based on the student's success;

Use planners, organisers, computers or timers;

Provide visual schedules and review them at least every morning, after lunch, and in the afternoon. Review more frequently for people who need those reminders;

Pair written directions with spoken instructions and visual models whenever possible;

Use daily routine where possible;

Create checklists and “ to do” lists;

Use positive reinforcement to help kids stay on task;

Break long assignments into smaller tasks and assign mini-timelines for completion of each. If children become overwhelmed with lists of tasks, share only a few at a time;

Use visual calendars or wall planners at to keep track of long term assignments, deadlines, and activities;

Adults may find time management planners or software helpful. (try the software to ensure effectiveness);

Organise the work space and minimise clutter on a weekly basis;

Have separate work areas with complete sets of supplies for different activities. This reduces time lost while searching around for the right materials for a task.

Keep strategies consistent across classrooms, at home, or in the workplace. People with executive functioning disorders are more likely to do well when their routines are similar in different settings.

If the person is not helped with the strategy or is making no progress after a reasonable amount of time, therefore older children and adults may be able

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to help identify more effective strategies or ways to adjust strategies for more effectiveness.

Conclusion

Executive functioning allows information to access, to think about solutions, and to implement those solutions. The executive functions are a diverse, but related and overlapping, set of skills. In order to understand a person, it is important to look at which executive skills are problematic for that person and to what degree. Treatment can be guided to inform parents and teachers of cognitive strategies to improve children's performance and participation in everyday activities.

It is also important to point out that a child or adult's cognitive profile is flexible and will change and develop throughout childhood, into adolescence and beyond (Brown, 2000, as cited in Solarz, n. d.).