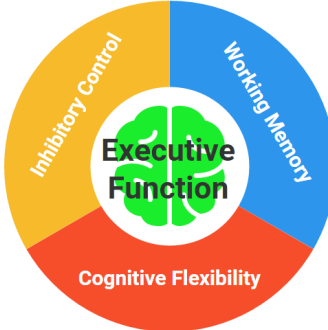


Executive Function



Inhibitory Control
Self-control to achieve goals by suppressing impulses & temptation

Working Memory

Cognitive Flexibility
Open to different perspectives and strategies to solve problems

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Verbal Fluency (11/min)

FAS Test: Name maximum number of words in 1 minute that begin with letter **F**
(no proper noun, no number, no past tense)
Inhibitory control, working memory, flexibility

Strategy:
 For consonant letter **f**: seek words through vowels
fa..., fe..., fi..., fo..., fu...
 For vowel letter **a**: seek words alphabetically
ab..., ac..., ad...

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-1,+3

Serial Subtractions of 7 from 100

93 86 79 72 65

-1,+3

Serial Subtractions of 7 from 89

82 75 68 61 54

-1,+3

Serial Subtractions of 7 from 94

87 80 73 66 59

Working Memory & Cognitive Flexibility

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Aging affects Language

- Word-finding difficulty (ToTs)
- Stressing Syllable
- Off-topic Verbosity
- Vocabulary Size
- Storytelling
-

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Nonliteral Language

Metaphors connect two dissimilar things and rely on *working memory* & *inhibition* of irrelevant information.

Older adults found it more difficult to inhibit the metaphorical interpretation (due to limited executive function)

Example

The car seat is a fluffy cloud

The singer killed the song

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Nonliteral Language

Idioms/proverbs are expressions fixed with one meaning

Understanding idioms improves with age up to 60s. Older adults performed poorly at inhibiting the literal meaning of idioms (due to limited inhibitory control)

Example

“Letting the cat out of the bag” for “revealing a secret.”

“Break a leg” for “good luck”

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Grammatical Complexity

Number of clauses embedded in a sentence

The juice that was bought yesterday and left on the counter until this morning is now in the refrigerator

The juice that is now in the refrigerator was bought yesterday and left on the counter until this morning

Older adults' sentences are 30% shorter and less complex due to limited executive function

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Pragmatic Competence

Being polite, socially appropriate, responsive to the needs of others. e.g. small talk requires understanding of context, social conventions, shared knowledge, and working memory of common ground.

Older adults are less flexible and accommodating to listeners who do not share the common ground.

Pragmatic deficit is not limited to verbal expression. Older adults are slower in following facial expression, voice tone, and eye gaze of conversational partners.


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Executive Function Training

Stroop Test

| | | | |
|--------|--------|--------|--------|
| BLUE | RED | YELLOW | ORANGE |
| GREEN | BLUE | PURPLE | RED |
| PURPLE | YELLOW | RED | BLUE |
| ORANGE | BLUE | YELLOW | RED |
| RED | GREEN | ORANGE | BLUE |
| PURPLE | YELLOW | BLUE | ORANGE |

Flanker Test

Match 

Non-match 

Perspective training

1 & 2

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Reasoning with Language

Tanya is older than Eric,
Cliff is older than Tanya.
Eric is older than Cliff X
Cliff > Tanya > Eric

Tanya is older than Eric,
Cliff is older than Tanya
Cliff is older than Eric ✓

✓ True
X False
? Uncertain

Executive Function
Working memory
Cognitive flexibility

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2. Mara runs faster than Gail.
Lily runs faster than Mara.
Gail runs faster than Lily X Lily > Mara > Gail
3. Blueberries cost more than strawberries.
Blueberries cost less than raspberries.
Raspberries cost more than strawberries and blueberries ✓
Raspberries > Blueberries > Strawberries
4. Josh saw more movies than Stephen.
Stephen saw fewer movies than Darren.
Darren saw more movies than Josh? Josh > Stephen
Darren > Stephen

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5. All the trees in the park are flowering trees.
Some of the trees in the park are dogwoods.
All dogwoods in the park are flowering trees ✓
Some Tree < All Tree
6. All the tulips in Zoe's garden are white.
All the pansies in Zoe's garden are yellow.
All the flowers in Zoe's garden are either white or yellow? Rose?
7. The Kingston Mall has more stores than the Galleria.
The Four Corners Mall has fewer stores than the Galleria.
The Kingston Mall has more stores than the Four Corners Mall ✓
Kingston > Galleria > Four Corners

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8. Rover weighs less than Fido.
 Rover weighs more than Boomer.
 Of the three dogs, Boomer weighs the least ✓

9. All the offices have carpeting.
 No carpeting is pink.
 None of the offices has pink carpeting ✓

10. Class A has a higher enrollment than Class B.
 Class C has a lower enrollment than Class B.
 Class A has a lower enrollment than Class C ✗

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11. A fruit basket contains more apples than lemons.
 There are more lemons than oranges in the basket.
 The basket contains more apples than oranges ✓

12. The hotel is two blocks east of the drugstore.
 The market is one block west of the hotel.
 The drugstore is west of the market. ✓

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13. Of the three babies, Jenna weighs more than Jason.
 Jason weighs less than Jasmine.
 Jasmine weighs the most ?

14. The temperature on Monday was lower than on Tuesday.
 The temperature on Wednesday was lower than on Tuesday.
 The temperature on Monday was higher than on Wednesday ?

15. Oat has more fiber than corn but less fiber than bran.
 Corn has more fiber than rice but less fiber than wheat.
 Rice has the least amount of fiber ✓

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