

## Insights: Financial Capability

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This paper summarizes the findings from a manuscript titled *Adverse Impacts of Declining Financial and Health Literacy in Old Age*. The corresponding author for this issue brief and the full manuscript is Lei Yu ([lei\\_yu@rush.edu](mailto:lei_yu@rush.edu)).

## Adverse Impacts of Declining Financial and Health Literacy in Old Age

### Summary

Inadequate financial and health literacy among older adults presents a formidable public health and economic challenge. Cross-sectional studies have reported robust associations of financial and health literacy with decision making, scam susceptibility and psychological well-being in old age. However, the effects of declining literacy on these outcomes have not been examined. This study investigated declining financial and health literacy in relation to subsequent decision-making performance, susceptibility to scams and psychological well-being among community-dwelling older adults. Data from annual literacy assessments of up to 10 years revealed an overall trend of decline in financial and health literacy, while a small proportion of participants were able to maintain their literacy level over time. Faster decline in financial and health literacy was associated with poorer decision making, higher susceptibility to scams and lower psychological well-being, above and beyond the starting level of literacy. These findings suggest that efforts to mitigate declining financial and health literacy may promote independence and well-being in old age.

### Background

Financial and health literacy involves skills of acquiring, processing and utilizing information necessary to make sound financial and health decisions, and is an important determinant of independence and well-being. Adequate financial and health literacy is especially critical in aging, as boomers are inundated with various financial and healthcare challenges. Unfortunately, older adults are vulnerable to poor financial and health literacy. A large proportion of older adults struggle with basic financial concepts such as compound interest, inflation or mutual funds,<sup>1</sup> and many lack sophistication in areas such as risk diversification, asset valuation, portfolio choice and investment fees.<sup>2</sup> In addition, the prevalence of inadequate health literacy also increases with age.<sup>3</sup>

Lack of financial and health literacy in old age presents a formidable economic and public health problem. Older adults can suffer from unrecoverable financial loss and severe health consequences because of poor literacy and decision making.<sup>4,5</sup> We and others have shown that older adults with lower financial and health literacy are less likely to participate in health promoting activities,<sup>6</sup> are more susceptible to financial fraud and scams,<sup>7</sup> and have poorer cognitive and mental health.<sup>8</sup>

Notably, the vast majority of the literature on the impacts of financial and health literacy has relied on cross-sectional data, *i.e.*, data collected at one time point. These data have an inherent limitation. Financial and health literacy is strongly influenced by life experience factors, such as education and occupation, as well as contextual factors like systemic racism and sexism. These factors greatly influence the level of performance at a single point in time. Furthermore, with aging, older adults are increasingly exposed to a variety of diseases—such as Alzheimer’s disease and stroke—that degrade many functional abilities, including financial and health literacy. Initial evidence suggests that financial and health literacy declines with age.<sup>9,10</sup> Taken together, these findings raise an important question, that is, are the consequences of inadequate financial and health literacy in old age driven primarily by the levels of literacy accumulated through earlier life experiences, or age-related declines that occurs later in life, or both?

*Faster decline in financial and health literacy was associated with poorer decision making, higher susceptibility to scams and lower psychological well-being.*

In this issue brief, we first demonstrate that financial and health literacy indeed declines over time among community-dwelling older adults. We then present evidence that declining financial and health literacy is implicated in subsequent decision-making performance, susceptibility to scams and psychological well-being, above and beyond the starting level of literacy.

## Study Participants

The analyses include data from 1,046 participants of the Rush Memory and Aging Project.<sup>11</sup> Participants are primarily older residents of continuous care retirement communities and subsidized housing facilities throughout the Chicago metropolitan area. The average age was about 80 years (Standard deviation [SD]: 7.4, range: 59.0-100.2). The average years of education was about 16 years (SD: 3.0, range: 5-30) and 76 percent were female (N=798). Almost all the participants were non-Latino white (91.4 percent). The annual median family income was between \$35,000 and \$49,999.

