# Why do some victims of scams continue to give money but appear perfectly fine? What is APS missing?

WEADD 2023 Conference June 15, 2023

# Why can some seniors?

Score well on a cognitive test

Meet their own daily needs

… but *still* fall victim to scams?

# Agenda

- APS highlights financial exploitation case
- Frontal Lobe Theory & Somatic Marker Hypothesis
- Conditions impacting brain function and behavior
- Interventions and case outcome
- Future needs

# The Story of KC

**Demographics**

- 68 years old
- male
- African American
- widower

**Academics**

- College educated

**Employment**

- Retired from high-profile, successful career

**Supports**

- Stepsons
- Live-in stepson does minor housework
- Housecleaner

# The Story of KC

**Allegations**

Nine reports of financial exploitation by scam over eight months.

- Wire transfers in large amounts to unknown accounts ($10,000 each)
- Withdrawals of  large amounts of cash ($5000 each)
- Bank account flagged as either money laundering or scam victim
- Total Loss of $240,000.  Ability to meet monthly expenses is compromised

**All of the above are a departure from historical checking account activity and represents a significant behavior change.**

# The Story of KC

**Law Enforcement activity**

- Law Enforcement called KC who stated he was sending money to friends and then abruptly hung up
- Reports as indications of a “classic scam”
- No previous record on KC

# The Story of KC

**Additional concerns**

- Refusal to pay for yard work or house repairs
- Refusal to use air conditioning even during hot weather
- Development of urinary and fecal incontinence
- Disposition change per stepson

**These concerns are additional indicators of significant behavioral change.**

# The Story of KC

Stepson overheard phone call:

- Phone call to KC 
- Caller indicates “FBI” 
- KC goes to bank & withdraw cash 
- KC goes to Walmart to buy gift cards 
- KC reads gift card numbers on phone to caller 

# The Story of KC

- KC's Primary Care Provider reports KC has decision making capacity
- MoCa scored within normal limits
- KC refuses to meet with APS worker

# Many more examples

- Elderly female
  - social
  - handles household and personal cares
  - believes she's won many cars, after sending $$
- Elderly male
  - believes he got married via the internet, has marriage certificate
  - never met wife
  - sent $1 million to "relatives of wife"
- Female
  - bought house, cars, paid college for young man who is "like a son"
  - Man is now controlling access

# Why do these cases present a dilemma?

- Limited understanding of the issue throughout systems
- MN has a vulnerable adult law
- Adult Protection ethics
- Without an infirmity or dysfunction:
  - No basis to classify as “vulnerable adult”
  - Limits understanding of the issue
  - Limits intervention possibilities
  - Victims continue to lose money to scams, often compromising victim’s ability to meet their own needs

# Clues & New Direction

# Are social situations to blame?


These conditions often do not accurately describe victims who have trusted, concerned supports; by history have astutely managed their finances.

# Is this Alzheimer's Disease or Dementia?

Research indicates **"isolated impaired decision-making"** has discrete phenomenon distinct from Alzheimer's and Dementia

- Far more subtle clinical symptoms
- "Dramatic declines in cognitive abilities that are not related to memory." (Denberg, 2009)

# If not Alzheimer's or dementia, what is it?

"Evidence supports being unable to detect long term consequences and choosing short term solutions with no benefits are direct consequences of dysfunction in brain systems that are critical to bringing emotional related signals to bear on decision making."

(Denburg, 2009)

# Regions of brain function

**Medial temporal region** - memory

**Frontal lobe** - Concentration, problem solving, decision making

**Ventromedial prefrontal cortex** - regulates and inhibits emotions

**Ventromedial prefrontal cortex** - monitors sensory data; relays to **amygdala**, which controls emotion and feeling

# Key Concepts

- People make choices in their best interests only after they effectively weigh potential short term and long-term outcomes.
- When a decision's outcome is ambiguous or uncertain, a person's emotions and feelings are essential for making a decision.

# Frontal Lobe Theory

Integrates these key concepts.

> "Disproportionate, age-related changes to the frontal lobe structures of the brain that lead to susceptibility to scams.
>
> Specifically, the ventromedial prefrontal cortex region of the frontal lobe."

- Theorized and researched by A. R. Damasio in 1994.
- This theory has been replicated in other studies.

# Somatic Marker Theory

Feelings associated with emotions

- In uncertain conditions, may trigger conflicting responses
- Favorable potential consequence may trigger excitement and elation
- Unfavorable consequence may trigger pain and dread

# Somatic Marker Theory

- Emergence of positive “go” signal or a negative “stop” signal
- Stronger signals override weaker ones.
- People deprived of appropriate emotional signals, may fail to perceive potential adverse long-term consequences.

# Impact of brain injury

"Damage to the ventromedial prefrontal cortex due to stroke, tumors, or other injuries can cause dramatic changes in personality and higher order abilities such as:

Reasoning, judgment, decision making and emotional processing."

(Denburg, 2009)

# Testing these theories

Phase 1 Iowa Gambling Task administered

Phase 2 Both groups given deceptive and non deceptive ads

Phase 3 Neuroimaging - MRI and PET

# IGT findings

| | |
|---|---|
| Damaged Orbitofrontal Cortex or amygdala | **hinders learning of the advantageous strategy** |
| Connections between orbitofrontal cortex and amygdala | **required for effective decision making** |
| Damage to the ventromedial prefrontal cortex | **susceptibility to swindle, fraud, and deceptive advertising** |

# Implications for APS

Someone who is at risk may appear to be of sound mind and body.

Indicators:

- Accumulation of junk mail advertisements and solicitations.
- Increase in # of phone calls, email, and mail activity.
- Increase in phone, internet, and mail order purchases.
- Large bank withdrawals, money transfers, gift card purchases, checks to unknown accounts
- Unusual activity, postings, messaging on social media; new friends
- Continues to give money after scam education

# Decision-making capacity

- MoCa, Mini Mental, SLUMS often do not pick up Frontal Lobe issues
- CLOX more sensitive to executive functioning
- Lichtenberg Screening for Financial Decision Making
- IDEAL Model by Dr. Bennet Blum identifies undue influence using 5 criteria
- IDA is coming

# Lichtenberg, IDEAL, IDA

- Screening tools can identify, document concerns
- Neuropsych eval for determining decision making capacity
  - Requires consultation with primary care physician
  - Requires physician referral

# Dr. Kerzner continues the discussion

# Why do some scam victims continue to give money but appear perfectly fine?
# What is APS Missing?

## Part 2: The biology of financial vulnerability

**Dementia is not all or none**

**Financial vulnerability - normal aging or pre-clinical disease?**

**All dementia is not created equal**

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No financial disclosures

Organizational disclosures

Hennepin County Vulnerable Adult-Law Enforcement Team

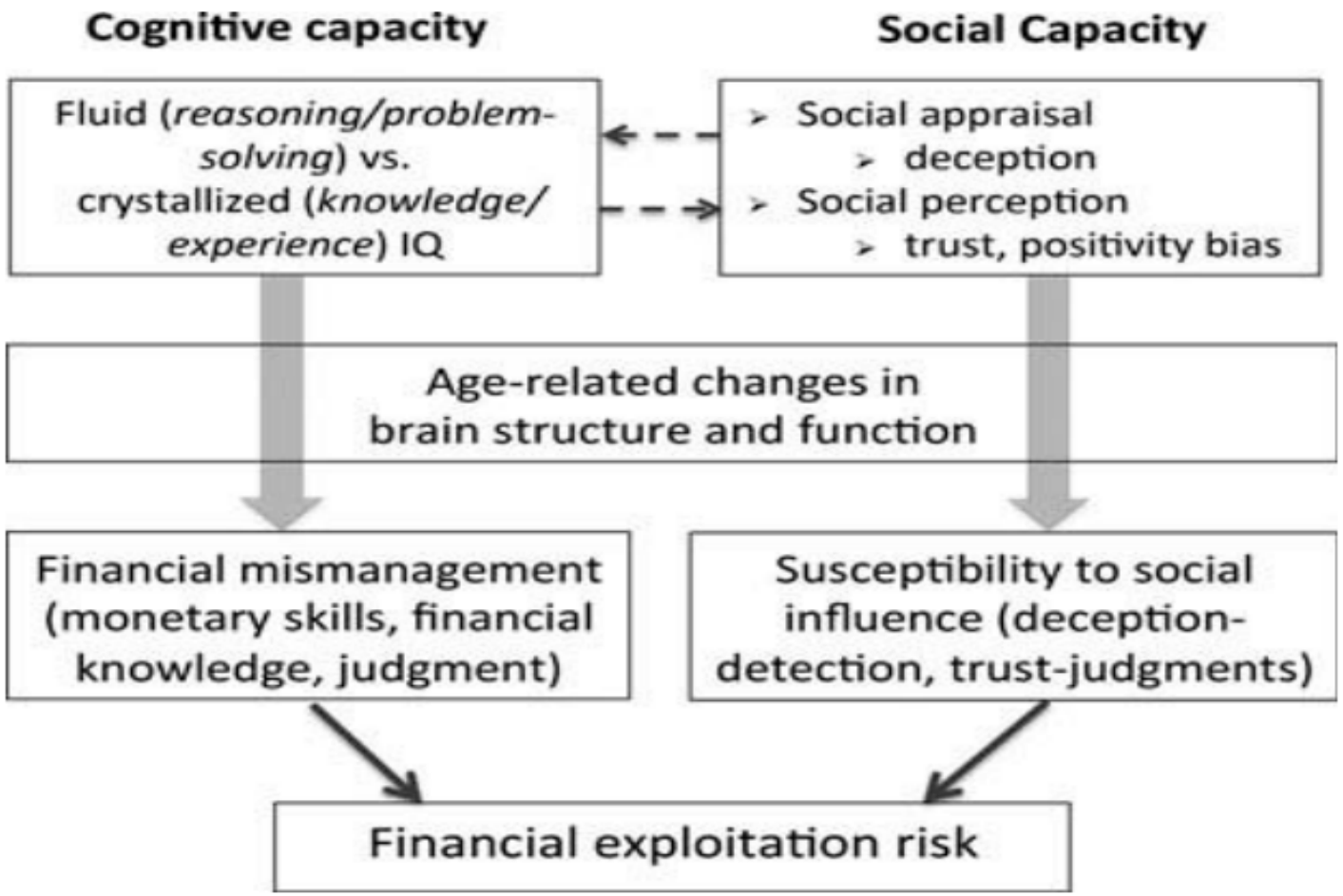
Minnesota Elder Justice Center, Board of Directors

Contextual disclosure

Literature review, work done by many others

# Abuse Intervention Model (AIM)


The Abuse Intervention Model: A Pragmatic Approach to Intervention for Elder Mistreatment, Mosqueda L, et al. JAGS 2016;64:1869-1873

