

Executive Functions (EF) and Dementia

Executive functioning involves the ability to *inhibit physical and verbal actions*, successfully engage *working memory*, and *focus attention* in order to plan and carry out typical life tasks in an efficient manner. It also includes the ability to self-monitor *emotions* and control our behaviors. Finally, EFs allow us to set *goals and plan* appropriate actions to accomplish our objectives.

Examples of Executive Dysfunction in Dementia

On a practical level, impairments in executive functioning have been associated with impairments in activities of daily living which include getting dressed, the ability to feed oneself, normal hygiene routines, such as bathing and brushing teeth. These issues are seen in individuals who have Alzheimer's Disease and dementia including vascular dementia, frontotemporal dementia and dementia with Lewy bodies.

Be aware that multi-step processes such as cooking and driving carry the possibility of danger when executive functioning is impaired, so take precautions in those areas, whether that's disconnecting the stove or talking to your loved one about quitting driving.

Other examples of impaired executive functioning in dementia include poor judgment, disorganization, socially inappropriate behavior, difficulty making plans for an event later in the day, and an inability to understand how their behavior or choices affect those around them. Executive functioning impairments may make it seem like the person is behaving selfishly, especially if their memory is still quite intact.

Interestingly, although memory impairment often goes along with executive impairment, a person can show **no memory problems** but still be impaired in decision-making and executive functioning.

Can You Improve Executive Functioning in Dementia?

Some studies suggest that physical exercise can help improve executive functioning in people with dementia. For example, one study found that people with Alzheimer's disease experienced less decline in their executive functioning when they had higher rates of physical activity.

Other studies have demonstrated that certain diets, such as the MIND diet or the Mediterranean diet, have the potential to slow cognitive decline in those who have dementia, and this benefit may extend to executive functioning, as well as memory.

How Is Executive Functioning Is Assessed?

There are several tests that help assess executive functioning. They include the Stroop test , (<https://www.youtube.com/watch?v=E92GSwr46DY>) the verbal fluency test, Draw a Clock, the Wisconsin card-sorting test, and the executive interview, among others.

Remember

An impairment in executive functioning can be frustrating at times, both for the person experiencing it as well as for loved ones, but if you are able to respond and interact positively, it will help both of you. Also, reminding yourself that this challenge is due to dementia and is not a deliberate choice can also help reduce your potential to respond emotionally instead of with a deep breath and patience.

The Orchestra of Executive Functions

Major domain	Skills	Development
Inhibition/ Action	<ul style="list-style-type: none"> • Monitoring and self-regulation actions • Inhibiting action when necessary – impulse control 	Initial signs observed in infants, 7 to 12-months old <ul style="list-style-type: none"> • Impairment in the ability to manage impulses in social situations is often linked to dementia.
Working Memory	<ul style="list-style-type: none"> • Utilizing working memory and accessing recall, • Using feedback to improve performance, • Consequences of behavior (if-then) • Is developmental. 	Initial signs observed in infants, 7 to 12-months old. <ul style="list-style-type: none"> • Impairment in working memory is often linked to dementia.
Focus/ Attention	<ul style="list-style-type: none"> • Selective attention: Paying attention to something while screening out other competing information. • Joint attention: shared attention with adult essential in vocabulary development. • Sustained attention: Remaining focused on a topic of interest. • Response inhibition: Inhibiting an impulse to respond to something that is distracting. 	<ul style="list-style-type: none"> • Selective attention: brief moments beginning at birth • Joint attention develops about 8-10 months • Sustained attention begins to develop at about a year of age • Response inhibition begins to develop before age one but continues throughout childhood <ul style="list-style-type: none"> • Impairment in the ability to focus attention later in life is often linked to dementia.
Emotional Control	<ul style="list-style-type: none"> • Managing frustration and regulation of emotions, • Interpreting other's emotions and intentions • Perspective taking 	Begins about 18 months and develops rapidly between 3 -5 year of age. <ul style="list-style-type: none"> • Managing emotions is a life-time work in progress.
Effort	<ul style="list-style-type: none"> • Initiating: Starting to do something. • Planning: Thinking ahead about how to do something. • Regulating attention - Resisting distraction • Pacing and managing time • Problem solving: Able to use multiple strategies to solve problems. • Strategic behaviors: Selecting a behavior to use for a specific situation or problems. 	Beginning in preschool but does not reach full capacity until adulthood. <ul style="list-style-type: none"> • Distinct growth patterns have been observed, indicating periods of intense development between the ages of 5 and 7, 9 and 12, and during adolescence. • Between the ages of 5 and 7, children typically begin to display the capacity for longer periods of sustained attention and the use of silent verbal mediation to guide themselves.
Goal Setting and Activation	<ul style="list-style-type: none"> • Organizing, initiating planning • Cognitive flexibility • Predicting and strategizing • Prioritizing and sequencing 	<ul style="list-style-type: none"> • Information-processing capacities, accuracy, and fluency dramatically increase between ages 9 and 12. Adolescence brings the capacity to consider "what if" situations and increased planning, organizational, problem-solving skills. • Impairment in these abilities is often hallmark symptoms of dementia.

