



Published in final edited form as:

J Elder Abuse Negl. 2014 ; 26(2): 107–122. doi:10.1080/08946566.2013.821809.

Correlates of Susceptibility to Scams in Older Adults Without Dementia

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Abstract

This study examined correlates of susceptibility to scams in 639 community-dwelling older adults without dementia from a cohort study of aging. Regression models adjusted for age, sex, education, and income were used to examine associations between susceptibility to scams, measured by 5-item self-report measure, and a number of potential correlates. Susceptibility was positively associated with age and negatively associated with income, cognition, psychological well being, social support, and literacy. Fully adjusted models indicated that older age and lower levels of cognitive function, decreased psychological well-being, and lower literacy in particular may be markers of susceptibility to financial victimization in old age.

Keywords

Fraud; scam; financial exploitation; elder abuse; risk factors

Introduction

Each year, millions of older Americans are targets of telemarketing fraud, internet fraud, and other scams (AARP, 1999), resulting in a loss by elder victims of an estimated \$2.9 billion annually from financial fraud alone (MetLife Inc., 2011). This figure may be even larger; the U.S. Government reported that \$40 billion are scammed from people over the phone yearly (U.S. House of Representatives, 1993), and elderly people constitute the vast majority of fraud victims (AARP, 2003). Further, older victims are less likely to report or even acknowledge their victimization compared to younger persons (Pak & Shadel, 2011) and have been called the “forgotten victims of financial crime” (Deem, 2000; Nerenberg, 2000). Scams can be devastating for seniors, who hold the majority of the nation's wealth (Souare & Lloyd, 2008). Older persons who are victimized lose assets accumulated over a lifetime and have limited opportunities to recover from financial losses due to limited employment options, retirement, or physical or cognitive disabilities (Dessin, 2000; Jackson & Hafemeister, 2011). Financial victimization can result in a loss of independence and security (Choi, Kulick, & Mayer, 1999) and a great deal of psychological distress (Deem, 2000). The problem of older scam victims is certain to loom larger as the number of Americans over age 65 swells as baby boomers approach this milestone (U.S. Census Bureau, 2005).

Telemarketing and other forms of fraud—and the specific targeting of older citizens—captured the attention of the media, law enforcement officials, and the government in the mid-1990s (Aziz, Bolick, Kleinman, & Shadel, 2000). With increased awareness of the implications of elder fraud, the U.S. Government launched the Protecting Seniors from Fraud Act in 2000 in order to increase the dissemination of information to educate seniors about scams and to develop strategies to prevent financial crimes against seniors (Sen. Evan Bayh [D-IN 1999-2010], 2000) and initiatives such as the National Telemarketing Victim Call center were launched (Aziz et al., 2000). However, relative to other forms of elder abuse, little is known about the factors that make older adults more vulnerable to financial exploitation and related scams (Dessin, 2000; Payne & Strasser, 2012). In addition to the fact that older persons hold a considerable amount of wealth, there are a number of other potential reasons why older adults are targeted for financial exploitation have been posited, though many of these are based on anecdotal information (Friedman, 1992). For example, seniors are commonly perceived as cognitively vulnerable, sedentary due to physical disabilities (and thus generally at home to receive telemarketing phone calls), naively trusting, socially isolated, and unsophisticated about financial matters (Friedman, 1992; Jackson & Hafemeister, 2011). However, according to a 1996 telephone poll conducted by the AARP, many of the perceptions of the typical older adult scam victim do not correlate well with the actual portrait of victimized older persons. In fact, the poll painted a surprising portrait of telemarketing fraud victims as relatively well-educated, informed and active, and affluent (AARP, 1996). Thus, more research is needed to reconcile the disconnect between common, impressionistic portrait of the elderly scams victim with the profile that is emerging from empirical evidence. An accurate description of the characteristics common to elderly victims of scams has public policy implications as it is necessary to the identification of persons who are at high risk of victimization and may aid in directing interventions to these seniors, ideally before they are targeted for scams.

To date, there remains little research on the characteristics that make older persons susceptible to scams. A number of studies have reported on characteristics of fraud victims from data sources such as police records (Friedman, 1992) or callers to fraud hotlines (National Consumers League, 2011), but findings from such studies could reflect reporting errors or biases, or simply reflect the make-up of the sampled population. Furthermore, a large number of scams go unreported, especially in the elderly. A recent AARP study compared a sample of fraud victims with a sample of the general population and found that fraud victims were more likely to be male, married, and interestingly, to have higher education and income (Pak & Shadel, 2011). This information is compelling, but the samples of fraud victims and general population may not be selected from the same underlying population (i.e., selection bias). Therefore, determining correlates of susceptibility to scams among a cohort of community-based older persons may be the most valid way to identify older adults who are most likely to fall victim to financial exploitation and inform efforts to prevent high risk seniors from falling victim to scams.

