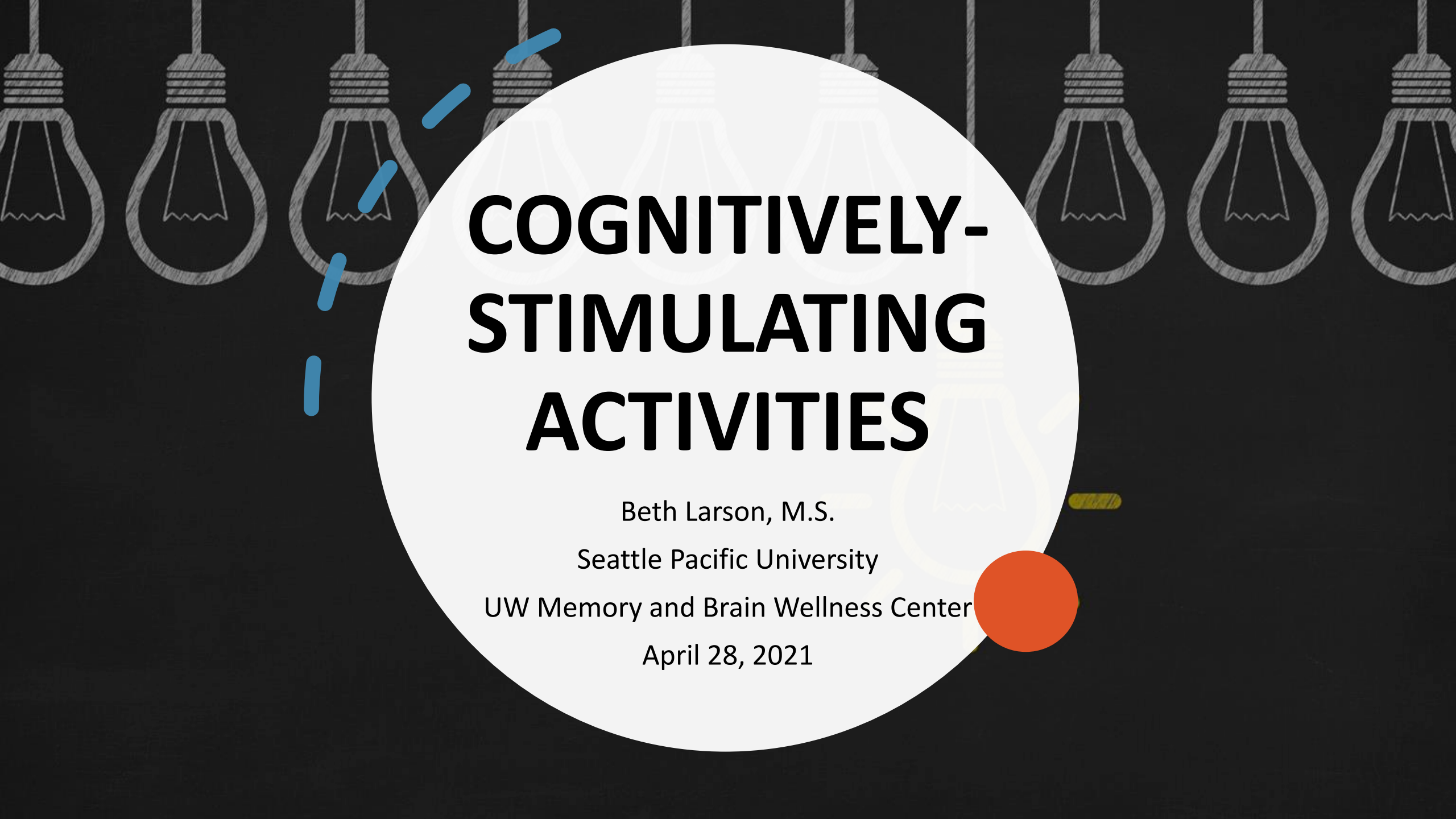


COGNITIVELY-STIMULATING ACTIVITIES

Beth Larson, M.S.

