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Childhood Socioeconomic Status Interacts with Cognitive Function to Impact Scam Susceptibility Among Community-Dwelling Older Adults

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Abstract

Objectives: We examined whether childhood socioeconomic status (SES) is related to scam susceptibility in old age and tested the hypothesis that childhood SES interacts with cognitive function to impact scam susceptibility.

Methods: This study employed a cross-sectional design. All data were collected in participants' community-based residences. Participants were 1071 older adults (mean age=81.05 years, SD=7.53) without dementia (median MMSE score=28.29, IQR=27.86-30.00). Participants completed assessments of childhood SES, cognitive function, and scam susceptibility. We used linear regression models to examine the associations of childhood SES and cognitive function with scam susceptibility.

Results: In a regression model adjusted for age, gender, and education, poorer cognitive function was associated with higher scam susceptibility, but childhood SES was not. However, in an additional model that included the interaction of childhood SES and cognitive function, the interaction was significant, such that lower childhood SES was associated with higher scam susceptibility among participants with lower cognitive function.

Conclusion: Lower childhood SES is associated with higher scam susceptibility among older adults with lower levels of cognitive function. Thus, older adults who experienced limited

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resources in childhood and have lower cognitive function may represent a specific group for interventions to increase scam awareness and prevent financial exploitation.

Keywords

Cognitive Aging; Childhood Socioeconomic Status; Scam Susceptibility; Cognitive Functioning

Introduction

Financial fraud and scams present major economic and public health challenges in the United States, particularly among older adults who may be at especially high risk of exploitation. Victimization may compound the unique challenges that accompany aging, including loss of cognitive and social resources, changes in income and financial status, and modification of living arrangements (DeLiema et al., 2020; James, Boyle, & Bennett, 2014; Koss & Ekerdt, 2016; Sacco, Bucholz, & Harrington, 2014; Wike, 2014). Victimization can also directly lead to negative outcomes, including loss of financial assets (i.e., homes and savings), psychological distress (e.g., anger and embarrassment), and even early mortality (AARP, 2020; Burnes et al., 2017; Deane, 2018; DeLiema, Mottola, & Deevy, 2017; Hall, Karch, & Crosby, 2016; Lee, 2017). Furthermore, we previously reported that regardless of actual victimization, increased scam susceptibility among older adults is associated with decreased cognitive function and increased risk of incident mild cognitive impairment and Alzheimer's dementia (Boyle et al., 2019; Han et al., 2016; James et al., 2014). Identification of factors associated with scam susceptibility is urgently needed and may offer considerable economic, psychological, and public health benefit among vulnerable older adults.

Various factors can impact scam susceptibility among older adults, particularly age-related decreases in cognition and psychosocial resources (e.g., loneliness) (Kirchheimer, 2011; Templeton & Kirkman, 2007). Most notably, an established relationship exists between cognition and scam susceptibility, such that lower cognitive function and the presence of cognitive impairment are associated with increased scam susceptibility (Centers for Disease Control, 2015; Gamble et al., 2014; Han et al., 2016; James et al., 2014). However, cognitive function is only one of many factors at play, and it is possible that lifecourse experiences play an important role. For example, burgeoning evidence suggests that conditions experienced during early life or childhood, such as childhood socioeconomic status (SES), may contribute to scam susceptibility and related behavioral economic outcomes in adulthood (Gamble, 2017; Grillo & Ward, 2020; Malmendier & Nagel, 2011). Childhood SES impacts perceptions of and approaches to financial decision making throughout adulthood and may impact scam susceptibility later in life (Griskevicius et al., 2011, 2013; Mittal, Griskevicius, & Haws, 2020). In particular, lower childhood SES has been linked to risk aversion, temporal discounting, and retirement savings in adulthood (Amir, Jordan, & Rand 2018; Griskevicius et al., 2011, 2013; Mittal et al., 2020). Furthermore, lower childhood SES has been associated with poorer cognition and cognitive decline in later life (Melrose et al., 2015; Zhang, Liu, & Choi, 2020). However, it remains unknown whether childhood SES – either directly or through its interaction with cognition - is associated with scam susceptibility among older adults.