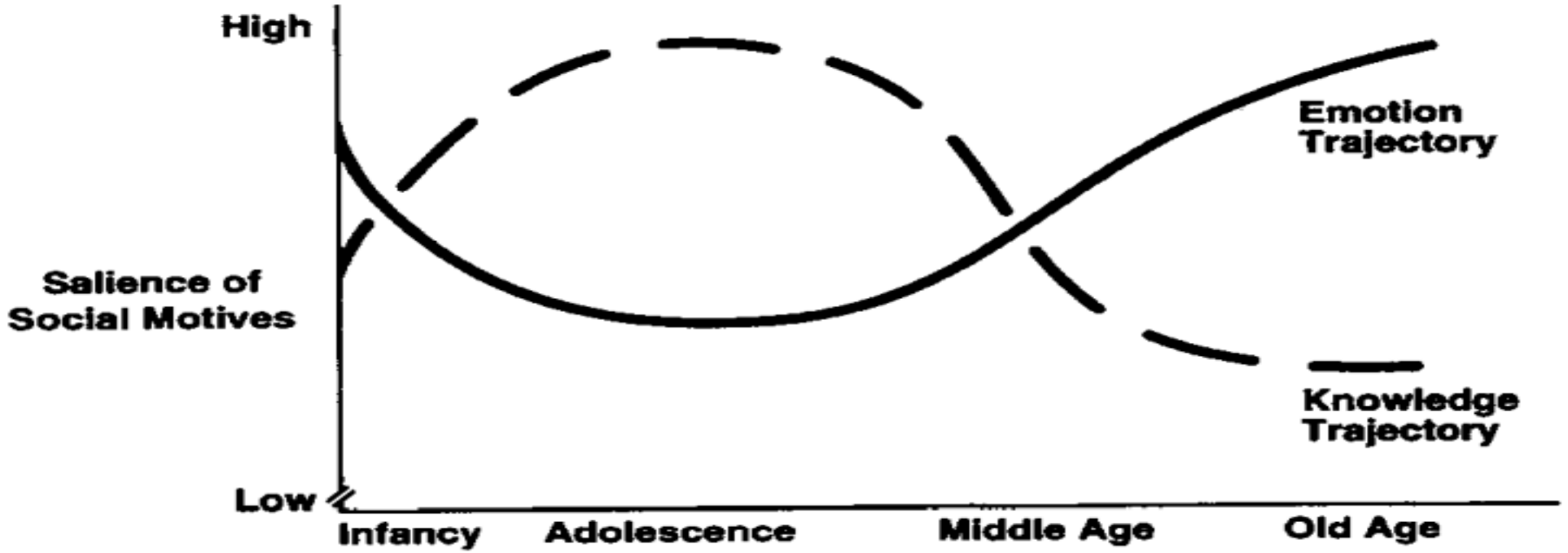



Cognitive, social, and neural determinants of diminished decision-making and financial exploitation risk in aging and dementia: A review and new model

JOURNAL OF ELDER ABUSE & NEGLECT 2016, VOL. 28, NOS. 4–5, 320–344 Spreng RN et al

**Figure 1**

*Idealized Model of Socioemotional Selectivity Theory's Conception of the Salience of Two Classes of Social Motives Across the Life Span*




*Note.* From "The Social Context of Emotion," by L. L. Carstensen, J. Gross, & H. Fung, 1997, *Annual Review of Geriatrics and Gerontology, 17,*

Psychology of aging: Less attention to negative emotions, more attention to positive

Taking time seriously, A theory of sociomotivational selectivity. Am Psychol. 1999;54:165-181.
Carstensen L., et al

# Background about Cognition

Brief mental state screening

| | |
|---|---|
| Mini-Mental State Examination | MMSE |
| Montreal Cognitive Assessment | MoCA |
| St. Louis University Mental Status | SLUMS |
| Mini-cog | |

## Dementia
DSM-4

≥ 2 cognitive areas of impairment

Short term Memory +

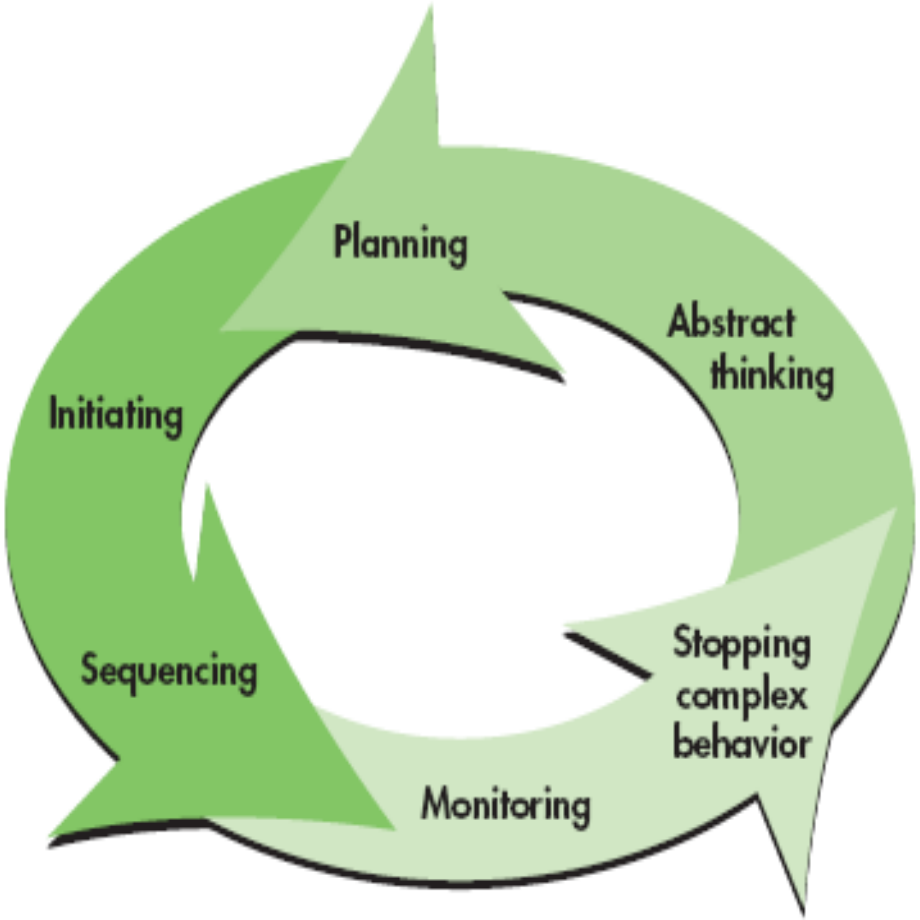
- Language
- Spatial ability
- Sensory integration
- Executive function
  - Concepts and complex tasks

## Major Neurocognitive Disorder DSM-5

≥ 1 area of significant decline

- Learning and memory
- Language
- Executive function
- Complex attention
- Perceptual-motor
- Social cognition

# Elements of Executive Function




Kennedy GJ, Smyth CA. Screening older adults for executive dysfunction. AJN 2008;108(12):62-71

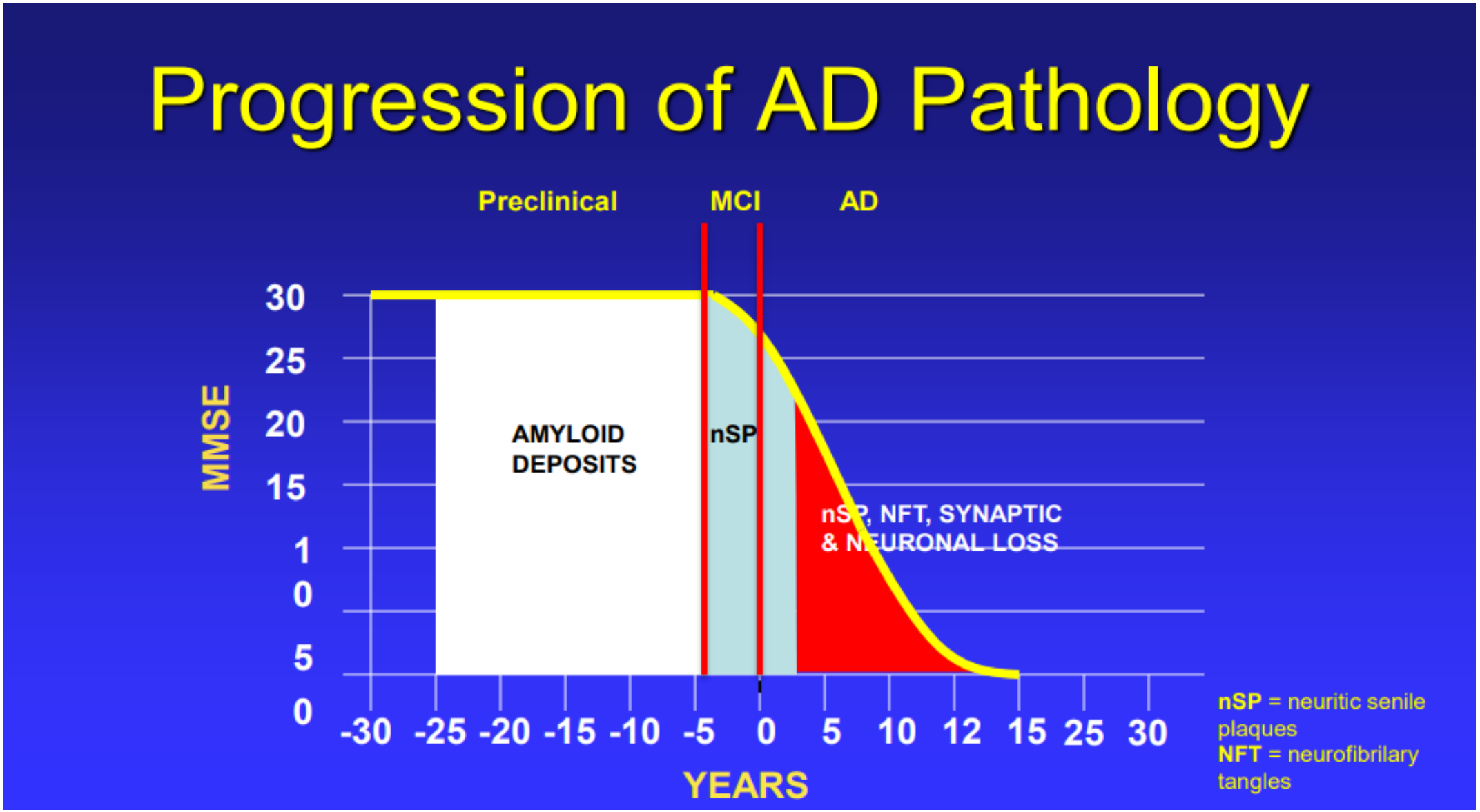
# Change is a **key aspect**

Recent significant change

Financial behavior

Social behavior

# Dementia is not all or none




Pre-clinical, prodromal, symptomatic prior to recognition, mild, more severe

Use of Anti-Amyloid Therapy for Alzheimer's Disease in Clinical Practice Oh E.. Presented at American Geriatrics Society 2022

## Box. National Institute on Aging/ Alzheimer's Association (NIA/AA) Definitions[3,4]

**Preclinical Stage 1:** evidence of amyloidosis on PET imaging or CSF analysis

**Preclinical Stage 2:** evidence of amyloidosis and neurodegeneration on PET imaging and CSF analysis

**Preclinical Stage 3:** evidence of amyloidosis, neurodegeneration, and subtle cognitive changes

Practical Neurology, June 2019: 36-47, Scharre DW

DOI: 10.1002/alz.043311

Alzheimer's & Dementia®
THE JOURNAL OF THE ALZHEIMER'S ASSOCIATION

CLINICAL MANIFESTATIONS

PODIUM PRESENTATIONS

Neuropsychiatry and behavioral neurology: The neuropsychiatry of subjective cognitive disorder and prodromal AD

# Robot-assisted detection of subclinical dementia: Progress report and preliminary findings

Krister Håkansson[1,2] | Jonas Beskow[3] | Hedvig Kjellström[3] | Joakim Gustafsson[3] | Alexandre Bonnard[2] | Marie Rydén[2] | Sara Stormoen[1,2] | Göran Hagman[4,5] | Ulrika Akenine[1,2] | Kristal Morales Pérez[1] | Gustav Henter[3] | Maria Sundell[2] | Miia Kivipelto[4,5,6,7,8]

Alzheimer's Dement. 2020;16(Suppl. 6):e043311

> 50% with dementia have not been diagnosed by a physician

Many with mild, some with moderate disease

What about more subtle forms?