Because victimization by scams is highly underreported and older persons specifically are less likely to report victimization (Pak & Shadel, 2011), an alternate strategy to examining correlates of reported victimization is to examine correlates of susceptibility to scams. A number of beliefs and behaviors have been identified by sources such as the AARP (AARP, 1996), the Financial Industry Regulatory Authority (Financial Industry Regulatory Authority), and researchers (Reiboldt & Vogel, 2003) that predispose people to being susceptible to a scam. These include being unable to hang up on a telemarketer and a belief that what a salesperson tells them over the phone is true (Reiboldt & Vogel, 2003). However, there are numerous additional factors that may be at play Determining the characteristics of community-dwelling older adults that are correlated with susceptibility to scams can be useful in targeting high risk seniors for intervention to alert them that they may

be targeted by fraudulent telemarketers before the scams take place, a strategy that has shown promise (Aziz et al., 2000).

To that end, in this study we examined data from a cohort of over 600 community-dwelling older adults without dementia to observe how cognitive ability, functional status, psychosocial factors such as social isolation, and literacy were associated with susceptibility to scams. These factors were selected based on the literature and based on the availability of a wide array of variables collected prospectively in the Rush Memory and Aging Project. We used a series of linear regression models to examine these potential correlates alone and in concert to determine the characteristics that were independently associated with susceptibility to scams, as measured with an instrument derived from information on the personal characteristics of known fraud victims from the AARP and Financial Industry Regulatory Authority (AARP, 1996; Financial Industry Regulatory Authority, 2013).

Methods

Participants

Data came from the Rush Memory and Aging Project, an ongoing longitudinal cohort study of chronic conditions of aging (Bennett et al., 2005). Participants were recruited from approximately 40 retirement and subsidized housing facilities around the Chicago metropolitan area. All participants signed an informed consent agreeing to annual clinical evaluation as well as organ donation at the time of death. The study was approved by the institutional review board of Rush University Medical Center. The annual clinical evaluation, conducted by examiners blinded to previous data, included medical history, neurological and neuropsychological examinations as described in detail previously (Bennett et al., 2005). At each evaluation, clinical diagnoses of dementia were conducted using a three-stage process including computer scoring of cognitive tests, clinical judgment by an experienced neuropsychologist, and diagnostic classification by an experienced clinician, as previously described (Bennett et al., 2005). Diagnosis of dementia and probable AD followed the criteria of the joint working group of the National Institute of Neurologic and Communicative Disorders and Stroke and the Alzheimer's Disease and Related Disorders Association (McKhann et al., 1984). Because the ability of persons with dementia to validly self-report is uncertain, we removed persons diagnosed with dementia from the analysis. Though the majority of the persons in this study live in housing facilities, they are all active, non-demented, independent seniors who interact with the world outside of their facility on a daily basis (Boyle, Buchman, Barnes, James, & Bennett, 2010; James, Boyle, Buchman, Barnes, & Bennett, 2011) and are thus quite susceptible to targeting for scams such as telemarketing and mail fraud.

The Memory and Aging Project began in 1997, and enrollment is ongoing. A decision-making assessment battery that includes questions on susceptibility to scams was added in 2010. At the time of these analyses, 1504 participants had completed the baseline evaluation for the parent study. Of those, 507 died, another 84 refused further participation in the parent project without completing the decision-making assessment battery, and 109 were deemed ineligible for a first decision-making assessment due to cognitive, vision, hearing, or language impairment. Of the remaining 804 potentially eligible persons, 674 completed the decision-making assessment, 71 had not yet completed their decision-making baseline evaluation, and 59 refused the decision-making assessment. Of the 674 participants who had completed the decision-making assessment, six had missing data on susceptibility to scams and 29 had dementia, leaving 639 eligible persons without dementia for these analyses.

Demographics

Age was based on baseline self-reported date of birth and date of assessment of susceptibility to scam. Sex, race (reported here as white, non-Hispanic vs. other), and education (years of schooling) were also self-reported at baseline. Income was measured at the time of the susceptibility to scam assessment using the show card methodology (Bennett et al., 2005). Self-reported annual income at baseline was ranked according to ten possible categories ranging from \$0 to over \$75,000.

