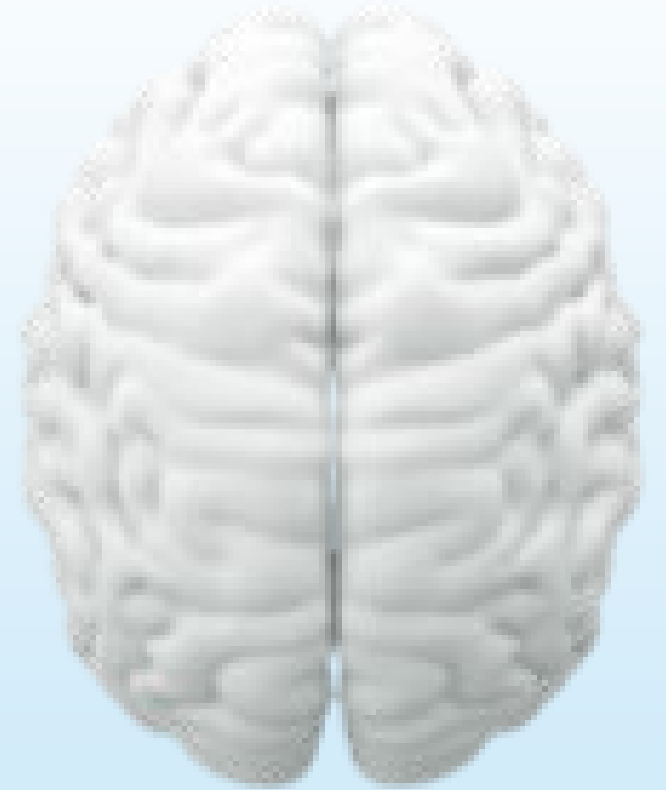


The Neuroscience of Scams

- ▶ Erik Lande, Ph.D., Insight Neuropsychology and consultant to Ventura County Adult Protective Services
- ▶ Debbie Deem, Financial Abuse Specialist Team (FAST) Coordinator Ventura County and retired FBI victim specialist

Co-authors of:

Deem, D., & Lande, E. S. (2018). Transnational Scam Predators and Older Adult Victims: Contributing Characteristics of Chronic Victims and Developing an Effective Response. *US Att'ys Bull.*, 66, 177.





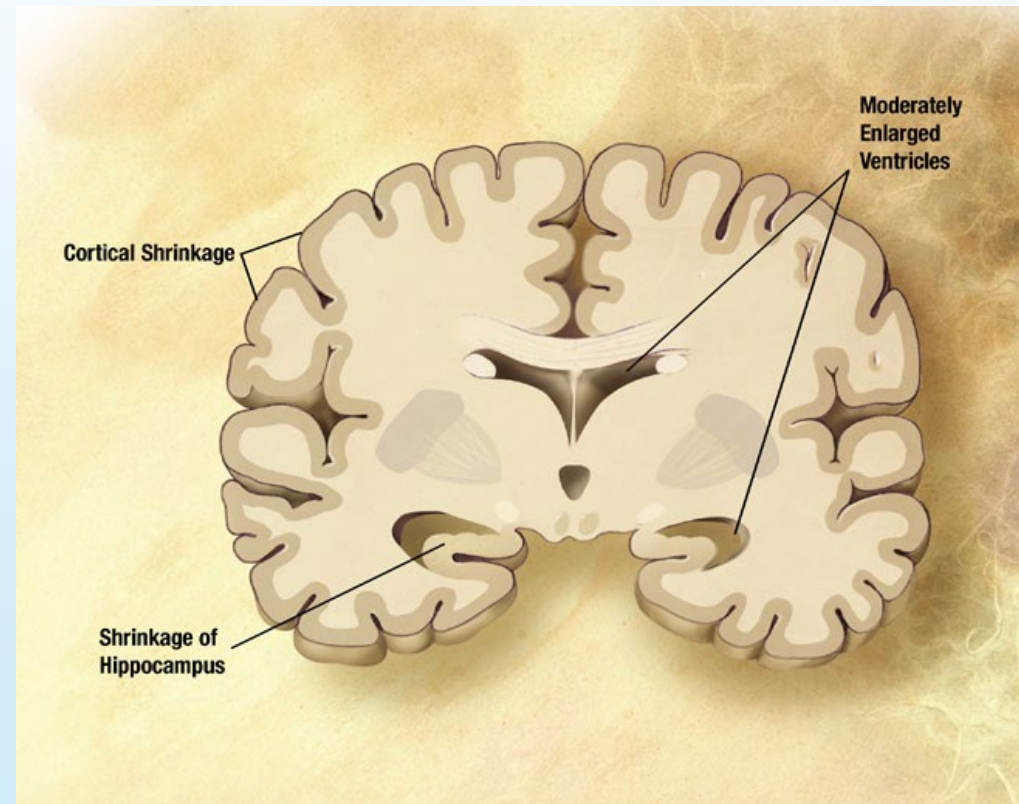
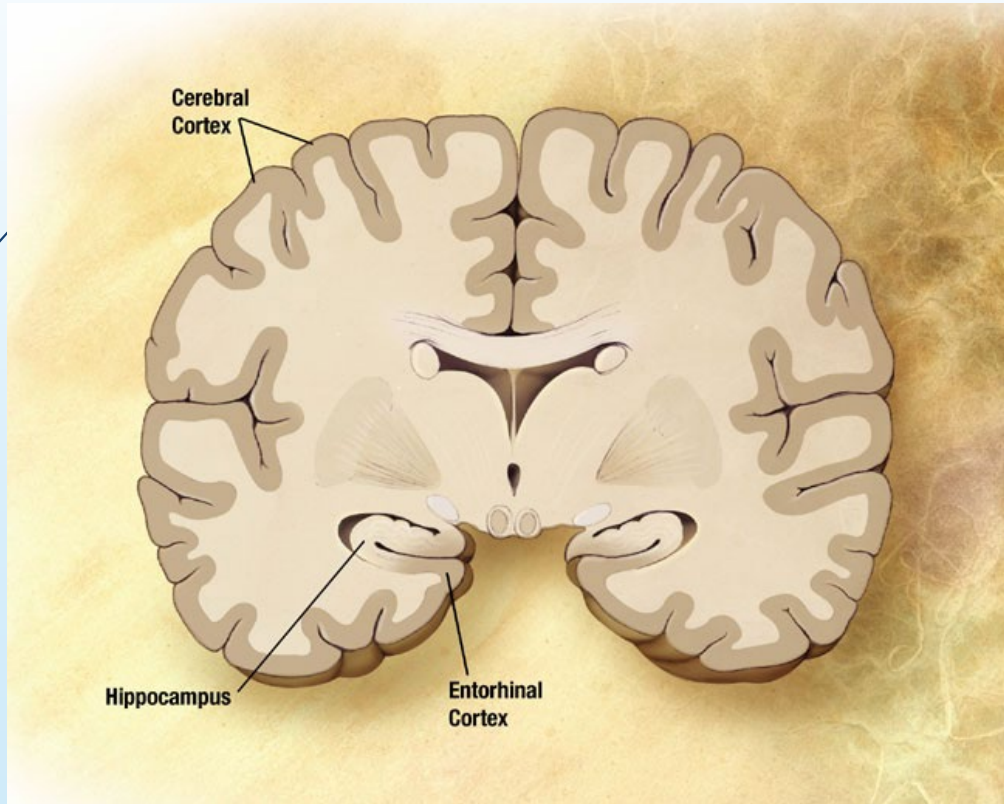
Today's Goals:

- ▶ Examine normal aging in the brain
- ▶ Learn how aging can increase vulnerability to financial exploitation
- ▶ Understand what interventions are most helpful
- ▶ Clarifying dementia is not part of normal aging
- ▶ Exploring working with medical experts

A composite image of four elderly women shown in profile from left to right, illustrating the progression of aging. The women's hair transitions from dark to white, and their facial features become more pronounced with age. A blue arrow on the left points towards the text.

