What Is *Brain Fog* and Can It Improve?

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Conflicts of Interest / Disclaimers

- Dr. Mills:
  - has no conflicts of interest or financial relationships to disclose
  - has been on the A Time To Heal Board of Directors since 2023 as a volunteer
  - teaches the A Time To Heal Brain Fog class 1-2x per year as a volunteer

Objectives

- Describe examples of Brain Fog
- Discuss the known and unknown aspects of Brain Fog
- Discuss strategies that may help improve symptoms
- Identify resources available to help individuals experiencing Brain Fog

Psychology Services In Cancer Care

Nebraska Medicine / Buffett Cancer Center

- Adam Mills
- Alice Mitwariciu
- Aisha Yapp

Previously Dr. Emaan Lehardy & Dr. Lauren Holcomb

What Is Brain Fog?

Names and Definitions

- Brain Fog
- Cancer Related Cognitive Impairment
- Chemo Brain / Chemo Fog
  - People who have not had chemo also report Brain Fog

Common Brain Fog Symptoms

Mental cloudiness

Forgetting things/ memory lapses

Difficulty making decisions

Short attention span

Difficulty starting, planning, and completing tasks

Increased time to complete routine tasks

Reduced problem-solving ability

Word-finding difficulties

Unusually disorganized

Causes of Brain Fog

- Direct (i.e., damage to the brain tissue or connections)
  - Cancer involvement (CNS lymphoma, brain tumors)
  - Cancer treatment (chemotherapy, radiation, immunotherapy, medications)

- “Indirect” (interfering with the process of cognition)
  - Emotional: Stress, anxiety, depression
  - Behavioral: Changes to routines and independence
  - Physical: Insomnia, pain, fatigue, hormone changes, malnutrition, low counts, other health issues, poor performance status
  - Pre-cancer risk (age, genetics)

Országhová et al., 2021

Prevalence of Brain Fog

- Self report: > 50% report changes / struggles
- Measured: 15% - 20% demonstrate changes / struggles

- Differences explained by how questions were asked, how brain fog was measured, validity of the tests, high baseline cognition that is now ‘average,’ etc.

Lange et al., 2019

Trajectory of Brain Fog

- 25% - 33% may report impairment *before treatment begins*
  - Compared to ~5% of healthy matches
  - Causes: stress, insomnia, physical discomfort, fatigue

- 60% may report impairment directly after treatment
  - This improves on its own for some and not others