Susceptibility to scams scale

The susceptibility to scams scale is a 5-item self report measure in which participants rated their agreement using a 7-point Likert scale (strongly agree to strongly disagree) for the following statements:

- I answer the phone whenever it rings, even if I do not know who is calling.
- 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.
- If something sounds too good to be true, it usually is.
- Persons over the age of 65 are often targeted by con-artists.
- If a telemarketer calls me, I usually listen to what they have to say.

The total score is the average of ratings across the five items (with items 1, 2, and 5 reverse coded so higher scores indicate more susceptibility to scams for all items). The statements were derived from findings and official statements from 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, regarding the characteristics, beliefs, and behaviors that make individuals more susceptible to scams (AARP, 1999; Financial Industry Regulatory Authority). The intraclass correlation coefficient for the measure was 0.63.

Cognitive function

Scores from a battery of 19 neuropsychological tests were used to create summary indices of global cognitive function and five specific cognitive domains: episodic memory (seven tests: immediate and delayed recall of story A from Logical Memory; immediate and delayed recall of the East Boston Story; Word List Memory; Word List Recall; and Word List Recognition); semantic memory (three tests: a 15-item version of the Boston Naming Test; Verbal Fluency; and a 15-item reading test); working memory (three tests: Digit Span Forward; Digit Span Backward; and Digit Ordering); perceptual speed (four tests: Symbol Digit Modalities Test; Number Comparison; and two indices from a modified version of the Stroop Neuropsychological Screening Test); and visuospatial ability (tests: a 15-item version of Judgment of Line Orientation and a 16-item version of Standard Progressive Matrices) (Bennett et al., 2005). Scores were z-transformed and averaged to obtain the summary scores for the five cognitive domains and global cognitive function (all 19 tests) (Wilson et al., 2005).

Functional Status

The total number of seven self-reported chronic medical conditions (diabetes mellitus, hypertension, heart disease, cancer, thyroid disease, head injury, and stroke) was used as a measure of chronic illness (Wilson et al., 2002). Frailty was measured as the mean of 4 z-transformed components: grip strength, timed walk, body composition, and fatigue as described in detail previously (Buchman, Boyle, Wilson, Tang, & Bennett, 2007). Activities of daily living (ADLs) were assessed using a modified version of the Katz Index (Katz &

Akpom, 1976); participants rated their ability to perform (no help, help, unable to do) six activities: feeding, bathing, dressing, toileting, transferring, and walking across a small room. Instrumental activities of daily living (IADLs) were assessed using items from the Duke Older Americans Resources and Services project (Lawton & Brody, 1969); participants rated their ability to perform (no help, help, unable to do) eight activities: telephone use, meal preparation, money management, medication management, light and heavy housekeeping, shopping, and local travel. Self-report physical activity assessed expressed as the sum of hours per week engaged in five common exercise activities: walking for exercise, gardening or yard work, calisthenics or general exercise, bicycle riding, and swimming or water exercise (McPhillips, Pellettera, Barrett-Connor, Wingard, & Criqui, 1989; Wilson et al., 2002). Life space, the extent of movement through the environment during daily functioning, was measured by self-report: participants were asked whether or not they had been in six zones within their surrounding environment in the past week, ranging from their bedroom (score=0) to out of town (score=6).

Psychosocial

Depressive symptoms were measured using a 10-item version of the Center for Epidemiologic Studies of Depression scale (range 1-10 with higher scores indicating more depressive symptoms) (Radloff, 1977). Well-being was measured via the 18-item version of Ryff's Scales of Psychological Well Being (Ryff, 1989; Ryff & Keyes, 1995), which includes three items for each of six aspects of well being: purpose in life; self acceptance (positive attitude towards oneself); positive relations with others (high quality satisfying relationships); autonomy (sense of self-determination and independence); environmental mastery (ability to manage life); and personal growth (self actualization). Item scores (range 1-7) for each dimension were averaged to yield domain specific well-being scores. The personality traits of neuroticism, indicative of distress proneness, and extraversion, indicative of sociability, were measured using subscales from the NEO Five-Factor Inventory (Costa & McCrae, 1992). Participants rated agreement with each item (six items each for neuroticism and extraversion) and total scores were computed (range 0-48) with higher scores indicating a higher level of each trait (Wilson et al., 2006). Loneliness was measured with a modified version of the De Jong-Gierveld Loneliness Scale (de Jong-Gierveld, 1987), described in detail previously (Wilson et al., 2007). Scores for each item (5-point scale indicating agreement with statement) were averaged with higher values indicating more loneliness. Social support was assessed with four questions from the Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988) that make up the Significant Other subscale (Zimet, Powell, Farley, Werkman, & Berkoff, 1990). Participants rated agreement with each statement (e.g., "There is a special person who is around when I am in need") on a 5-point scale, and item scores were averaged, with higher scores denoting more social support. Social network size was the total number of children, other relatives, and close friends seen at least once per month (Bennett, Schneider, Tang, Arnold, & Wilson, 2006). Because of skew, the number of contacts was square-rooted for regression analysis.

