

## Insights: Financial Capability

March 2021

### Authors:

**Christopher C. Stewart, Ph.D.**  
Indiana University School of  
Medicine

**Patricia Boyle, Ph.D. and  
Lei Yu, Ph.D.**  
Rush Alzheimer’s Disease Center

**Gary Mottola, Ph.D. and Olivia  
Valdes, Ph.D.**  
FINRA Investor Education  
Foundation

### What’s Inside

Summary	1
Background	1
Study Participants	2
Financial and Healthcare Decision Making	2
Loneliness	3
Cognition	3
Other Factors	3
Findings	3
Discussion	4
Acknowledgement	4
References	5

This issue brief summarizes the findings from a paper titled “Loneliness Interacts With Cognition in Relation to Healthcare and Financial Decision Making Among Community-Dwelling Older Adults” and published in *The Gerontologist*. The corresponding author for this issue brief and the full paper is Christopher C. Stewart (postal address: 355 W. 16th St., Suite 2500, Indianapolis, IN 46202; email address: [chcstew@iu.edu](mailto:chcstew@iu.edu)).

## The Relation of Loneliness and Cognition With Financial and Healthcare Decision Making in Older Persons

### Summary

In this research, we examine the relation of loneliness and cognition with financial and healthcare decision making among 1,121 older adults. Consistent with prior studies, we found that lower cognition was associated with poorer decision making. Of greater interest, loneliness was not associated with decision making among older adults, in general; however, loneliness was detrimental to decision making among those older adults with low cognition. Thus, loneliness compromised decision making when cognition was low. This finding suggests that loneliness puts older adults with lower cognition at risk for poor financial and healthcare decision making. Interventions that target loneliness might lead to improved decision making in old age.

### Background

Many older adults make poor decisions pertaining to retirement funds, estate planning, prescription drug benefit plans, and numerous other complex financial and health matters. In turn, poor financial and healthcare decision making in old age is associated with a range of adverse financial and health outcomes, including overindebtedness,<sup>1</sup> Alzheimer’s dementia,<sup>2</sup> and even mortality.<sup>3</sup> In order to identify at-risk older adults and develop interventions, researchers first need to identify the factors that contribute to poor financial and healthcare decision making in older adulthood.

It is well-established that lower cognition is associated with poorer healthcare and financial decision making among older adults.<sup>4</sup> By contrast, the relation of social vulnerabilities such as loneliness with decision making has garnered very little scientific attention, although there is reason to suspect a role for loneliness, specifically. Loneliness has been implicated in poorer brain health<sup>5</sup> and a reliance on intuition over analytic reasoning<sup>6</sup> and so might negatively influence decision making, especially in the setting of low cognition. Therefore, in this study, we examined whether the detrimental effect of loneliness on financial and healthcare decision making is stronger among older adults with low cognition.

## Study Participants

To examine this issue, we leveraged data from 1,121 older adults enrolled in the Rush Memory and Aging Project (MAP).<sup>7</sup> MAP is a community-based cohort study of aging and age-related diseases in the Chicago metropolitan area. To enhance coverage across the socioeconomic spectrum, MAP participants were recruited from a variety of settings, including retirement communities, local churches, Section 8 and Section 202 subsidized housing, and other social service agencies. MAP participants undergo annual clinical evaluations, and all participants in the current study were without dementia. We focused on older adults without dementia because they typically continue to make their own financial and healthcare decisions. The average age of participants was 81.0 years old (Standard Deviation [SD]: 7.5; Range: 58.8 – 100.8), and the average level of education was 15.6 years (SD: 3.1; Range: 5 – 30). About three quarters of participants were female.

## Financial and Healthcare Decision Making

Participants completed a 12-item measure of financial and healthcare decision making.<sup>8</sup> Six of the 12 items pertained to financial decisions, and the remaining six items pertained to healthcare decisions. Mimicking the types of decisions that older adults face in everyday life, participants viewed tables displaying information about mutual funds (for the financial items) or health maintenance organization (HMO) plans (for the healthcare items). Participants then answered questions requiring comprehension and integration of the tabulated information (see Figure 1 for an example item). Participants’ performance was quantified by tallying the number of correct items (Range: 0 – 12, with higher scores indicating better decision making).