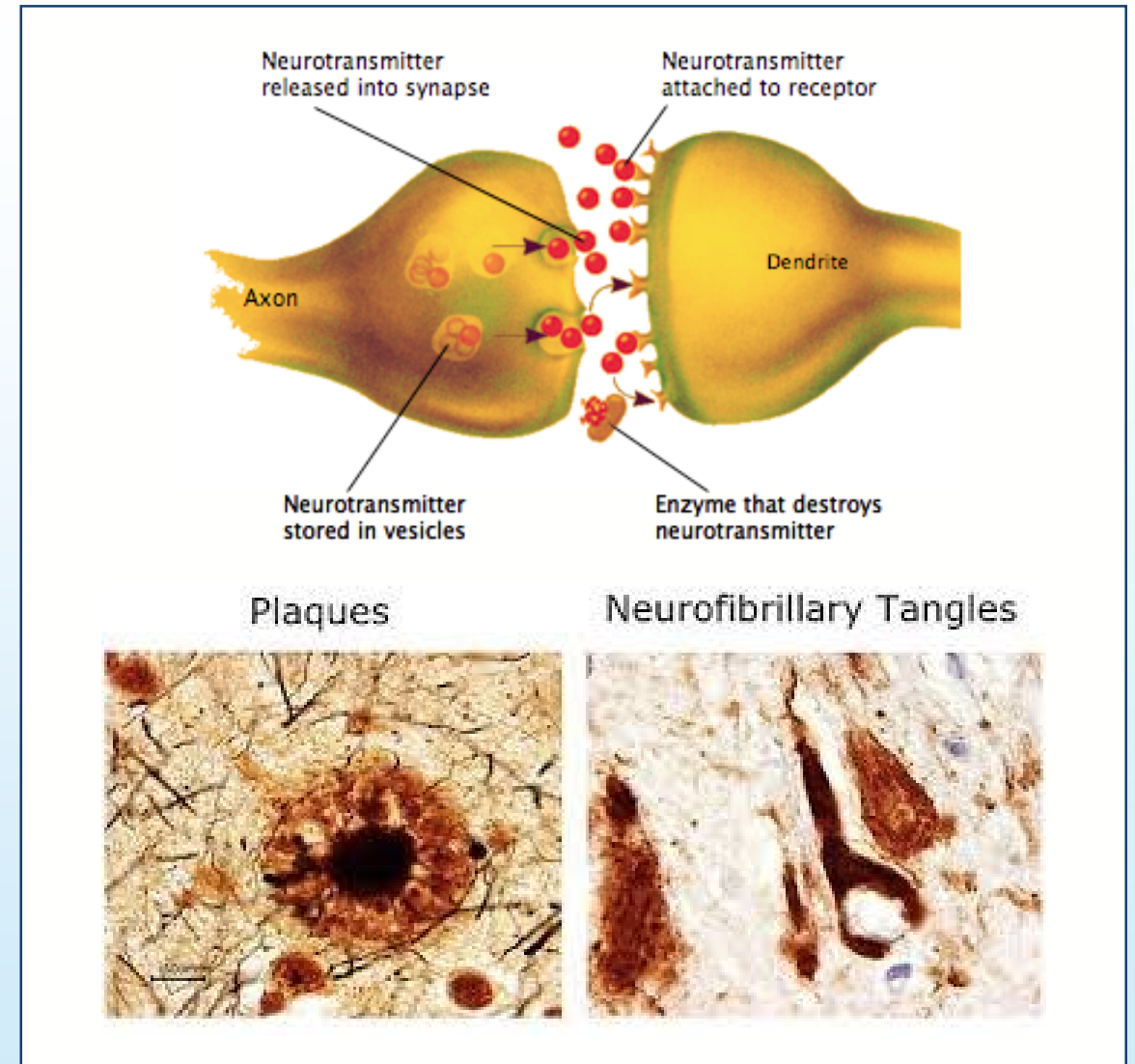
The Aging Brain

Normal Aging



Anatomical Changes

- ▶ Cerebral blood flow and metabolism decline
- ▶ Neurofibrillary tangles develop
- ▶ Neurotransmitter receptors decrease