**Undiagnosed patients may account for 50-60% of dementia in primary care populations**

# How what appears to be normal aging affects financial vulnerability

Normal aging or pre-clinical disease?

# Financial Scam prevalence

Very limited information

**4.7%** of >4,000 older adults NY State, reported experiencing some form of FE since turning age 60

Telephone interview, excluded many with risk factors  i.e., substantial cognitive/other impairments
Those with financial vulnerabilities may lack sufficient insight to report

Meta analysis 12 studies, 41,711 individuals

Financial fraud-scam prevalence in up to 5 year period = **5.6%** (1/18 persons)
95% CI=4.0-7.8

Higher than single general question self report assessment = **3.6%**
95% CI= 1.8-5.4

Am J Public Health. 2017;107: e13–e21.

Cognitively intact older adults can have “functional” changes that may render them financially vulnerable

Social isolation

Many “products and services”

Marketing opportunity

Annals of Internal Medicine IDEAS AND OPINIONS

# Age-Associated Financial Vulnerability: An Emerging Public Health Issue

Mark S. Lachs, MD, MPH, and S. Duke Han, PhD

Is this a clinical syndrome?

Group of signs and symptoms that occur together, characterize a particular abnormality or condition

Clinically relevant

Behaviors must affect quality of life

Recent onset vs previous financial decision-making patterns

There needs to be a change

Similar to dementia vs pre-existing cognitive impairment

Differs from “mild cognitive impairment”. Cognitive impairment not necessary for AAFV

Prior research focused on cognitive impairment as the driving force for financial vulnerability. Not so with AAFV

Ann Intern Med 2015;163(11):877-879

# Aging Associated Financial Vulnerability

Possibly linked to, though conceptually different from Financial Exploitation (FE)

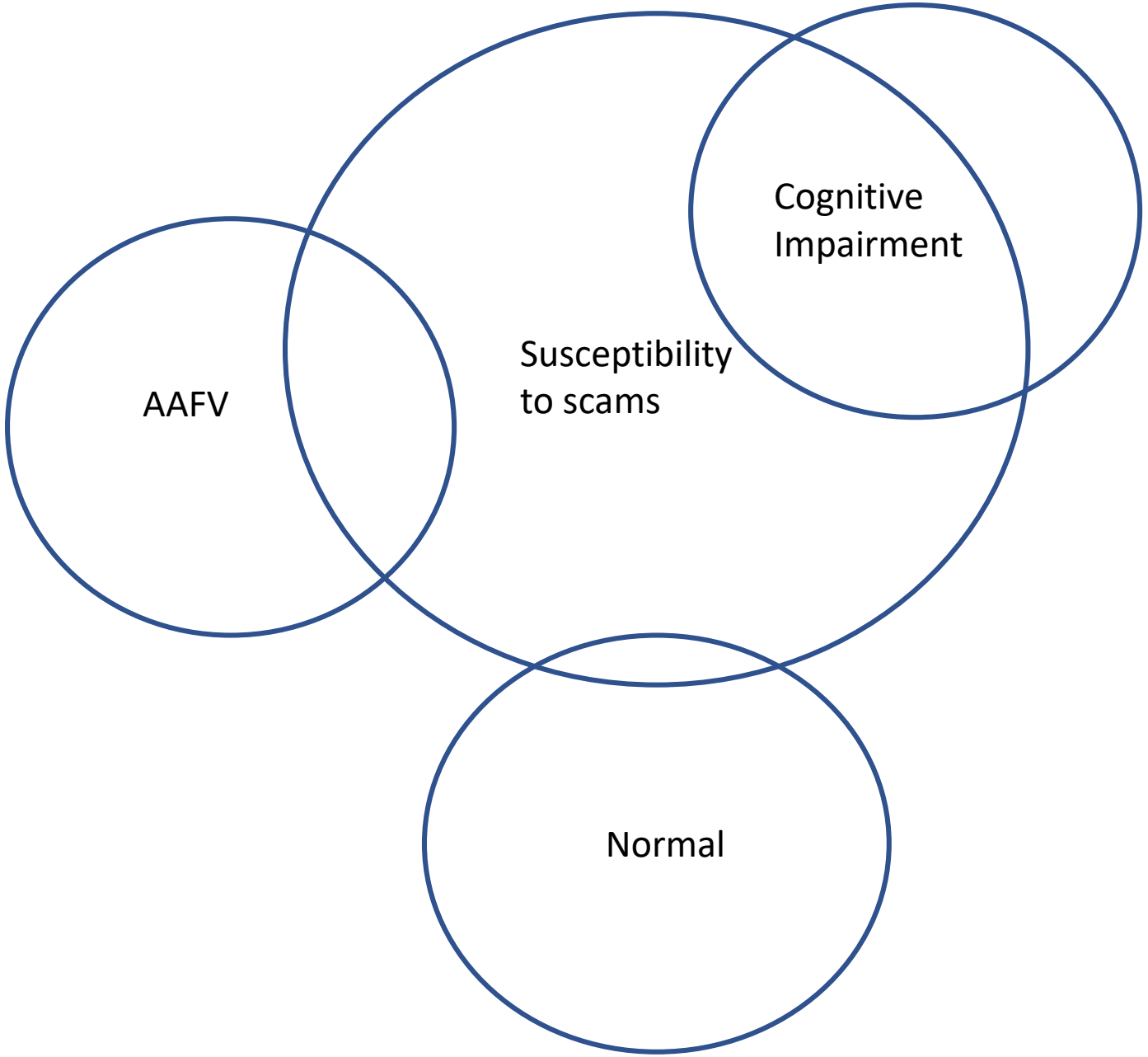
FE focuses on intentional or forceful methods

AAFV - "potential condition"

May have multiple causes

May or may not lead to exploitation

Those without AAFV may be victims of FE


Cognitive
Impairment
Susceptibility
to scams
AAFV
Normal

# Possible factors contributing to AAFV Cognitive/Emotional

Executive dysfunction ↓

Multitasking ability

Organize by time

Abstractly comprehend implications of financial actions

Acalculia ↓

Mentally calculate

Verify numbers

Do the math

↓Frontal inhibition

↓Ability to avoid actions with potentially negative consequences

Anxiety

May increase pressure to take bad financial risks

Not pursue appropriate financial safeguards

↓ability to discern trustworthy persons

↓ information to distinguish good financial opportunities from bad risks

# Tasks related to financial capacity

1. Identifying and counting money
2. Conducting cash transactions
3. Paying bills, checkbook management
4. Understanding debt and loans
5. Judgment to conduct financial activities
   (Mail, telephone fraud)
6. Avoid financial abuse