Seattle Pacific University

UW Memory and Brain Wellness Center

April 28, 2021

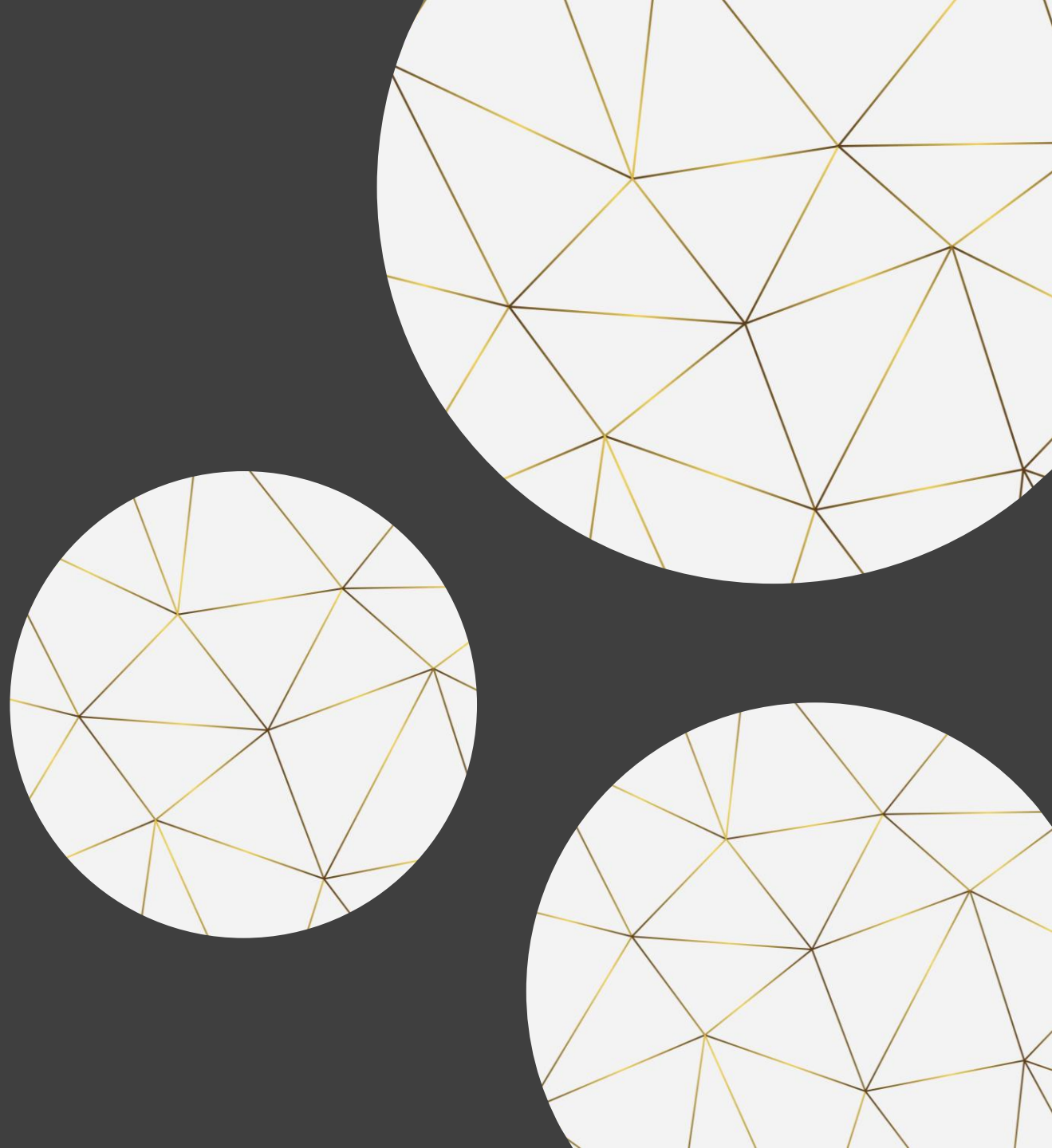
TODAY'S AGENDA

- Cognitive Changes in Aging: What is Typical/Atypical Cognitive Aging?
- Research on Cognitive Intervention Strategies: What Do We Know?
- Practical Suggestions: What to Consider?
- Cognitive Engagement: What Can You Do?

COGNITIVE AGING

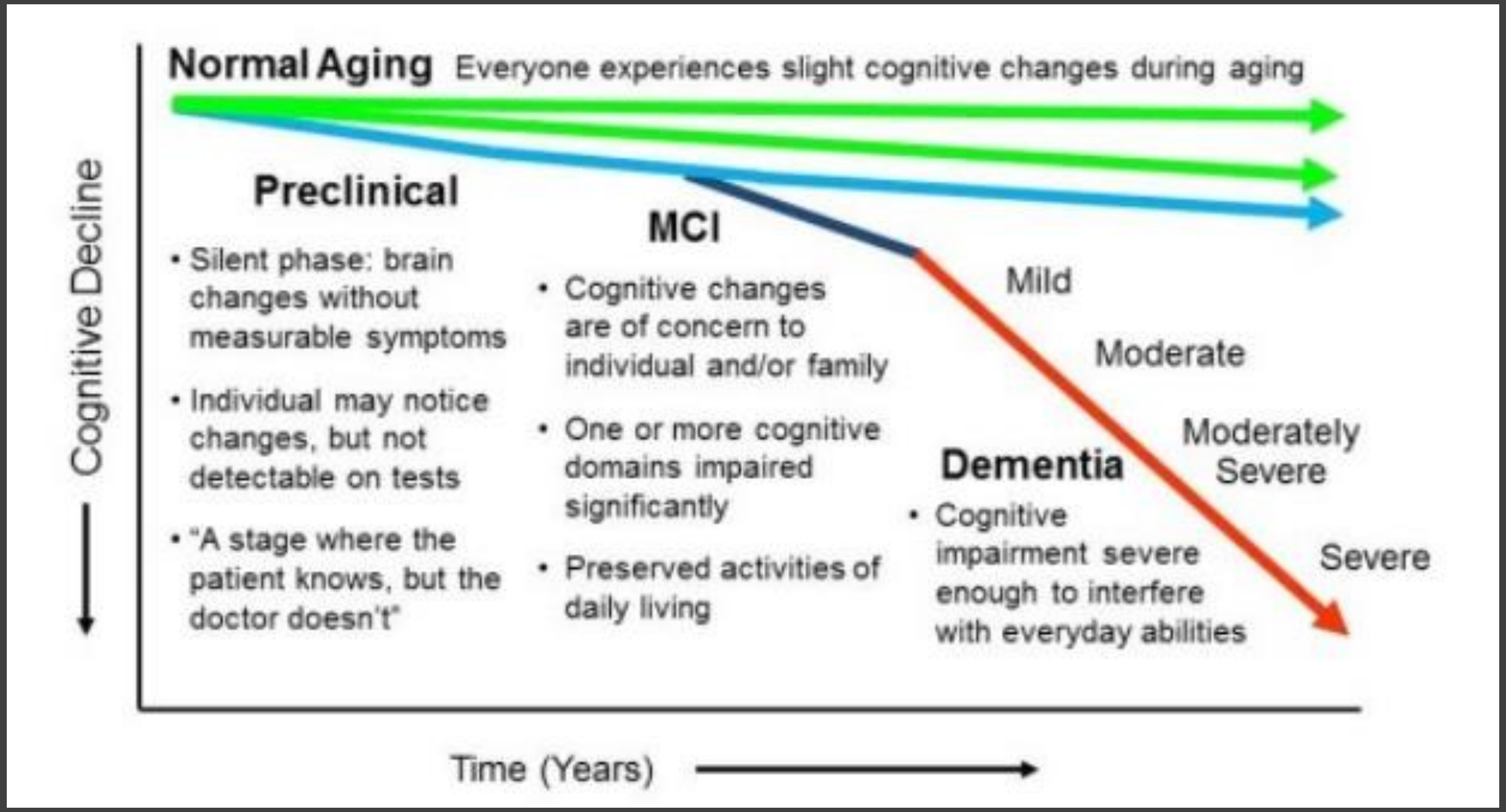
COGNITIVE AGING: What is Typical?