Here, we examined the association of childhood SES with scam susceptibility in old age. We specifically hypothesized that childhood SES may interact with cognitive function to impact scam susceptibility based on our conceptual model and prior work that suggests that non-cognitive factors influence aspects of decision making most strongly when cognitive function is low. We also examined whether the impact of childhood SES is independent of loneliness, a psychological factor that may impact scam susceptibility among older adults (Kirchheimer, 2011). Lastly, we examined whether the interaction of childhood SES and cognitive function was of a general nature or driven by a specific cognitive domain(s) (i.e., episodic memory, visuospatial ability, perceptual speed, semantic memory, and working memory). As previous literature has established the association between cognitive function and scam susceptibility, current study results may provide insight into a more refined subgroup of people that may be more susceptible to scams based on childhood exposures.

Materials and Methods

Participants

Participants were from the Rush Memory and Aging Project (MAP), an ongoing clinical-pathologic cohort study of aging (Bennett et al., 2012, 2018). MAP began enrollment in 1997, with recruitment of non-demented, community-dwelling older adults who are tested within their homes. MAP participation includes a thorough clinical evaluation consisting of medical history, neurological testing, neuropsychological examination, risk factor assessment, and organ donation at death. A MAP substudy on decision making began in 2010 and included assessments of scam susceptibility and healthcare and financial decision making (Boyle et al., 2012a, 2012b). Both studies were approved by an Institutional Review Board at Rush University Medical Center. All participants signed an informed consent document for each study. Data can be requested at https:\\www.radc.rush.edu.

Eligibility for these analyses required the absence of dementia at the baseline assessment of the decision making substudy. Of 2102 participants who completed a MAP baseline evaluation, 642 died before the decision making substudy, 77 withdrew from MAP, and 68 either moved away from the area or were ineligible due to severe comprehension or sensory limitations. Of the 1315 alive and eligible MAP participants, 127 had not yet completed the decision making substudy at the time of the current analyses. Of the remaining 1188 participants, 66 were diagnosed with dementia and 51 had missing data for variables of interest, including childhood SES and scam susceptibility. As a result, 1071 participants were included in the current analyses.

Assessment of Childhood Socioeconomic Status

Childhood SES was measured using a composite of three self-report indicators of a participant's early life household SES (Wilson et al., 2005). The three indicators included paternal education –the number of years of schooling completed by a participant's father, maternal education –the number of years of schooling completed by a participant's mother, and the number of children in a participant's childhood household. Paternal and maternal education were assessed by the question, "What was the highest grade or year of regular school your father [mother] completed?" with participants responding in the number of

years. If the exact number of years of education was unknown, participants answered the following question, “Would you say that s/he had no schooling, a few years, finished grammar school, had any high school, or any college?” with response options 0, 3, 8, 10, or 15 years, respectively. All three indicators were z-scored, with the number of children being multiplied by −1 prior to being z-scored, and averaged with higher scores indicating higher childhood SES (Wilson et al., 2005).

Assessment of Scam Susceptibility

Scam susceptibility was measured using a self-report scale developed for use in older adults and based on data from AARP and the Financial Industry Regulatory Authority (FINRA) Risk Meter (James et al., 2014). The scale consisted of five items that assessed engaging in behaviors that increase the risk of exploitation and knowledge of the tactics of fraudsters. Items were rated using a seven-point Likert scale ranging from 1 (strongly agree) to 7 (strongly disagree). One question asked participants, “I feel I have to answer the phone whenever it rings, even if I do not know who is calling.” Another question asked participants, “If something sounds too good to be true, it usually is.” Three items were reverse coded before all items were averaged to create a total score (range= 1-7), with higher total scores indicating greater scam susceptibility. The measure has demonstrated psychometric soundness and is associated with other important decision making and related behavioral economic resources, including lower health and financial literacy (James et al., 2014); and adverse outcomes in older age such as cognitive decline (Boyle et al., 2012b), incident mild cognitive impairment (Han et al., 2016), and incident Alzheimer’s dementia (Boyle et al., 2019).