# Financial capacity

Lifetime

Conceptual

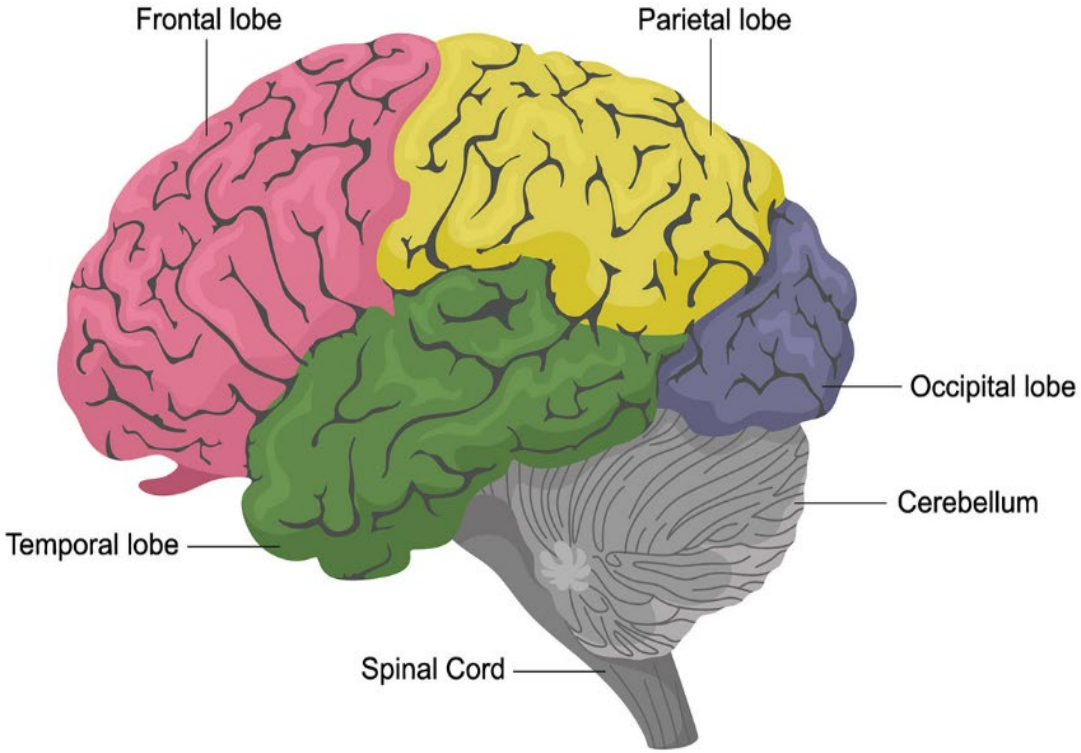
Judgment

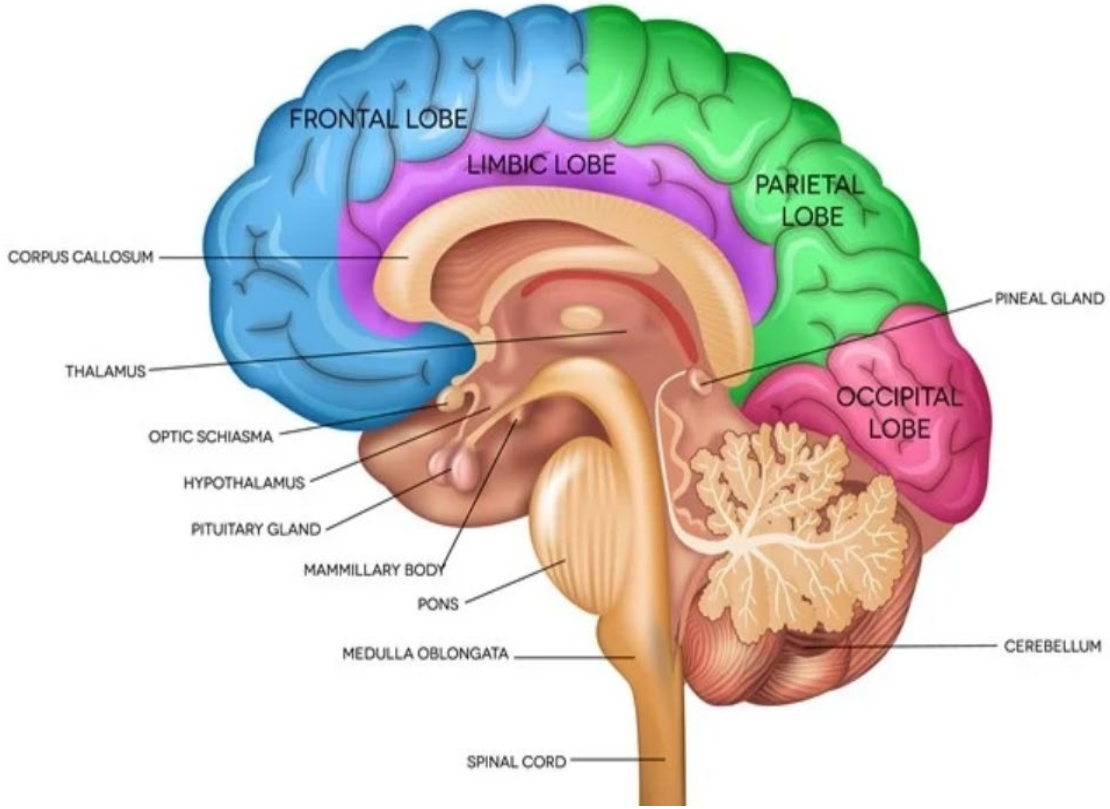
Highly vulnerable to illness

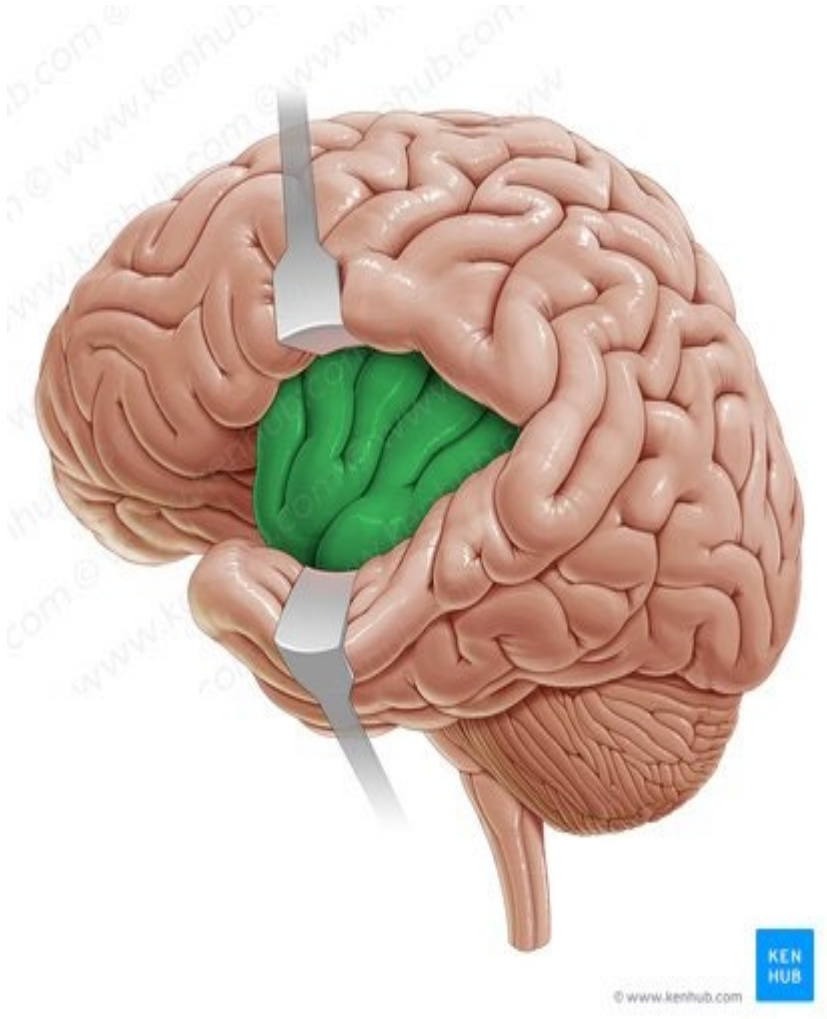
Impairment occurs early

Individuals/family members may be unaware

# Basic Science

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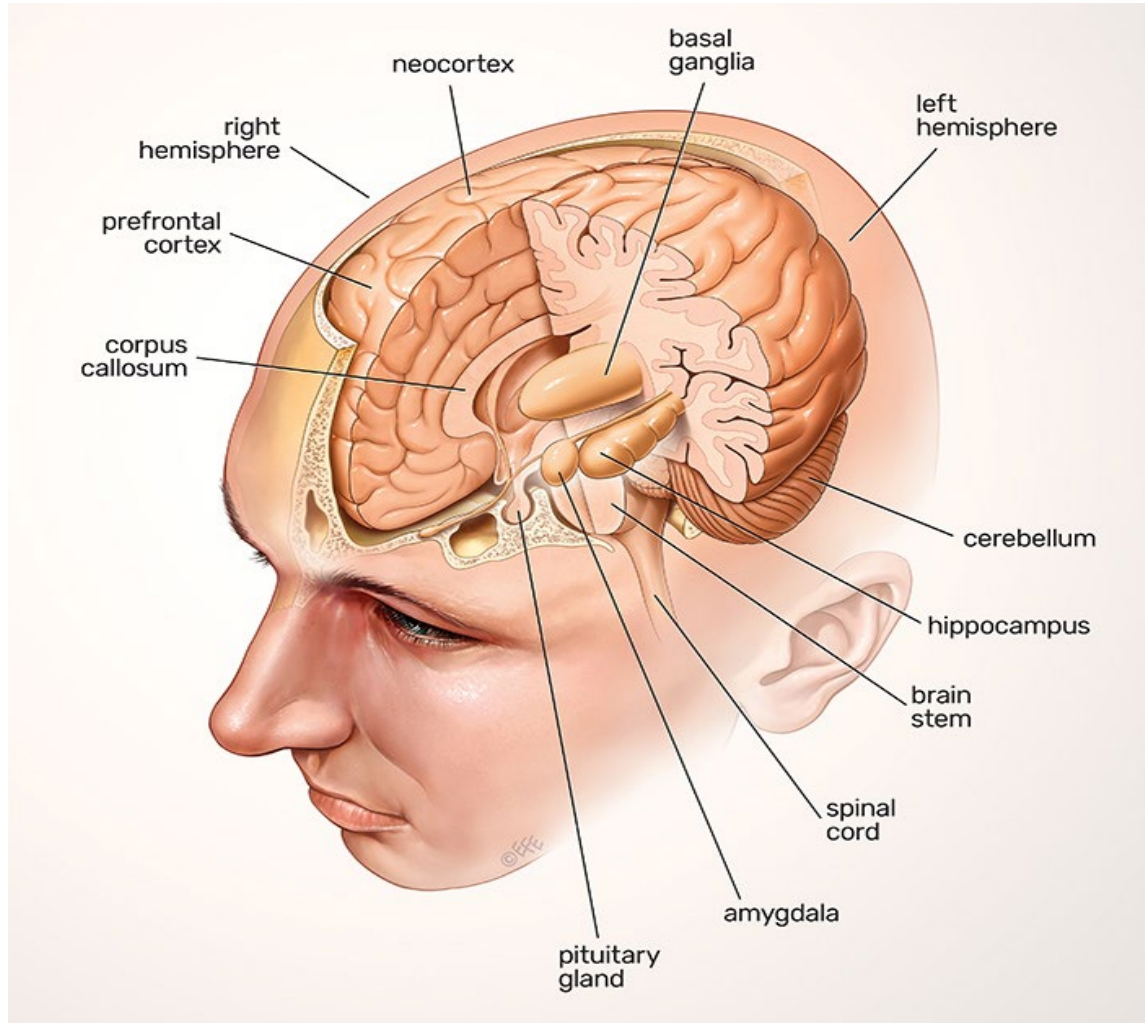
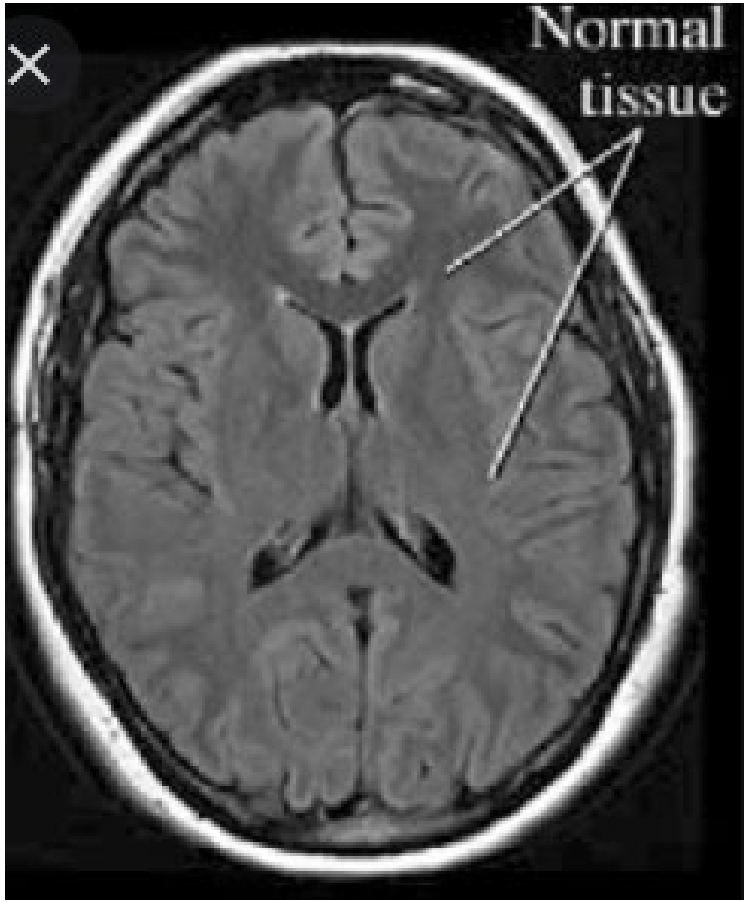
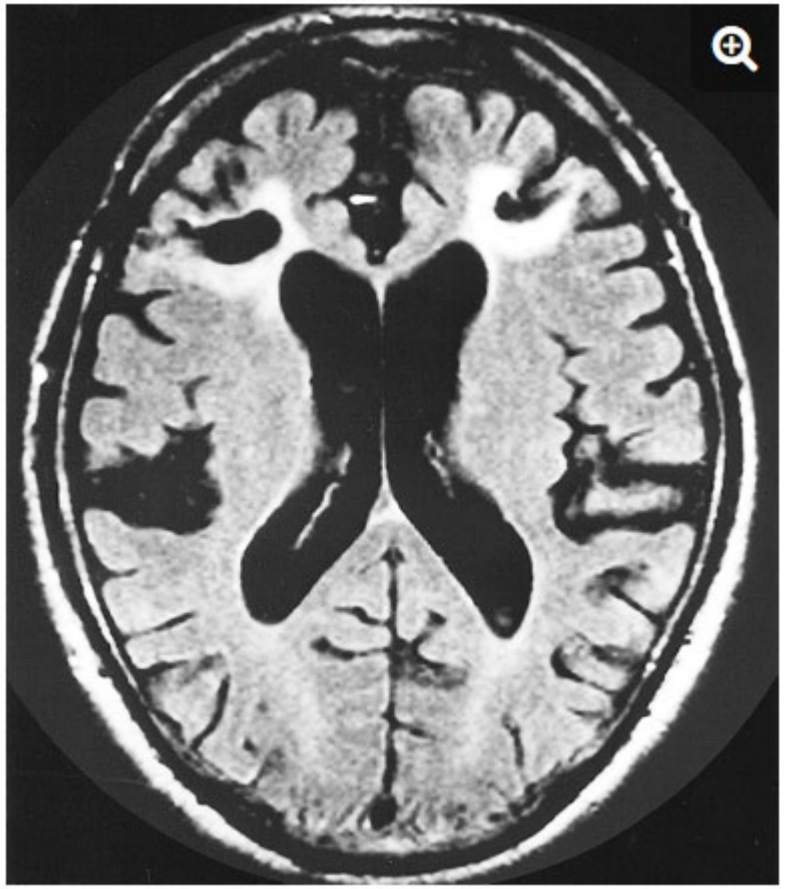