Health and financial literacy

Health and financial literacy were assessed with a series of questions designed to measure knowledge of health and financial information and concepts, and numeracy as previously described (James, Boyle, Bennett, & Bennett, 2012; Lusardi & Mitchell, 2006). There were nine questions on health literacy, including questions on Medicare, following doctors' prescription instructions, leading causes of death in older persons, and framing the same drug risk information in two separate ways. There were 23 questions on financial literacy, many of which were adapted for use in older persons (by simplifying wording) from the Health and Retirement Survey (Lusardi & Mitchell, 2006). Questions assessed knowledge of

financial terms and institutions such as the Federal Deposit Insurance Corporation and stocks and bonds. Other questions dealt with numeracy and assessed ability to perform simple monetary calculations such as sales and interest rates. All answer choices were multiple choice or true/false with only one correct answer, and each item was scored as correct or incorrect. Because of the difference in number of items, health and financial literacy subscores were expressed as the percentage correct out of total items (from 0-100). The total literacy score was the average of these two percentages.

Statistical analysis

We first examined correlations of susceptibility to scams with demographics and all covariates. We then constructed a linear regression model with susceptibility to scams as the dependent variable and terms for demographics (age, sex, race, education, and income). To this model, we added terms for each of the variables that were significantly correlated (at $\alpha = 0.05$) with susceptibility to scams, separately. All variables that were significantly associated after adjustment for demographics were then examined in models that included the same terms plus a term for global cognition to determine if relationships were independent of level of cognitive ability. Finally, a fully adjusted model was constructed with all variables that were significantly associated at $\alpha = 0.05$ with susceptibility to scams after adjustment for demographics and global cognition. Interactions between each significantly associated variable and demographic variables were examined in models with interaction terms. Model diagnostics were performed by checking residuals using analytic and graphical techniques. All analyses were conducted using SAS 9.3.

Results

Descriptive characteristics of the analytic cohort are presented in Table 1. The mean age was 82.4 (SD=7.6) years old, mean education was 15.2 (SD=3.0) years, and mean income was between \$30,000 and \$34,999, 23.2% were male, 8.8% were not white, Non-Hispanic. The mean score on the susceptibility to scams scale (range 1-7) was 2.88 (SD=0.70). In bivariate analyses, susceptibility to scams was positively correlated with age, frailty, ADL and IADL disability, neuroticism, and loneliness, and negatively correlated with education, income, cognition (total and all domains), physical activity, life space, well-being, social support and literacy (financial, health, and total) (Table 1).

We next ran a series of linear regression models to examine adjusted associations. In a core model with terms for each demographic variable, higher age ($\beta = 0.027$, $p < 0.001$) and lower income ($\beta = -0.040$, $p = 0.001$) were associated with greater susceptibility to scams. Sex ($\beta = 0.028$, $p = 0.065$), race ($\beta = -0.043$, $p = 0.67$), and education ($\beta = -0.009$, $p = 0.36$) were not associated with susceptibility to scams. Next, to this model, we added terms for each variable that was examined in bivariate analyses (separate model for each variable; Table 2, Model set 1). Lower levels of global cognitive function and each specific cognitive domain except for visuospatial ability were associated with greater susceptibility to scams. None of the measures of functional status were associated with susceptibility to scams. Lower scores on the well-being measure, less social support, and lower levels of health, financial, and total literacy were associated with greater susceptibility to scams.

Although persons with dementia were not included in these analyses, there was substantial variability in cognitive function, and level of cognitive function could greatly affect an older adult's susceptibility to scams and confound associations with other variables. We therefore reran the models in the previous step that had variables including significant associations with susceptibility to scams (well-being, social support, and literacy [because both health and financial literacy were significantly associated, we focused on total literacy]) with a term for global cognitive function (Table 2, Model set 2) to determine whether associations

persisted after adjustment for the level of cognitive ability. Well-being and total literacy remained associated with susceptibility to scams after adjustment for cognitive function. Social support showed a trend but the relationship did not meet the standard threshold for statistical significance. Finally, in a fully adjusted model with terms for demographics, global cognition, well-being, and total literacy, persons who were older, had lower cognitive function, lower well-being, and lower literacy scores were more susceptible to scams (Table 3).