Assessment of Cognitive Function

Participants completed a battery of 21 performance-based measures of cognitive function (Bennett et al., 2018; Wilson et al., 2002). Two tests, the Mini-Mental State Examination (MMSE) and Complex Ideational Material, were used for descriptive or diagnostic purposes only. The remaining 19 performance-based tests assessed 5 domains of cognitive function: 1) episodic memory (7 tests: Word List Memory, Recall, and Recognition from the CERAD neuropsychological battery; immediate and delayed recall of Logical Memory Story A and the East Boston Story); 2) visuospatial ability (2 tests: Judgment of Line Orientation and Standard Progressive Matrices); 3) perceptual speed (4 tests: the oral version of the Symbol Digit Modalities Test, Number Comparison, Stroop Color Naming, and Stroop Word Reading); 4) semantic memory (3 tests: Category Fluency, Boston Naming, and the National Adult Reading Test); and 5) working memory (3 tests: Digit Span subtests [forward and backward] of the Wechsler Memory Scale-Revised and Digit Ordering). Participants’ raw scores on each of the 19 performance-based tests were converted to z-scores using the baseline mean and standard deviation of the full MAP cohort (Wilson et al., 2005). All 19 z-scores were averaged to yield a composite score of global cognitive function for each participant. The five specific cognitive domains were calculated by averaging the z-scores from the tests in each cognitive domain.

Clinical Diagnosis of Alzheimer's Dementia

Participants underwent structured clinical evaluations including a review of medical history, neurological examination, and cognitive function testing. A clinician then classified persons regarding dementia using the criteria of the Joint Working Group of the National Institute of Neurological and Communicative Disorders and Stroke and the Alzheimer's Disease and Related Disorders Association (McKhann et al., 1984).

Loneliness

Since psychosocial factors such as loneliness are thought to play a role in older adults' susceptibility to scams, we also adjusted for loneliness in our models (Stewart et al., 2020). Loneliness refers to feeling alone or disconnected from others and was measured with the modified Loneliness Scale consisting of five items (e.g., "I experience a general sense of emptiness.") along a five-point Likert scale (1=strongly disagree to 5=strongly agree) (Wilson et al., 2007). All items were averaged to create an overall score with higher scores indicating more loneliness.

Analyses

First, we assessed bivariate associations of demographic characteristics, childhood SES, and global cognitive function with scam susceptibility using Pearson correlations or *t*-tests, as appropriate. Second, we examined associations of childhood SES and global cognitive function with scam susceptibility (the continuous outcome variable) in a series of linear regression models. The initial model examined direct associations of both childhood SES and global cognitive function with scam susceptibility after adjusting for age, gender, and years of education. We then added an interaction term for childhood SES with global cognitive function to the model to examine whether childhood SES interacts with global cognitive function to impact scam susceptibility. Third, to address potential confounding by loneliness, we performed a separate linear regression model that expanded upon our previous model by further adjusting for loneliness as well as its interaction with global cognitive function. Lastly, we repeated the core model but replaced global cognition with five specific cognitive domains (i.e., episodic memory, visuospatial ability, perceptual speed, semantic memory, and working memory) in five separate linear regression models. Estimates from linear regression models represent unstandardized regression coefficients. All analyses were conducted using SAS software, version 9.4 of the SAS system for Linux.

Results

Participant Characteristics

Participants (N=1071) were a mean age of 81 years, 76% female, and 97% non-Latino White. Additional descriptive information is reported in Table 1. In bivariate analyses, older age (Pearson's r=0.30, p<.0001), fewer years of education (Pearson's r=−0.16, p<.0001), lower levels of childhood SES (Pearson's r=−0.14, p<.0001), and lower levels of global cognitive function (Pearson's r=−0.26, p<.0001) were associated with higher scores on the scam susceptibility measure. Additionally, women (*Mean*=2.67, SD=0.75) scored similarly to men (*Mean*=2.76, SD=0.77) on the scam susceptibility measure (t_{1069} = −1.70, p=0.09).

Associations of Childhood Socioeconomic Status and Cognitive Function with Scam Susceptibility

First, to examine direct associations of both childhood SES and global cognitive function with scam susceptibility, we performed a linear regression model with scam susceptibility as the outcome and terms for age, gender, years of education, childhood SES, and global cognitive function as predictors. Lower global cognitive function was associated with higher scam susceptibility (estimate=−0.21, standard error [SE] =0.05, t_{1065}=−4.40, p<0.0001), but childhood SES was not (estimate= −0.04, SE=0.03, t_{1065}=−1.30, p=0.19). However, in a second model that included an interaction term for childhood SES with global cognitive function, the interaction was significant (estimate=0.13, SE=0.06, t_{1063}= 2.13, p=0.03), such that lower childhood SES was associated with higher scam susceptibility among participants with lower global cognitive function. See Figure 1.