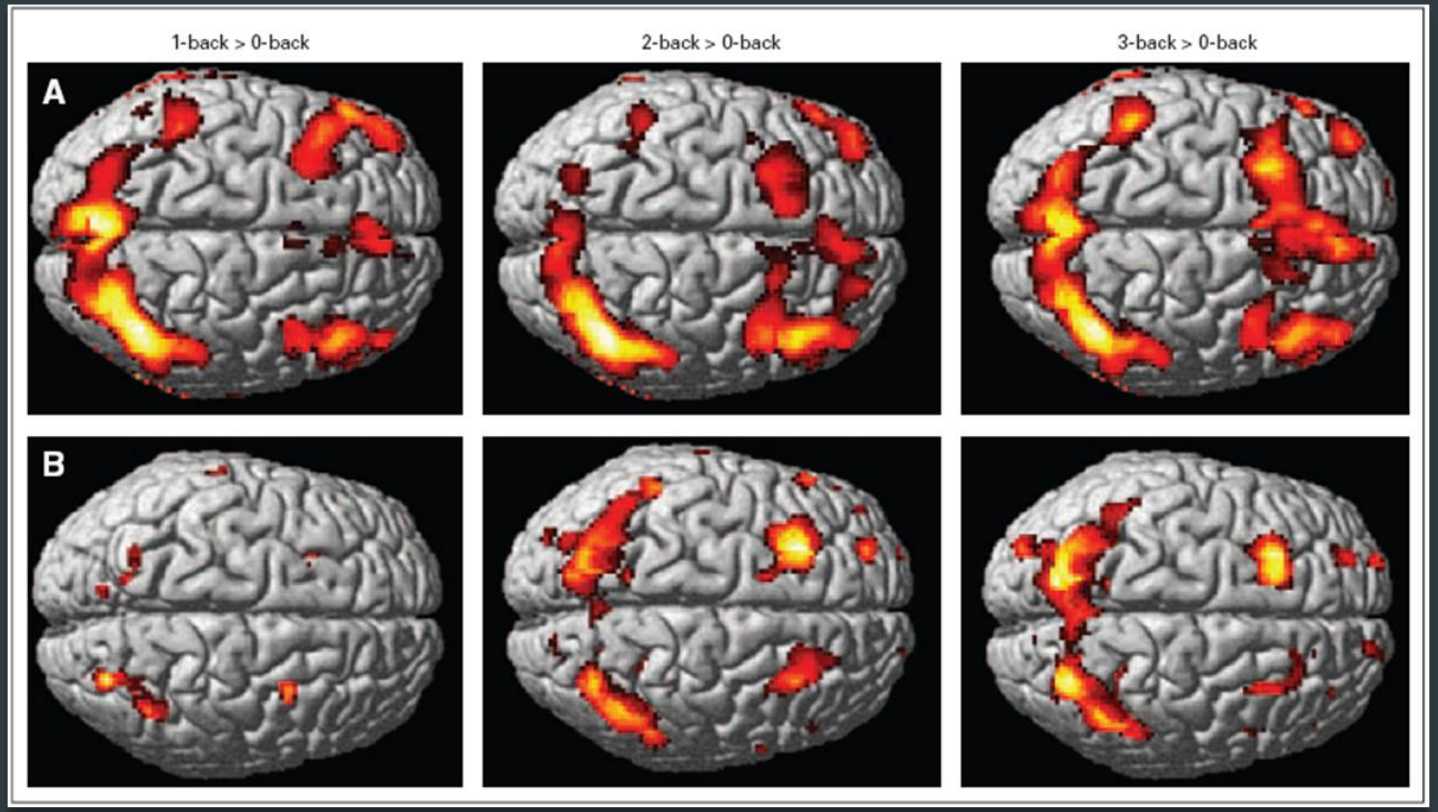
- 30% may report impairment longer term

Országhová et al., 2021

Simple Task | Moderate Task | Difficult Task

Twin A = Cancer Survivor

Twin B = No Cancer



Types of Cognition / Impairment

- Sensory memory
  - Hearing / seeing something
  - Lasts only a few seconds on its own

- Short-term memory
  - Holding information temporarily
  - Limited to X items at a time (5-9?)
  - Requires attention to become long term