Discussion

In this cohort of more than 600 older men and women without dementia, we investigated a number of potential correlates of susceptibility to scams. The oldest old, persons with lower levels of cognitive function, lower psychological well-being, and poorer health and financial literacy appeared to be the most susceptible to scams, independent of level of education and income. There was no difference in susceptibility between males and females. This study identifies a number of factors that may put older adults at high risk of falling prey to scams, and suggests at least two modifiable factors—health and financial literacy and well-being—as potential targets for interventions to prevent victimization of older persons. Combined with other research, this information could be a crucial first step in determining which seniors are most susceptible to financial victimization and what to do to prevent it in the context of this large and growing threat to independence and quality of life in old age.

This study supports the emerging idea that the prevailing stereotype of the elderly fraud victim as socially isolated, physically frail individuals may not align with reality (AARP, 1996; Alves & Wilson, 2008; Johnson, 2003) as many of the health, disability, and social integration variables assessed here were not associated with susceptibility to scams. Healthy and active seniors appear to be equally susceptible to scams. Socio-economic factors (i.e., education and income) also did not appear to play much of a role in determining which seniors are susceptible. The AARP survey found that the predominant feature of older persons who fell victim to telemarketing scams is that they seem to believe the pitches they hear and are unable to hang up on telemarketers (AARP, 1996). Thus, we tested whether certain recognized personality traits were associated with susceptibility to scams. Interestingly, the most robust psychosocial correlate of susceptibility to scams was psychological well-being. This indicates that positive functioning and outlook on one's life is associated with being less susceptible to being taken advantage of by a scammer. However, somewhat surprisingly, the personality traits of neuroticism and extraversion did not have relationships with susceptibility. Depression also did not appear to be related to susceptibility. This information may help family members and other caretakers identify if a senior under their care may be at high risk for falling victim to a scam.

The oldest old are more at risk for susceptibility to scams than the younger old even after adjusting for differences in socioeconomic status, cognition, health, and literacy. This could point to other generational differences such as attitudes towards telemarketers or general phone manners, but more research is needed to explore the basis of these age differences. These results also indicate that even among older adults without dementia, cognitive function plays a large role in determining who is susceptible to scams. This is not surprising and aligns with previous research (Choi et al., 1999; Choi et al., 1999) but should be taken into account in determining effective measures to counter victimization of the elderly. Even though an older person has not been clinically diagnosed with dementia or other form of cognitive impairment, persons with preclinical dementia or even those without overt cognitive impairment may be at risk. Finally, the finding that both financial and health literacy were related to susceptibility to scams indicates a potential intervention target to prevent scams. Older adults with more knowledge of financial concepts and how financial

and healthcare institutions work may be less likely to fall for false information that is fed to them by scammers, regardless of their cognitive abilities. This is encouraging because it indicates that improving upon the knowledge that older persons need to make every day decisions regarding their money and health needs may be a way to intervene upon vulnerable seniors.

Strengths and Limitations of the Study

A limitation of this study is that we had no information on whether the participants of this study had actually fallen victim to a scam. Future work will examine the relationship between our measure of susceptibility to scams and actual experiences with scams. Another limitation is the selected nature of this relatively high functioning volunteer cohort, which may have limited the range of the susceptibility to scam scale and many of the correlates, and may limit the generalizability of our findings. Furthermore, the majority of participants in the Rush Memory and Aging Project live in retirement communities and thus may be exposed to less risk of fraud than older persons living alone in individual homes.

This study had a number of strengths including the use of data from a large, community-based cohort of older adults and robust measures of cognitive function, psychosocial factors, and other potential correlates of susceptibility to scams. Additionally, we were able to examine several potential confounders to assure that associations were independent of cognitive ability and socio-economic differences.

Implications

This study has implications for future research and practice in terms of efforts to reduce the risk of scams in the elderly. These findings could aid the development of an assessment tool for decision-making capacity regarding investment and healthcare decisions targeted to older adults. Such a tool could help to balance a respect for independence with protection from victimization in the context of cognitive impairments.

These findings could also help to guide the creation of an intervention to address deficiencies in financial and health literacy for older persons, which, in addition to raising awareness of scams and how to recognize them, may prove to be a successful strategy to prevent victimization by scammers. Reducing the cognitive demands inherent to informational materials for older individuals and tailoring them to be more specific to the situations seniors often contend with may effectively increase literacy in the aging population.

Finally, these findings indicate that psychological interventions such as counseling to address well-being and instill a positive outlook on life may help to make older adults less susceptible to falling prey to con-artists. More work is needed to understand how to translate these findings into preventive measures to stem the rising exploitation of seniors.