Potential Confounder: Loneliness—Next, as loneliness is thought to impact scam susceptibility, we performed a separate model that augmented the previous model by including terms for loneliness as well as its interaction with global cognitive function. Neither the main effect for loneliness nor its interaction with global cognitive function were associated with scam susceptibility. Moreover, the inclusion of loneliness did not substantially change the interaction between childhood SES and global cognitive function on scam susceptibility. See Table 2.

Interactions between Childhood Socioeconomic Status and Five Specific Cognitive Domains—Lastly, we examined whether the interaction between childhood SES and cognitive function was of a general nature or specific to a particular cognitive domain(s). We observed a significant interaction between childhood SES and episodic memory, such that lower childhood SES was associated with higher scam susceptibility among participants with poorer episodic memory (estimate= 0.12, SE=0.05, t_{1063}=2.36, p=0.02). No other cognitive domain showed a significant interaction with childhood SES.

Discussion

The current study examined whether childhood SES is related to scam susceptibility and tested the hypothesis that childhood SES interacts with cognitive function to impact scam susceptibility in community-dwelling, non-demented older adults. Results indicated that lower childhood SES was associated with higher scam susceptibility among persons with lower global cognitive function. This association persisted after adjusting for loneliness, suggesting that the interaction between childhood SES and global cognitive function was independent of this psychosocial factor. Furthermore, childhood SES interacted with one specific cognitive domain, episodic memory, such that lower childhood SES was associated with higher scam susceptibility particularly among persons with poorer episodic memory.

The current study addresses a gap in the literature by examining the role of childhood SES in relation to scam susceptibility among older adults and, thus, provides insight into a subgroup of older adults that may be more vulnerable to scams. Previous research has established the association between cognition and vulnerability to scams among older adults, even among cognitively intact older adults (Boyle et al., 2012b; Centers for Disease Control,

2015; Gamble et al., 2014; Han et al., 2016; James et al., 2014). A growing body of research also suggests that early life conditions such as childhood SES may contribute to financial behaviors and financial outcomes in adulthood (Gamble, 2017; Grillo et al., 2020; Malmendier et al., 2011). Indeed, lower childhood SES has been linked to decision making preferences, retirement savings, and general financial difficulty or strain in later life (Amir et al., 2018; Griskevicius et al., 2011, 2013; Harber-Aschan et al., 2020; Mittal et al., 2020).

To our knowledge, previous studies have not examined the role of childhood SES – either independent of or together with cognition– in scam susceptibility among older adults. Current study results indicate that lower childhood SES is associated with higher scam susceptibility particularly among persons with lower global cognitive function. This is consistent with our hypothesis that non-cognitive factors impact aspects of decision making particularly when other resources needed for decision making (i.e., cognition) are diminished. Our and others' findings suggest that older adults with relatively lower global cognitive function and with fewer economic resources during early life may be more prone to take financial risks or make financial errors in later life (Amir et al., 2018; Griskevicius et al., 2011, 2013; Mittal et al., 2020). We suspect that having fewer resources in childhood impacts the level of experience or familiarity with financial decisions and, relatedly, risky decision making and trust in various interactions. Thus, having less access to economic resources during childhood may deleteriously impact how an older adult with diminished cognitive function perceives or approaches financial decision making.

Notably, loneliness did not impact the relationship between childhood SES and scam susceptibility. Loneliness refers to feeling alone or disconnected from others and differs from the related construct of social isolation (i.e., being physically isolated from or without relationships with others) (de Jong, Van Tilburg, & Dykstra, 2006). Previous literature suggests an association between social isolation and scam susceptibility among older adults, such that persons who have limited social relationships or connections are more susceptible to scams (Shao, Zhang, Ren, Li, & Lin, 2019). Hence, it remains important for future research to explore associations and distinctions between loneliness and social isolation in relationship to scam susceptibility among older adults to better understand how social factors impact susceptibility and fraud risk.