basal ganglia
neocortex
left hemisphere
right hemisphere
prefrontal cortex
corpus callosum
cerebellum
hippocampus
brain stem
spinal cord
amygdala
pituitary gland


Normal
tissue



# Brain anatomy underlying socio-emotional functioning

**Anterior insula**

Aging related changes in processing affective information

**Interoceptive awareness**

**"Feeling based, visceral, gut feelings" regarding expected risk /risk avoidant behavior.**

**Lower visceral warning in response to untrustworthiness**

↓ ability to distinguish trustworthiness

Older perceive untrustworthy faces more trustworthy than younger

Weaker warning signal

Insensitivity to loss (not gain)

Anticipation in gambling task

**Posterior superior temporal**

Processing social information

# Connections within and between areas

**Default network**

Active during passive tasks

Inferring thoughts/intentions of others

Social cognition

**Salience network**

Focus task attention, choice

**Appraisal** of emotionally connected information

THE GERONTOLOGICAL SOCIETY OF AMERICA®

*Journals of Gerontology: Medical Sciences*
cite as: *J Gerontol A Biol Sci Med Sci*, 2017, Vol. 72, No. 10, 1365–1368
doi:10.1093/gerona/glx051
Advance Access publication May 2, 2017

OXFORD

Brief Report

# Financial Exploitation Is Associated With Structural and Functional Brain Differences in Healthy Older Adults

First preliminary investigation of structural and functional brain differences associated with financial exploitation in normal aging.

**Are there differences in the brain regions associated with salience and default networks between victims of financial exploitation and those who avoided potential exploitation?**

Financially **exploited** older adults

- Theft, misappropriation, coercion resulting in financial loss, impersonation to obtain property or services
- Hardship due to loss of agreed upon financial consideration

Controls

- **Exposed** to potential financial exploitation (telemarketing) since age 60
- **Identified the scam and repelled the threat**

**Matched** by gender, education, global cognitive status, site.

- MMSE ≥ 27
- Mean age = 68.9 y, SD = 4.6; years of education = 16.9 y, SD = 2.1

Neuropsychological and behavioral assessment

Cognition, personality and social interaction, financial abilities

Structural / functional brain scanning with magnetic resonance imaging

# Differences

**Functional network differences**

↓ connectivity **within** both the salience and default networks

↑ connectivity **between** both regions

Even **without clinically** identifiable brain disease, their brains are different

Early evidence - financial exploitation risk may be related to altered socioemotional circuitry in older adulthood

Affect-Integrative-Motivational Framework

**Are these people vulnerable adults?**

Nat Rev Neurosci 2015;16(5):278-289

ORIGINAL RESEARCH

Annals of Internal Medicine

# Scam Awareness Related to Incident Alzheimer Dementia and Mild Cognitive Impairment

## A Prospective Cohort Study

Rush University Memory and Aging project started 1997

- **No known dementia**
- Annual evaluation
- Agree to organ donation

Scam awareness assessment 2010

Analysis of **935 free of dementia at time of enrollment**

Ann Intern Med. 2019;170:702-709. Boyle P et. al.

Asked questions to assess:

- Openness to sales pitches
- Interest in potentially risky investments
- Awareness of heightened vulnerability due to older age

7-point Likert scale

- Higher scores = lower scam awareness

935 subjects

| | |
|---|---|
| Mean Age | 81.2 |
| Education | 15.4 |
| Women | 76.9% |

76% Answer telephone whenever it rings even if they do not know who is calling

24% Listen to telemarketers

11% Difficulty ending an unsolicited/unwanted communication with telemarketer

Yearly neuropsychologic testing, medical history, neurologic exam

Detailed process to identify development of dementia and cause, MCI

Approx.  6 years

151 (16.1%) developed Alzheimer dementia

Those with worse scam awareness scores went on to develop MCI and AD at rates higher than those with better scam awareness

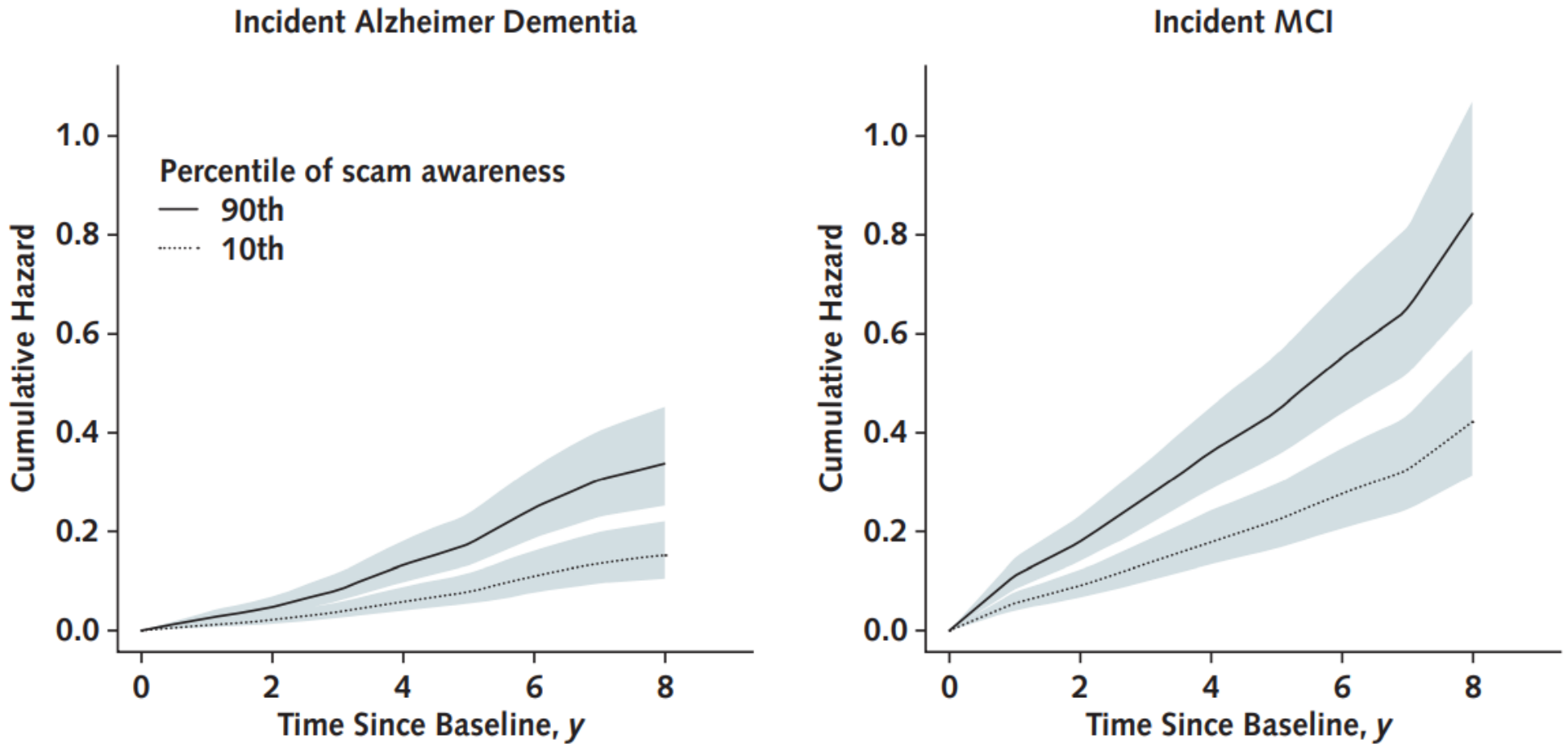
Lower Scam Awareness ↓

Lower Scam Awareness ↓

*Table 2.* Incidence Rates of Alzheimer Dementia and MCI for Different Percentiles of Scam Awareness

| Scam Awareness* | Incidence Rate per 1000 Person-Years (95% CI) |
|---|---|
| **Alzheimer dementia** | |
| 10th percentile | 11.02 (3.00–26.20) |
| 25th percentile | 33.43 (16.69–57.87) |
| 50th percentile | 28.02 (21.22–36.03) |
| 75th percentile | 40.11 (21.93–65.50) |
| 90th percentile | 42.17 (26.10–63.24) |
| **MCI** | |
| 10th percentile | 37.97 (19.62–64.31) |
| 25th percentile | 52.63 (28.02–87.44) |
| 50th percentile | 78.97 (65.25–94.34) |
| 75th percentile | 73.08 (44.00–111.77) |
| 90th percentile | 90.61 (60.21–129.05) |

MCI = mild cognitive impairment.
* Higher scores indicate lower scam awareness, such that 10th percentile reflects high scam awareness and 90th percentile reflects low scam awareness.