## Key Findings

### *Financial and health literacy declines in old age*

We used a composite score to examine the change in financial and health literacy over time.<sup>12</sup> Financial literacy was assessed via a 23 item instrument, of which 12 items assessed financial and institutional knowledge (*e.g.*, stocks and mutual funds, bond prices in relation to interest); nine items assessed numeracy (*e.g.*, comparing and converting percentages, calculating merchandise price given the discount); and the remaining three items assessed the skill that combines both financial knowledge and numeracy in the context of investment returns. Health literacy was assessed via nine items that measure knowledge of health information and concepts (*e.g.*, Medicare and Medicare Part D coverage, following prescription instruction). The financial literacy score is the percentage of total financial literacy items answered correctly, and the health literacy score follows a similar calculation. A composite score for total literacy is the average of the domain-specific scores, with higher scores indicating higher financial and health literacy.

Figure 1 Estimating change in financial and health literacy in old age

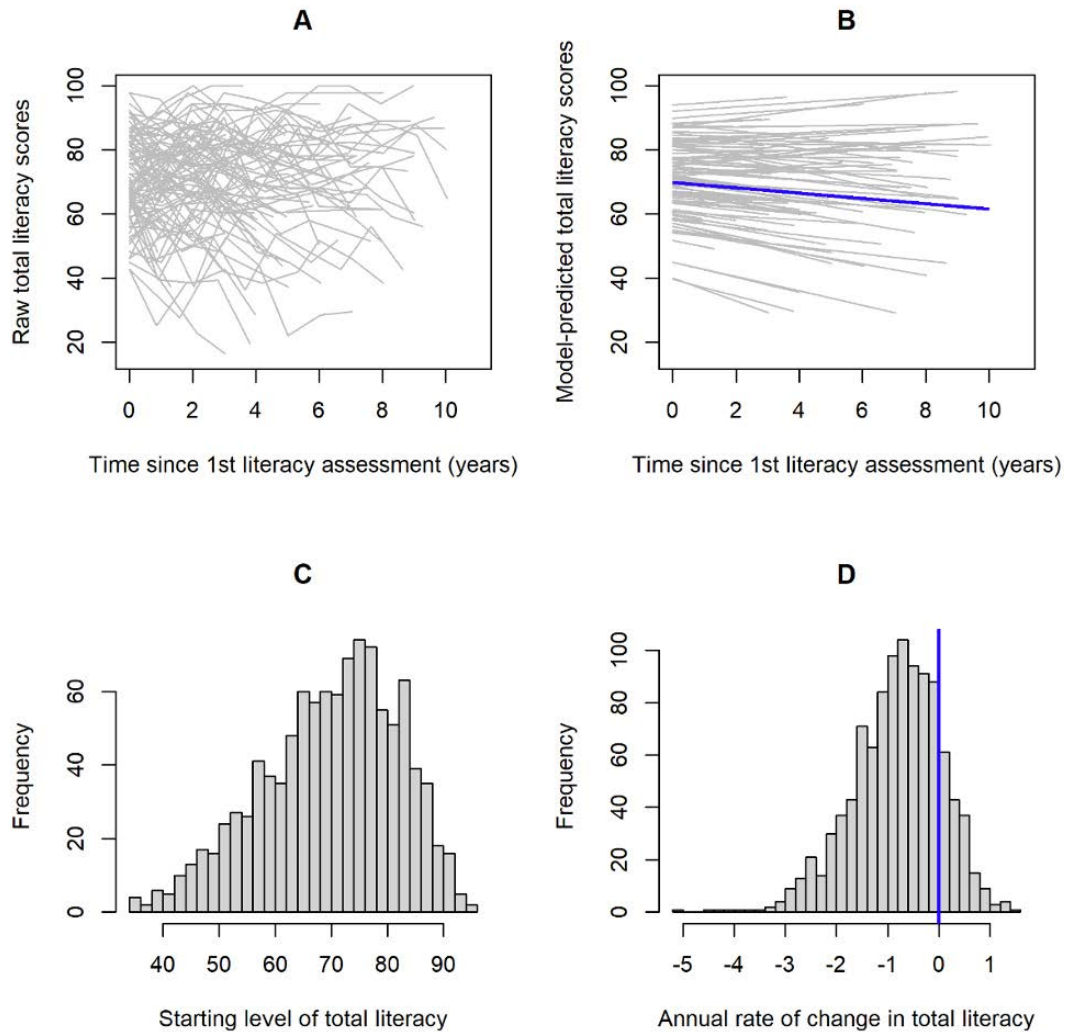