However, current study results do suggest that the association between lower childhood SES with higher scam susceptibility among older adults with poorer cognitive function is largely driven by poorer episodic memory. It is not entirely clear why episodic memory plays a key role. However, episodic memory has been linked to consumer decisions, as persons rely on their previous experiences or recollections of prior situations and feelings associated with those memories when making financial decisions (Herz & Brunk, 2017; Scheibe et al., 2014). Perhaps limited access to economic resources during early life heightens scam susceptibility in old age through diminished memory. Conversely, decreases in episodic memory are an early sign of neurodegenerative disease and the experience of having fewer resources during early life may confer additional vulnerability to scam as age-related changes degrade cognitive function (Wilson et al., 2020). In sum, while the mechanism(s) by which childhood SES interacts with episodic memory to impact scam susceptibility in old age remains unclear, our findings suggest that older adults with lower childhood SES and

poorer cognitive function may represent a specific group for interventions to increase scam awareness and prevent financial exploitation.

The current study has limitations and strengths. One limitation is the homogeneity among study participants regarding race and gender (97% non-Latino White and 76% women, respectively) as well as the high years of education of participants (mean years=15.60, SD=3.11). There is a small but growing literature on scams and financial exploitation among older Black adults. Burgeoning findings are mixed, with some suggesting that older Black adults have a higher risk of victimization and others indicating that they may be less susceptible to scams compared to their White counterparts (Han, Barnes, Leurgans, Yu, Stewart, Lamar, et al., 2021; Yu, Mottola, Barnes, Han, Wilson, Bennett, et al., 2021). Previous literature also demonstrates similarities between correlates of scam susceptibility (e.g., diminished cognitive function) among both older Black and White adults (James et al., 2014; Yu et al., 2021). Currently, we are collecting data regarding scam susceptibility among more demographically diverse older adults and aim to add to the growing body of literature focused on older Black adults and scam susceptibility. A second limitation is the cross-sectional nature of the current study. Longitudinal data collection in MAP is ongoing, and we will be able to examine how childhood SES and other factors are related to change in scam susceptibility in future analyses. A third potential limitation is that current study findings may not translate to specific financial scams that older adults may encounter. Our measure of scam susceptibility is relatively general in nature and focuses on behaviors that have been shown to render older adults vulnerable to exploitation and fraud. That said, the measure may not capture behaviors relevant to particular types of scams. A fourth possible limitation is that we did not measure social isolation and, hence, we are unable to fully address its role in the relationship between childhood SES and scam susceptibility. This study also has several strengths including a well-characterized group of community-dwelling older adults without dementia and established measures of childhood SES, cognitive function – general and domain-specific, and scam susceptibility. We also adjusted for loneliness, an important covariate, which increases confidence in our findings. Overall, the current study demonstrates an important interaction between childhood resources and cognitive function on scam susceptibility in old age and suggests that lower childhood SES contributes to additional vulnerability among older persons with relatively lower cognitive function.

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References

AARP. (2020). The impostors: Stealing money, damaging lives. Washington, D.C.: AARP Research.

Amir D, Jordan MR, & Rand DG (2018). An uncertainty management perspective on long-run impacts of adversity: The influence of childhood socioeconomic status on risk, time, and social preferences. Journal of Experimental Social Psychology, 79, 217–226.

Bennett DA, Buchman AS, Boyle PA et al. (2018). Religious Orders Study and Rush Memory and Aging Project. J Alzheimers Dis, 64(s1), S161–S189. doi:10.3233/JAD-179939. [PubMed: 29865057]

Bennett DA, Schneider JA, Buchman AS et al. (2012). Overview and findings from the Rush Memory and Aging Project. Current Alzheimer Research, 9(6), 646–663. [PubMed: 22471867]

Boyle P, Yu L, Buchman A et al. (2012a). Risk aversion is associated with decision making among community-based older persons. Frontiers in psychology, 3, 205. [PubMed: 22754545]

Boyle PA, Yu L, Schneider JA, Wilson RS, & Bennett DA (2019). Scam awareness related to incident Alzheimer dementia and mild cognitive impairment: a prospective cohort study. Annals of Internal Medicine, 170(10), 702–709. [PubMed: 30986826]

Boyle PA, Yu L, Wilson RS et al. (2012b). Poor decision making is a consequence of cognitive decline among older persons without Alzheimer's disease or mild cognitive impairment. PloS one, 7(8).