Cumulative hazards of developing Alzheimer dementia or MCI for representative women with high versus low scam awareness scores, with 95% confidence bands

Annals of Internal Medicine

EDITORIAL

# Social Cognition and the Aging Brain

Ability to interact with other people in ways that serve our needs

Integrates emotions and cognition

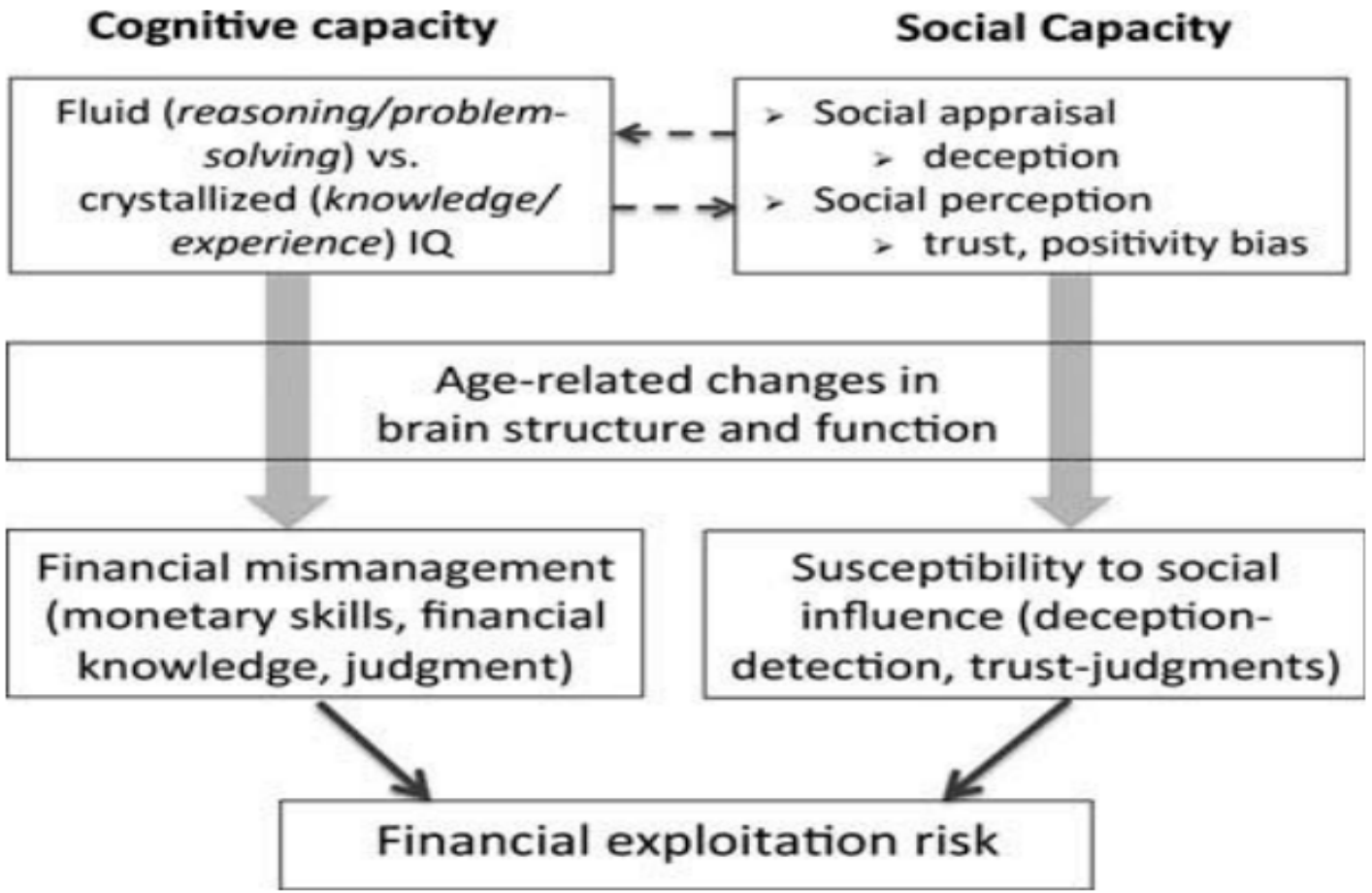
Cell phone shows a call from an unfamiliar number

As you listen to the caller's introduction

**Decision** whether to continue to talk to the person or end the call

**Interpret** words, emotions, and intentions as you decide how much to trust

Karlawish, J. Ann Intern Med.2019;170:726-727




Cognitive, social, and neural determinants of diminished decision-making and financial exploitation risk in aging and dementia: A review and new model
JOURNAL OF ELDER ABUSE & NEGLECT 2016, VOL. 28, NOS. 4–5, 320–344 Spreng RN et al

# Medical and Functional Contributors

1. Serious progressive/chronic illness

   Unresponsive to traditional therapy - motivator to seek expensive and unproven treatments

2. Impaired mobility

   ↓ ability to remove oneself from a setting of being pressured to make financial decisions

3. ↓ Vision and hearing

   ↓ likelihood that complex financial transactions/document are fully comprehended before execution

4. Polypharmacy

   May contribute to delirium

   Cost of medication may lead to inadvisable risk-taking

Lachs M, Han S. Ann Intern Med. 2015;163:877-878.

Aging associated financial vulnerability: an emerging public health issue

# Psychosocial

5. Depression

   Executive dysfunction

   Shame and guilt impair disclosure to trusted friends/family who could help

6. Social isolation

   No beneficent person within the older person's social network to recognize, lessen or report financial exploitation

7. Loneliness

   Engagement with potential exploiters as a way to ↑ social connectedness

# Environmental / Societal

8. Wealth concentration

   High concentration of wealth in older populations, targeting

9. Information overload

   Complex offering of products and service may reduce sound decision

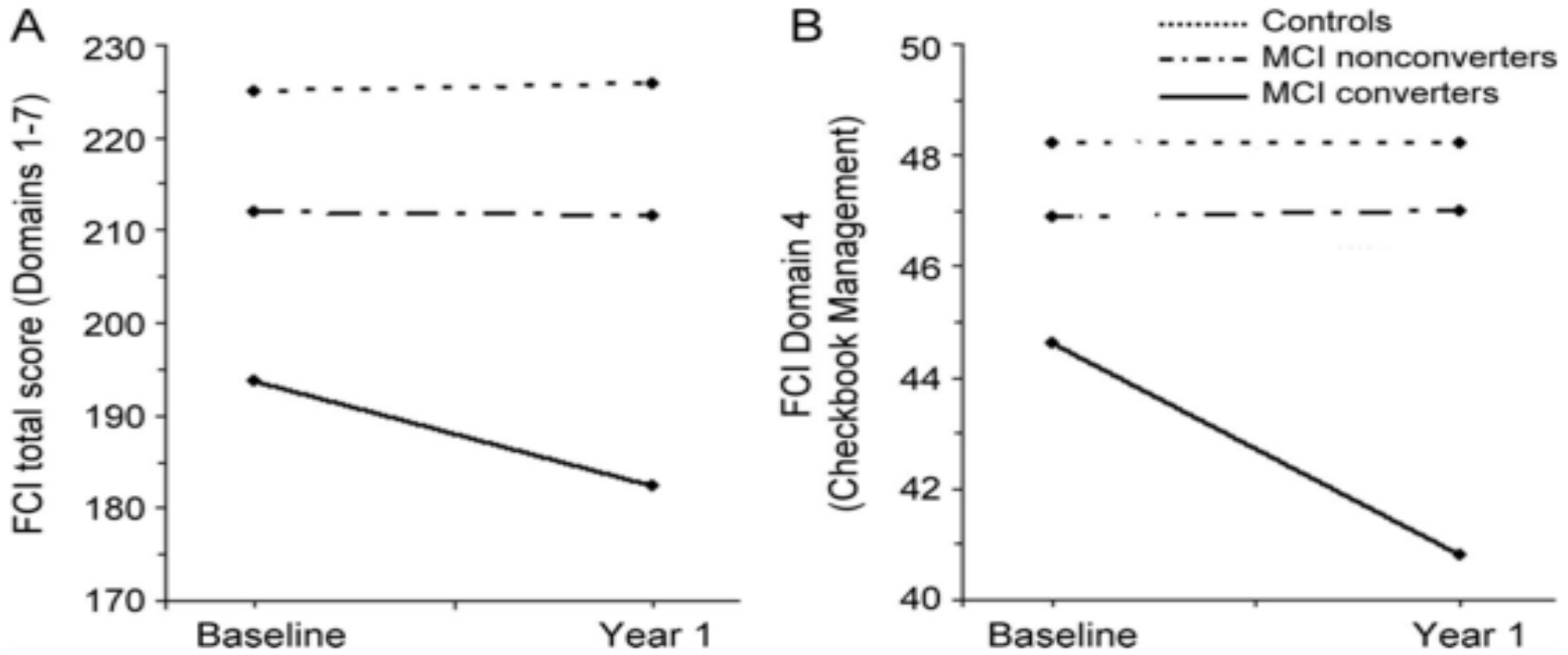
10. Sophisticated marketing

    The aging brain may be more susceptible to an increase in use of behavioral economics and cognitive neuroscience to sway consumers.

# Susceptibility to scams is associated with the subsequent development of MCI and ADRD

# Those with MCI and lower financial capacity are more likely to convert to dementia

**Figure** **Change over time in FCI total score and domain 4**




(A) Change over time in Financial Capacity Instrument (FCI) total score (domains 1–7). (B) Change over time in FCI domain 4 (checkbook management).

Declining financial capacity in mild cognitive impairment. A 1- year longitudinal study. Triebel K, et al. Neurology 2009;73:928 –934
Declining financial capacity in mild cognitive impairment. A six year longitudinal study. Martin R, et al. Archives of Clinical Neuropsychology 34 (2019) 152–161

What is the financial situation of people

**prior to having dementia diagnosed?**

JAMA Internal Medicine | Original Investigation

# Financial Presentation of Alzheimer Disease and Related Dementias

Lauren Hersch Nicholas, PhD, MPP; Kenneth M. Langa, MD, PhD; Julie P. W. Bynum, MD, MPH; Joanne W. Hsu, PhD

Are Alzheimer disease and related dementias (ADRD) associated with adverse financial outcomes in the years before and after diagnosis?

Medicare diagnosis claims ↔ financial data in consumer credit reports

JAMA Intern Med. 2021;181(2):220-22

Federal Reserve Bank of New York/Equifax Consumer Credit Panel (CCP/Equifax)

5% sample of US credit file population 1999 to present

Outcomes:

1. Payment delinquency = one or more accounts ≥30 days past due

   Failed to make a minimum payment for ≥ 2 more consecutive months

2. Subprime Equifax Credit Score (< 620)

   Predicts risk of defaulting on loans over next 24 months

All members living in single-person households in the second quarter of 2018, or year of death, born before 1947

Medicare beneficiary summary files and exact addresses for 20% sample

Alive for at least part of 2014

All with ≥ 1 claim for a diagnostic code indicating ADRD

Comparison group without ADRD

Probability  of payment delinquency or subprime credit score

Time from ADRD diagnosis

7 years prior to and 4 years after diagnosis

Compared with those who never developed ADRD

**Adjusted** for age, sex, race/ethnicity, average credit score at age 65, state of residence

**Controlled** for comorbid health conditions

Diabetes, stroke, TIA, HTN, CHF, ischemic heart disease, COPD, CKD, atrial fibrillation, cancer

**Outcome:**

Development of ADRD

Significantly higher risk of payment delinquency compared with similar beneficiaries who never developed ADRD

**7.7% vs 7.3%; absolute difference 95% CI, 0.07-0.7**

↑ Risk 6 years prior to diagnosis

**Figure 1. Change in Proportion With Missed Credit Payments Before and After Alzheimer Disease and Related Dementias (ADRD) Diagnosis Relative to Never Diagnosed, 1999 to 2018**