Thinking Changes in Normal Aging



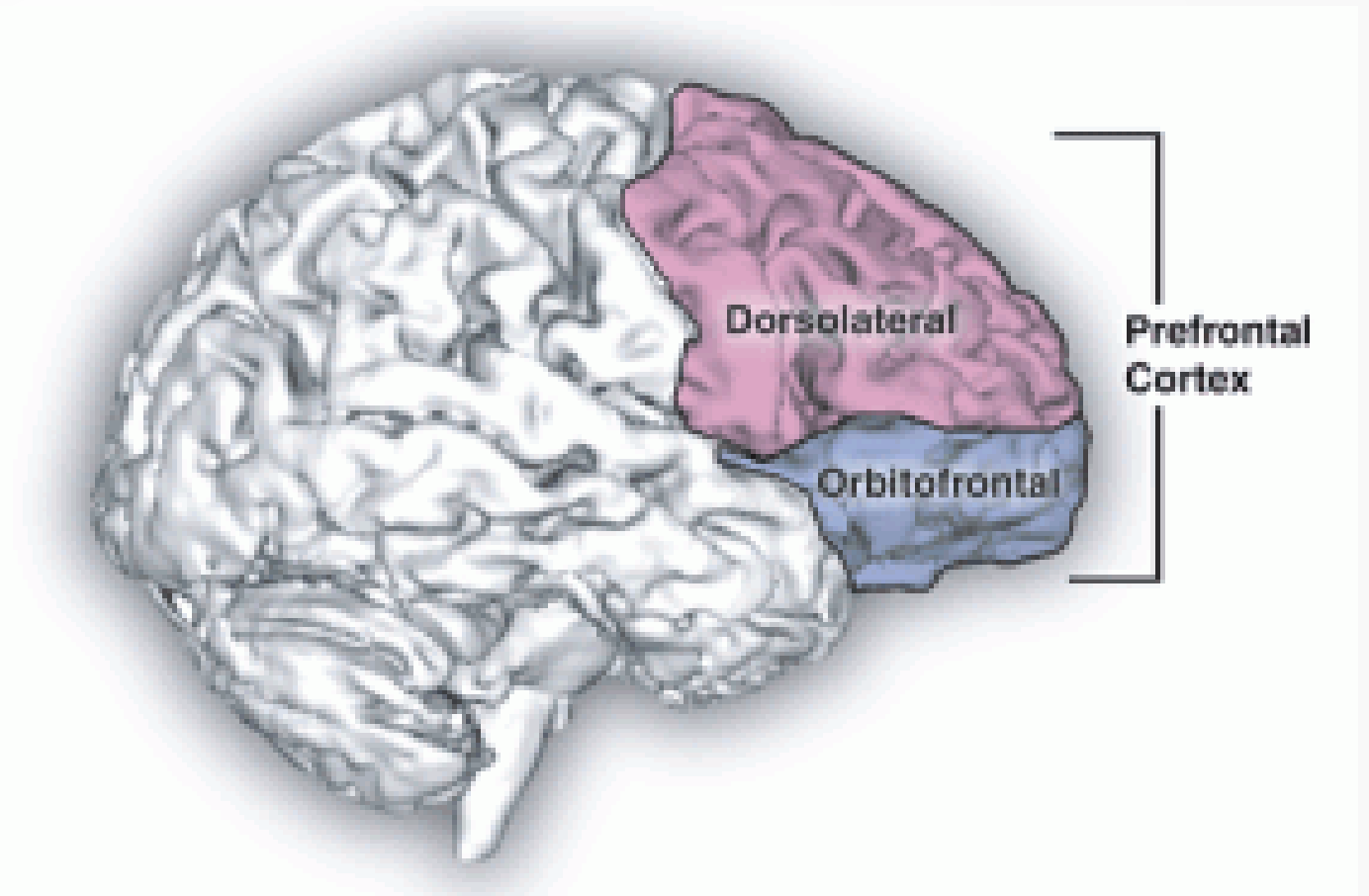
- ▶ Decreased speed and efficiency of processing
- ▶ Decreased complex attention
- ▶ Problem solving more difficult for unfamiliar tasks
- ▶ Language, reasoning, memory storage, and basic attention all remain intact
- ▶ We develop wisdom

A composite image of four elderly women shown in profile from left to right, illustrating the progression of aging. The women are dressed in light-colored, patterned blouses. The background is dark and slightly blurred. A blue arrow graphic points from the left edge towards the text.

The Aging Brain

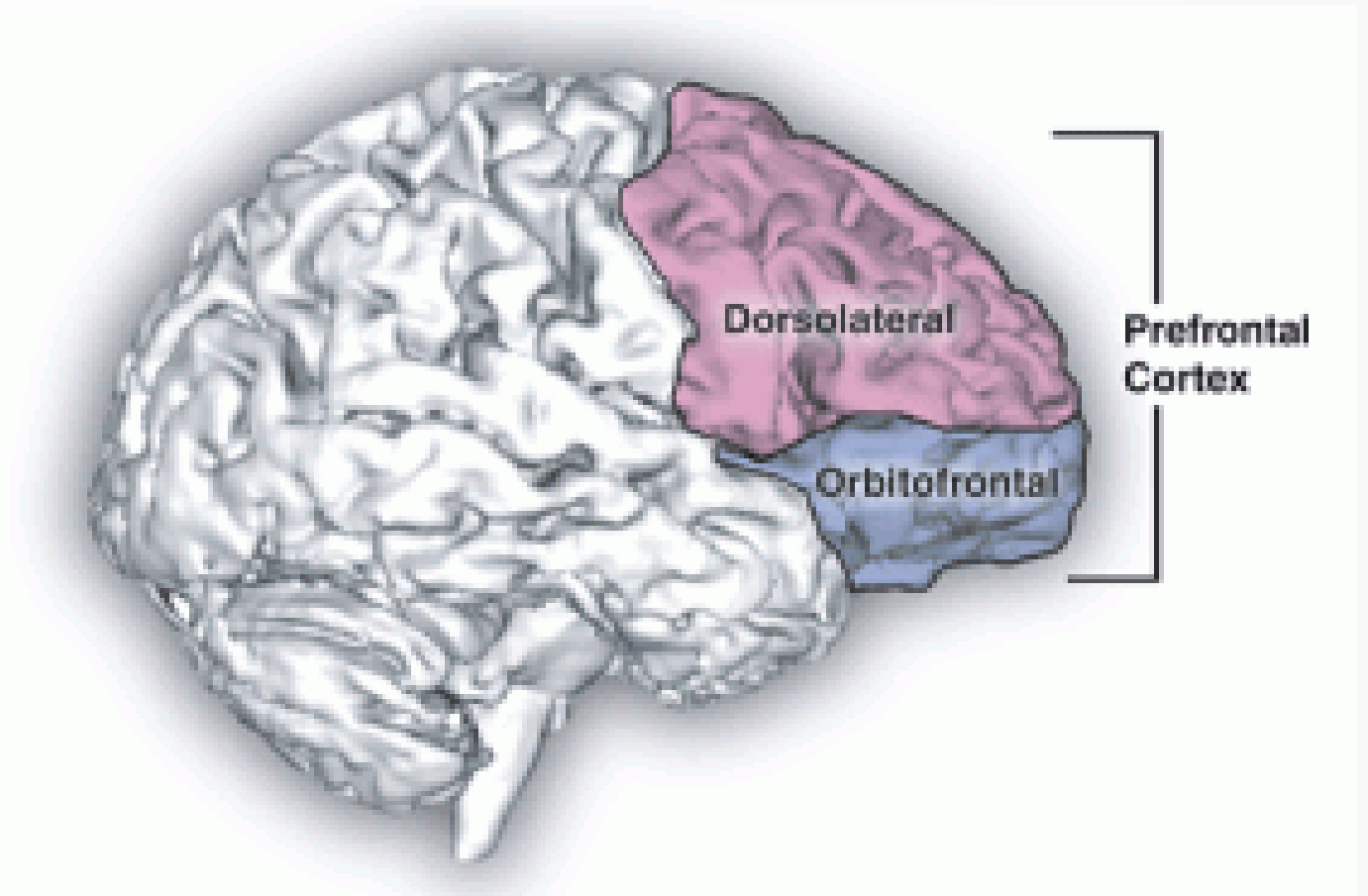
Frontal Lobe Hypothesis of Aging

- ▶ West RL (1996) An application of prefrontal cortex function theory to cognitive aging. *Psychological Bulletin* 120:272-292.



Frontal Lobe Hypothesis of Aging

- ▶ West RL (1996) An application of prefrontal cortex function theory to cognitive aging. *Psychological Bulletin* 120:272-292.



