

Financial Decision Making in Older Age: Key Points

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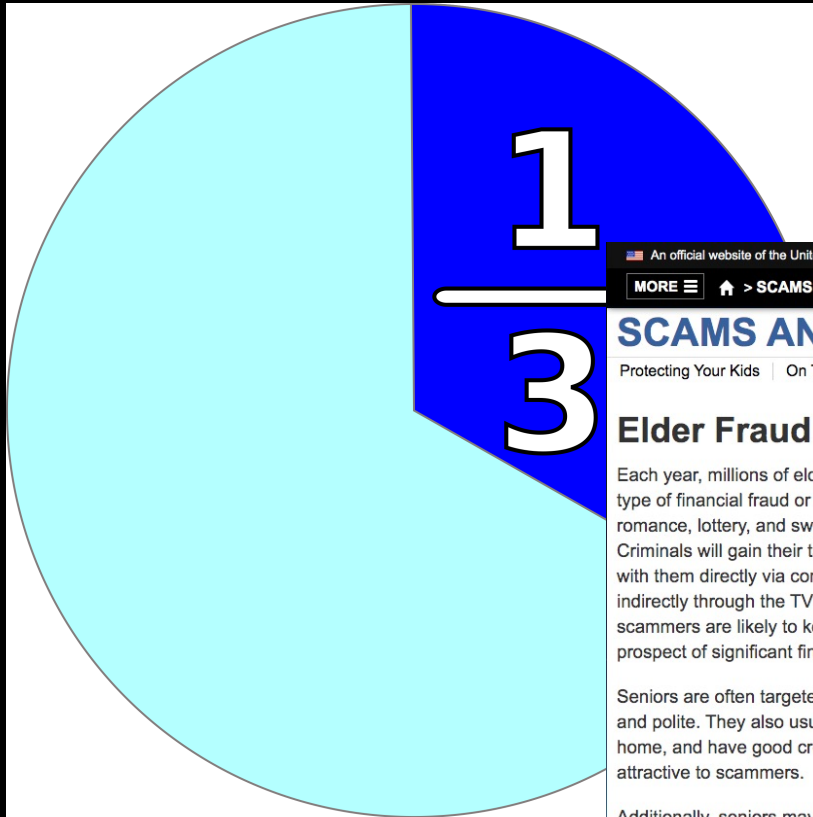
Policy Dialogue: Decision Making in Old Age
Australian National University and ARC Centre of Excellence in Population Ageing
Research (CEPAR)
October 10, 2022



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Background



An official website of the United States government. [Here's how you know](#) ▾

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SCAMS AND SAFETY

Protecting Your Kids | On The Internet | **Common Scams And Crimes** | Sex Offender Registry Websites

Elder Fraud

Each year, millions of elderly Americans fall victim to some type of financial fraud or confidence scheme, including romance, lottery, and sweepstakes scams, to name a few. Criminals will gain their targets' trust and may communicate with them directly via computer, phone, and the mail; or indirectly through the TV and radio. Once successful, scammers are likely to keep a scheme going because of the prospect of significant financial gain.

Seniors are often targeted because they tend to be trusting and polite. They also usually have financial savings, own a home, and have good credit—all of which make them attractive to scammers.

Additionally, seniors may be less inclined to report fraud because they don't know how, or they may be too ashamed at having been scammed. They might also be concerned that their relatives will lose confidence in their abilities to manage their own financial affairs. And when an elderly victim does report a crime, they may be unable to supply detailed information to investigators.

With the elderly population growing and seniors racking up more than \$3 billion in losses annually, elder fraud is likely to be a growing problem.

Former FBI Director William Webster Helps F...

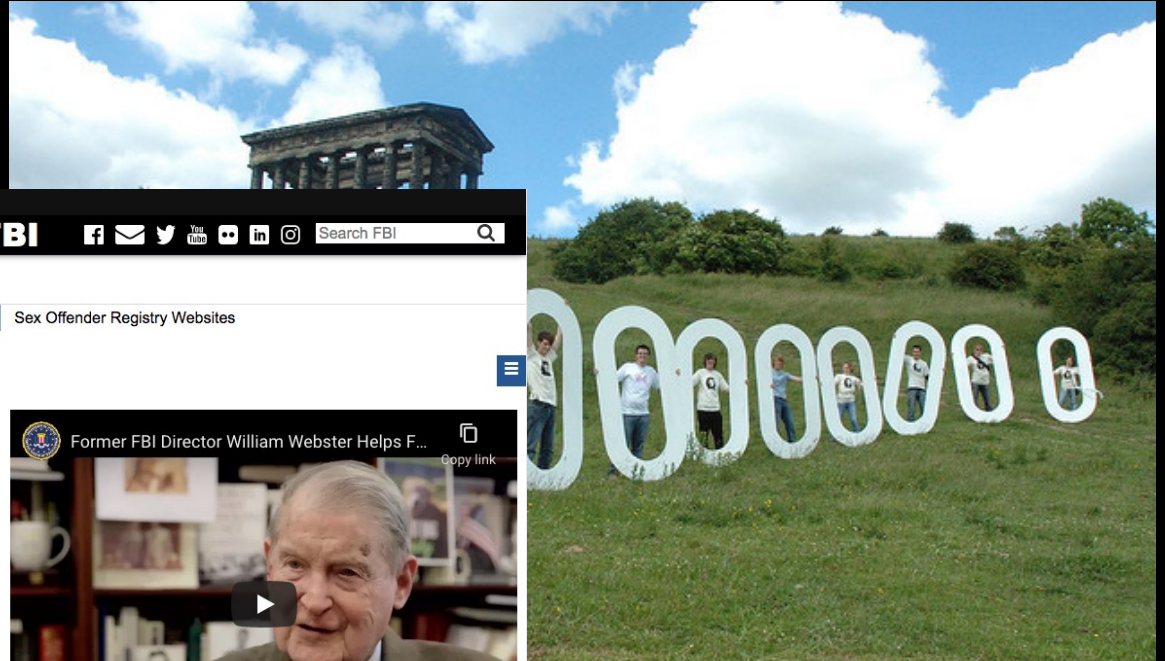
Watch on YouTube

Former FBI Director William Webster and his wife were the targets of a Jamaican lottery scam in 2014. They assisted in the FBI's investigation, which led to the arrest and conviction of Keniel Thomas, who was sentenced in February 2019 to nearly six years in prison.

[Transcript](#) / [Visit Video Source](#)

Report It

If you believe you or someone you know may have been a victim of elder fraud, contact your local [FBI field office](#) or [submit a tip online](#). You can also file a complaint with the FBI's [Internet Crime Complaint Center](#).