Figure 1A illustrates the annual financial and health literacy scores observed over time, with each series representing a participant randomly selected from our data. Figure 1B shows the corresponding annual rate of change. On average, 70 percent of financial and health questions were answered correctly at baseline (Figure 1C). Consistent with previous reports,<sup>13,14</sup> there was an overall decline in financial and health literacy, such that the total literacy score dropped about 1 percentage point each year ( $p < .001$ ). Further, we observed a substantial person-to-person variation in the rate of decline. While most participants ( $N=873$ , 83.5 percent) experienced decline in financial and health literacy, some ( $N=173$ , 16.5 percent) managed to maintain their literacy level during the follow-up (Figure 1D). Older age, being female, lower income, fewer years of education and impaired cognition are correlated with faster decline in financial and health literacy.

In a series of regression analyses, we examined the impacts of change in financial and health literacy on the measures of financial and health decision making, scam susceptibility and psychological well-being. Notably, our analyses specifically target the rate of change in financial and health literacy that precedes these outcomes of interest. This allows us to better understand the consequences of declining literacy.

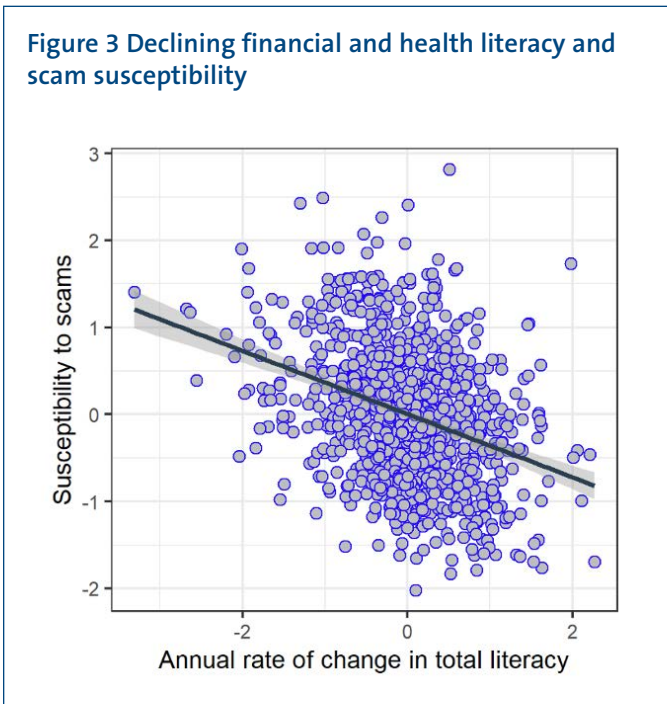
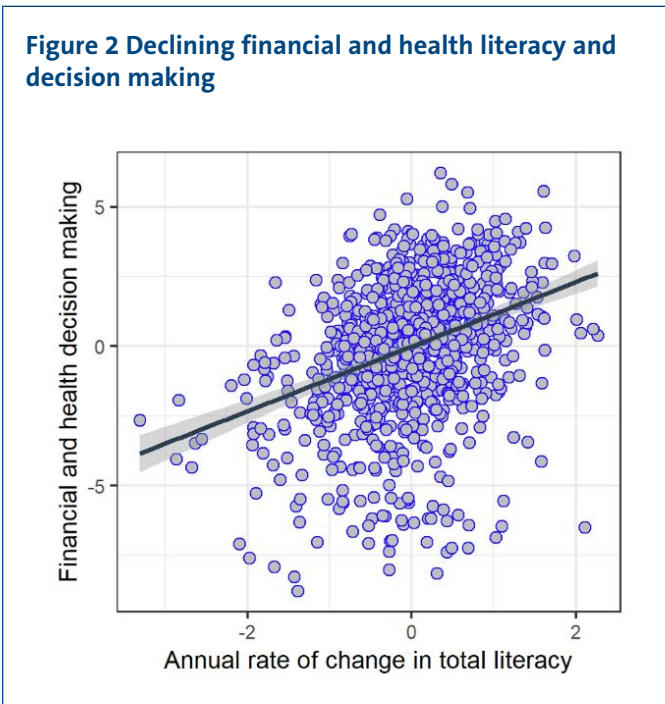
**Declining literacy negatively influences financial and health decision making**