Thinking Changes in Normal Aging

- ▶ Decreased speed and efficiency of processing
- ▶ Decreased complex attention
- ▶ Problem solving more difficult for unfamiliar tasks
- ▶ Language, reasoning, memory storage, and basic attention all remain intact
- ▶ **We develop wisdom, but can be manipulated or overwhelmed by complex information or emotion**



tricks

rackets

Scams

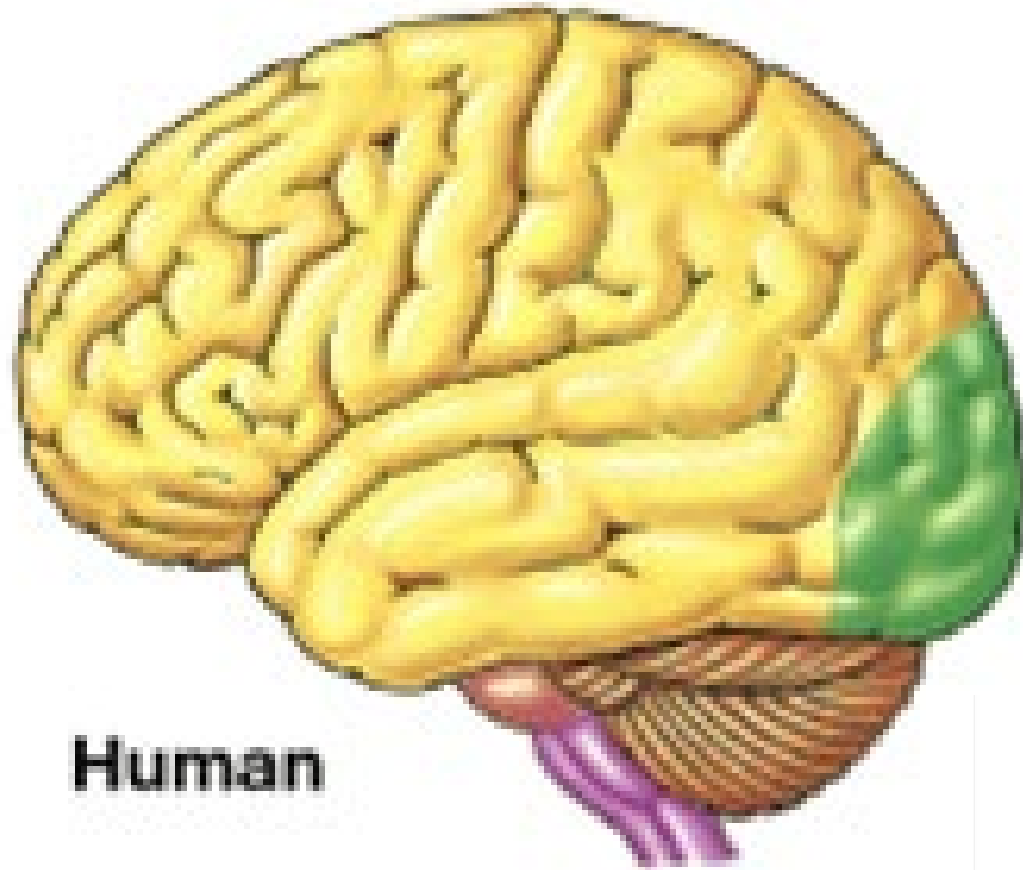
SWINDLES

ruses





Confidence games

FINANCIAL EXPLOITATION





Human

-  Forebrain
-  Visual Cortex
-  Cerebellum
-  Medulla




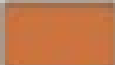

Alligator

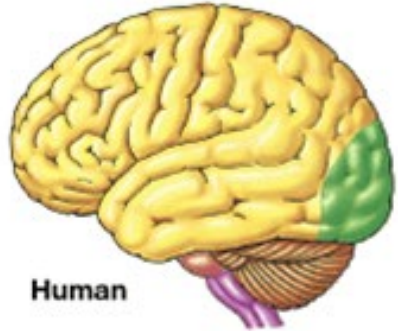


Frog

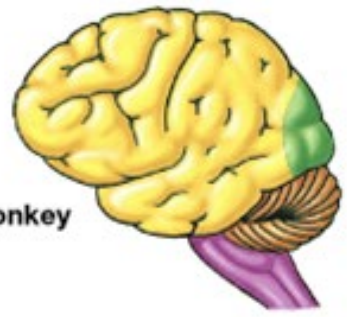


Codfish

-  Forebrain
-  Visual Cortex
-  Cerebellum
-  Medulla



Human



Monkey



Cat



Goose



Alligator



Frog



Codfish

- Forebrain
- Visual Cortex
- Cerebellum
- Medulla
- Midbrain
- Pituitary



Why Do Scams Work?



Techniques of Persuasion

- Visceral rewards
- Emphasize urgency
- Use a personal touch
- Demonstrate authority



Why Do Scams Work?