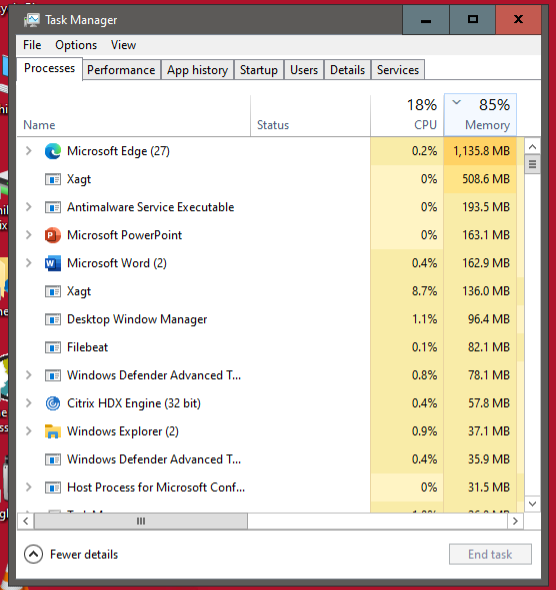
Cowan, 2008

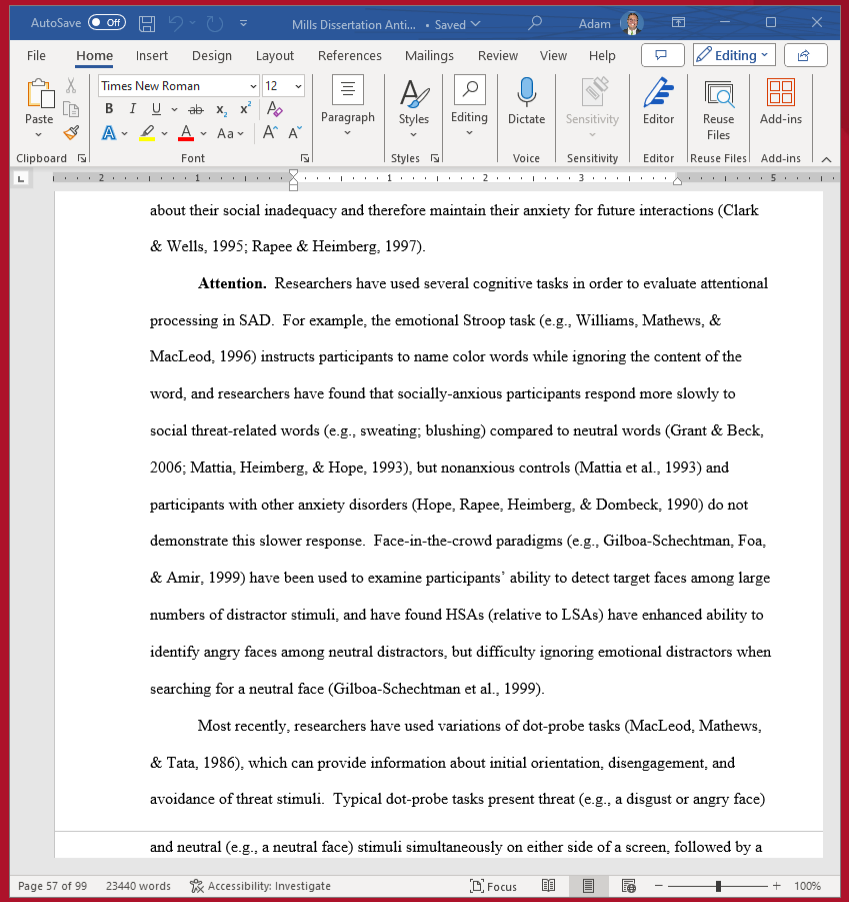
Types of Cognition / Impairment

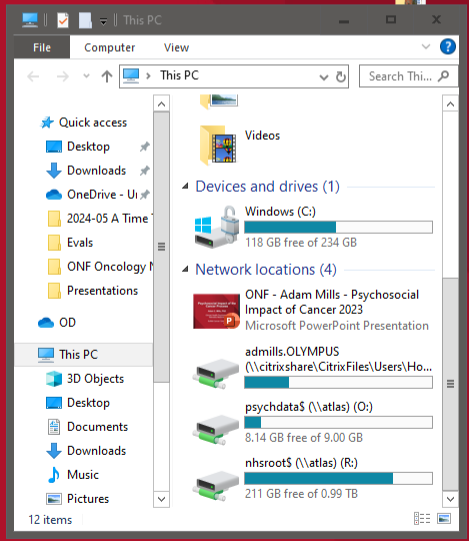
- Working memory / executive functioning
  - Holding and manipulating information in your head
  - Planning, organizing, decision-making, inhibition
  - Prospective memory (memory to do something)

- Long-term memory
  - Longer-term, more permanent
  - Semantic – general information (Lincoln is Capital of Nebraska)
  - Episodic – life events (I went to Lincoln last year)
  - Procedural – ‘muscle memory’ (Driving to Lincoln)

