

Original Research Report

# Importance of Numeracy as a Risk Factor for Elder Financial Exploitation in a Community Sample

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Received November 3 2014; Accepted May 14 2015.

**Decision Editor:** Bob Knight, PhD

## Abstract

**Objectives.** To examine the role of numeracy, or comfort with numbers, as a potential risk factor for financial elder exploitation in a community sample.

**Method.** Individually administered surveys were given to 201 independent, community-dwelling adults aged 60 and older. Risk for financial elder exploitation was assessed using the Older Adult Financial Exploitation Measure (OAFEM). Other variables of interest included numeracy, executive functioning, and other risk factors identified from the literature. Assessments were completed individually at the Wood Lab at Scripps College in Claremont, CA and neighboring community centers.

**Results.** After controlling for other variables, including education, lower numeracy was related to higher scores on the OAFEM consistent with higher risk for financial exploitation. Self-reported physical and mental health, male gender, and younger age were also related to increased risk.

**Conclusions.** Results indicated that numeracy is a significant risk factor for elder financial exploitation after controlling for other commonly reported variables. These findings are consistent with the broader literature relating numeracy to wealth and debt levels and extend them to the area of elder financial exploitation.

**Key words:** Elder mistreatment—Numeracy—Risk factors

At 7:00 a.m. Betty Bell, aged 88 years, received a call telling her that she had failed to attend jury duty and that the police were on their way to arrest her. To avoid being arrested she needed to pay a fine. Fortunately, Betty's nurse aid got on the phone and the caller hung up (Olson, 2014). Millions of older adults, however, are not as lucky as Betty is. Indeed, governments, law enforcement agencies, and third-sector organizations have long been interested in reducing the rate of financial victimization, but with little hard data to support any specific programs (Scheibe et al., 2014).

Financial elder abuse is increasingly common (Dong, 2014), and researchers have long been interested in what factors help protect

older adults against financial exploitation. We define financial elder exploitation (FE) broadly in this paper as the illegal or improper use of older adults' financial resources. Large population-based studies have, thus, examined common correlates of financial elder abuse (U.S. Government Accountability Office, 2011), emphasizing demographic variables such as age, race, and income (Beach, Schulz, Castle, & Rosen, 2010; Garre-Olmo et al., 2009; Laumann, Leitsch, & Waite, 2008). Functional dependence—activities of daily living (ADLS) and instrumental activities of daily living (IADLS), and some mental and physical health diagnostic information (depression, current diagnoses)—were also found to be related to elder financial exploitation

(Acierno, Hernandez-Tejada, Muzzy, & Steve, 2009; Beach et al., 2010; Lichtenberg, Stickney, & Paulson, 2013). There has also been a growing interest in the link between cognitive variables such as memory and executive functioning, and financial elder abuse (Dong, 2014).

Although the research on financial exploitation of older adults has gained some attention, a parallel line of research has focused the relationship between cognitive ability and financial behavior, such as investing. Based on a series of studies in patients with mild cognitive impairment and moderate dementia, neuropsychological measures have been linked to financial incapacity including arithmetic abilities, executive functioning, and verbal memory (Griffith et al., 2003; Marson, Earnst, Jamil, Bartolucci, & Harrell, 2000; Martin et al., 2008). Decline in arithmetic skills as assessed by the WRAT-R calculation subtest was associated with impairment in financial capacity in the very earliest stages of mild cognitive impairment (Griffith et al.). Even among healthy adults, researchers have shown that higher cognitive abilities are associated with increased likelihood to plan for the future and participate as investors in financial market (Cole & Shastry, 2009).

Numeracy—usually conceptualized as the capacity to understand and manipulate basic mathematical concepts—is a variable that has been reported to be important in a broad range of decision-making contexts (Schwartz, Woloshin, Black, & Welch, 1997). However, numeracy is a distinct construct from basic calculation abilities and influences not only an individual's ability to “do the math” but also their engagement, comprehension, and use of numeric information in decision making (Reyna, Nelson, Han, & Dieckmann, 2009). A paper by Hung, Parker, and Yoong (2009) maintains that while numeracy and financial literacy have certain features in common, they capture different abilities, skills, and knowledge. The authors argue, therefore that, “it is more productive to keep general numeracy distinct from financial literacy” (2009, p. 7). Numeracy, however, is not only a separate capacity than financial literacy. After reviewing the literature, Reyna and colleagues (2009) state that on “the basis of studies that have controlled for education, intelligence, literacy, and other factors, we can be reasonably sure that numeracy is a separate faculty” (p. 967).