Acknowledgments

We thank the many Illinois residents for participating in the Rush Memory and Aging project; Traci Colvin, MPH, Tracey Nowakowski, and Brian Hillary for managing the study; Woojeong Bang, MS, for aid with statistical programming; and John Gibbons, MS for data management.

Funding: Funding is provided by NIH grants R01AG17917, R01AG34374, and R01AG33678, and the Robert C. Borwell Endowment Fund.

References

- AARP. Telemarketing Fraud and Victimization of Older Americans: An AARP Survey. Washington, D.C.: 1996.
- AARP. AARP Poll: Nearly One in Five Americans Report They've Been Victimized by Fraud. Washington, D.C.: 1999.
- AARP. Off the hook: Reducing participation in telemarketing fraud. Washington, DC: 2003.
- Alves LM, Wilson SR. The Effects of Loneliness on Telemarketing Fraud Vulnerability Among Older Adults. *Journal of Elder Abuse & Neglect*. 2008; 20(1):63–85.10.1300/J084v20n01_04 [PubMed: 18551907]
- Aziz SJ, Bolick DC, Kleinman MT, Shadel DP. The National Telemarketing Victim Call Center: Combating Telemarketing Fraud in the United States. *Journal of Elder Abuse & Neglect*. 2000; 12(2):93–98.10.1300/J084v12n02_10
- Bennett DA, Schneider JA, Buchman AS, Mendes de Leon C, Bienias JL, Wilson RS. The Rush Memory and Aging Project: study design and baseline characteristics of the study cohort. *Neuroepidemiology*. 2005; 25(4):163–175. [PubMed: 16103727]
- Bennett DA, Schneider JA, Tang Y, Arnold SE, Wilson RS. The effect of social networks on the relation between Alzheimer's disease pathology and level of cognitive function in old people: a longitudinal cohort study. *Lancet Neurol*. 2006; 5(5):406–412. [PubMed: 16632311]
- Boyle PA, Buchman AS, Barnes LL, James BD, Bennett DA. Association between life space and risk of mortality in advanced age. *J Am Geriatr Soc*. 2010; 58(10):1925–1930.10.1111/j.1532-5415.2010.03058.x [PubMed: 20831722]
- Buchman AS, Boyle PA, Wilson RS, Tang Y, Bennett DA. Frailty is associated with incident Alzheimer's disease and cognitive decline in the elderly. *Psychosom Med*. 2007; 69(5):483–489. [PubMed: 17556640]
- Choi NG, Kulick DB, Mayer J. Financial Exploitation of Elders: Analysis of Risk Factors Based on County Adult Protective Services Data. *Journal of Elder Abuse & Neglect*. 1999; 10(3-4):39–62.10.1300/J084v10n03_03
- Costa, P.; McCrae, R. Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) Professional Manual. Odessa, FL: Psychological Assessment Resources; 1992.
- de Jong-Gierveld J. Developing and testing a model of loneliness. *J Pers Soc Psychol*. 1987; 53(1): 119–128. [PubMed: 3612484]
- Deem DL. Notes from the Field: Observations in Working with the Forgotten Victims of Personal Financial Crimes. *Journal of Elder Abuse & Neglect*. 2000; 12(2):33–48.10.1300/J084v12n02_05
- Dessin CL. Financial Abuse of the Elderly. *Idaho Law Review*. 2000; 36(203)
- Financial Industry Regulatory Authority. Financial Industry Regulatory Authority Risk Meter. Retrieved June, 2013, from <http://apps.finra.org/meters/1/riskmeter.aspx>
- Friedman M. Confidence Swindles of Older Consumers. [Article]. *Journal of Consumer Affairs*. 1992; 26(1):20–46.
- Jackson, SL.; Hafemeister, TL. Final Report Presented to the National Institute of Justice. 2011. Financial Abuse of Elderly People vs Other Forms of Elder Abuse: Assessing Their Dynamics, Risk Factors, and Society's Response.
- James BD, Boyle PA, Bennett JS, Bennett DA. The Impact of Health and Financial Literacy on Decision Making in Community-Based Older Adults. *Gerontology*. 2012 000339094 [pii] 10.1159/000339094.
- James BD, Boyle PA, Buchman AS, Barnes LL, Bennett DA. Life space and risk of Alzheimer disease, mild cognitive impairment, and cognitive decline in old age. *Am J Geriatr Psychiatry*. 2011; 19(11):961–969.10.1097/JGP.0b013e318211c219 [PubMed: 21430509]
- Johnson, KD. Financial Crimes Against the Elderly. 2003. Retrieved from http://www.popcenter.org/problems/crimes_against_elderly/#endref15
- Katz S, Akpom CA. A measure of primary sociobiological functions. *Int J Health Serv*. 1976; 6(3): 493–508. [PubMed: 133997]