Total financial and health decision making was assessed using a 12-item version of the Decision Making Assessment Tool.<sup>15</sup> For financial decision making, participants were presented tables with information about different mutual funds and then asked six questions of varying difficulty levels. The assessment of health decision making follows a similar structure, in which tables with information about various HMO plans were presented. Each correct answer was scored one point, and the number of correct answers was tallied to obtain a total financial and health decision-making score.<sup>16</sup> A higher score indicated higher decision-making ability. The mean total decision-making score was 7.2 (SD=3.0, range 0-12), suggesting on average, seven out of 12 financial and health decision making questions were answered correctly.

Having a lower starting level of financial and health literacy was associated with poorer decision making years later, such that 1SD lower in the baseline total literacy score corresponded to 0.2SD lower in the total decision making score. Separately, a faster decline in financial and health literacy was also associated with poorer decision making. With 1SD of additional decline in the total literacy score, the decision-making score was approximately 0.3SD lower. Figure 2 illustrates the correlation between the change in financial and health literacy with decision making. It is evident that the faster financial and health literacy declines (*i.e.*, lower value on the x-axis), the lower the decision-making ability.

**Declining literacy increases susceptibility to scams**

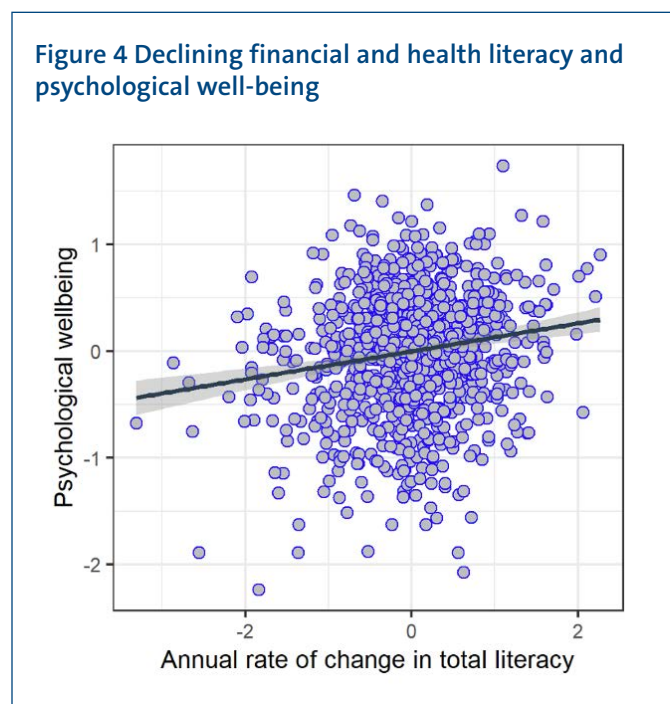
Susceptibility to scams was assessed based on participants’ responses to five statements that indicate vulnerability to scams according to findings from AARP and the FINRA Foundation<sup>17</sup> (See Appendix for the specific items.). Participants used a seven-point scale to indicate how much they disagreed or agreed with each statement. A higher average rating across the five items indicates higher susceptibility to scams. The mean scam susceptibility score was 2.6 (SD=0.9, range 1-6).