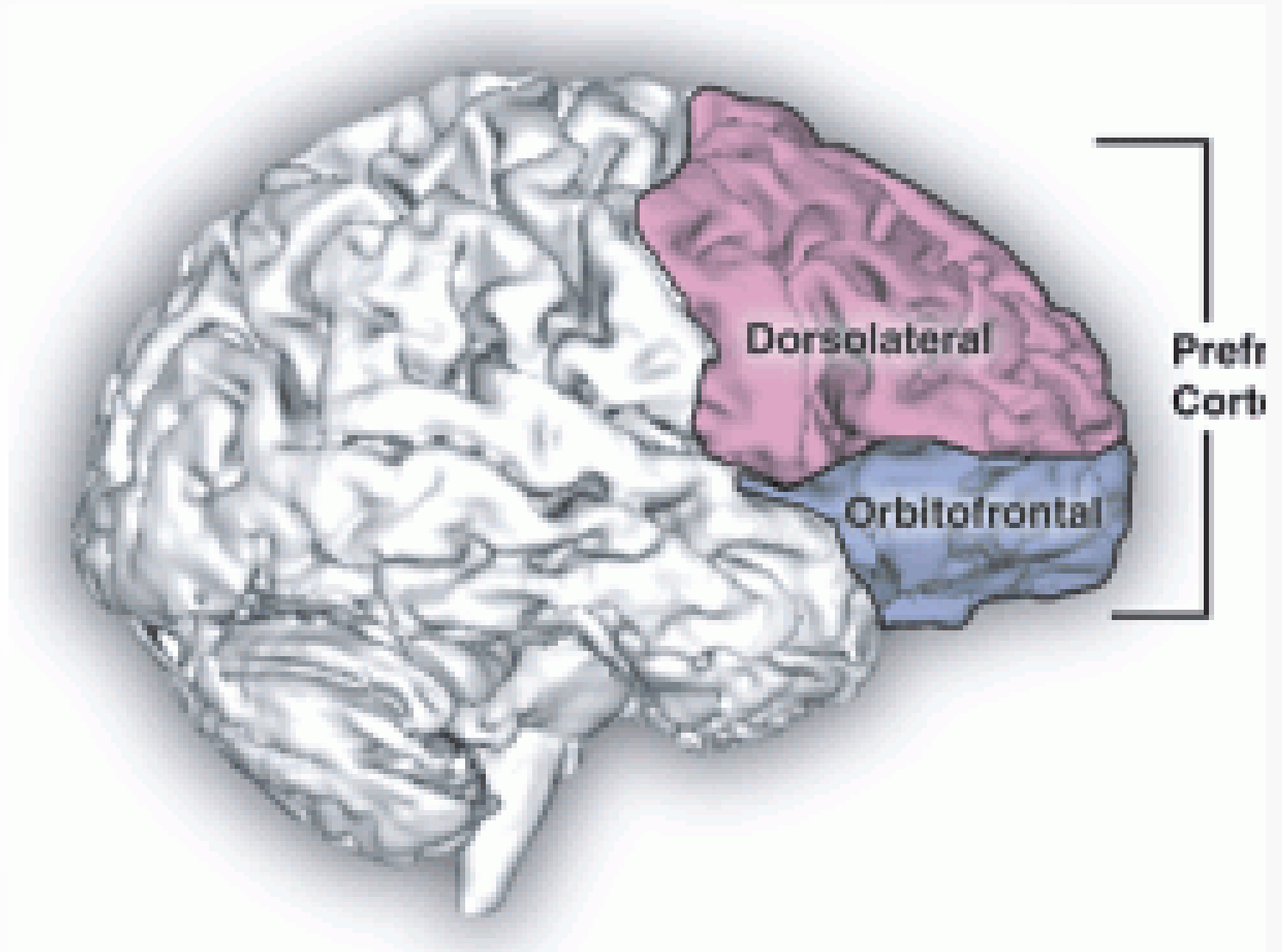


A composite image showing four elderly women in profile, facing right, illustrating the progression of aging. The women are arranged from left to right, with the youngest on the far left and the oldest on the far right. The image is dimly lit and has a dark background. A blue arrow points from the left edge towards the text.

The Aging Brain

Frontal Lobe Hypothesis of Aging

- ▶ West RL (1996) An application of prefrontal cortex function theory to cognitive aging.
- ▶ Psychological Bulletin 120:272-292.