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Laibson, 2011; Metlife, Inc., 2011; True Link Financial, Inc., 2015

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Brain Structure Changes As We Age

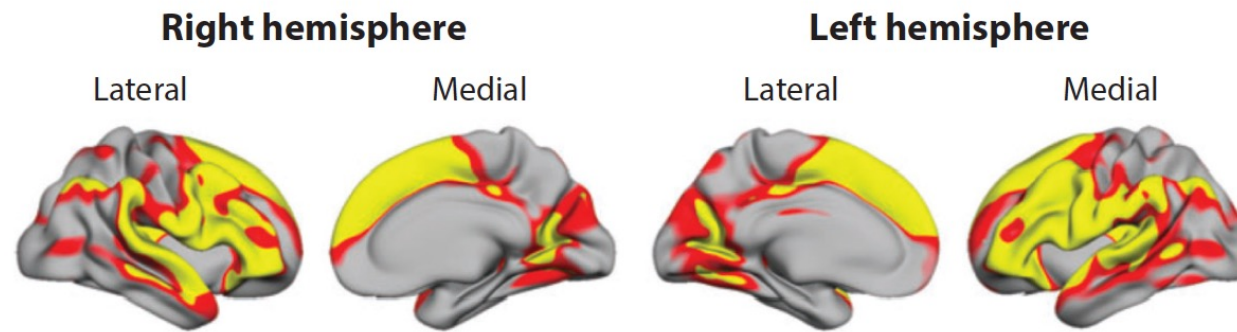
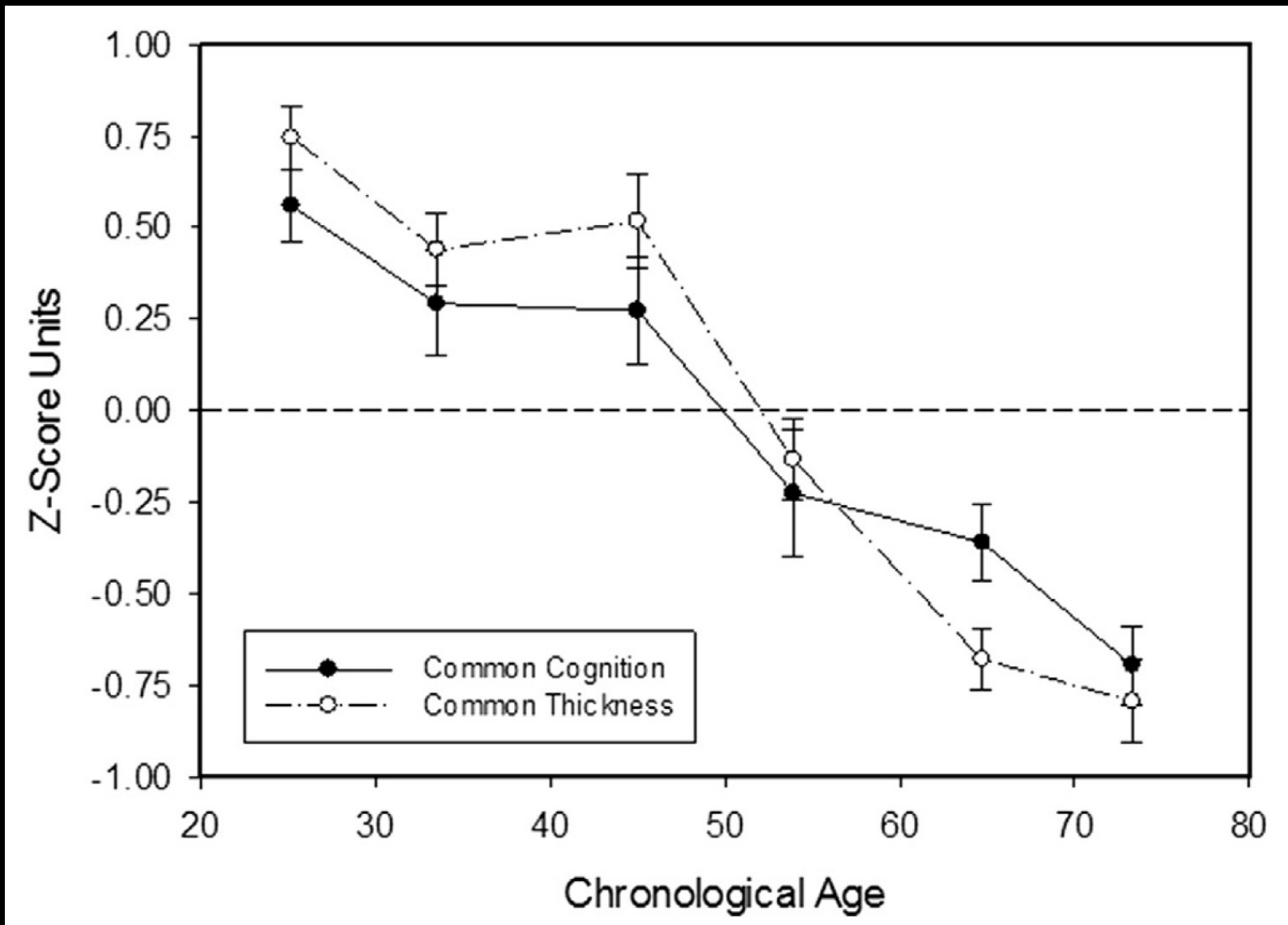


Figure 2

Brain regions shown in yellow are those that exhibited the largest decline in cortical thickness with age across a sample of 883 participants ranging in age from 18 to 94 (Fjell et al. 2009b).



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Mild Cognitive Impairment Is Associated with Poorer Decision-Making in Community-Based Older Persons

S. Duke Han, PhD,^{*†‡§} Patricia A. Boyle, PhD,^{*†} Bryan D. James, PhD,^{*||} Lei Yu, PhD,^{*†} and David A. Bennett, MD^{*†}

JAGS 63:676–683, 2015
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0002-8614/15/\$15.00

N=730; MCI=144

Table 2. Relationship Between Mild Cognitive Impairment (MCI) and Decision-Making, Adjusted for Age, Education, and Sex

Model Term	Model 1	Model 2
	Estimate (Standard Error) P-Value	
Total decision-making		
Age	−0.11 (0.01) <.001	−0.10 (0.01) <.001
Education	0.28 (0.03) <.001	0.28 (0.03) <.001
Male	0.82 (0.22) <.001	0.89 (0.21) <.001
MCI		−1.35 (0.23) <.001
Financial decision-making		
Age	−0.06 (0.01) <.001	−0.05 (0.01) <.001
Education	0.11 (0.02) <.001	0.12 (0.02) <.001
Male	0.52 (0.12) <.001	0.55 (0.11) <.001
MCI		−0.61 (0.12) <.001
Healthcare decision-making		
Age	−0.06 (0.01) <.001	−0.05 (0.01) <.001
Education	0.16 (0.02) <.001	0.16 (0.02) <.001
Male	0.30 (0.13) .02	0.34 (0.13) .007
MCI		−0.74 (0.13) <.001

Table 4. Relationship Between Individual Cognitive Function Measures and Decision-Making in Individuals with Mild Cognitive Impairment

Cognitive System	Estimate (Standard Error)	P-Value	R ² Change
Total decision-making			
Global cognition	3.20 (0.47)	<.001	0.16
Episodic memory	0.70 (0.32)	.03	0.02
Semantic memory	1.34 (0.33)	<.001	0.13
Working memory	0.65 (0.31)	.04	0.02
Perceptual speed	1.87 (0.22)	<.001	0.26
Visuospatial ability	0.60 (0.23)	.01	0.09
Financial decision-making			
Global cognition	1.61 (0.25)	<.001	0.14
Episodic memory	0.30 (0.17)	.08	0.01
Semantic memory	0.69 (0.18)	<.001	0.12
Working memory	0.49 (0.16)	.003	0.04
Perceptual speed	0.95 (0.12)	<.001	0.25
Visuospatial ability	0.24 (0.13)	.06	0.05
Healthcare decision-making			
Global cognition	1.59 (0.30)	.003	0.12
Episodic memory	0.39 (0.20)	.05	0.02
Semantic memory	0.65 (0.21)	.003	0.09
Working memory	0.16 (0.20)	.41	0.00
Perceptual speed	0.91 (0.15)	<.001	0.17
Visuospatial ability	0.36 (0.15)	.02	0.06