- Occasional forgetting of names
- Occasional difficulty finding words
- Forgetting the date by a few days
- Forgetting to do something



COGNITIVE AGING: What is Atypical?

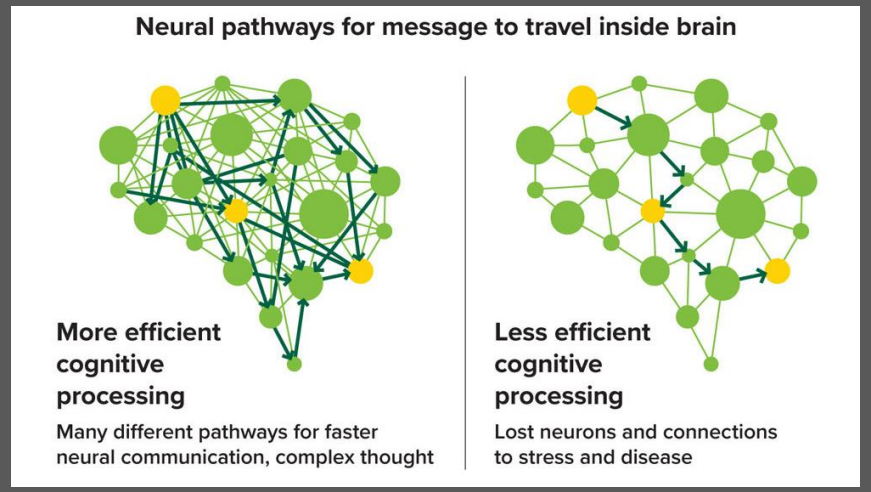
- Mild cognitive impairment (MCI); dementia
  - Persistently forgetting names of close relatives or common words
  - Major change in personality and/or mood
  - Difficulty acquiring and recalling information
  - Assistance in managing daily activities



https://www.mind.uci.edu/dementia/mild-cognitive-impairment/

COGNITIVE AGING: Cognitive Reserve Hypothesis

- Concept: The unique structure and function of one's brain may buffer the effects of neuropathology
- Neural network = synaptic organization/functioning
- Greater cognitive reserve = more efficient utilization of neural network
- More efficient utilization of neural network = cope more successfully with age-related changes
- What are some predictors of cognitive reserve?