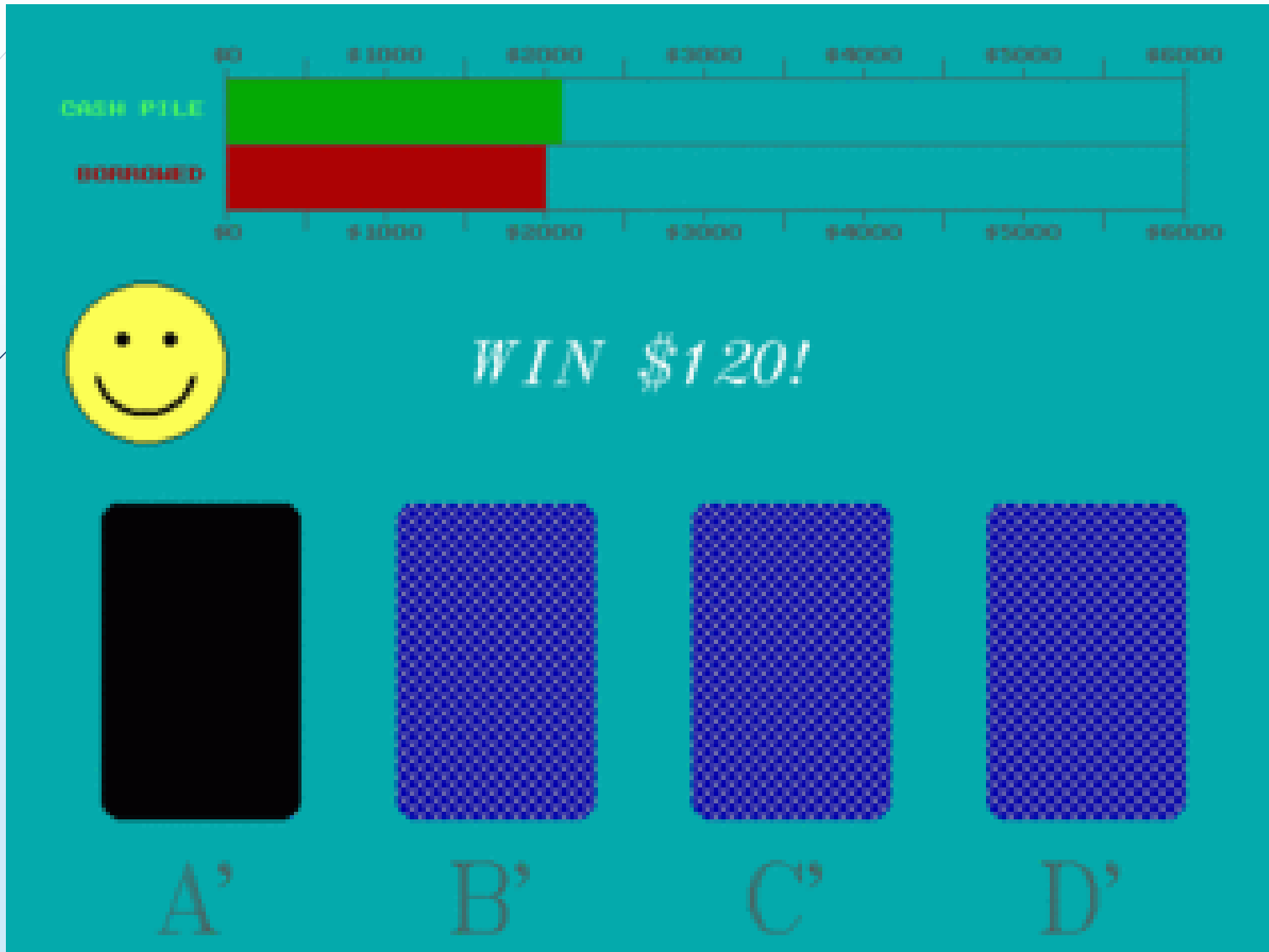




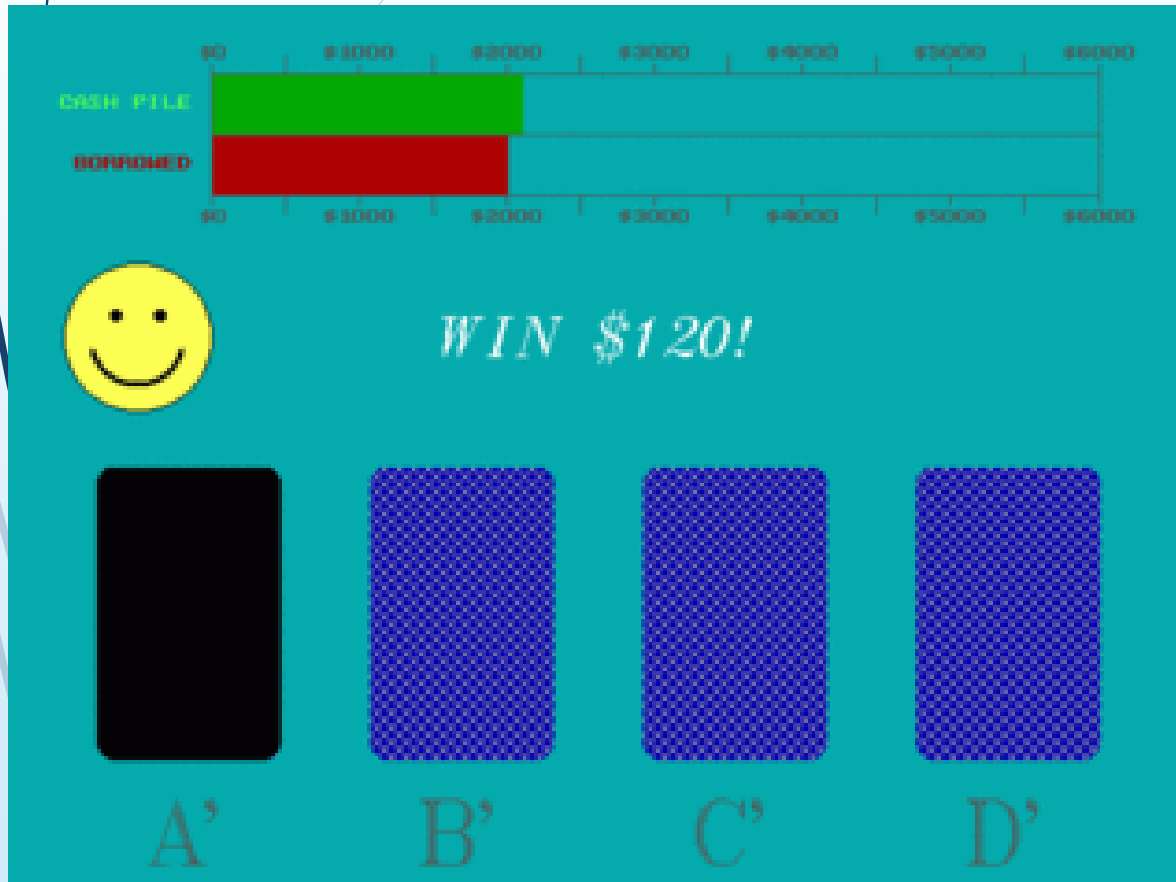
?	

1	2	3	4	5

Iowa Gambling Test

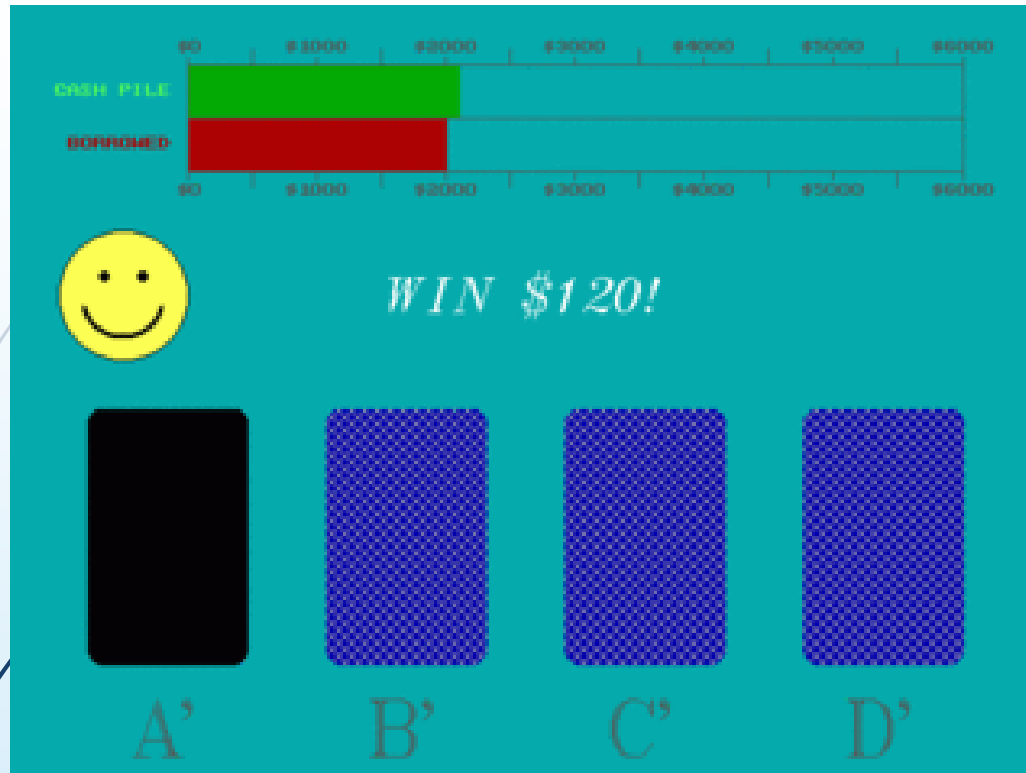


IGT and the PFC



- ▶ PFC damage results in difficulty learning from one's mistakes and decreased self-awareness
- ▶ Similar performance is seen in those with disinhibition conditions

IGT and Seniors



- ▶ Those over 55 generally do worse than those under 55
- ▶ Similar performance to those with disinhibition
- ▶ These are normal older adults who do not have dementia

Denburg NL, Tranel D, Bechara A. The ability to decide advantageously declines prematurely in some normal older persons. *Neuropsychologia* 2005;43(7):1099–1106.

Denburg, N. L., Cole, C. A., Hernandez, M., Yamada, T. H., Tranel, D., Bechara, A., & Wallace, R. B. (2007). The orbitofrontal cortex, real-world decision-making, and normal aging. *Annals of the New York Academy of Sciences*, 1121, 480–498.

Fein, G., McGillivray, S., & Finn, P. (2007). Older adults make less advantageous decisions than younger adults: Cognitive and psychological correlates. *Journal of the International Neuropsychological Society*, 13, 480–489.



