BRAIN RELATED CHANGES AS WE AGE

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Dementia Services Educator

WILLIAMSBURG LANDING®
**True Or False:**
Our ability to focus on more than one thing at a time decreases as we age.

If your older parents had dementia, chances are great that you will have it, too.

We lose brain cells throughout our lives and unfortunately cannot grow new ones.

As we age, we become less creative.

Writing things down is a crutch that weakens the memory.

Older people recall more slowly than younger people.

Poor memory is often caused by lack of attention.
How Your Brain Works…

- **Motor Area**: control of voluntary muscles
- **Sensory Area**: skin sensations (temperature, pressure, pain)
- **Frontal Lobe**: movement, problem solving, concentrating, thinking, behaviour, personality, mood
- **Broca’s Area**: speech control
- **Temporal Lobe**: hearing, language, memory
- **Brain Stem**: consciousness, breathing, heart rate
- **Parietal Lobe**: sensations, language, perception, body awareness, attention
- **Occipital Lobe**: vision, perception
- **Wernicke’s Area**: language comprehension
- **Cerebellum**: posture, balance, coordination of movement
Areas Affected by Normal Aging of the Brain...

- **PREFRONTAL AREA**
  - Executive Function

- **HIPPOCAMPUS**
  - Memory

- **AXONS**
  - Processing Speed
This Translates Into…

✓ It is harder to learn new things. You can always learn, but it will take longer than a younger person.

✓ Slower in Problem Solving and less apt to change strategies in decision making.

✓ It is harder for you to focus your attention. You are more easily distracted and sensitive to interruptions.

✓ It is harder to perform different tasks at the same time.

✓ Spatial relationships diminish- ability to visualize objects affecting reading a map or finding your car in a sprawling parking lot.

✓ Retrieval of information and takes longer- *Tip Of The Tongue Phenomenon*
Is a problem with the RETRIEVAL

✓ BLOCKING
   The memory is properly stored, but something is keeping you from finding it.

   Similar memories might have partially overlapping patterns of neuronal activation. Some of the increased activity inhibits other areas. A similar memory “blocks” the one you are trying to retrieve

Scientists think that memory blocks become more common with age.

GOOD NEWS- the information will come after you relax.
More Good News!!!

Age-related changes in the brain may slow down your learning and recall, but they do not impair your ability to function effectively.

Wisdom you have gained over the years remains unscathed!

You can compensate for the slow by working harder to pay attention to any new information you are trying to learn.
Memory

How Memory Works:

*ACQUIRING-----CONSOLIDATING----RETRIEVING*

The Hippocampus - Acquiring and Consolidating

The Amygdala – reacts and tags emotionally powerful information

The Cerebral Cortex - once a memory is established, it is stored not in a single part, but distributed among pertinent areas of the brain
What Can I Do to Remember a Person’s Name?

1. **Motivation**- you have to want to do it!

2. **Pay attention!**- Focus, listen and Concentrate.

3. **Repetition**- repeat it out-loud, write it, incorporate as many areas of the brain as possible!

4. **Association**- visualize the more bizarre the better! You are making the information more meaningful.

5. **Make up a story**- Again the more bizarre the better
“The most important principle for improving your memory is focusing your attention on what you are trying to learn”

Professor Richard Resak
Clinical Professor Neurology
George Washington School of Medicine
Attention…

https://youtu.be/vJG698U2Mvo
# STROOP EXERCISE

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Neuroplasticity refers to our Brain’s ability to change in response to experience.

We now know that the brain has the capability to form and reorganize synaptic connections, especially in response to learning, experience or following injury.

In this way, alternate circuits or pathways can be established for lost or injured neurons.
CELLS THAT FIRE TOGETHER, WIRE TOGETHER”

**Rerouting:** New connections are made between active neurons to create alternate neural pathways

**Sprouting:** New axon and dendrite extensions allow existing neurons to form new connections

**Before**
- Primary path
- Secondary path
- Terminated path

**After**
- Neural connections by neuron A and neuron B prior to degeneration
- Collateral sprouting of neuron B after damage to axon of neuron A
Exercising the Brain

✓ You are trying to stimulate many areas of the brain to increase the number of neuron connections…create “nerve nets”

✓ Try to do something you do not ordinarily do.