Cowan, 2008







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Type here to search

Temps to drop

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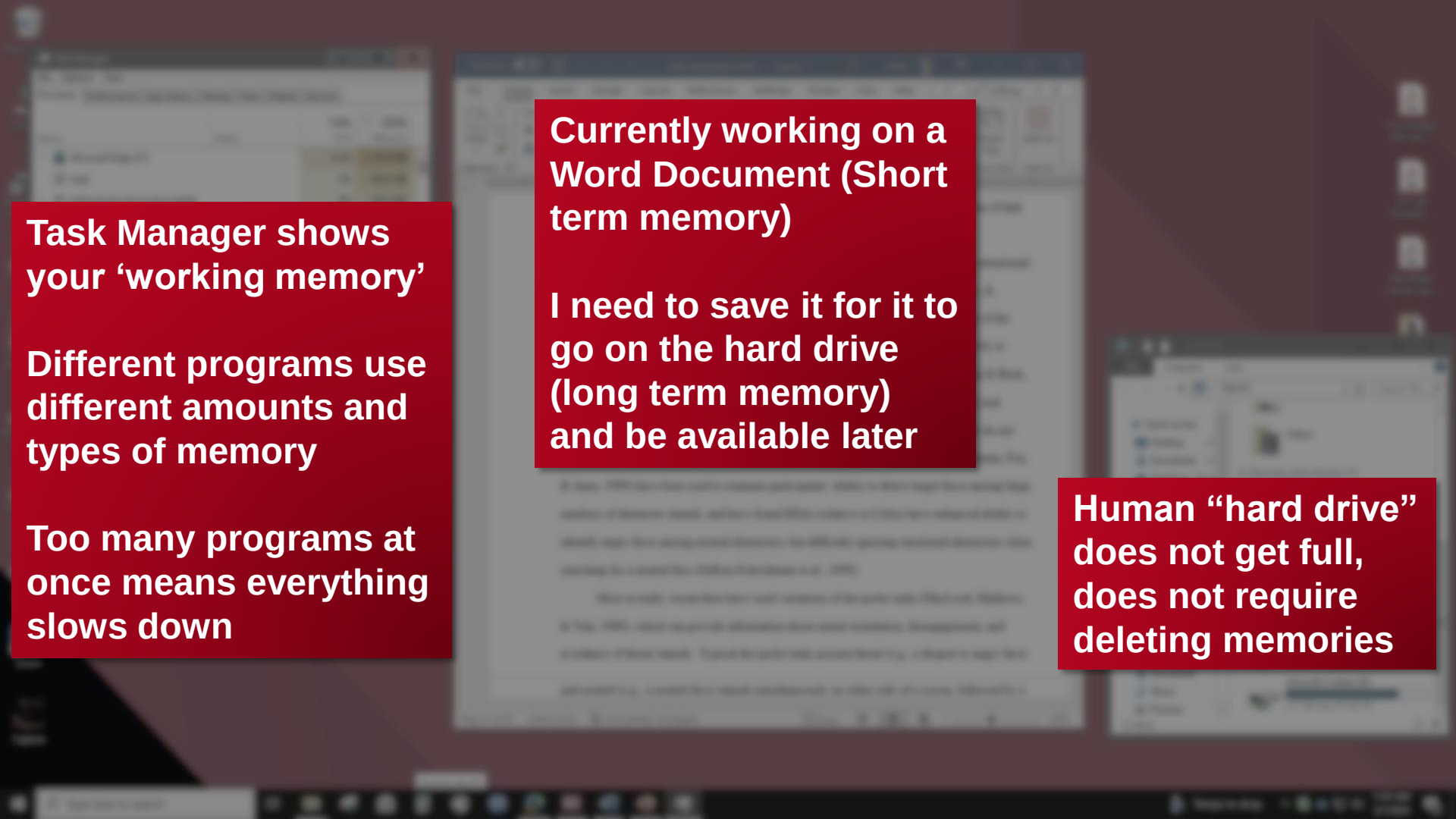
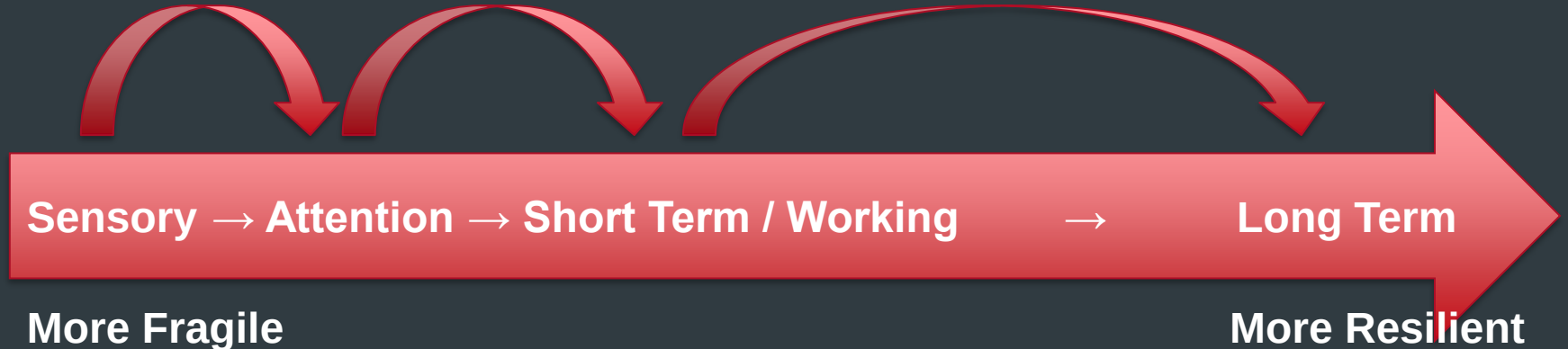