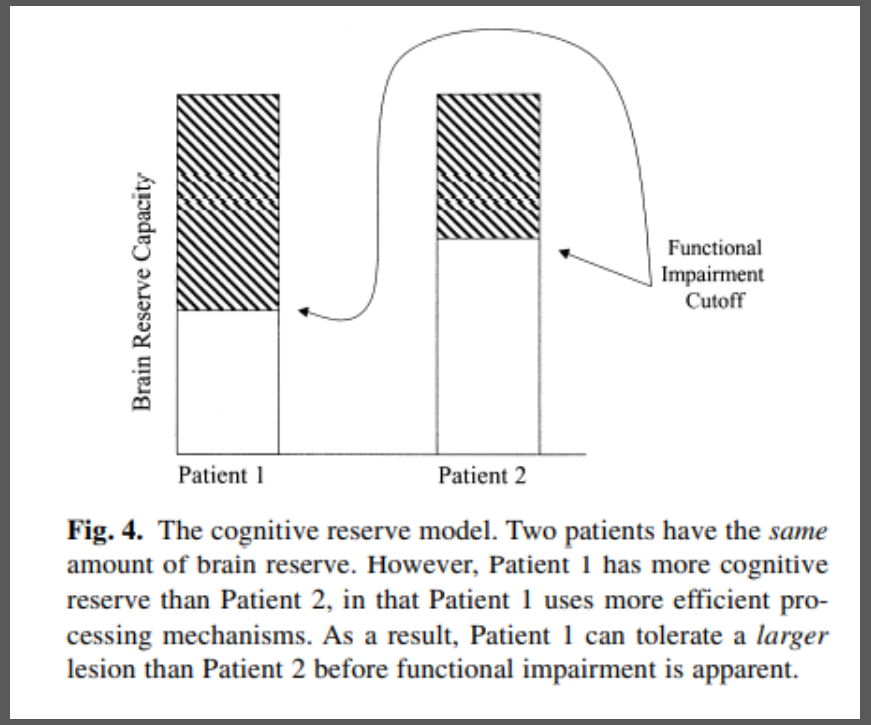
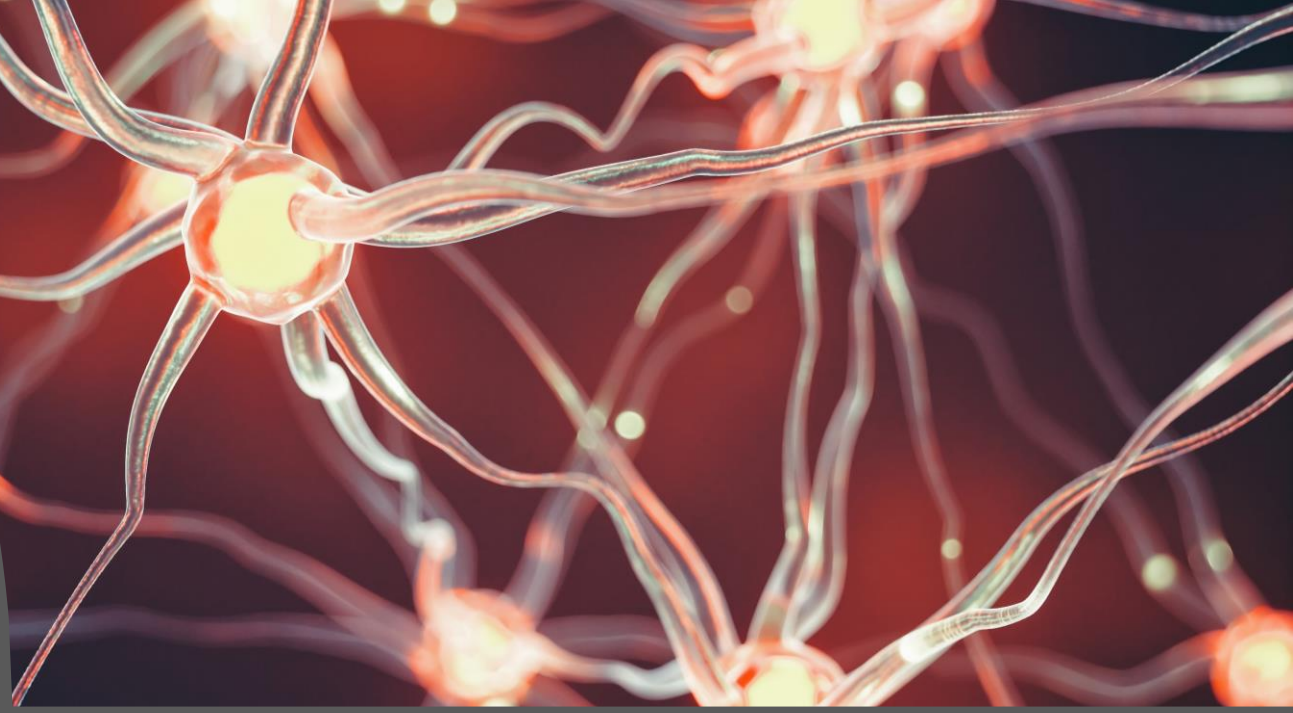


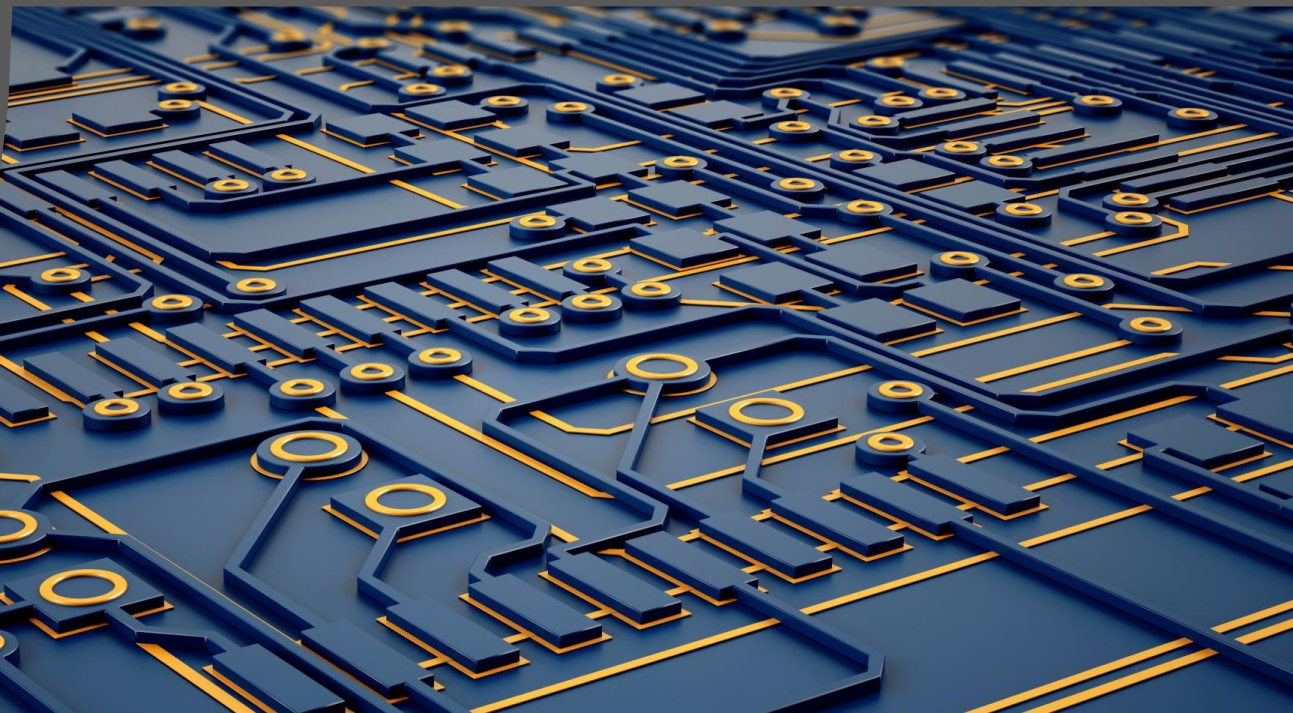
Fig. 4. The cognitive reserve model. Two patients have the *same* amount of brain reserve. However, Patient 1 has more cognitive reserve than Patient 2, in that Patient 1 uses more efficient processing mechanisms. As a result, Patient 1 can tolerate a *larger* lesion than Patient 2 before functional impairment is apparent.