- Lawton MP, Brody EM. Assessment of older people: self-maintaining and instrumental activities of daily living. *Gerontologist*. 1969; 9(3):179–186. [PubMed: 5349366]
- Lusardi A, Mitchell OS. *Financial Literacy and Planning: Implications for Retirement Wellbeing*: Netherlands Central Bank, Research Department. 2006
- McKhann G, Drachman D, Folstein M, Katzman R, Price D, Stadlan EM. 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*. 1984; 34(7):939–944. [PubMed: 6610841]
- McPhillips JB, Pellettera KM, Barrett-Connor E, Wingard DL, Criqui MH. Exercise patterns in a population of older adults. *Am J Prev Med*. 1989; 5(2):65–72. [PubMed: 2730794]
- MetLife Inc. *Elder Financial Abuse: Crimes of Occasion, Desperation, and Predation Against America's Elders*. 2011
- National Consumers League. *National Fraud Information Center Top Scams of 2011*. Washington DC: 2011.
- Nerenberg L. Forgotten Victims of Financial Crime and Abuse: Facing the Challenge. *Journal of Elder Abuse & Neglect*. 2000; 12(2):49–73.10.1300/J084v12n02_06
- Pak, K.; Shadel, D. *AARP Foundation National Fraud Victim Study*. Washington DC: 2011.
- Payne BK, Strasser SM. Financial Exploitation of Older Persons in Adult Care Settings: Comparisons to Physical Abuse and the Justice System's Response. *Journal of Elder Abuse & Neglect*. 2012; 24(3):231–250.10.1080/08946566.2011.653315 [PubMed: 22737974]
- Radloff L. The CES-D Scale: a self-report depression scale for research in the general population. *Applied Psychological Measurement*. 1977; 1:385–401.
- Reiboldt W, Vogel RE. A Critical Analysis of Telemarketing Fraud in a Gated Senior Community. *Journal of Elder Abuse & Neglect*. 2003; 13(4):21–38.10.1300/J084v13n04_02
- Ryff CD. In the eye of the beholder: views of psychological well-being among middle-aged and older adults. *Psychol Aging*. 1989; 4(2):195–201. [PubMed: 2789747]
- Ryff CD, Keyes CL. The structure of psychological well-being revisited. *J Pers Soc Psychol*. 1995; 69(4):719–727. [PubMed: 7473027]
- Sen. Evan Bayh [D-IN 1999-2010]. S. 3164 (106th): Protecting Seniors From Fraud Act (2000).
- Souare, GE.; Lloyd, LS. The history of demography and aging in the United States. In: Loue, S.; Sajatovic, M., editors. *Encyclopedia of Aging and Public Health*. New York: Springer; 2008. p. 11-22.
- U.S. Government Printing Office. , editor. U.S. Census Bureau. *Current Population Reports, Special Studies, P23-209, 65+ in the United States: 2005*. Washington, DC: 2005.
- U.S. House of Representatives. HR 868: Consumer Protection Telemarketing Act (103d Congress, 1st Session). Washington, DC: U.S. Government Printing Office; 1993.
- Wilson RS, Barnes LL, Krueger KR, Hoganson G, Bienias JL, Bennett DA. Early and late life cognitive activity and cognitive systems in old age. *J Int Neuropsychol Soc*. 2005; 11(4):400–407. [PubMed: 16209420]
- Wilson RS, Buchman AS, Arnold SE, Shah RC, Tang Y, Bennett DA. Harm avoidance and disability in old age. *Exp Aging Res*. 2006; 32(3):243–261. RK55687697354R24 [pii] 10.1080/03610730600699142. [PubMed: 16754467]
- Wilson RS, Krueger KR, Arnold SE, Schneider JA, Kelly JF, Barnes LL, et al. Bennett DA. Loneliness and risk of Alzheimer disease. *Arch Gen Psychiatry*. 2007; 64(2):234–240. [PubMed: 17283291]
- Wilson RS, Mendes De Leon CF, Barnes LL, Schneider JA, Bienias JL, Evans DA, Bennett DA. Participation in cognitively stimulating activities and risk of incident Alzheimer disease. *JAMA*. 2002; 287(6):742–748. [PubMed: 11851541]
- Zimet GD, Dahlem NW, Zimet SG, Farley GK. The Multidimensional Scale of Perceived Social Support. [Article]. *Journal of Personality Assessment*. 1988; 52(1):30.
- Zimet GD, Powell SS, Farley GK, Werkman S, Berkoff KA. Psychometric characteristics of the Multidimensional Scale of Perceived Social Support. *J Pers Assess*. 1990; 55(3-4):610–617.10.1080/00223891.1990.9674095 [PubMed: 2280326]