Task Manager shows your ‘working memory’
Different programs use different amounts and types of memory
Too many programs at once means everything slows down
Currently working on a Word Document (Short term memory)
I need to save it for it to go on the hard drive (long term memory) and be available later
Human “hard drive” does not get full, does not require deleting memories

A Small Window to Remember



More Fragile
(Fewer connections)
(Less rehearsal)

More Resilient
(More connections)
(More rehearsal)
(More relevant)

Cowan, 2008

A Small Window to Remember

Cowan, 2008

A Small Window to Remember

- Mental cloudiness
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A Small Window To Remember

Who am I?

What are my current colleagues’ names?

Who are my former colleagues?

Strategies To Improve Brain Fog

Strategies to Improve Brain Fog

- Develop routines
  - Requires fewer resources for each activity
- Rehearse, practice, connect – short term into long term
- Increase mindfulness / decrease multitasking
  - Improve attention for the task at hand → better chance of it going into long-term memory
- Improve self-awareness / self-monitoring

Strategies to Improve Brain Fog

- Use tools & technology
  - Notepads / phones / alarms / apps / calendars

- Improve indirect contributors to Brain Fog
  - Stress / Anxiety
  - Mood
  - Sleep
  - Overall health

Strategies to Improve Brain Fog

Be kind to yourself

- Brain Fog is real and documented
  - Self report, MRI studies, neuropsychological testing
- We don’t have all the answers, but we have some
- You are not going crazy or losing your mind
- You are not stupid
- You very likely do not have dementia / Alzheimer’s
- This can get better
- You are not alone (but not everyone understands)

Additional Resources

Additional Resources

- **A Time To Heal – Navigating Brain Fog Class**
  - Free!
  - Open to individuals who have experienced cancer, COVID-19, or other medical conditions
  - 90-minute classes over 6 weeks
  - Zoom / online classes & in-person classes
  - Will teach specific strategies for various scenarios (grocery shopping, remembering names, tackling large projects, managing distractions)

Additional Resources

- **A Time To Heal – Survivorship 101**
  - Free!
  - Open to individuals who have experienced cancer
    - Including special class for individuals under 45 years old
  - 9-week course
  - Focused on emotional and physical health

References

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