Stern, 2002

COGNITIVE AGING: Neuroplasticity

- Concept: the potential for morphological changes in the brain (e.g., new and strengthening neural connections)
- Neuroplasticity plays a role in increasing cognitive reserve
- Repeated exposure to stimuli that promote learning challenges existing neuronal connections to adapt, resulting in a more efficient neural network
- Evidence that neuroplastic changes occur during older adulthood, even when cognitive function has begun to decline

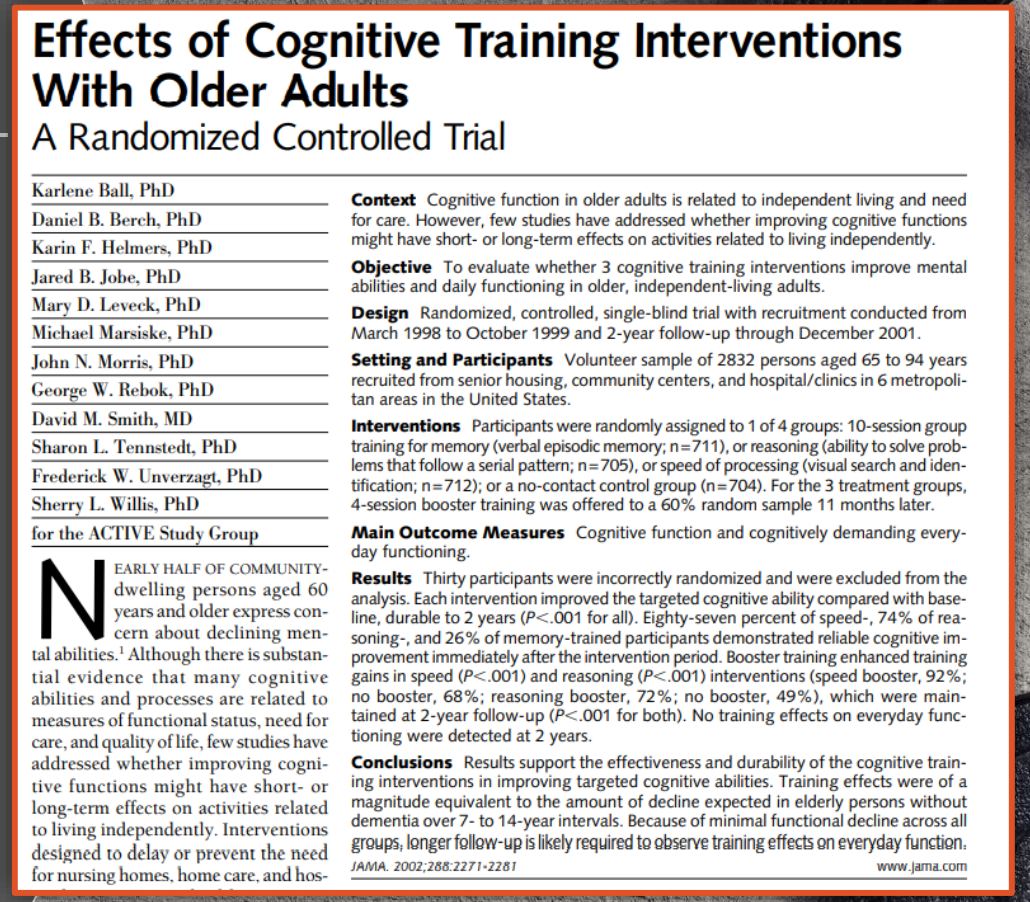




COGNITIVE INTERVENTION STRATEGIES

COGNITIVE STRATEGIES: Cognitive Training

- Cognitive training (CT): exercises intended to improve cognition *in a particular domain,* measured via standard neuropsychological tests
- Example: ACTIVE study
- Consensus of effectiveness:
  - May be effective for healthy older adults and adults at risk of developing dementia; improvement on tasks closely related to the trained task (i.e., near transfer)
  - Mixed findings for individuals with Alzheimer's disease; unknown for older adults with depression
  - Must address limitations to existing research