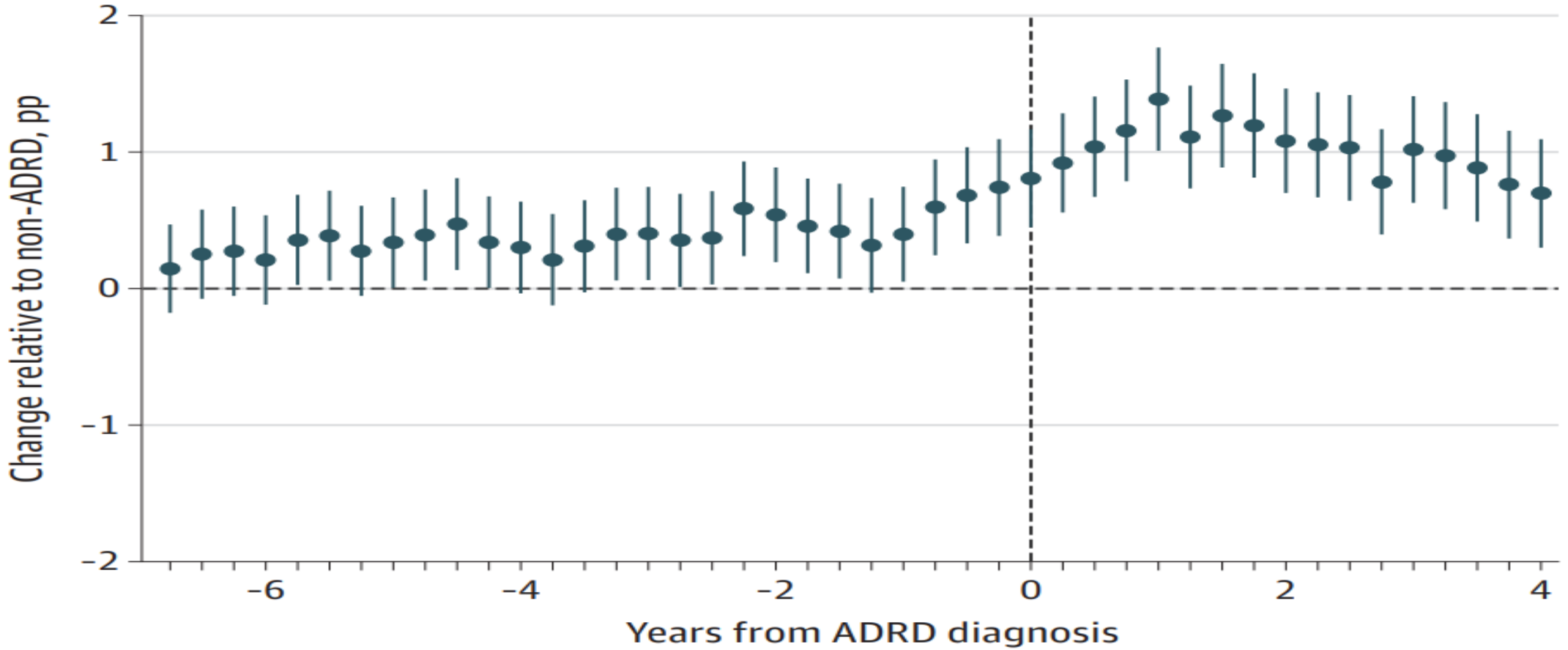
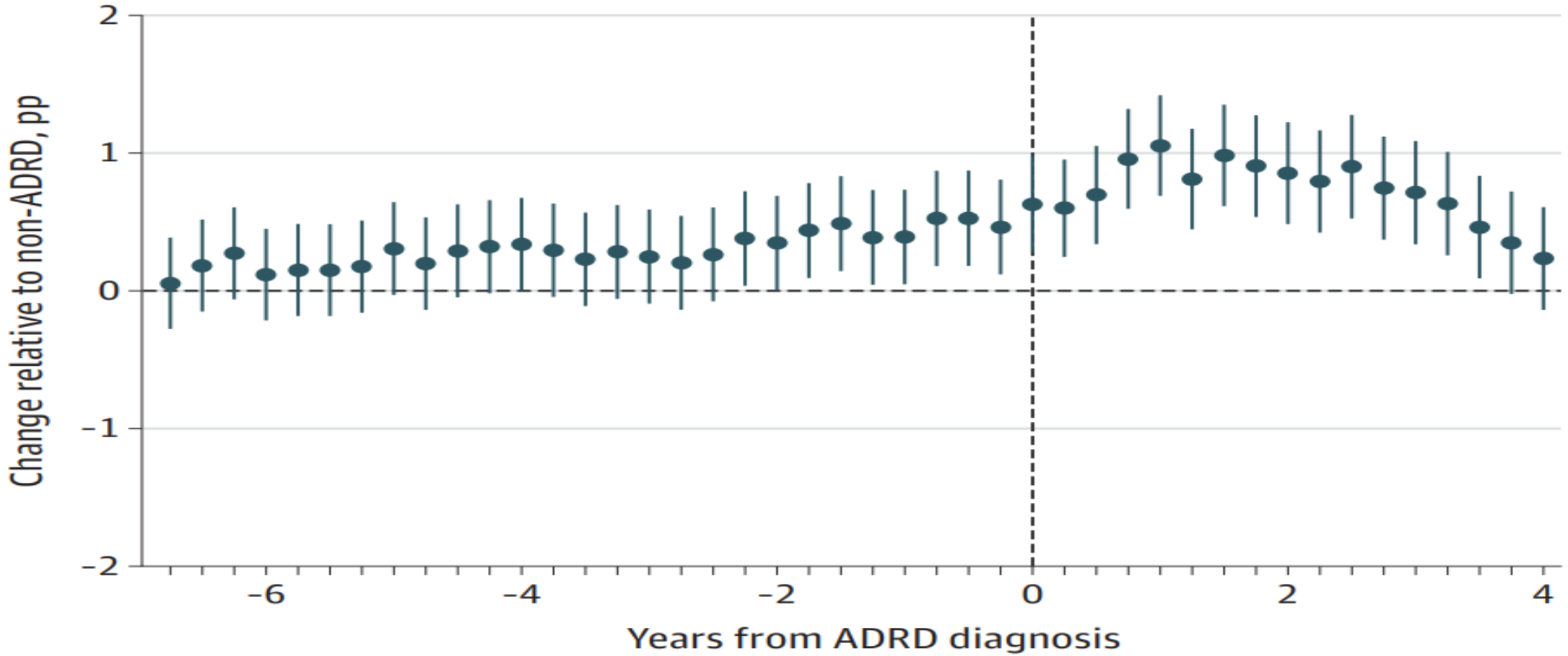


**Figure 2. Change in Proportion With Subprime Credit Scores Before and After Alzheimer Disease and Related Dementias (ADRD) Diagnosis Relative to Never Diagnosed, 1999 to 2018**



Invited Commentary

# Desktop Medicine and the Practice of Wealth Care

Jason Karlawish, MD

Most (80%) of the delinquent credit payments were missed payments on credit card bills

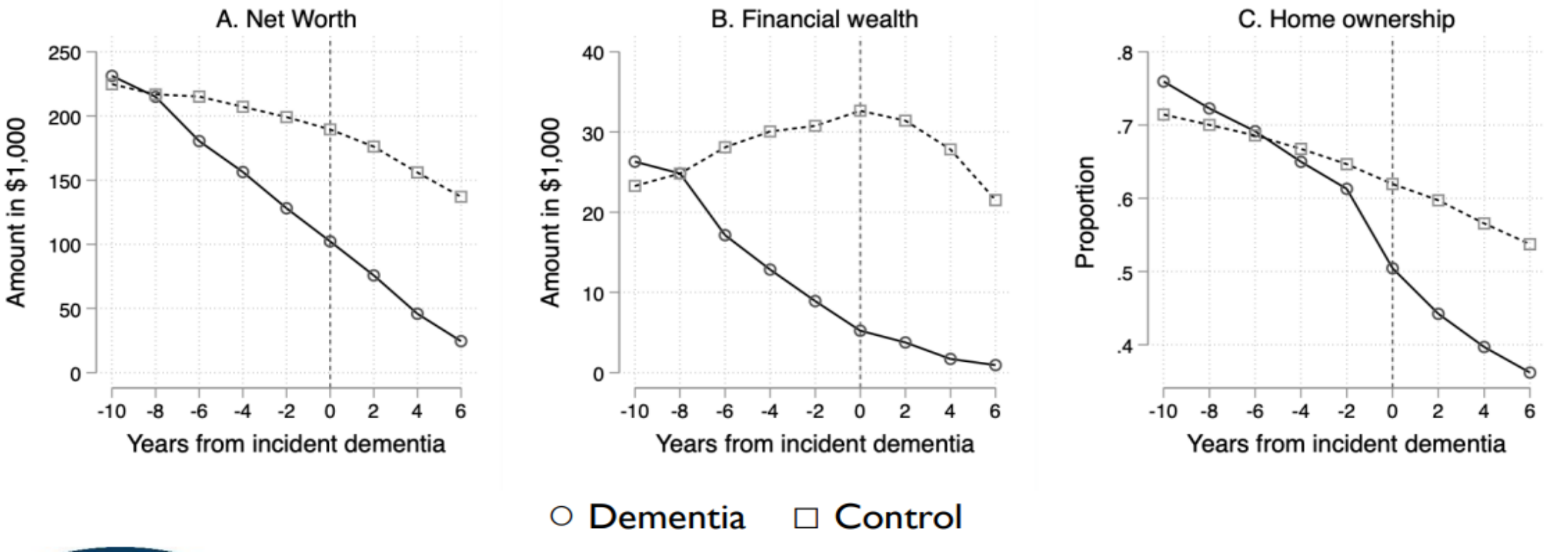
Sometimes severe financial consequences

Fees and interest rates for late payments and unpaid balances

Regulatory implications

JAMA Int Med 2021;282:227-228

# Dementia and Long-term Trajectories in Household Finances




Li J, et al, work in progress, presented by Kelley A. Embracing complexity; a geriatrician's approach to understanding serious illness. AGS 2022