Executive Function Quiz

Trait - Inhibitory Control The ability to integrate and simultaneously control attention, impulses and emotions and behavior.	Exactly like you	Very much like you	Somewhat like you	Not too much like you	Not at all like you	Total Score
If I am in a noisy room, I can still pay attention to the task I'm working on	5	4	3	2	1	
I tend to blurt out what I am thinking even if it might hurt someone else	1	2	3	4	5	
If I interrupted while I am working on a task, I can switch gears and pay attention	5	4	3	2	1	
If others are having dessert, I usually have one too, even when I want to lose weight	1	2	3	4	5	

20 – 15 You rate high on the skill	14 – 9 You could use some work on this skill	8 and below You could improve this skill
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Suggestions

- Stop and go impulse management games such as Slap
- Golf, Yoga & Pilates - helps to strengthen the ability to focus
- Karate & Dance– Significantly improves focus and body control
- Keep a behavioral diary that deals with emotional impulses such as eating or verbal comments

Trait - Working Memory The ability to hold information in your mind while mentally working with it or updating it.	Exactly like you	Very much like you	Somewhat like you	Not too much like you	Not at all like you	Total Score
I can hold a couple of ideas in my mind at the same time	5	4	3	2	1	
If I am reading, it is hard for me to remember what I have just read	1	2	3	4	5	
I can add large numbers in my head	5	4	3	2	1	
I do not always remember what I plan to do first and then second	1	2	3	4	5	

20 – 15 You rate high on the skill	14 – 9 You could use some work on this skill	8 and below You could improve to skill
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Suggestions

- Get adequate sleep – children need 10-12 and adults need 7-9
- Prepare visual schedules and to-do lists and review them several times a day
- Play games that require memory – such as chess and concentration

Trait - Attention and Focus – The ability to remain alert and concentrate for periods of time	Exactly like you	Very much like you	Somewhat like you	Not too much like you	Not at all like you	Total Score
I typically get so absorbed in what I'm doing that I stay with it for a long time	5	4	3	2	1	
I am easily distracted	1	2	3	4	5	
I have a hard time keeping my mind on the task at hand	1	2	3	4	5	
I can keep my focus and energy at just the right level so that I can concentrate when I need to	5	4	3	2	1	
20 – 15 You rate high on the skill		14 – 9 You could use some work on this skill		8 and below You could improve this skill		
Suggestions						
<ul style="list-style-type: none"> • Create checklists and "to do" lists, estimating how long tasks will take. • Break long assignments into chunks and assign time frames for completing each chunk. • When you are working on a task, play music in the background • Be sure to get adequate sleep and nutrition 						
Trait – Emotional Control The ability to understand and manage your emotions and reactions. The ability to recognize emotions in others.	Exactly like you	Very much like you	Somewhat like you	Not too much like you	Not at all like you	Total Score
I can stand back and take a bird's eye view of myself in a situation; with the ability to self-reflect and take another's perspective.	5	4	3	2	1	
I am frequently frustrated and irritated	1	2	3	4	5	
I have frequent mood shifts throughout the day	1	2	3	4	5	
I understand my emotions and understand why I am feeling the emotions I feel.	5	4	3	2	1	
20 – 15 You rate high on this skill		14 – 9 You could use some work on this skill		8 and below You could improve this skill		
<ul style="list-style-type: none"> • Monitor your sleep and diet. • Get more physical activity as this relives stress and produces more dopamine • Breath deeply and slowly for several moments before responding to a situation. • Seek counseling to learn how to manage situations you can not change. 						

Trait – Planning and Achieving Goals The ability to set and accomplish realistic goals.	Exactly like you	Very much like you	Somewhat like you	Not too much like you	Not at all like you	Total Score			
I can identify <u>realistic</u> goals for myself.	5	4	3	2	1				
I can organize a set of sequential steps to accomplish my goals	5	4	3	2	1				
I am usually motivated to accomplish my goals.	5	4	3	2	1				
I find it difficult to achieve my goals and/or daily tasks.	1	2	3	4	5				
<table border="0" style="width: 100%;"> <tr> <td style="width: 33%; text-align: center;">20 – 15 You rate high on this skill</td> <td style="width: 33%; text-align: center;">14 – 9 You could use some work on this skill</td> <td style="width: 33%; text-align: center;">8 and below You could improve this skill</td> </tr> </table>							20 – 15 You rate high on this skill	14 – 9 You could use some work on this skill	8 and below You could improve this skill
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Suggestions <ul style="list-style-type: none"> • Write down goals. – Analyze: Are your goals achievable/realistic? • Establish daily to-do list. Check back in with your list throughout the day to help you stay focused on completing tasks. • Mentally and verbally encourage yourself and commend yourself on task completion. • Share your goals and progress with a friend! 									
Trait - Cognitive Flexibility The ability to switch perspective or focus of attention and adjust to changed demands or priorities.	Exactly like you	Very much like you	Somewhat like you	Not too much like you	Not at all like you	Total Score			
When I try something that doesn't work, it's hard for me to give it up and try another solution	1	2	3	4	5				
I adapt to change pretty easily	5	4	3	2	1				
When I can't convince someone of my point of view, I can usually understand why not	5	4	3	2	1				
I am not very quick to take on new ideas	1	2	3	4	5				
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Suggestions <ul style="list-style-type: none"> • Deliberate self-talk "Is there another way to accomplish this goal?" • How might ___ think about this problem? • Develop plan A, plan B and plan C – remind yourself that there are many ways to accomplish this task • Reading and analyzing stories – consider the characters behavior. Why might they act as they do? Are there other ways they might have acted? 									

Adapted from Galinsky, E. (2010). A mind in the making: The seven essential life skills every child needs. Harper Collins: New York:NY.