Effects of Cognitive Training Interventions With Older Adults

A Randomized Controlled Trial

Karlene Ball, PhD
Daniel B. Berch, PhD
Karin F. Helmers, PhD
Jared B. Jobe, PhD
Mary D. Leveck, PhD
Michael Marsiske, PhD
John N. Morris, PhD
George W. Rebok, PhD
David M. Smith, MD
Sharon L. Tennstedt, PhD
Frederick W. Unverzagt, PhD
Sherry L. Willis, PhD
for the ACTIVE Study Group

Context Cognitive function in older adults is related to independent living and need for care. However, few studies have addressed whether improving cognitive functions might have short- or long-term effects on activities related to living independently.

Objective To evaluate whether 3 cognitive training interventions improve mental abilities and daily functioning in older, independent-living adults.

Design Randomized, controlled, single-blind trial with recruitment conducted from March 1998 to October 1999 and 2-year follow-up through December 2001.

Setting and Participants Volunteer sample of 2832 persons aged 65 to 94 years recruited from senior housing, community centers, and hospital/clinics in 6 metropolitan areas in the United States.

Interventions Participants were randomly assigned to 1 of 4 groups: 10-session group training for memory (verbal episodic memory; n=711), or reasoning (ability to solve problems that follow a serial pattern; n=705), or speed of processing (visual search and identification; n=712); or a no-contact control group (n=704). For the 3 treatment groups, 4-session booster training was offered to a 60% random sample 11 months later.

Main Outcome Measures Cognitive function and cognitively demanding everyday functioning.

Results Thirty participants were incorrectly randomized and were excluded from the analysis. Each intervention improved the targeted cognitive ability compared with baseline, durable to 2 years ($P<.001$ for all). Eighty-seven percent of speed-, 74% of reasoning-, and 26% of memory-trained participants demonstrated reliable cognitive improvement immediately after the intervention period. Booster training enhanced training gains in speed ($P<.001$) and reasoning ($P<.001$) interventions (speed booster, 92%; no booster, 68%; reasoning booster, 72%; no booster, 49%), which were maintained at 2-year follow-up ($P<.001$ for both). No training effects on everyday functioning were detected at 2 years.

Conclusions Results support the effectiveness and durability of the cognitive training interventions in improving targeted cognitive abilities. Training effects were of a magnitude equivalent to the amount of decline expected in elderly persons without dementia over 7- to 14-year intervals. Because of minimal functional decline across all groups, longer follow-up is likely required to observe training effects on everyday function.

JAMA. 2002;288:2271-2281 www.jama.com

NEARLY HALF OF COMMUNITY-dwelling persons aged 60 years and older express concern about declining mental abilities.[1] Although there is substantial evidence that many cognitive abilities and processes are related to measures of functional status, need for care, and quality of life, few studies have addressed whether improving cognitive functions might have short- or long-term effects on activities related to living independently. Interventions designed to delay or prevent the need for nursing homes, home care, and hos-

Ball et al., 2002

COGNITIVE STRATEGIES: Cognitive Training

A note on “Brain Games”

- A billion-dollar industry; activities intended to train core cognitive processes
- Exaggerated claim: training will lead to broad improvement in many different mental activities
- More research is needed to support claims of effectiveness

lumosity

5	3			7				
6			1	9	5			
	9	8					6	
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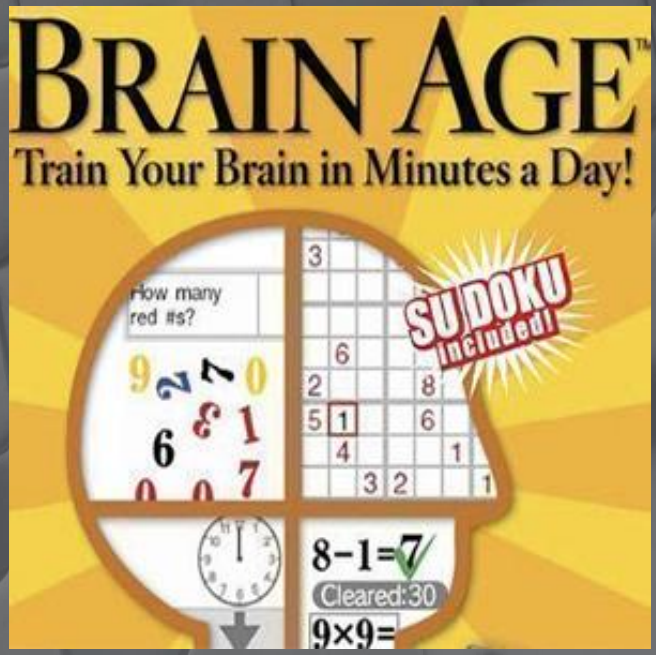


COGNITIVE STRATEGIES: Modifiable Health Factors

- Diet:
  - Antioxidant-rich foods
  - MIND diet
- Exercise
  - Aerobic exercise
  - Do what is right for your own body!
- Mood
  - Pharmacotherapy/psychotherapy
  - Engaging in fulfilling activities
  - Stress management

COGNITIVE STRATEGIES: Skill Building Activities

- Leisure activities have been positively associated with memory performance and may be beneficial for cognitive aging and delaying the onset of dementia
  - Chess
  - Musical instruments
  - Theater training

Noice et al., 2004; Richards et al., 2003

COGNITIVE STRATEGIES: Socializing

- Having a socially integrated lifestyle is associated with reduced risk of dementia in older adulthood
- Social support has been positively associated with psychological, cardiovascular, endocrine, and immune system health

PRACTICAL SUGGESTIONS: WHAT TO CONSIDER?