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Not Just About “Cognitive Ability”

Aging Clin Exp Res

DOI 10.1007/s40520-015-0375-7

ORIGINAL ARTICLE

Discrepancies between cognition and decision making in older adults

S. Duke Han^{1,2,3,5} • Patricia A. Boyle^{1,2} • Bryan D. James^{2,3,4} • Lei Yu^{2,3} •
Lisa L. Barnes^{1,2,3} • David A. Bennett^{2,3}

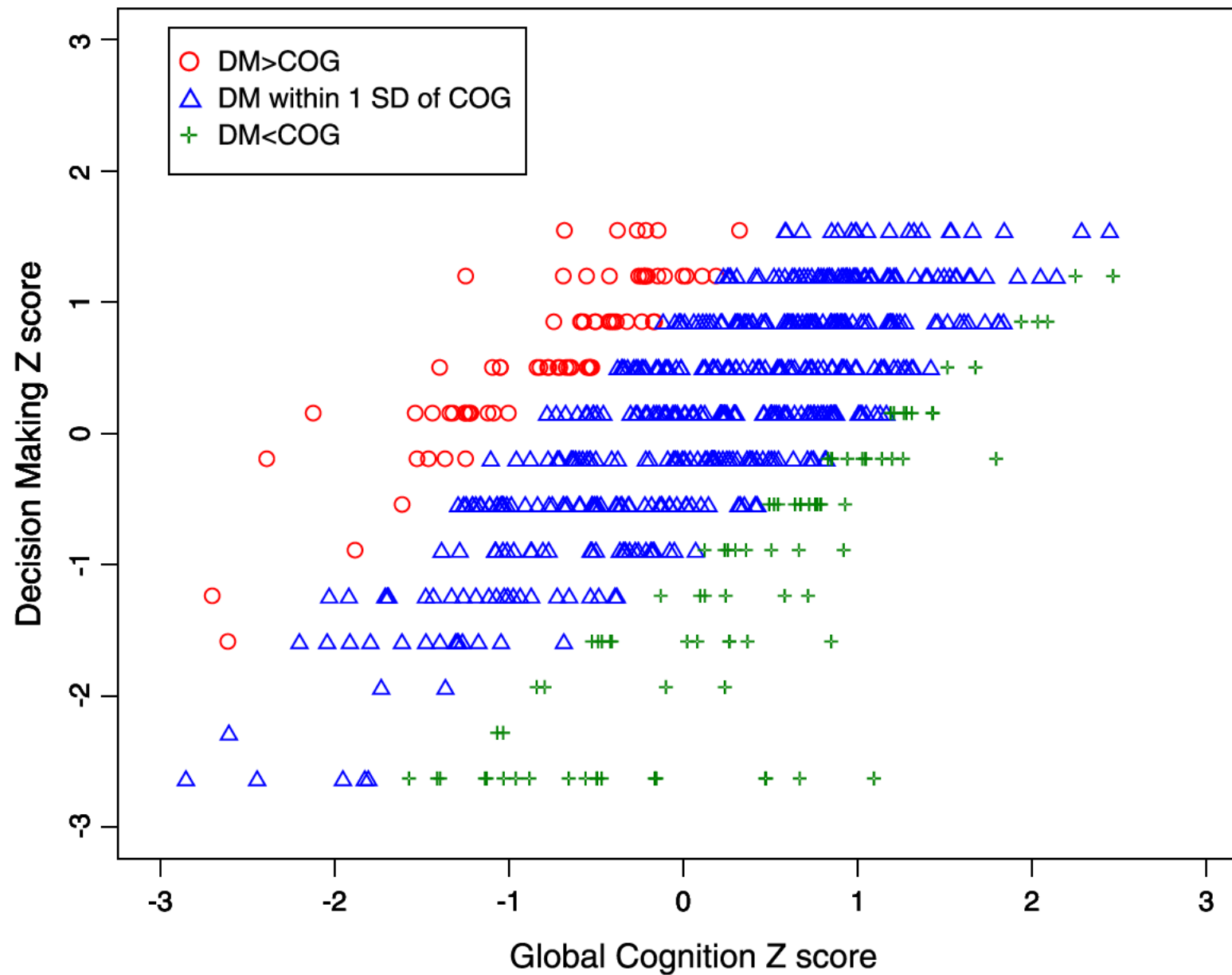
- N=648 nondemented older adults
- Mean age=81.8, s.d.=7.6; mean number of years of education=15.2, s.d=3.1; 76.8% female



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Global Cognition and Decision Making Z-scores by Discrepancy Group



Rationale

If an older adult shows impaired financial decision making or becomes a victim of a scam, the burden is not only experienced by the older adult, but is often displaced upon family members, caregivers, or society.

Reduced scam awareness and poor decision making may be early signs of Alzheimer's Disease (Boyle et al., 2019; Stewart et al., 2019), but can occur without cognitive impairment.

Understanding poor decision making or susceptibility to scams in older adults is a significant public health concern, as this understanding may inform prevention and intervention strategies.

➤ *How can we understand this?*



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Neurobiology of Disease

Changes in Brain Function Occur Years before the Onset of Cognitive Impairment

Lori L. Beason-Held,¹ Joshua O. Goh,^{1,2} Yang An,¹ Michael A. Kraut,³ Richard J. O'Brien,⁴ Luigi Ferrucci,¹ and Susan M. Resnick¹

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Multidisciplinary Approach

- Decision Making

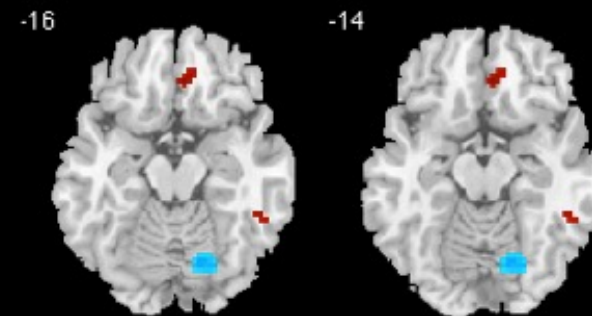
- Cognitive processing
- Affective processing
- Personality styles
- Behavioral Economics

$$GP_{ij} = \frac{0.5 \times \text{Gain}_j^{1-\gamma_i}}{1 - \gamma_i} \quad SP_{ij} = \frac{\text{Safe}_j^{1-\gamma_i}}{1 - \gamma_i}$$
$$\text{logit}(P(Y_{ij} = 1)) = GP_{ij} - SP_{ij}$$
$$\text{logit}(P(Y_{ij} = 1)) = \frac{0.5 \times \text{Gain}_j^{1-\gamma_i} - \text{Safe}_j^{1-\gamma_i}}{1 - \gamma_i}$$