**Figure 1: Example of a financial decision making item**

You have \$2,000 to invest. You want a mutual fund that has a management fee of less than 1.5 percent, one that has been active for at least 5 years, and one that has a gross annual return of at least 6.0 percent. Based on the information in the table below, which fund should you choose?

- |            |            |            |
|------------|------------|------------|
| (1) Fund A | (4) Fund D | (7) Fund G |
| (2) Fund B | (5) Fund E | (8) Fund H |
| (3) Fund C | (6) Fund F | (9) Fund I |

	Gross Annual Return	Management Fee	Minimum Investment	Years of Activity
Fund A	6.25%	0.60%	\$1,500	4
Fund B	7.30%	1.20%	\$2,500	10
Fund C	6.00%	0.80%	\$1,500	5
Fund D	7.00%	1.50%	\$2,000	4
Fund E	7.15%	0.75%	\$2,500	6
Fund F	5.85%	2.00%	\$1,000	15
Fund G	6.20%	1.25%	\$2,500	8
Fund H	4.00%	1.75%	\$500	7
Fund I	5.50%	0.90%	\$1,000	6

## Loneliness

Loneliness was measured via five items pertaining to perceived social isolation (e.g., “I miss having a really close friend.”)<sup>9</sup> Participants rated their agreement with each item on a five-point scale (1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly agree). Loneliness was quantified for each participant by averaging their responses to the five items (Range: 1 – 5, with higher scores indicating greater loneliness).

## Cognition

Participants’ cognition was assessed via 19 cognitive tests.<sup>10</sup> Raw scores on each test were converted to z-scores using the baseline mean and standard deviation of the full MAP cohort. Z-scores from the 19 tests were then averaged, yielding a composite measure of global cognition.

## Other Factors

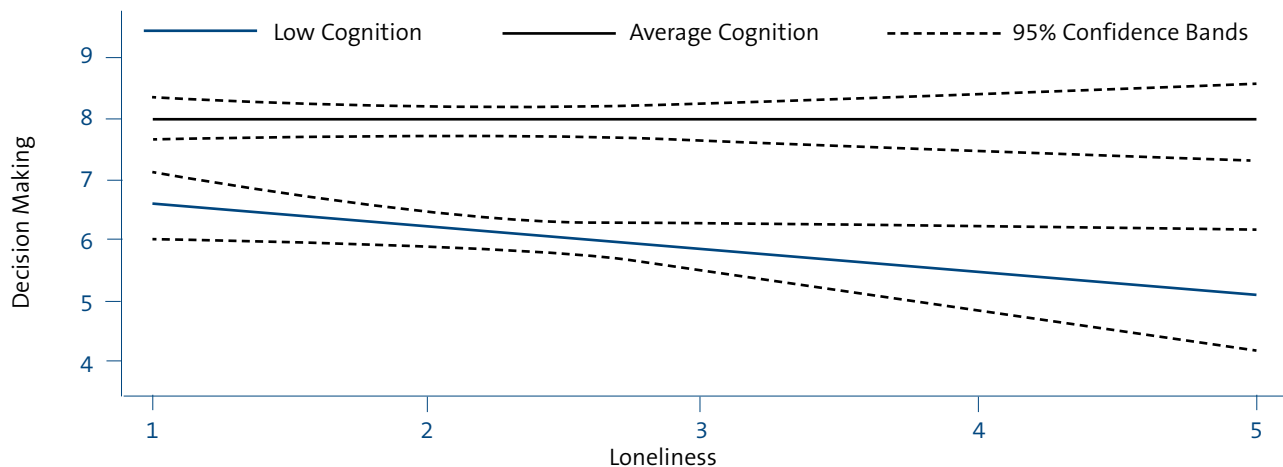
In examining the relation of loneliness and cognition with decision making, it is important to account for the potential role of factors that are conceptually similar to loneliness, or might otherwise influence decision making. Therefore, in addition to conducting analyses that accounted for basic demographics (age, sex, and education), we conducted analyses that accounted for depressive symptoms, social network size, medical conditions, and income.