PRACTICAL SUGGESTSIONS

- There is no “right” or “wrong” activity
- Choose activities that are stimulating but not overly challenging (in order to continue your engagement)
- Choose activities that bring you joy/fulfillment
- Consider activities that involve more than one cognitive intervention category
- Choose a novel activity
- Re-engage in an activity that you used to enjoy
- Quality over quantity

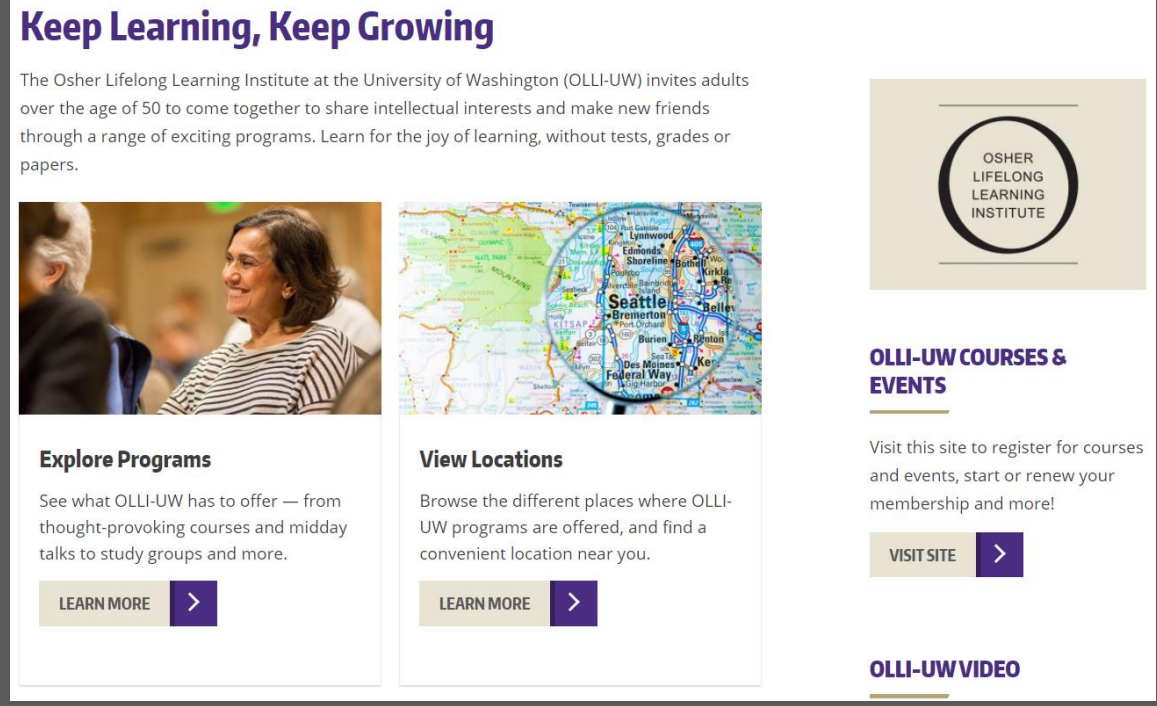
COGNITIVE ENGAGEMENT: WHAT CAN YOU DO?

COGNITIVE ENGAGEMENT: Switch It Up

- Embrace your hobbies and strengths
  - If it's been a while, revisit it!
- Challenge your brain by modifying your preferred activity
  - If you like to read non-fiction, try a science-fiction novel
  - If you like to play guitar solo, try harmonizing
  - If you like to draw, try painting