R01AG033678; PI: Patricia Boyle
R01AG017917; PI: David Bennett

- Neuroimaging

- Volumetry
- Diffusion Tensor Imaging
- Functional connectivity

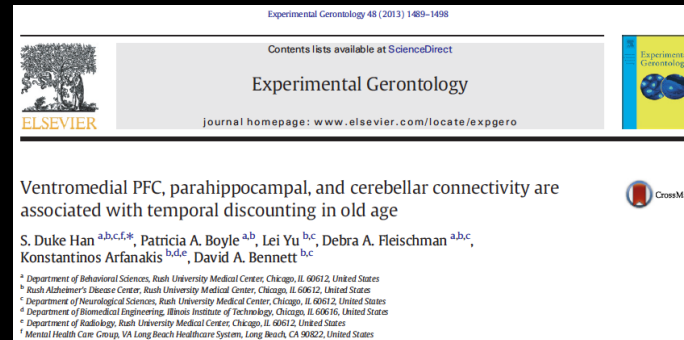
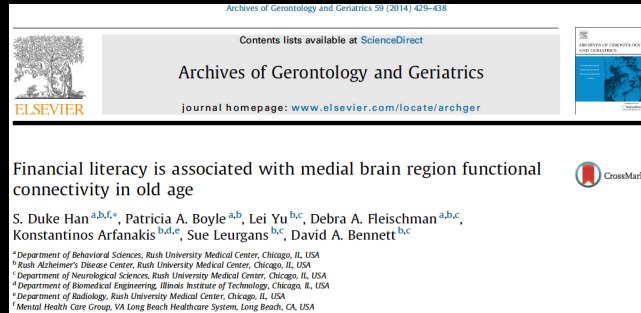


K23AG040625; PI: Duke Han



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Neuroimaging Work to Date

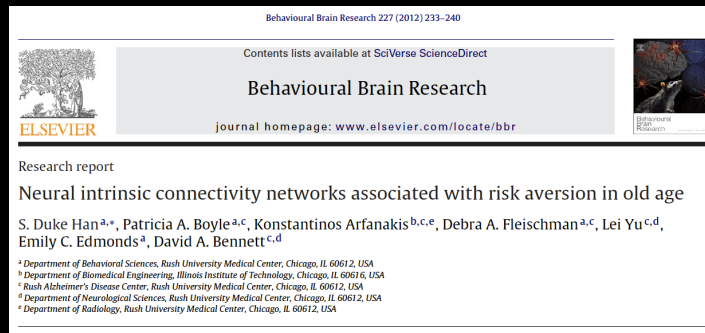


Brain Imaging and Behavior (2016) 10:524–532
DOI 10.1007/s11682-015-9422-4

ORIGINAL RESEARCH

Grey matter correlates of susceptibility to scams in community-dwelling older adults

S. Duke Han^{1,2,3,4} · Patricia A. Boyle^{1,2} · Lei Yu^{1,3} · Konstantinos Arfanakis^{6,7} · Bryan D. James^{1,5} · Debra A. Fleischman^{1,2,3} · David A. Bennett^{1,3}



Brain Structure and Function
https://doi.org/10.1007/s00429-018-1712-3

ORIGINAL ARTICLE

White matter correlates of temporal discounting in older adults

S. Duke Han^{1,2,3,4,10} · Konstantinos Arfanakis^{5,6,7} · Debra A. Fleischman^{6,8,9} · Lei Yu^{6,9} · David A. Bennett^{6,9} · Patricia A. Boyle^{6,8}

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Brain Imaging and Behavior
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ORIGINAL RESEARCH

White matter correlates of scam susceptibility in community-dwelling older adults

Melissa Lamar^{1,2} · Konstantinos Arfanakis^{1,3,4} · Lei Yu^{1,5} · Shengwei Zhang¹ · S. Duke Han^{1,2,5,6,7,8,9} · Debra A. Fleischman^{1,2,5} · David A. Bennett^{1,5} · Patricia A. Boyle^{1,2}



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Susceptibility to Scams

Brain Imaging and Behavior
DOI 10.1007/s11682-015-9422-4

ORIGINAL RESEARCH

Grey matter correlates of susceptibility to scams in community-dwelling older adults

S. Duke Han^{1,2,3,4} • Patricia A. Boyle^{1,2} • Lei Yu^{1,3} • Konstantinos Arfanakis^{6,7} •
Bryan D. James^{1,5} • Debra Fleischman^{1,2,3} • David A. Bennett^{1,3}

- Voxel-based morphometry (VBM) to assess grey matter density at the voxel level
- N=348 nondemented older adults
- Mean age=81.55, s.d.=7.25; mean number of years of education=15.30, s.d.=2.91; 74.10% female



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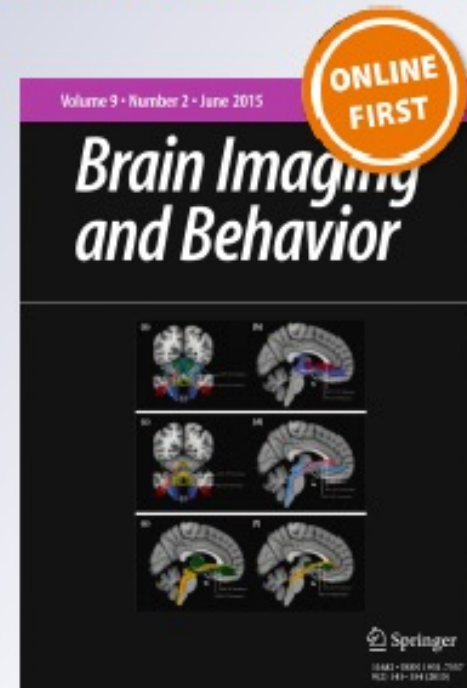
Grey matter correlates of susceptibility to scams in community-dwelling older adults