## Findings

Participants on average correctly answered 8 of 12 items on the financial and healthcare decision-making measure (67 percent), and their average score on the loneliness scale was 2.2 (Range: 1 – 5). Older age, more depressive symptoms, more medical conditions, lower education, lower income, and fewer social contacts were associated with poorer decision making. Women tended to score lower on the decision-making measure than men.

After accounting for age, sex, and education, lower cognition was associated with poorer financial and healthcare decision making. Loneliness was not associated with decision making among older adults, in general; however, loneliness was detrimental to decision making among those older adults with low cognition. To illustrate this finding, we examined the effect of loneliness on decision making for participants with average cognition (50th percentile) and low cognition (10th percentile). For participants with average cognition, a one-point increase on the loneliness scale only corresponded to a 0.02-point reduction in decision making. By contrast, for participants with low cognition, a one-point increase on the loneliness scale corresponded to a 0.35-point reduction in decision making (Figure 2).

**Figure 2: Association of loneliness with decision making at the 10th and 50th percentiles of global cognition, with 95 percent confidence bands, adjusted for age, sex and education**



To ensure that these findings were not due to other potentially relevant factors, we conducted analyses that accounted for depressive symptoms, social network size, medical conditions, and income. We observed the same results after accounting for these other factors, which increases confidence that our findings are not due to factors that are conceptually similar to loneliness or might otherwise shape decision making.

## Discussion

In order to tackle the problem of poor financial and healthcare decision making in old age, researchers first need to identify the factors that contribute to older adults' decision making. This research examines the relation of loneliness and cognition with financial and healthcare decision making among more than 1,100 older adults from the Rush Memory and Aging Project. We found that lower cognition was associated with poorer decision making, as demonstrated previously.<sup>4</sup> Of greater interest, loneliness was not associated with decision making among older adults, in general; however, loneliness was associated with poorer decision making among those older adults with low cognition. We observed the same relation of loneliness and cognition with decision making after accounting for depressive symptoms, social network size, medical conditions, and income, which increases confidence that loneliness does indeed compromise decision making when cognition is low.

While this research does not address the underlying basis of the relation of loneliness and cognition with financial and healthcare decision making, a couple possibilities bear mention. A growing body of evidence suggests that loneliness reduces brain health,<sup>5</sup> and while the behavioral consequences of this are unclear, loneliness-related reductions in brain health might degrade decision making, especially when cognition is low. Another potential explanation is that loneliness biases decision making in a manner that is ill-fitted for complex financial and healthcare decisions. Specifically, research suggests that loneliness promotes a reliance on intuition over analytic reasoning,<sup>6,11</sup> and an overreliance on intuition might detrimentally affect financial and healthcare decision making in the setting of low cognition. Although much remains to be learned, determining exactly why loneliness affects decision making is an important topic for future research, as the development of interventions hinge on our understanding of underlying mechanisms that support decision making in old age.

The present study raises some interesting possibilities in terms of policy and program intervention. For example, one application of the current findings is assessing loneliness to stratify risk of poor financial and healthcare decision making among older adults who are already susceptible due to low cognition. This information could then be used to allocate intervention resources to those most in need. The current findings also could be used to determine when loneliness should be a focus of decision making interventions. If cognition is average or better, then a loneliness intervention would not be indicated from a decision making perspective, even among lonely individuals. On the contrary, if cognition is low and loneliness is high, then a loneliness intervention would be indicated. Notably, cognitive-behavioral interventions are particularly effective in reducing loneliness<sup>12</sup>; however, it is not known whether these interventions also benefit decision making.

This research highlights the important role of loneliness in financial and healthcare decision making in old age. This study was conducted prior to the COVID-19 pandemic, and although loneliness was common among older adults prior to the pandemic,<sup>13</sup> given the ongoing need to social distance, we suspect that our findings currently apply to an even broader swath of seniors. While this is concerning, this research also offers some hope, as loneliness is modifiable and might be a suitable target for interventions that bolster decision making in old age.