Burnes D, Henderson CR Jr, Sheppard C, Zhao R, Pillemer K, & Lachs MS (2017). Prevalence of financial fraud and scams among older adults in the United States: A systematic review and meta-analysis. American Journal of Public Health, 107(8), e13–e21.

CDC Brief addressing financial exploitation among people living with cognitive impairment and their caregivers: role of the public health and aging services networks. 2015. https://www.cdc.gov/aging/pdf/exploitation-cognitive-impairment-brief-july-2015.pdf. Accessed 5 February 2021.

Deane S (2018). Elder Financial Exploitation. U.S. Securities and Exchange Commission, Office of the Investor Advocate.

DeLiema M, Deevy M, Lusardi A, & Mitchell OS (2020). Financial fraud among older Americans: Evidence and implications. The Journals of Gerontology: Series B, 75(4), 861–868.

DeLiema M, Mottola GR, & Deevy M (2017). Findings from a pilot study to measure financial fraud in the United States. Available at SSRN 2914560.

de Jong Gierveld J, Van Tilburg T and Dykstra PA, 2006. Loneliness and social isolation. Cambridge handbook of personal relationships, pp.485–500.

Ekerdt DJ, & Koss C (2016). The task of time in retirement. Ageing & Society, 36(6), 1295–1311.

Gamble KJ (2017). Challenges for financial decision making at older ages. Financial Decision Making and Retirement Security in an Aging World, 33–45.

Gamble KJ, Boyle P, Yu L, & Bennett D (2014). The causes and consequences of financial fraud among older Americans. Boston College Center for Retirement Research WP, 13.

Grillo TL, & Ward AF (2020). How Childhood Adversity Shapes Susceptibility to COVID-19 Scams. The University of Chicago Press Journal. 10.1086/711833.

Griskevicius V, Ackerman JM, Cantú SM, Delton AW, Robertson TE, Simpson JA, … & Tybur JM (2013). When the economy falters, do people spend or save? Responses to resource scarcity depend on childhood environments. Psychological science, 24(2), 197–205. [PubMed: 23302295]

Griskevicius V, Tybur JM, Delton AW, & Robertson TE (2011). The influence of mortality and socioeconomic status on risk and delayed rewards: A life history theory approach. Journal of Personality and Social Psychology, 100, 1015–1026. [PubMed: 21299312]

Hall J, Karch D, & Crosby A (2016). Elder abuse surveillance: Uniform definitions and recommended core elements. Centers for Disease Control and Prevention (CDC).

Han SD, Barnes LL, Leurgans S, Yu L, Stewart CC, Lamar M, Glover CM, Bennett DA and Boyle PA (2021). Susceptibility to Scams in Older Black and White Adults. Frontiers in psychology, 12.

Han SD, Boyle PA, James BD, Yu L, & Bennett DA (2016). Mild cognitive impairment and susceptibility to scams in old age. Journal of Alzheimer's Disease, 49(3), 845–851.

Harber-Aschan L, Calderón-Larrañaga A, Darin-Mattson A, Hu X, Fratiglioni L, & Dekhtyar S (2020). Beyond the social gradient: the role of lifelong socioeconomic status in older adults' health trajectories. Aging (Albany NY), 12(24), 24693. [PubMed: 33349620]

Herz M, & Brunk KH (2017). Conceptual advances in consumers' semantic and episodic brand memories: A mixed methods exploration. Psychology & Marketing, 34(1), 70–91.

James BD, Boyle PA, & Bennett DA (2014). Correlates of susceptibility to scams in older adults without dementia. Journal of elder abuse & neglect, 26(2), 107–122. [PubMed: 24499279]

Kirchheimer S (2011). Scams trap older adults. AARP Bulletin, 1.

Lee K (2017). Fighting Financial Fraud. Monitor on Psychology, 48(8), American Psychological Association https://www.apa.org/monitor/2017/09/financial-fraud. Accessed 5 February 2021.

Malmendier U, & Nagel S (2011). Depression babies: Do macroeconomic experiences affect risk taking?. The quarterly journal of economics, 126(1), 373–416.