S. Duke Han, Patricia A. Boyle, Lei Yu, Konstantinos Arfanakis, Bryan D. James, Debra A. Fleischman & David A. Bennett

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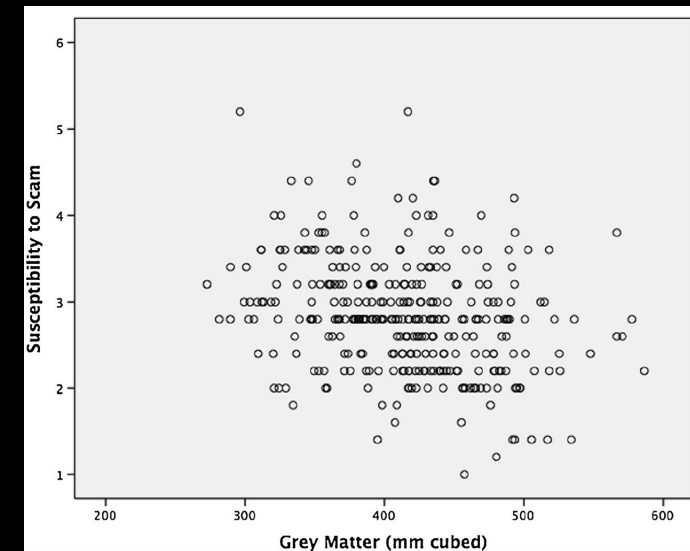
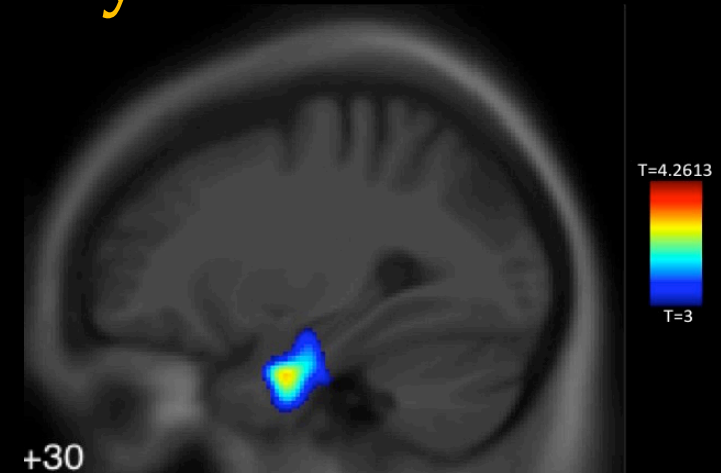
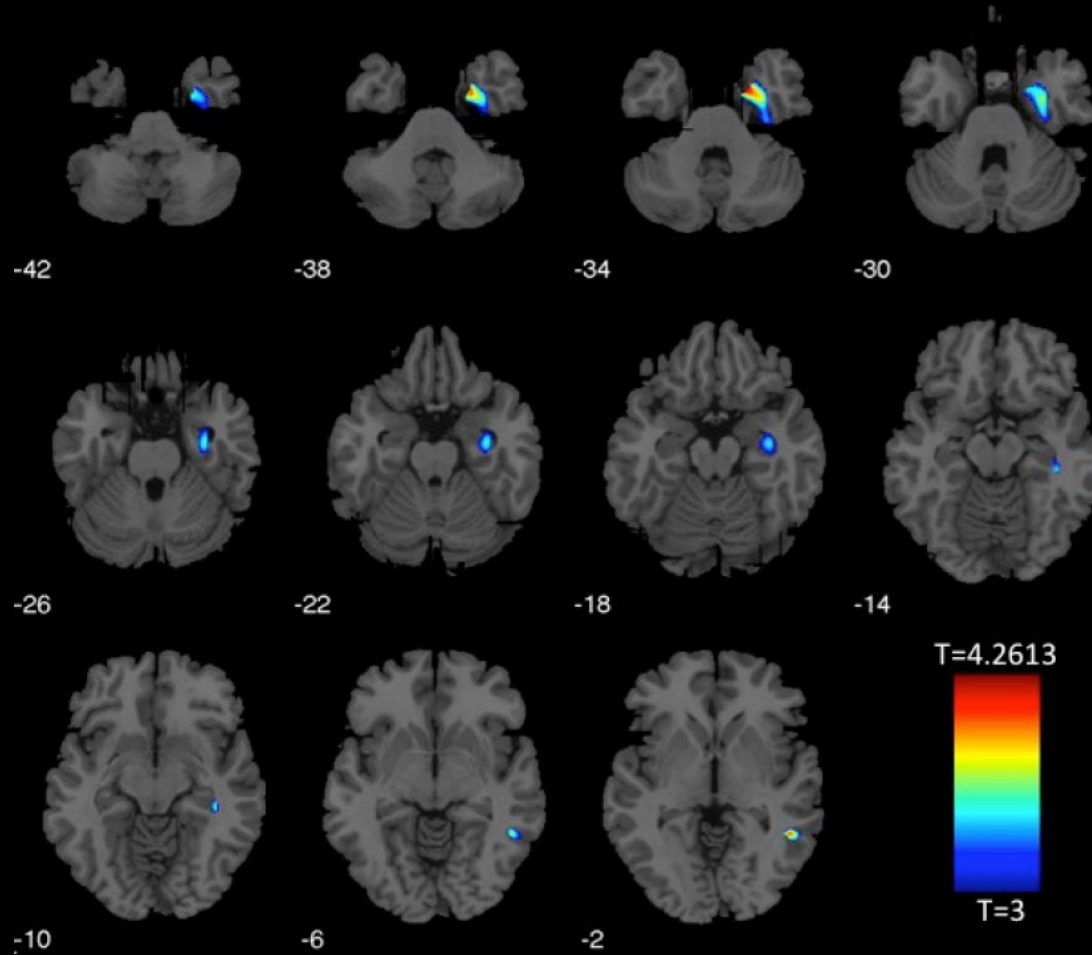
Assessment of susceptibility to scams

The susceptibility to scams scale is a five-item self-report measure in which participants rated their agreement to a statement according to a 7-point Likert scale (strongly agree to strongly disagree). The five statements included in the measure have been previously reported (James et al. 2014) and address topics such as telemarketing behaviors, older adults being targeted by con-artists, and suspiciousness of claims that seem too good to be true. The statements are:

1. I answer the phone whenever it rings, even if I do not know who is calling.
2. I have difficulty ending a phone call, even if the caller is a telemarketer, someone I do not know, or someone I did not wish to call me.
3. If something sounds too good to be true, it usually is.
4. Persons over the age of 65 are often targeted by con-artists.
5. If a telemarketer calls me, I usually listen to what they have to say.

Each question corresponds to a Likert scale and has a total possible range of 1 to 7 (1 = strongly agree, 2 = agree, 3 = slightly agree, 4 = neither agree or disagree, 5 = slightly disagree, 6 = disagree, 7 = strongly disagree). The total score for susceptibility to scams was calculated by averaging the five items (with items 1, 2, and 5 reverse coded). The statements were based generally on findings from the AARP and the Financial Industry Regulatory Authority Risk Meter, a measure of poor and risky financial decision making that is widely used in finance studies (AARP 1999; Financial Industry Regulatory Authority 2013). The intraclass correla-

Susceptibility to Scams – Grey Matter Density



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Some Thoughts and Observations...

- Very few behavioral economic or neuroimaging decision making studies have a representation of diverse participants.
 - Racial differences in cognitive and affective factors have been suggested.
 - Racial differences in decision making are suggested by a limited number of studies in financial planning and healthcare treatment options.
- However, whether (or the extent to which) decision making abilities, specifically, may vary by race is largely unknown.
- **Contextual factors (e.g., literacy, socioeconomic status) may explain a significant portion of any racial differences observed due to historically documented institutionalized racism and unequal access to supportive resources.**