Table 1
Characteristics of cohort and correlations with susceptibility to scams

Variable (units or range)	Mean (or n)	SD (or %)	Correlation with scams (or F)	p-value
Age (years)	82.44	7.57	0.29	<0.001
Sex (male)	148	23.2%	F=0.00	0.97
Race (not white, Hispanic)	56	8.8%	F=0.60	0.44
Education (years)	15.20	2.99	-0.10	0.010
Income*	7.10	2.41	-0.15	<0.001
Susceptibility to Scams (1-7)	2.88	0.70	--	--
Cognition				
Global cognition	0.22	0.55	-0.28	<0.001
Episodic memory	0.32	0.72	-0.21	<0.001
Semantic memory	0.24	0.61	-0.22	<0.001
Visuospatial ability	0.22	0.73	-0.10	0.011
Perceptual speed	0.10	0.81	-0.30	<0.001
Working memory	0.13	0.72	-0.15	<0.001
Functional Status				
Chronic medical conditions	0.82	0.92	-0.013	0.75
Frailty	0.04	0.58	0.19	<0.001
ADLs	0.38	1.01	0.10	<0.001
IADLs	1.45	1.89	0.19	<0.001
Physical activity	3.32	3.50	-0.079	0.045
Life space	5.50	1.04	-0.12	0.002
Psychosocial				
Depression	1.03	1.63	0.076	0.057
Well-being	5.48	0.60	-0.24	<0.001
Neuroticism	14.05	7.00	0.098	0.013
Extraversion	32.35	6.04	-0.029	0.47
Loneliness	2.20	0.61	0.091	0.021
Social networks (number of contacts)	6.45	5.72	-0.016	0.69
Social support	4.36	0.70	-0.14	<0.001
Literacy				
Financial literacy	72	17	-0.26	<0.001
Health literacy	61	19	-0.22	<0.001
Total literacy**	67	15	-0.28	<0.001

* Income range: 1 (<\$5,000) to 10 (>\$75,000). A score of 7 represents an annual income of \$30,000–\$34,999.

** average of financial and health literacy.

Table 2
Associations with susceptibility to scams

	Model set 1		Model set 2 ^a	
	β estimate (SE)	p-value	β estimate (SE)	p-value
Cognition				
Global cognition	-0.237 (0.056)	<0.001		
Episodic memory	-0.125 (0.040)	0.002		
Semantic memory	-0.163 (0.051)	0.002		
Visuospatial ability	-0.045 (0.041)	0.28		
Perceptual speed	-0.170 (0.037)	<0.001		
Working memory	-0.089 (0.039)	0.024		
Functional Status				
Chronic medical conditions	0.001 (0.029)	0.99	--	
Frailty	0.030 (0.066)	0.65	--	
ADLs	0.019 (0.027)	0.49	--	
IADLs	0.027 (0.015)	0.076	--	
Physical activity	-0.007 (0.008)	0.34	--	
Life space	-0.015 (0.027)	0.58	--	
Psychosocial				
Depression	0.009 (0.017)	0.59	--	
Well-being	-0.177 (0.047)	<0.001	-0.144 (0.048)	0.003
Neuroticism	0.006 (0.004)	0.14	--	
Extraversion	0.001 (0.005)	0.99		
Loneliness	-0.015 (0.047)	0.75	--	
Social networks ^b	0.013 (0.027)	0.61	--	
Social support	-0.087 (0.039)	0.025	-0.074 (0.038)	0.053
Literacy				
Financial literacy	-0.009 (0.002)	<0.001	--	
Health literacy	-0.004 (0.002)	0.009	--	
Total literacy	-0.009 (0.002)	<0.001	-0.006 (0.002)	0.016

From linear regression models; all adjusted for age, sex, race, education, and income

^a Model set 2 includes a term for global cognitive function

^b Square root of number of contacts seen in a week

Table 3
Fully adjusted associations with susceptibility to scams

Outcome	β estimate	p-value
Age	0.017 (0.004)	<0.001
Male sex	0.025 (0.065)	0.70
Education	0.009 (0.010)	0.37
Race (not white, Hispanic)	-0.133 (0.103)	0.20
Income	-0.021 (0.013)	0.089
Global cognition	-0.139 (0.065)	0.031
Well being	-0.140 (0.048)	0.003
Total literacy	-0.006 (0.002)	0.017

From linear regression model.