✓ It is not about getting the right answer…it is the puzzling over it that stimulates many neurons

✓ *Metacognition* is thinking about your thinking! Develop strategies
# Exercise Map for the Mind

<table>
<thead>
<tr>
<th>PERCEPTION</th>
<th>MOTIVATION</th>
<th>METACOGNITION</th>
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<tr>
<td>Noticing</td>
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<td>Utilizing Strategies</td>
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<td>Accuracy and Speed</td>
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<td>Self-Reflection</td>
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<tr>
<th>REASONING</th>
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<td>Logical Thinking</td>
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<td>Systemic Thought</td>
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<tr>
<th>FLEXIBLE THINKING</th>
<th>USING NUMBERS</th>
<th>SPATIAL RELATIONSHIPS</th>
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<tr>
<td>Opening New Pathways</td>
<td>Mathematical Reasoning</td>
<td>Shape Recognition</td>
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<td>Divergent Thinking</td>
<td>Practical Arithmetic</td>
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<th>LANGUAGE</th>
<th>COMMUNICATION</th>
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<tr>
<td>Verbal Fluency</td>
<td>Listening</td>
<td>Shape Recognition</td>
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<td>Alternate Meanings</td>
<td>Giving and Following</td>
<td>Direction and Location</td>
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<tr>
<td>Enlarged Vocabulary</td>
<td>Directions</td>
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*From: Mind Your Mind A Whole Brain Workout For Older Adults, Beatrice Seagull and Sara Seagull*
Where do boats go when they get sick?
   #4 To the Dock

Why did the tomato turn red?
   #7 Because it saw the salad dressing

What did the policeman say to his belly button?
   #1 Your under a vest

Which US state has the smallest soft drinks?
   #8 Minnesota

Why did the stadium get hot after the game?
   #5 Because all the fans left
Find The Punchline

Why is England the wettest Country?
#2 Because the Queen has reigned for years

What is the difference between ignorance and apathy?
#9 I don’t know and I don’t care

What happens when the smog lifts over Los Angeles?
#6 UCLA

Why did the scarecrow win an award?
#3 Because he was outstanding in his field.
1. You are in a race. What place are you in if you take over the person in second place???

2. Mike is a butcher. He is 5 ft. 10 in tall. What does he weigh?

3. A farmer has 17 sheep and all but 9 die. How many are left?

4. A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost?

5. There are six eggs in a basket. Six people each take one of the eggs. How can it be that one egg is left in the basket?
These puzzles use letters and pictures to cryptically represent a common word, phrase or saying.

To Solve Carefully Consider:

- The SIZE and color
- The word or meaning of the word you can read
- The position and direction of location in the box or to each other
- Is a word or symbol inside of another one
milli1on

ONE IN A MILLION
Examples

Pants
Pants
Pants

A PAIR OF PANTS
Examples

another one thing

ONE THING AFTER ANOTHER
Examples

coffe

COFFEE BREAK
Examples

lang4uage

FOREIGN LANGUAGE
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<td>DECISION</td>
<td>SELFESTEEM</td>
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<td>HOUSE&lt;br&gt;PRAIRIE</td>
<td>COUCURT</td>
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<td>PUNISHMENT</td>
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Common Phrase Picture Puzzle

Concentration Puzzles

Puzzle #1

Puzzle #2

Puzzle #3

Puzzle #4
What You Can Do!

Develop a Brain Healthy Lifestyle!

✓ Diet- Mediterranean/ MIND Diet
   Lutein- Green Leafy Vegetables (Kale, Spinach, Avocado)
✓ Exercise
✓ Sleep- short term memory is laid down into long term memory.
   - CSF removes amyloid proteins from the day
✓ Brain Exercises
✓ Lower Stress
✓ Watch Your Head!
✓ Laugh more
Ending Humor------Who Said It???

• A Bank is a place that will lend you money if you can prove you don’t need it.

• When I was born, the doctor said to my mother:
   “Congratulations. You have an eight-pound ham.”

• She said that she was approaching 40.
   I couldn’t help but think from which direction.

• How can you tell if a man is well informed?
   His views are pretty much like your own.

• Culture is the ability to describe Jane Russell without moving your hands.

• I grew up with 6 brothers. That’s how I learned to dance.
   Waiting for the bathroom

• I love to go to Washington. I like to be near my money.

BOB HOPE