Scams and Normal Aging



Decreased Processing Speed

- More vulnerable to false urgency
- May not “figure it out” until it’s too late
- Easily overwhelmed

Decreased Memory Efficiency

- May have trouble remembering if they have paid already
- May be unsure who they can reach out to for support

Frontal Lobe Issues

- May not think through possibilities
- More likely to use emotional reasoning rather than logic
- Less efficient at decision making

Emotional Risk Factors

- ▶ Phase of life
 - ▶ Generativity vs stagnation (40-65)
 - ▶ Ego integrity vs despair
- ▶ Loss of spouse/loved ones
- ▶ Loneliness
- ▶ Depression, anxiety, and fear
- ▶ Economic uncertainty, burden on others



Age Associated Financial Vulnerability

Coined by Mark Lachs, MD, an epidemiologist

a pattern of financial behavior in older adults that:

- Puts them at substantial risk for a considerable loss of resources
- Can result in dramatic changes in quality of life
- Is inconsistent with patterns of financial decision making in younger life
- Can occur in absence of dementia or neurodegenerative problems

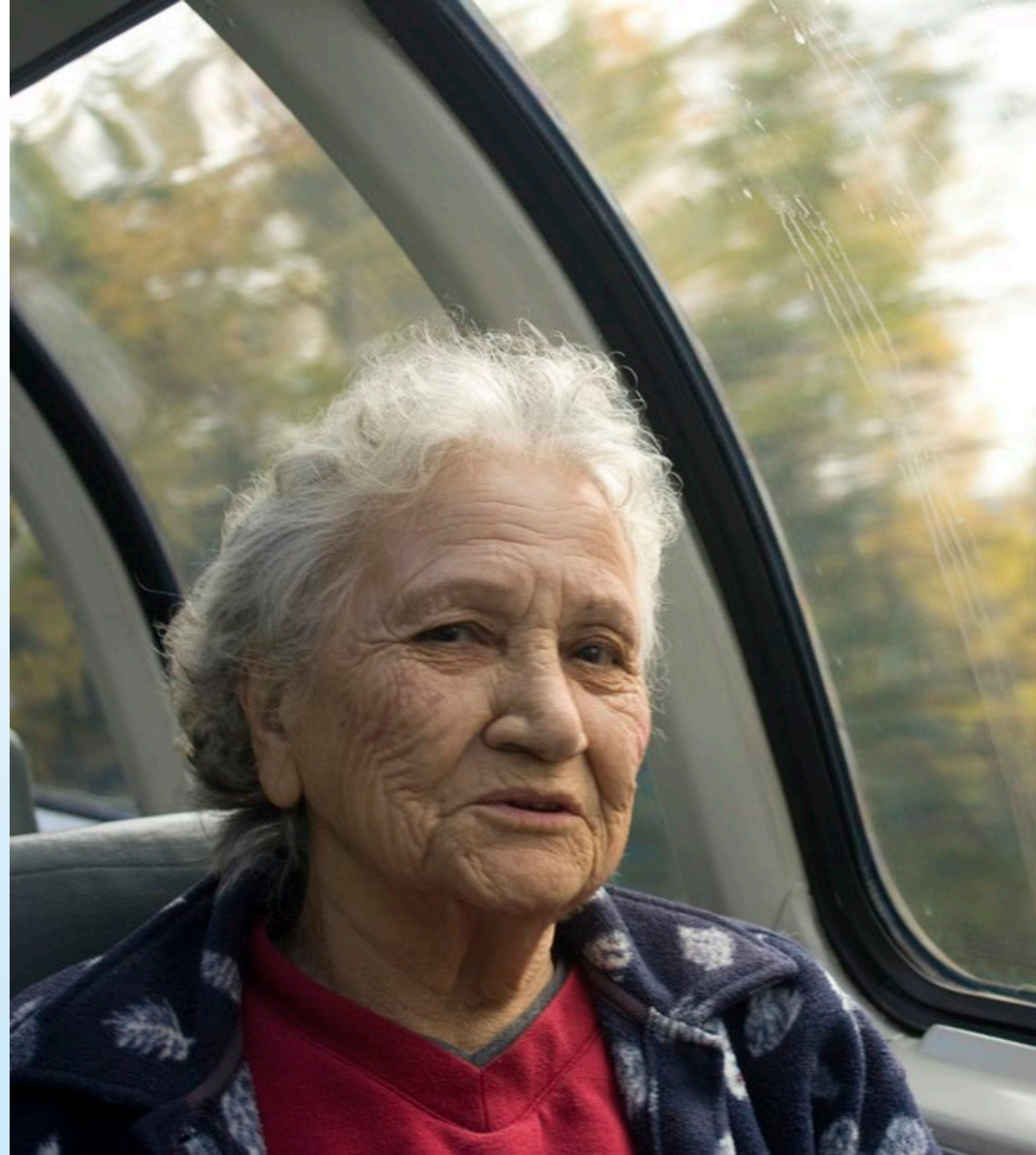
Risk Factors: Medical Decline

- ▶ Serious Illnesses
- ▶ Impaired Mobility
- ▶ Sensory Loss
- ▶ Polypharmacy



Risk Factors: Fast Paced Lifestyle

- ▶ Information Overload
- ▶ Sophisticated Marketing
- ▶ Wealth Concentration



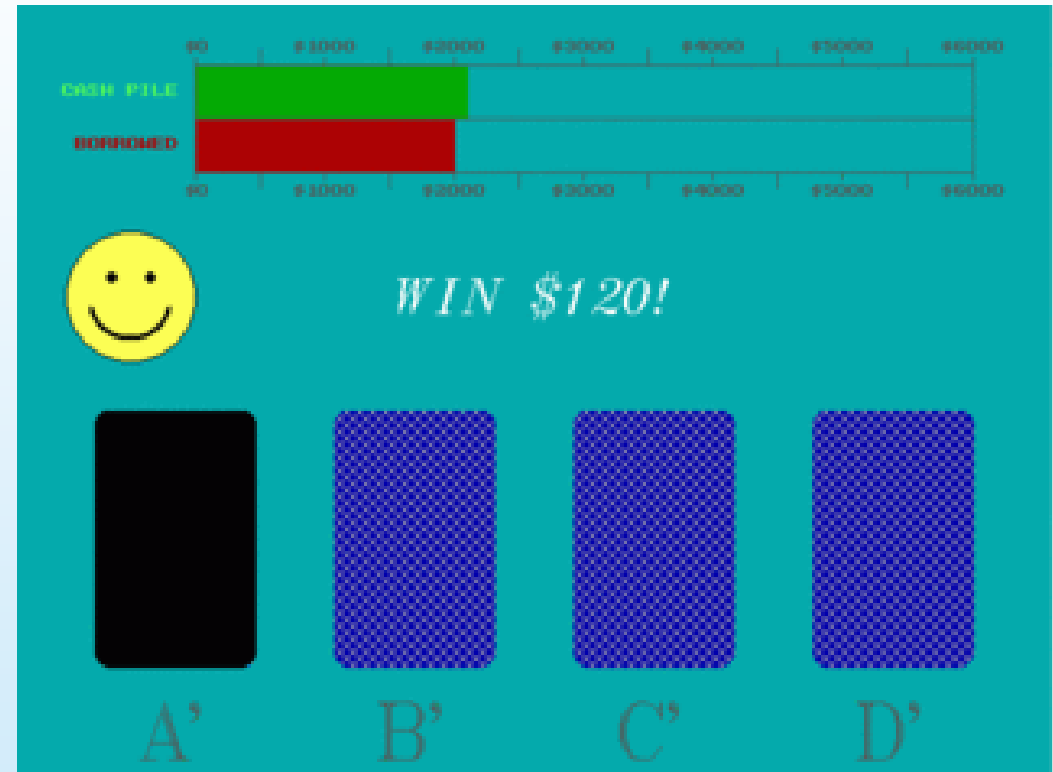
Need for AAFV

- ▶ **Association of a Negative Wealth Shock With All-Cause Mortality in Middle-aged and Older Adults in the United States.**
 - ▶ [Pool LR¹](#), [Burgard SA^{2,3,4}](#), [Needham BL³](#), [Elliott MR^{4,5}](#), [Langa KM^{4,6,7,8}](#), [Mendes de Leon CF³](#).
 - ▶ [JAMA](#). 2018 Apr 3;319(13):1341-1350. doi: 10.1001/jama.2018.2055.