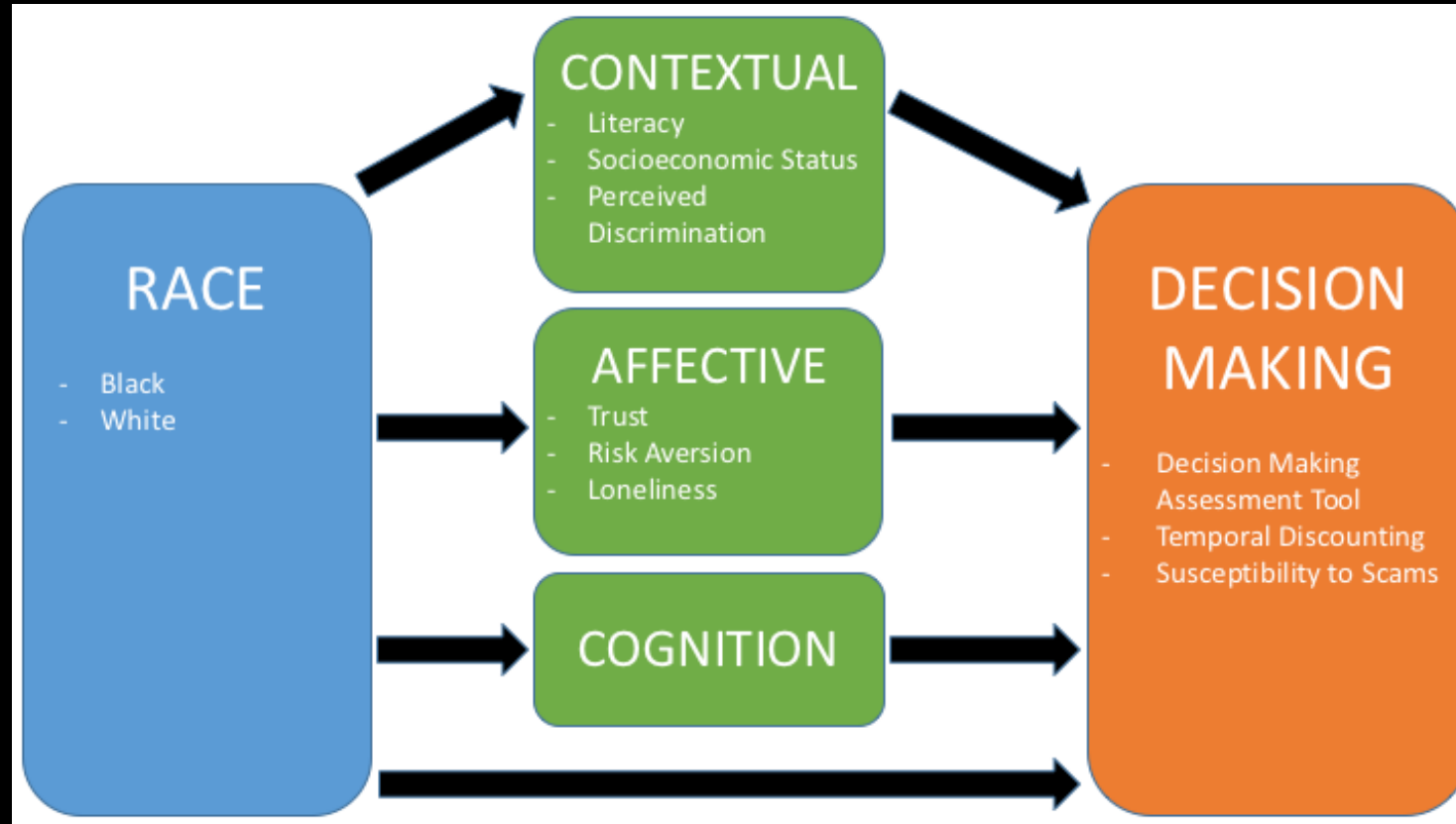
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Ferguson et al., 1998; Doescher et al., 2000; Gutter & Fontes, 2006; Li et al., 2009; Isamah et al., 2010, LaVeist, 2005

Racial Differences in Decision Making among Older Adults

(R01AG055430; PI: Han)



Literacy Mediates Racial Differences in Financial and Healthcare Decision Making in Older Adults


S. Duke Han, PhD, *†‡§¶**  Lisa L. Barnes, PhD, ¶** Sue Leurgans, PhD, ¶** Lei Yu, PhD, ¶**
David A. Bennett, MD, ¶** and Patricia A. Boyle, PhD ¶¶

Table 1. Demographic, Cognitive, and Other Descriptive Data

Variable	Black (N = 138)		White (N = 138)		t, Z, or χ^2	P Value
	Mean	SD	Mean	SD		
Age, y	76.85	6.07	77.30	6.38	0.60	.55
Education, y	14.91	3.12	14.99	2.98	−0.32	.75
Sex (male:female ratio)	27:111		27:111		0	1
Global cognition	0.11	0.53	0.15	0.50	0.59	.56
Total decision making	6.89	2.52	7.75	2.58	−2.99	<.01
Financial decision making	3.20	1.23	3.58	1.38	−2.53	.01
Healthcare decision making	3.70	1.67	4.17	1.51	−2.45	.01
Total literacy	60.37	13.52	68.97	14.01	5.18	<.01

Note. Global cognition is a mean of z-scores. Literacy is percentage correct, and decision making is total score correct. For age, global cognition, and literacy, t-values are reported. For sex, χ^2 is reported. For education and decision making, Wilcoxon Z-values are reported.



Literacy Mediates Racial Differences in Financial and Healthcare Decision Making in Older Adults


S. Duke Han, PhD,^{*†‡§||**}  Lisa L. Barnes, PhD,^{||**} Sue Leurgans, PhD,^{||**} Lei Yu, PhD,^{||**} David A. Bennett, MD,^{||**} and Patricia A. Boyle, PhD^{||}

Table 3. Associations of Race and Literacy With Total Decision Making

	Model 1	Model 2	Model 3
Adjusted R^2	.4409	.4666	.4715
Age	-.08 (.02 [-.12 to -.04], <.01)	-.06 (.02 [-.10 to -.03], <.01)	-.07 (.02 [-.10 to -.03], <.01)
Education	.21 (.04 [.13 to .29], <.01)	.16 (.04 [.08 to .24], <.01)	.12 (.04 [.09 to .25], <.01)
Sex (male = 1, female = 0)	1.16 (.30 [.58 to 1.74], <.01)	.89 (.29 [.32 to 1.47], <.01)	.93 (.29 [.35 to 1.50], <.01)
Global cognition	2.29 (.26 [1.78 to 2.79], <.01)	1.73 (.28 [1.19 to 2.27], <.01)	1.79 (.28 [1.25 to 2.33], <.01)
Race (Black = 1, White = 0)	-.80 (.23 [-1.25 to -.34], <.01)		-.45 (.24 [-.93 to .02], .06)
Literacy		.05 (.01 [.03 to .07], <.01)	.04 (.01 [.02 to .06], <.01)

Note. Data are given as estimate (SE [95% confidence interval], P value), unless otherwise indicated. The dependent variable is financial and healthcare decision making total score. Age and education are presented in years. Global cognition is a mean of z-scores of 18 cognitive tests. Literacy is the average of the two domain (financial and health) percentages correct.

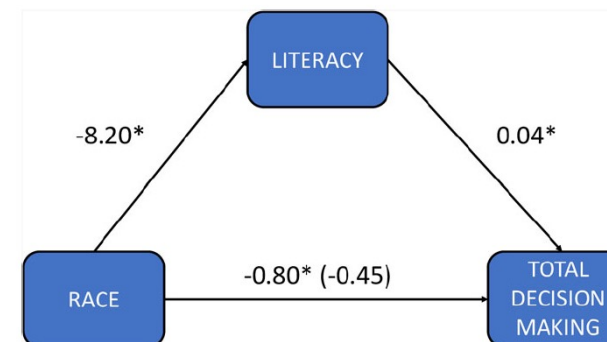


Figure 1. Mediation of race association with total decision making by literacy. Standardized regression coefficients for the association between race and literacy (-8.20) and literacy and total decision making (0.04), after multiplication, estimate the indirect effect of race on total decision making through literacy. The direct effect of race on total decision making is estimated by standardized regression coefficient for the association between race and total decision making after controlling for literacy (-0.45). Regression models were adjusted for age, education, sex, and global cognition. $*P < .05$.