McKhann G, Drachman D, Folstein M et al. (1984). Clinical diagnosis of Alzheimer's disease Report of the NINCDS-ADRDA Work Group* under the auspices of Department of Health and Human Services Task Force on Alzheimer's Disease. Neurology, 34(7), 939–939. [PubMed: 6610841]

Melrose RJ, Brewster P, Marquine MJ, MacKay-Brandt A, Reed B, Farias ST, & Mungas D (2015). Early life development in a multiethnic sample and the relation to late life cognition. Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 70(4), 519–531. [PubMed: 24389122]

Mittal C, Griskevicius V, & Haws KL (2020). From Cradle to Grave: How Childhood and Current Environments Impact Consumers' Subjective Life Expectancy and Decision-Making. Journal of Consumer Research, 47(3), 350–372.

Sacco P, Bucholz KK, & Harrington D (2014). Gender differences in stressful life events, social support, perceived stress, and alcohol use among older adults: results from a national survey. Substance use & misuse, 49(4), 456–465. [PubMed: 24131262]

Scheibe S, Notthoff N, Menkin J, Ross L, Shadel D, Deevy M, & Carstensen LL (2014). Forewarning reduces fraud susceptibility in vulnerable consumers. Basic and applied social psychology, 36(3), 272–279. [PubMed: 25328263]

Shao J, Zhang Q, Ren Y, Li X and Lin T, 2019. Why are older adults victims of fraud? Current knowledge and prospects regarding older adults' vulnerability to fraud. Journal of Elder Abuse & Neglect, 31(3), pp.225–243. [PubMed: 31159679]

Stewart CC, Yu L, Glover CM, Mottola G, Bennett DA, Wilson RS, & Boyle PA (2020). Loneliness Interacts With Cognition in Relation to Healthcare and Financial Decision Making Among Community-Dwelling Older Adults. The Gerontologist, 60(8), 1476–1484. [PubMed: 32574350]

Templeton VH, & Kirkman DN (2007). Fraud, vulnerability, and aging: Case studies. Alzheimer's Care Today, 8(3), 265–277.

Wike AE (2014). Discrimination and perceived stress in sexual and gender minorities: Self-esteem as a moderating factor. University of North Texas.

Wilson RS, Barnes LL, Krueger KR et al. (2005). Early and late life cognitive activity and cognitive systems in old age. Journal of the International Neuropsychological Society, 11(4), 400–407. DOI: 10.1017/S1355617705050459 [PubMed: 16209420]

Wilson RS, Beckett LA, Barnes LL et al. (2002). Individual differences in rates of change in cognitive abilities of older persons. Psychology and Aging, 17(2), 179–193. doi:10.1037/0882-7974.17.2.179. [PubMed: 12061405]

Wilson RS, Krueger KR, Arnold SE, Schneider JA, Kelly JF, Barnes LL, Tang Y, & Bennett DA. Loneliness and risk of Alzheimer disease. Archives of general psychiatry. 2007 Feb 1;64(2):234–40. [PubMed: 17283291]

Wilson RS, Scherr PA, Hoganson G, Bienias JL, Evans DA, & Bennett DA (2005). Early life socioeconomic status and late life risk of Alzheimer's disease. Neuroepidemiology, 25(1), 8–14. [PubMed: 15855799]

Wilson RS, Wang T, Yu L, Bennett DA, & Boyle PA (2020). Normative cognitive decline in old age. Annals of neurology, 87(6), 816–829. [PubMed: 32144793]

Yu L, Mottola G, Barnes LL, Han SD, Wilson RS, Bennett DA and Boyle PA (2021). Correlates of Susceptibility to Scams in Community-Dwelling Older Black Adults. Gerontology, 67(6), pp.729–739. [PubMed: 33882498]

Zhang Z, Liu H, & Choi SW (2020). Early-life socioeconomic status, adolescent cognitive ability, and cognition in late midlife: Evidence from the Wisconsin Longitudinal Study. Social Science & Medicine, 244, 112575. [PubMed: 31606188]