We examined the association of decline in financial and health literacy with susceptibility to scams. Older adults with a lower baseline level of financial and health literacy and, separately, a faster decline in literacy, were more susceptible to scams. With 1SD lower in the baseline literacy score, the scam susceptibility score was 0.17SD higher. The strength of association for decline in literacy was nearly double, such that 1SD of additional decline in the financial and health literacy score corresponded to 0.35SD higher in the scam susceptibility score (Figure 3).

### Declining literacy undermines psychological well-being

Psychological well-being was assessed using an 18-item instrument adapted from Ryff's Scales of Psychological Well-being.<sup>18</sup> Participants rated, on a seven-point scale, their agreement with each item. Six different aspects of psychological well-being were assessed, including self-acceptance, autonomy, environmental mastery, purpose, positive relation with others and personal growth. Item-specific ratings were averaged to obtain an overall well-being measure, and a higher score indicated higher psychological well-being. The mean overall well-being score was 5.5 (SD=0.6, range 3-7), suggesting a relatively high level of psychological well-being in this group of older adults.



We did not observe an association of baseline literacy level with psychological well-being; however, participants with faster decline in financial and health literacy exhibited lower psychological well-being. With 1SD of additional decline in the literacy score, the overall psychological well-being score was 0.19SD lower (Figure 4).

## Discussion

In this study of over 1,000 community-dwelling older adults, we show that decline in financial and health literacy is subsequently associated with poorer decision making, higher susceptibility to scams and lower psychological well-being, above and beyond the association of starting level of literacy. Implications of these findings are discussed.

The current study extends the very limited literature on the longitudinal profile of financial and health literacy in old age. By leveraging data from annual literacy assessments of up to 10 years, our findings reveal two interesting patterns of change in domain-specific literacy. First, our data demonstrate an overall trend of decline in financial and health literacy among community-living older adults. It is estimated that an average older person declined 1 percentage point a year in total literacy score. Second and more interestingly, we observe that not everyone experienced decline in financial and health literacy, and a small proportion were able to maintain their literacy level over time. This person-specific heterogeneity of change in financial and health literacy offers an opportunity for future studies to identify potential modifiable determinants of declining financial and health literacy.

We show that the association of declining financial and health literacy with subsequent outcomes was above and beyond the starting level of literacy. More importantly, the strength of associations with all three outcomes (*i.e.*, financial and health decision making, scam susceptibility and psychological well-being) are stronger for rate of decline of financial and health literacy than level. This is especially relevant for research on aging. These results highlight the importance of capturing and possibly reversing age-related decline in financial and health literacy. Notably, additional analysis further reveals that the association of declining literacy persisted even after controlling for traditionally measured cognitive abilities.



In this context, declining financial and health literacy may represent a novel harbinger of adverse outcomes, and regular monitoring of financial and health literacy could serve as a useful tool to identify individuals at risk of impending impairment in decision making and other important aspects of functioning.

In conclusion, by showing that declining financial and health literacy impacts a variety of outcomes, yet that decline is not inevitable and potentially preventable or reversible, the current study highlights the importance of preventing declining literacy in old age. One important implication of this finding is that efforts to increase or maintain financial and health literacy in older adults could prove beneficial, with regard to a number of outcomes. As such, making financial and health education and training programs more widely available and accessible, particularly for older adults, might be a very useful strategy to improve overall well-being in old age.

## Acknowledgement

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## Appendix

### Scam Susceptibility Questions

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.

Note: Participants rate their agreement with each of the items using a 7-point Likert scale with 1 being strongly agree to 7 being strongly disagree. Items 1, 2, and 5 are reverse coded so higher values indicate more susceptibility to scams for all items.