# Dementia syndromes are different from each other

Multiple different illnesses

Each identifiable to varying degrees early on

At the end many resemble each other

| | Disease[a] | | | |
|---|---|---|---|---|
| | Alzheimer Disease | Cerebrovascular Disease[b] | Lewy Body Disease | Frontotemporal Dementia |
| Pathologic characteristics | Brain atrophy especially of the mesial temporal lobe; histologic hallmarks of neuritic plaques containing β-amyloid and neurofibrillary tangles containing phosphorylated tau | Small, often cystic chronic infarcts (lacunar infarcts), multiple microinfarcts, or large infarcts including intracerebral hemorrhage; age of infarcts may be variable in the same person, including chronic and acute; cerebral vessel pathology such as atherosclerosis and arteriolosclerosis; white matter gliosis; focal brain atrophy | Brain atrophy, often generalized; intraneuronal Lewy body inclusions containing α synuclein, including in the neocortex (as opposed to inclusions restricted to the substantia nigra, as seen in Parkinson disease) | Focal brain atrophy affecting frontal[c] and/or anterior temporal lobes, histologic hallmarks of phosphorylated TDP-43, MAPT, or FUS protein |

| | Disease[a] | | | |
|---|---|---|---|---|
| | Alzheimer Disease | Cerebrovascular Disease[b] | Lewy Body Disease | Frontotemporal Dementia |
| Onset and course | Slow onset and gradual progression over months or years | Temporal relation between acute vascular event (stroke) and onset of cognitive impairment, within minutes or days; stepwise course | Slow onset and gradual progression over months or years; fluctuations in levels of alertness and cognition | Slow onset and gradual progression over months or years |
| History, examination, and cognitive features in the early stage[d] | History: Presenting symptom is typically short-term memory loss | History: Vascular risk factors (eg, hypertension, diabetes) or prior stroke or other vascular events (myocardial infarction) | History: RBD for years preceding the cognitive impairment; visual and other hallucinations | History: Marked changes in behaviors such as in personality (eg, disinhibition, apathy) |

| | Clinical characteristics and behaviour | Cognitive and neuropsychological profile | | | | | Social cognition |
|---|---|---|---|---|---|---|---|
| | | Attention and orientation | Language | Memory | Visuospatial and praxis | Executive functioning | |
| Behavioural variant of frontotemporal dementia | Early and insidious change in behaviour and personality (eg, disinhibition, apathy, stereotyped behaviour, reduced sympathy and empathy, changes in eating habits, limited insight) | Usually oriented in time and place | Nature of difficulties similar to those in semantic variant primary progressive aphasia, but less severe (can be intact in some patients) | Variable; spatial memory might be better able to distinguish from Alzheimer's disease | Intact; complex figure copy tasks can be compromised due to poor organisational approach; intact praxis | Impaired on tasks tapping the ventromedial prefrontal cortex (ie, error sensitivity, verbal fluency, inhibition, decision making, and neuroeconomics tasks) | Profound impairment in emotion recognition, theory of mind (mentalising) and empathy; growing evidence of impaired moral reasoning, affective decision making, interoception, and social cooperation |

Advances and controversies in frontotemporal dementia: diagnosis, biomarkers, and therapeutic considerations
Boeve B, et al. Lancet Neurol 2022;21:258-72

Behavioral variant Frontotemporal dementia

- 3rd most common cause of dementia > 65
- 2nd most common < 65

Hallmark symptoms

- Progressive changes in emotional regulation, conduct and personality
  - Dysfunction of the salience network
  - Responsible for socioemotional awareness, reward processing and motivation

Typically, do not have insight

Family members / friends critical in identifying the earliest symptoms and progression of symptomology (APS?)

Frontotemporal dementia: diagnosis, deficits and management. Bott N, et al. Neurodegener Dis Manag. 2014;4(6);439-454

**Apathetic type**

- Decreased volition and motivation
- Isolating behaviors
- Loss of socio-emotional awareness
- Increased latency to pain response

**Disinhibited type**

- Hyperorality
- Preference for sweet foods
- Perseverative behaviors and motor stereotypies
- Increased disinhibition and impulsivity
    - Inappropriate remarks,  sexually explicit comments
    - Embarrassing social behavior
    - Overspending
    - Pathological gambling
    - More rarely, hyper-religiosity

## Clinical features of bvFTD without a progressive neurodegenerative condition

"Phenocopy syndrome"

Behavioral features characteristic of bvFTD without progressing to dementia.

Family members report behavior mimicking bvFTD, though activities of daily living (ADL) less impaired

Intact memory and socio-emotional functioning, and normal or only mild deficits on measures of executive functioning

Minimal or no atrophy on MRI, and normal glucose metabolism on PET

Etiology unknown

Resemblance to other neuropsychiatric conditions

Personality disorders

Autism spectrum disorders with subclinical symptomology

*Neurocase*. 2014 August ; 20(4): 389–396. doi:10.1080/13554794.2013.770886.

# Financial errors in dementia: Testing a neuroeconomic conceptual framework

**Winston Chiong**, **Ming Hsu**, **Danny Wudka**, **Bruce L. Miller**, and **Howard J. Rosen**

Demographically balanced cohort of AD and bvFTD in memory disorders clinic at UCSF

Systematic, retrospective, blinded chart review

Clinical reports, research summaries

Financial impairments, financial errors, aberrant financial behavior

Disposition of money, property, assets

**Cognitive**, **affective**, **contextual** aspects related to susceptibility to errors

Financial errors in dementia: Testing a neuroeconomic conceptual framework Winston Chiong, et al. Neurocase. 2014;20:389-396

# Neuroeconomic framework

## Cognitive, Affective, Contextual

**A. Cognitive**

Memory, calculation, executive errors

Correct decision to pay a bill

Failed to correctly carry out that decision due to a cognitive error

Paying the same bill twice
Miscalculating amount
Carry out the sequence of steps to pay it

**B. Affective -** contributors to poor financial decisions

↑ Sensitivity to gains

↓ Sensitivity to losses, negative consequences

- Excessive spending
- Risky investments
- Shoplifting
- Multiple loans when overextended
- Paranoia about theft, hiding valuables

**C. Contexual**

Failure to critically assess solicitations / proposals

Interpersonal

Telemarketing, email

Excessive charitable giving

Not able to meet own expenses

Not able to identify charity

# Financial impairments

| | Alzheimer Disease | bvFTD |
|---|---|---|
| Prevalence | 72% | 84% |
| 1st indicator or concurrent | 16% | 30% |
| 1st two years of illness | 34% | 38% |

Prevalence of reported financial errors in AD and bvFTD.

| | **AD(*n*= 100)** | **bvFTD(*n*= 50)** | ***p*** |
|---|---|---|---|
| All reported financial errors | 49 (49%) | 35(70%) | 0.01* |
| Memory | 26 (26%) | 2 (4%) | <0.001* |
| Calculation | 6 (6%) | 1 (2%) | 0.20 |
| Executive function | 8 (8%) | 3 (6%) | 0.65 |
| Excessive spending | 7(7%) | 17 (34%) | 0.004* |
| Decreased sensitivity to losses | 0 (0%) | 18 (36%) | <0.001* |
| Increased sensitivity to losses | 9 (9%) | 3 (6%) | 0.50 |
| Interpersonal solicitation | 5 (5%) | 8 (16%) | 0.06 |
| Telephone/mail/e - mail solicitation | 2(2%) | 5 (10%) | 0.08 |

# Patterns of financial errors

Amnestic (memory related) financial errors were common in **AD**

**bvFTD**

Excessive spending

Behaviors suggesting diminished affective sensitivity to losses / other negative consequences

Theft, shoplifting, risky investments, and overuse of credit

**AD** Cognitive vulnerability factor

**bvFTD** Social and affective vulnerability factor

**Social/affective** rather than cognitive deficits conferred greater risk for financial errors

Behavioral neurology

“Infirmity or dysfunction”

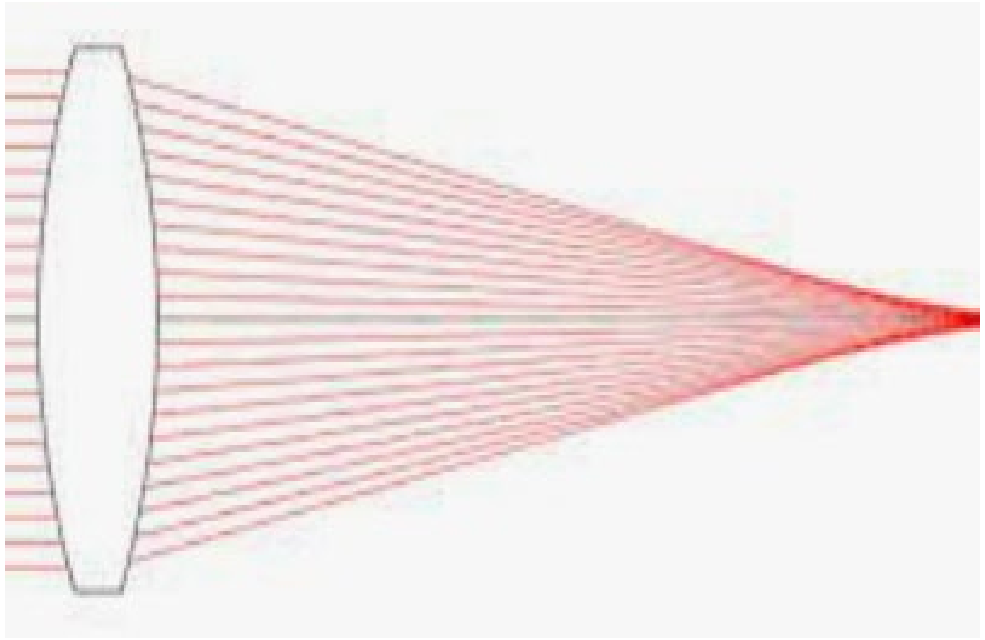
Change in behaviors

Pre-clinical, sub-clinical illness

Neurocognitive disorder may not primarily involve memory

Frontotemporal dementia?

# Through the lens



APS Client

# Interventions for APS situations

- Education on scams
- Autopay for bills
- Involve supports, professional and personal
  - Consult health care professionals on neuropsych eval
  - Use Power of attorney, SSA rep payee, VAA financial guardian to pay bills
  - Supportive decision making teams
- Legal intervention
  - Protective order
  - Conservatorship and guardianship

# Intra-agency collaboration critical

- Multidisciplinary Team
- Safe Seniors Act (MN Statute 45A)
- MN Department of Commerce
- Forensic Accounting Firm
- Access to financial and medical records and sharing these records with Law Enforcement
- Liaison to SSA
- AARP, Senior Linkage Line, and MN Elder Justice Center

# Future Needs

- Education on frauds, scams, and predatory marketing
- More investigative resources to identify, locate and prosecute
- More emphasis on justice and asset recovery
- Identify genetic and environmental risk factors
- Identify faulty brain circuits
- More legal and societal protection

# What APS can do now

The Lichtenberg Financial Decision Screening Scale can be used to screening for financial decision-making concerns.

This tool helps determine whether an individual is able to:

- Communicate relevant information regarding the financial choice
- Communicate awareness of available options
- Weigh the long-term benefits, consequences and risks of the decision to the person and others
- Express the choice being made consistently
- Protect older adults from financial exploitation - Older Adult Nest Egg

# New tools and future training

The Interview for Decisional Ability (IDA) is a newly developed tool

- Collaboration of Weill Cornell Hospital in New York and University of Pennsylvania
- Utilized by social workers and non-health care professionals
- Assesses decision making capacity for financial, health care, and lifestyle issues
- Certificate is granted after completion of course

The Cornell-Penn Interview for Decisional Abilities (IDA) | Division of Geriatrics and Palliative Medicine

# KC Case Outcome

Stepson and APS working together

- APS was finally able to interview KC
- A new primary care physician was established and referred KC for a neuropsychological evaluation
- Critical to this referral was APS emphasizing “dramatic and rapid” changes
- Stepson filed for and was granted conservatorship

# Lessons Learned for APS

- Be **persistent**
- **Family conferences** are useful
- **Education** on the “anatomy” of scams
- **Coaching** on actions to stop the scams and support the vulnerable adult
- Utilize **Lichtenburg Financial Decision Screening Scale**
- Interface with **law enforcement and health care professionals**
- Advocate for appropriate **testing for decisional ability**

# Q & A

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