## Acknowledgement

Funding for this study comes from National Institute on Aging Grants (R01 AG017917, R01 AG033678, R01 AG034374, and R01 AG060376) and the FINRA Investor Education Foundation. We extend our deep gratitude to the thousands of participants in the Rush Memory and Aging Project (MAP) and the investigators and staff of the Rush Alzheimer's Disease Center (RADC), without which this research would not be possible. The authors also would like to thank Donna Hemans and Elizabeth Kessler from FINRA for editing and designing the issue brief. All results, interpretations, and conclusions expressed are those of the research team alone and do not necessarily represent the views of the National Institute on Aging, FINRA, the FINRA Investor Education Foundation, or any of its affiliated companies.

## References

1. Lusardi, A., & Tufano, P. (2009). Debt literacy, financial experiences, and overindebtedness. *National Bureau of Economic Research*.
2. Stewart, C. C., Yu, L., Wilson, R. S., Bennett, D. A., & Boyle, P. A. (2019). Healthcare and financial decision making and incident adverse cognitive outcomes among older adults. *Journal of American Geriatric Society*, 67(8), 1590-1595. <https://doi.org/10.1111/jgs.15880>
3. Boyle, P. A., Wilson, R. S., Yu, L., Buchman, A. S., & Bennett, D. A. (2013). Poor decision making is associated with an increased risk of mortality among community-dwelling older persons without dementia. *Neuroepidemiology*, 40(4), 247-252. <https://doi.org/10.1159/000342781>
4. Stewart, C. C., Yu, L., Wilson, R. S., Bennett, D. A., & Boyle, P. A. (2018). Correlates of healthcare and financial decision making among older adults without dementia. *Health Psychology*, 37(7), 618-626. <https://doi.org/10.1037/hea0000610>
5. Cacioppo, S., Capitanio, J. P., & Cacioppo, J. T. (2014). Toward a neurology of loneliness. *Psychological Bulletin*, 140(6), 1464-1504. <https://doi.org/10.1037/a0037618>
6. Baumeister, R. F., DeWall, C.N., Ciarocco, N. J., & Twenge, J. M. (2005) Social exclusion impairs self-regulation. *Journal of Personality and Social Psychology*, 88(4), 589-604. <https://doi.org/10.1037/0022-3514.88.4.589>
7. Bennett, D. A., Buchman, A. S., Boyle, P. A., Barnes, L. L., Wilson, R. S., & Schneider, J. A. (2018). Religious orders study and Rush memory and aging project. *Journal of Alzheimers Disorders*. 64(s1), S161-S189. <https://doi.org/10.3233/JAD-179939>
8. Finucane, M. L., & Gullion, C. M. (2010). Developing a tool for measuring the decision-making competence of older adults. *Psychology and Aging*, 25(2), 271-288. <https://doi.org/10.1037/a0019106>
9. De Jong-Gierveld, J., & Kamphuls, F. (1985). The development of a Rasch- Type loneliness scale. *Applied Psychological Measurement*. 9(3), 289-299. <https://doi.org/10.1177/014662168500900307>
10. Wilson, R. S., Beckett, L.A., Barnes, L. L., Schneider, J. A., Bach, J., Evans, D. A., & Bennett, D. A. (2002). Individual differences in rates of change in cognitive abilities of older persons. *Psychology and Aging*, 17(2), 179-193. <https://doi.org/10.1037/0882-7974.17.2.179>
11. Sanfey, A. G., & Chang, L. J. (2008). Multiple systems in decision making. *Annals of the New York Academy of Sciences*, 1128, 53-62. <https://doi.org/10.1196/annals.1399.007>
12. Masi, C. M., Chen, H. Y., Hawkey, L. C., & Cacioppo, J. T. (2011). A meta-analysis of interventions to reduce loneliness. *Personality and Social Psychology Review*. 15(3), 219-266. <https://doi.org/10.1177/1088868310377394>
13. Ong, A. D., Uchino, B. N., & Wethington, E. (2016). Loneliness and health in older adults: A mini-review and synthesis. *Gerontology*. 62(4), 443-449. <https://doi.org/10.1159/000441651>

1735 K Street, NW  
Washington, DC 20006-1506  
[www.finrafoundation.org](http://www.finrafoundation.org)

20\_0324.1—03/21