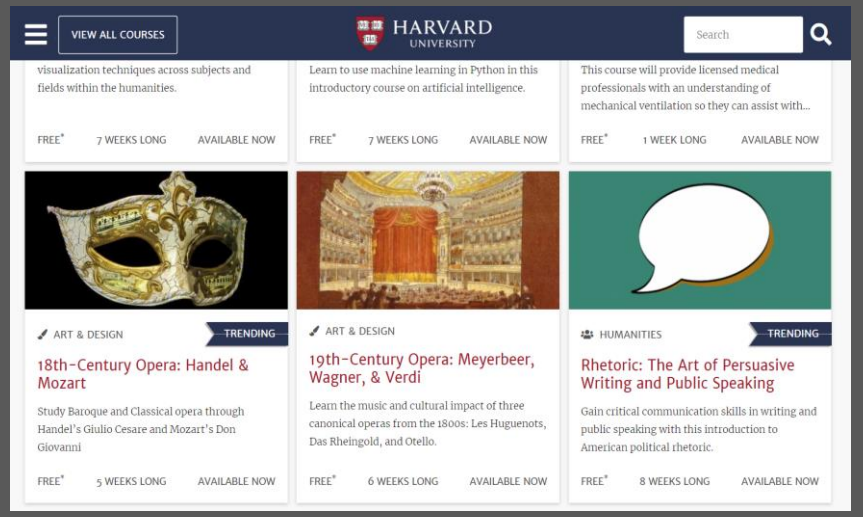
COGNITIVE ENGAGEMENT: Lifelong Learning

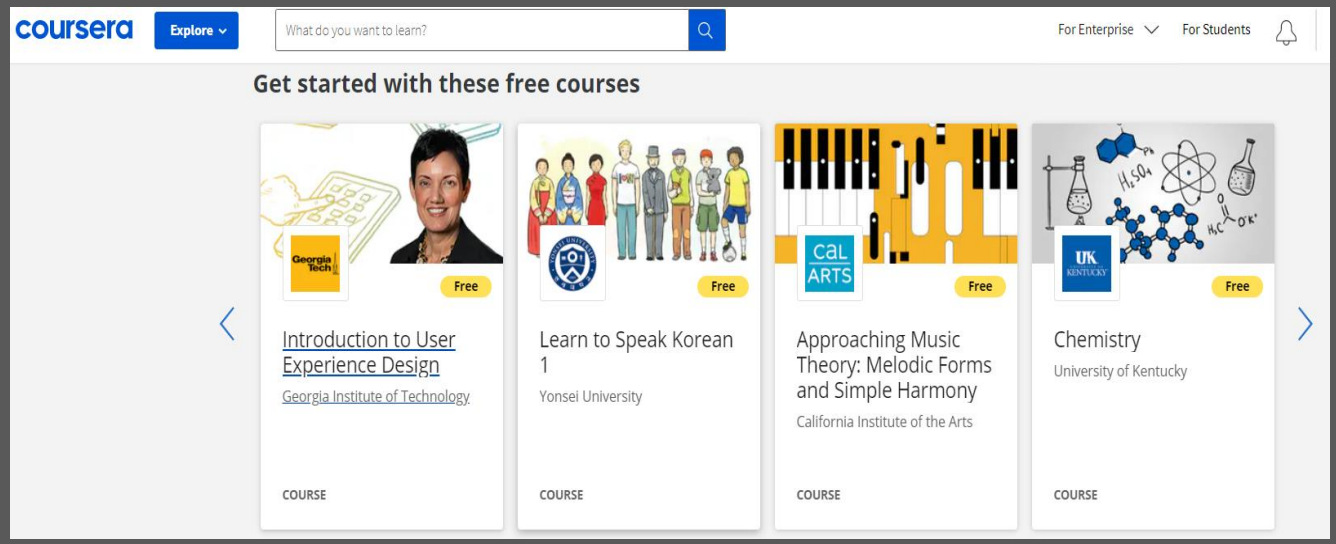
- Learning in the community:
  - Osher Lifelong Learning Institute at the University of Washington (OLLI-UW)
  - Community College (Central, North, South)
  - Parks and Recreation (YouTube channel)



COGNITIVE ENGAGEMENT: Lifelong Learning

- Online:
  - Coursera
  - edX
  - Harvard University



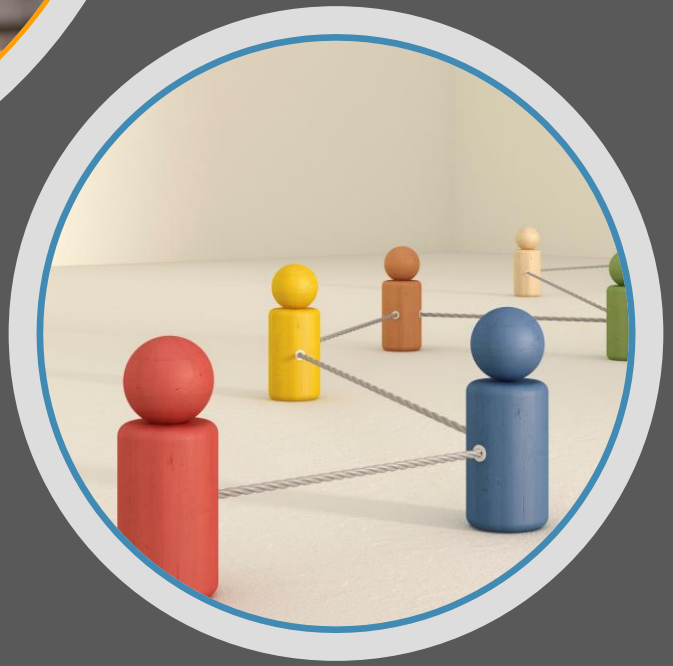


COGNITIVE ENGAGEMENT: Music and Culture

- Google Arts and Culture
  - American Museum of Natural History
- National Nordic Museum
- The Museum of Flight
- Burien Actors Theatre:
  - Script Club
  - Live Plays
- Seattle Symphony Live
- Seattle Opera

COGNITIVE ENGAGEMENT: Utilize Your Library

- SPL online resources
  - Online book clubs
  - SilverKite art classes
  - Explore your genealogy
  - Need a library card?
- KCLS online resources
  - Need a library card?



COGNITIVE ENGAGEMENT: Make It Social

- Accountability!
- Join a group
- Do an activity with a friend
- Learn a skill, teach a skill
- Conversation starters
- Volunteer

TAKEAWAY

- It’s never too late to learn
- Think holistically
- Set achievable goals
- Enjoy yourself

THANK YOU!