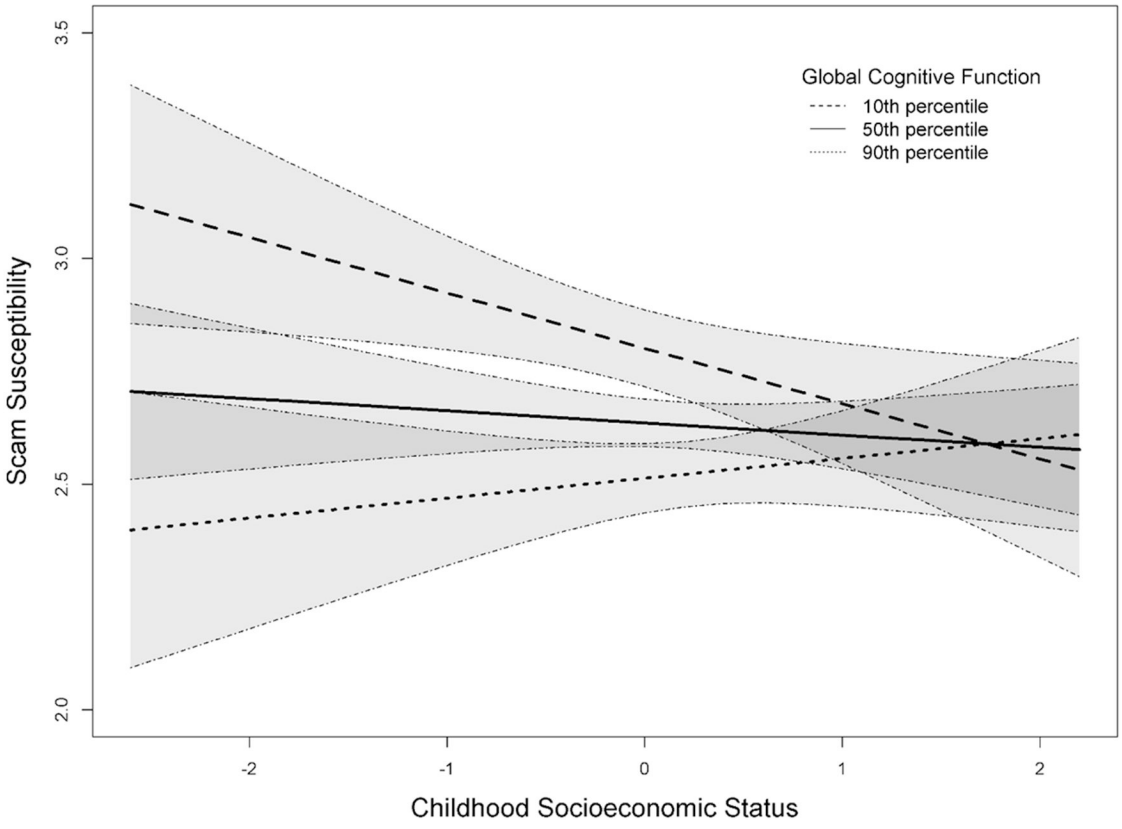

Figure 1:

Association of Childhood Socioeconomic Status with Scam Susceptibility at 10th, 50th, and 90th Percentiles of Global Cognitive Function.

Table 1.

Participant Characteristics (N=1071).

Characteristics	Mean (SD)	Range of Scores
Age	81.05 (7.53)	58.82 – 100.78
Ethnicity and Race, Non-Latino White (%)	1039 (97%)	
Gender, Women (%)	812 (76%)	
Years of Education	15.60 (3.11)	5.00 – 30.00
MMSE Score, Median (IQR)	28.29 (27.86-30.00)	17.00 – 30.00
Scam Susceptibility	2.69 (0.76)	1.00 – 5.60
Childhood Socioeconomic Status	0.13 (0.71)	−2.57 – 2.17
Cognitive Function	0.23 (0.52)	−1.59 – 1.60
Loneliness	2.17 (0.59)	1.00 – 5.00

Table 2.

Associations of Childhood Socioeconomic Status, Global Cognitive Function, and Loneliness with Scam Susceptibility.

Terms	Estimate	Standard Error	*t*-Statistic	*p*-Value
Age	0.02	0.003	7.65	<.0001
Gender	0.10	0.05	1.98	0.05
Years of Education	−0.02	0.01	−2.58	0.01
Childhood Socioeconomic Status	−0.06	0.03	−1.75	0.08
Global Cognitive Function	−0.21	0.05	−4.21	<.0001
Loneliness	0.05	0.04	1.09	0.28
Childhood Socioeconomic Status X Global Cognitive Function	0.12	0.06	2.07	0.04
Loneliness X Global Cognitive Function	0.02	0.07	0.28	0.78

[a]Based on one multivariable linear regression model. Significance was tested using a *t*−statistic with degrees of freedom of 1060.