Typically, assessments of numeracy include an individual's ability to understand probabilities. For example, Peters and colleagues (2006) have reported that individuals lower in numeracy are more susceptible to certain biases in the decision making, such as being more susceptible to framing effects in their medical decision making. These individuals are more likely to demonstrate the “denominator” effect, that is, focusing on a numerator, but ignoring the denominator when estimating probabilities. Individuals lower in numeracy have also been reported to be more susceptible to mood effects, that is, demonstrating overconfidence when in a positive mood (Reyna & Brust-Renck, 2014). Numeracy appears to be related to deliberative reasoning in the sense that information derived from numbers is more easily extracted and comprehended in high numerate individuals. Individuals lower in numeracy have been reported to be left with information that is less complete and less understood than in high numerate individuals. As a result, the low numerate appears to be influenced by competing irrelevant affective factors (Peters et al., 2006). Ample research has demonstrated the importance of numeracy as a protective factor in both the health and financial domains. Individuals high in numeracy make better health insurance decisions (Hibbard, Mahoney, Stock, & Tusler, 2007), and numeracy is an independent predictor of people's ability to choose a health plan (Hibbard et al., 2007; Wood et al., 2011). Interestingly, older adults tend to be less numerate than younger adults and therefore may be at higher risk for poor

decision making (Jenkins, Ackerman, Frumkin, Salter, & Vorhaus, 2011).

Works by Lusardi and Mitchell (2007, 2011) have highlighted the important link between numeracy and the ability to understand, grapple, and utilize financial information. Their studies show that numeracy is related to the ability to correctly answer financial questions, make better financial decisions about their retirement saving, and more likely to pay off loans and credit cards (Lusardi & Mitchell, 2011; Lusardi & Tufano, 2009). Also, it has been argued that one way of protecting older adults from FE is to increase their financial knowledge (Gamble, Boyle, Yu, & Bennett, 2014). Despite this corpus of data, we know of few empirical studies that have examined the link between numeracy and financial exploitation among older adults. Given earlier work linking financial capacity to mild cognitive impairment, it is, therefore, reasonable to predict that numeracy may also be an indicator of risk in a nonclinical group (Griffith et al., 2003).

Assessment of financial exploitation has been done traditionally by a single-item measure. Realizing its limitation, researchers have developed a multiple-item interview questions to better capture the complexity and diversity of financial exploitation (Acierno et al., 2009, 2010; Beach et al., 2010). Probably the most in-depth and comprehensive measure currently available, the Self-Report Measure of Financial Exploitation of Older Adults (the Older Adult Financial Exploitation Measure [OAFEM]) is a 79-item, client self-report measure that has been psychometrically validated in a sample of abused older adults (Conrad, Iris, Ridings, Langley, & Wilber, 2010). The OAFEM covers six domains of financial exploitation: theft and scams, abuse of trust, financial entitlements, coercion, signs of possible abuse, and risk factors. The wide variety of domains covered in the OAFEM makes the measure more likely than others to detect potential financial exploitation that has taken place within the past 12 months. These characteristics render the OAFEM as the best instrument for our purposes, which is the study of elder financial exploitation broadly defined in a community sample.

In the current study, we interviewed a sample of community-dwelling older adults to identify risk factors for financial exploitation. Previous work in elder mistreatment has found that dependency, physical health, and mental health are important risk factors in elder mistreatment (see Wilber & Reynold, 1997, for a theoretical overview). We included these variables and added executive functioning, general cognitive functioning, and numeracy. It was hypothesized that lower scores on all of the cognitive measures will be a critical risk factor for higher scores on the OAFEM. However, we were especially interested in the role that numeracy may play in vulnerability to financial exploitation in this project.

## Method

### Participants

A total of 201 community-dwelling adults aged 60 and older were recruited from the Greater Los Angeles Area. Participants were residents in Claremont and nearby cities recruited from an existing participant pool, or with flyers distributed to senior centers and retirement communities. Participants' average age was 74.84 years ( $SD = 8.17$ ; range 60–95 years) and were highly educated (16.05 years of education;  $SD = 3.09$ ). Mini-Mental State Examination (MMSE) average score was 28.25 ( $SD = 2.03$ ), ranging from 20 to 30.