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**“Of course we’ll make a decision ...
once we have considered the 5243 factors.”**



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The Finance, Cognition, and Health in Elders Study: Toward Preventing Financial Exploitation of Older Adults

by Gali H. Weissberger and S. Duke Han

February 28, 2018



Health in Elders Study (FINCHES) being carried out through USC's Department of Family Medicine.

Why is financial exploitation so common in the elderly population? Why do some older adults fare better than others when making financial decisions? What factors protect or place one at greater risk of being financially exploited? These are just some of the questions that a multidisciplinary team of investigators hope to answer through the Finance, Cognition, and

Blogs Series:

- NCEA Blog
- WEADD Blogs
- Victim Services (Spanish)
- Diversity and Inclusion (Spanish)
- USC Davis School of Gerontology



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Physical and mental health correlates of perceived financial exploitation in older adults: Preliminary findings from the Finance, Cognition, and Health in Elders Study (FINCHES)

Gali H. Weissberger^a, Laura Mosqueda^a, Annie L. Nguyen^a, Anya Samek^b, Patricia A. Boyle^{c,d}, Caroline P. Nguyen^a and S. Duke Han^{a,c,e,f,g}

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ABSTRACT

Objectives: Financial exploitation (FE) in old age is poorly understood, particularly among those without significant cognitive impairment. The Finance, Cognition, and Health in Elders Study (FINCHES) aims to identify factors associated with FE among cognitively-healthy older adults. Preliminary findings regarding physical and mental health correlates in the pilot phase of FINCHES are reported.

Method: Sixteen older adults who self-reported FE were demographically-matched on age, education, sex, and race/ethnicity to eighteen older adults who did not report past FE.

Results: Those who believed they were exploited endorsed significantly greater symptoms of depression ($p = 0.014$) and marginally greater symptoms of anxiety ($p = 0.062$). Participants trended towards lower perceived successful aging ($p = 0.094$). Perceived FE participants also endorsed greater medical conditions ($p = 0.047$), but follow-up individual item analyses suggest that this was driven by problems with sleep ($p = 0.030$).

Conclusions: These preliminary findings from the pilot phase of FINCHES highlight negative mental health factors associated with perceived FE among cognitively-intact older adults.

ARTICLE HISTORY

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KEYWORDS

Financial exploitation;
aging; mental health;
physical health; sleep



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Physical Frailty and Financial Exploitation

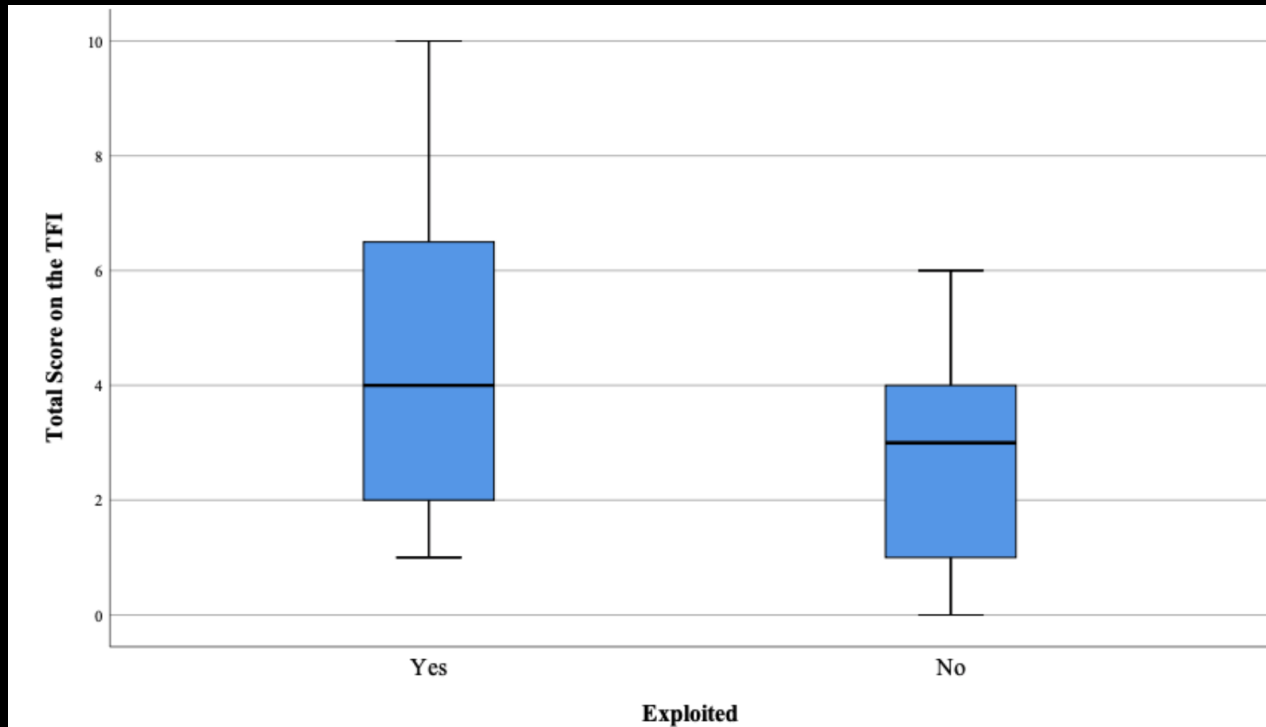


Figure 1. Boxplot display of total scores on the 15-item Tilburg Frailty Inventory (TFI) for perceived financially exploited ($n = 24$) and non-exploited ($n = 13$) older adults.




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Axelrod, J., Mosqueda, L., Weissberger, G.H., Nguyen, A.L., Boyle, P.A., Parunakian, E., & Han, S.D. Frailty and perceived financial exploitation: Findings from the Finance, Cognition, and Health in Elders Study. *Gerontology and Geriatric Medicine*, 2020. 6:1-5.