IGT in Alzheimer's

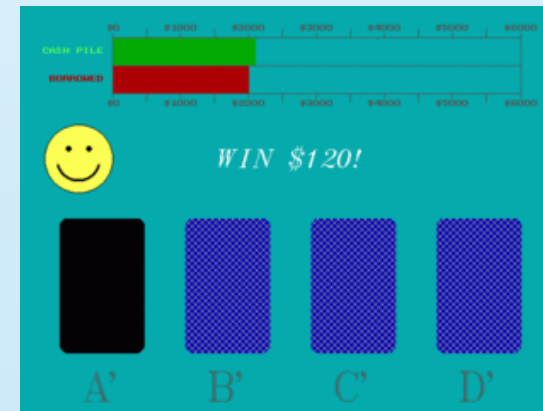
- ▶ Looks different than that seen in healthy seniors
- ▶ More random responses and poor strategy stability



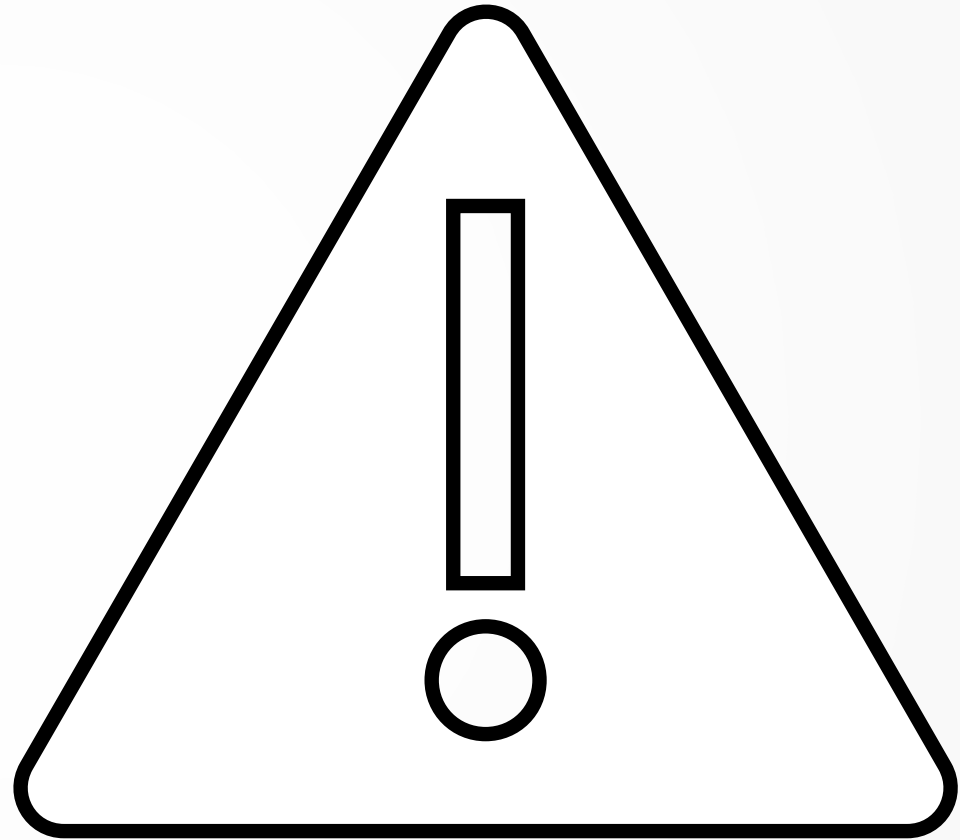
Zamarian, L., Weiss, E.M., & Delazer, M. (2010). The impact of mild cognitive impairment on decision making in two gambling tasks. *Journal of Gerontology: Psychological Sciences*, 66B(1), 23–31,

Conclusions

- ➔ Aging disproportionately affects the frontal lobe, which is involved in executive functions such as decision making and judgment
- ➔ Results in decreased ability to process information in a rapid manner
- ➔ Results in generally increased susceptible to financial exploitation involving urgency and visceral/emotional information



How Do We
Help?



The Basics

- ▶ Help strengthen capacity in the situation
 - ▶ Notice hearing and vision loss
 - ▶ Speak slowly and simply
 - ▶ Use frequent repetition and questioning

The Basics

- ▶ Help strengthen capacity in the situation
 - ▶ Limit the length of meetings
 - ▶ Provide information in verbal and written format
 - ▶ One question at a time

Financial Warning Signs

- ▶ Changes in financial behavior
- ▶ Disorganization
- ▶ Decreased checkbook management skills
- ▶ Arithmetic mistakes
- ▶ Financial concepts confusion





Screening For Vulnerability

- ▶ Mental status
 - ▶ MOCA vs MMSE
- ▶ Financial questions
 - ▶ Who manages your money?
 - ▶ What is your monthly income?
 - ▶ What are your expenses?
- ▶ Have you won money or prizes?
- ▶ Have you ever paid for services by purchasing money cards?
- ▶ Do you talk to friends online?
 - ▶ May not know online vs phone
 - ▶ Have you met any new people?

Refer for Further Evaluation

- Use a neutral expert who understands capacity assessment
- Disciplines include geriatricians, neurologists, psychiatrists, geropsychologists and neuropsychologists
- **Clearly identify the specific question you want addressed!**



What Can We Do?

- ▶ May or may not be “impaired” overall
- ▶ Educate on common themes and specific examples of scams
 - ▶ Frame in a way that does not make them the “dumb one”
 - ▶ May be incapable of insight depending on the issue
- ▶ If unable to recognize problems, may need someone to step in and take over to some degree
- ▶ Start with least restrictive approach to respect autonomy
 - ▶ Auto bill pay, supervision, limiting access, helping to block numbers
- ▶ Collaborative and empathetic approach
- ▶ REMEMBER, we want to help while respecting their autonomy!

Approaches to Prevention

- “Family awareness” programs about financial vulnerability of older loved ones?
- Consider it similar to addictive/disinhibited conditions such as drug abuse, suggesting similar Tx programs?
- Involvement of local banks, brokers, and other financial professionals
- The best source of protection for a financially vulnerable elder is usually an aware and caring family



To Sum Up

- ▶ The Frontal Lobe Hypothesis tells us that aging causes slowed processing, difficulties with complex reasoning, and possible difficulties with emotional control
- ▶ Scammers are trying to capitalize on these issues, encouraging a focus on emotional reasoning and not giving time to think things through
- ▶ Important to consider a person's capacity, as it limits what interventions will be most successful. Can they understand the situation and consider a plan?