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Qualitative Interviews of Financial Exploitation

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Journals of Gerontology: Social Sciences
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doi:10.1093/geronb/gbab010
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OXFORD

Research Article

Perceived Types, Causes, and Consequences of Financial Exploitation: Narratives From Older Adults

Annie L. Nguyen, PhD, MPH,^{1,*} Laura Mosqueda, MD,¹ Nikki Windisch, MSG,¹ Gali Weissberger, PhD,² Jenna Axelrod, PhD,¹ and S. Duke Han, PhD¹

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***Selected as Editor's Choice**

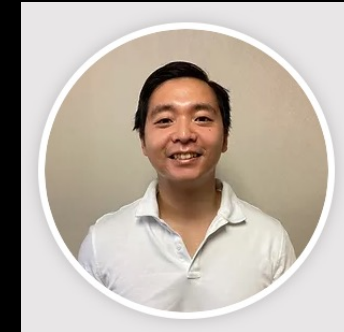
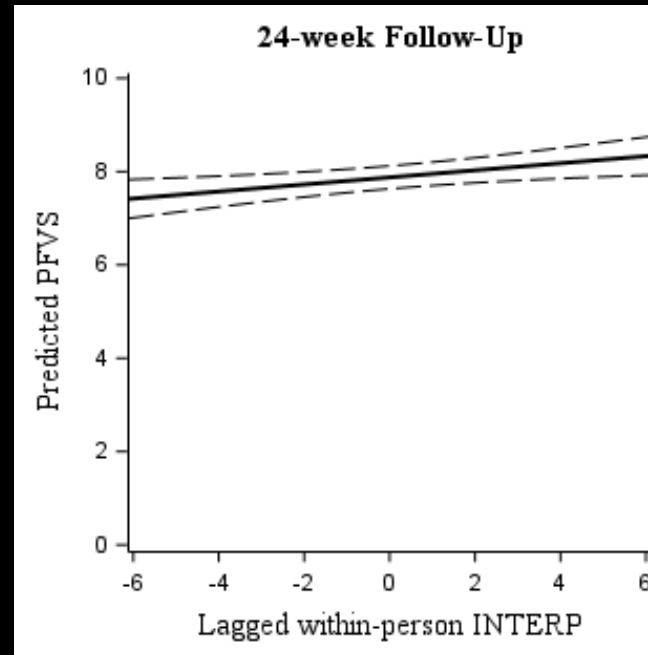
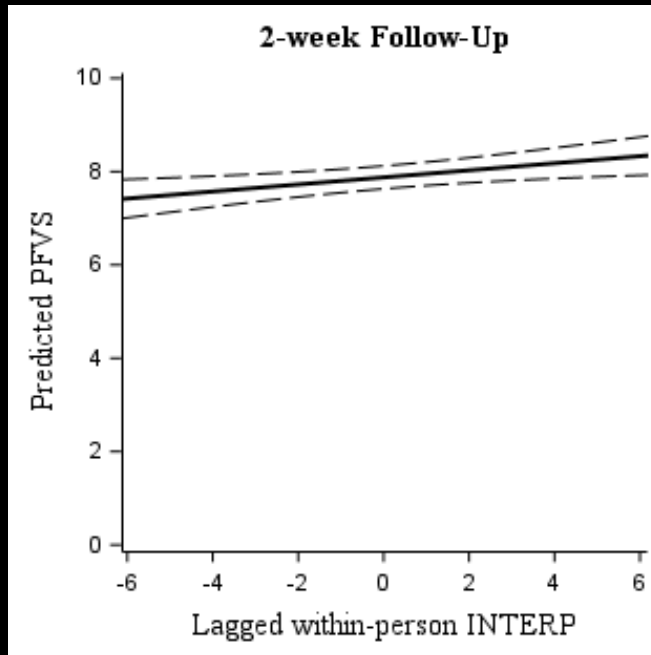


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Nguyen, A.L., Mosqueda, L., Windisch, N., Weissberger, G., Axelrod, J., Han, S.D. Perceived causes, context, and consequences of financial exploitation: Narratives from older adults. *Journal of Gerontology: Social Sciences*, 2021. 76(5):996-1004

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Interpersonal Relationships Predict Financial Exploitation

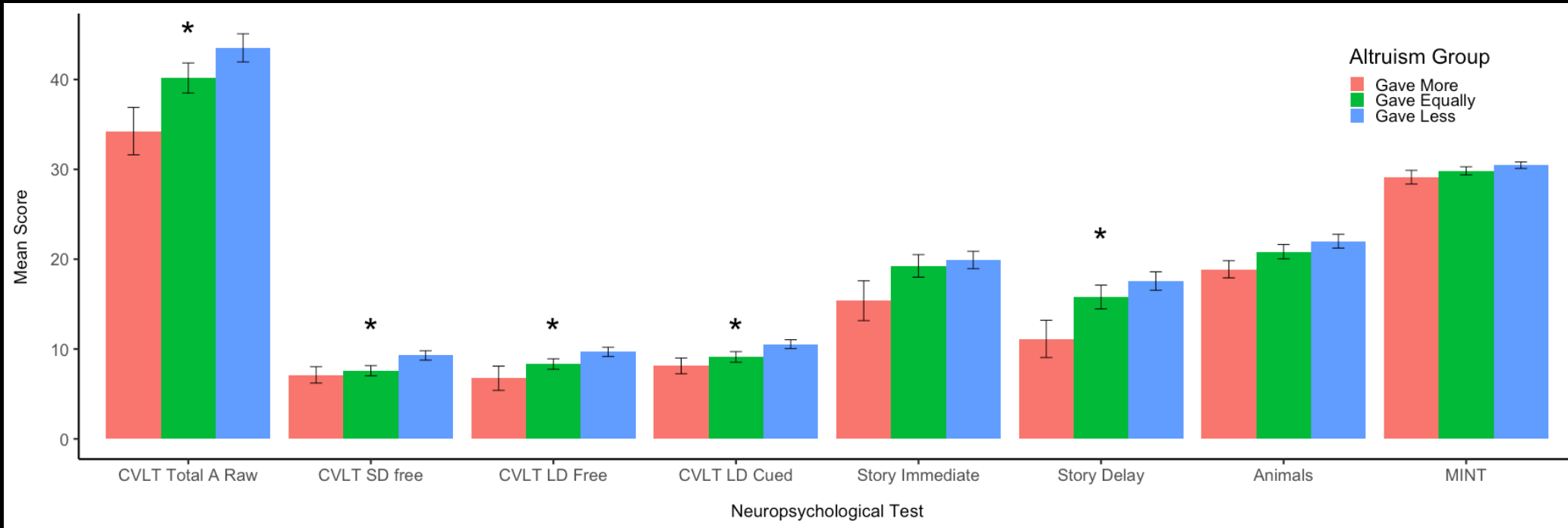


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Lim, A.C., Mosqueda, L., Nguyen, A.L., Mason, T.B., Weissberger, G.H., Fenton, L., Lichtenberg, P., Han, S.D. Interpersonal dysfunction predicts subsequent financial exploitation vulnerability in a sample of adults over 50: A prospective observational study. *Aging and Mental Health*, 2022.

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Increased Financial Altruism is Associated with Alzheimer's Disease Neurocognitive Profile in Older Adults



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Weissberger, G.W., Samek, A., Mosqueda, L., Nguyen, A.L., Lim, A.C., Fenton, L., & Han, S.D. (In press). Increased financial altruism is associated with Alzheimer's disease neurocognitive profile in older adults. *Journal of Alzheimer's Disease*, 2022.

 @sdukehan

Summary

- Age-related cognitive decline could make an older adult more susceptible to poor financial decision making.
- Although poor cognition is associated with poor decision making, poor decision making may not be solely due to poor cognition.
- A complex network of brain regions susceptible to age-related neuropathology may be involved in poor decision making in older age.
- There are likely multiple factors (cognitive, emotional, medical, social, etc.) that are involved in poor financial decision making and susceptibility to scam in older age.
- More research needs to be done with diverse samples and to better understand the contextual factors surrounding seemingly poor decisions.
- A multidisciplinary approach is needed to evaluate the complexities of financial decision making in older age.



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