Are people aware of their cognitive decline? Misperception and financial decision making

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Motivation

- Cognitive functioning is crucial for decision making.
- A key aspect of the aging process is the decline of cognitive ability.
- Trend to scale back publicly-provided safety nets and to rely more on private providers that require higher decision-making skills.
- As a result, older people are increasingly required to make complex decisions regarding finance, health, and long-term care.
- The expected increase in the share of the elderly in the population and the large fraction of assets they hold make these problems even more relevant.
- "When households lack the intellectual capacity to manage their financial decisions, they make mistakes that lower their own welfare and can also have broader consequences for the economy" (Campbell 2016, p. 2).

This paper

- Our questions:
  - Are older people aware of their cognitive decline?
  - When not, what are the consequences for their wealth?
- Using data from the Health and Retirement Study (HRS), we investigate whether HRS respondents correctly perceive their own cognitive decline and the potential financial consequences of misperception.
- We show that:
  - HRS respondents tend to grossly underestimate their own cognitive decline. ▸ Figure
  - Those who experience a severe cognitive decline but are unaware of it are more likely to suffer large wealth losses compared to those who do not experience a severe decline or are aware of it.
  - Large wealth losses are mainly reported by respondents in the top half of the wealth distribution and mainly involve the value of financial assets, especially stocks.

Related literature

- Cognitive decline and decision making:
  - Aging is associated with increased risk aversion (e.g., Dohmen et al. 2010, 2018; Koscielniak et al. 2016).
  - Older adults are more likely to use heuristic methods and biased strategies (Abaluck and Gruber 2011).
- Cognitive ability, financial literacy and financial performance:
  - Evidence of a hump-shaped profile of financial performance (Agarwal et al. 2009; Korniotis and Kumar 2011).
- Wealth dispersion around retirement:
  - Heterogeneity in saving rates (Dynan et al. 2004) or risk aversion (Calvet et al. 2009).
  - Heterogeneity in rates of returns (Fagereng et al. 2016), possibly arising from differences in financial knowledge (Lusardi et al. 2017).
  - We provide evidence for a different channel, with different policy implications.

Data

- We use the RAND-HRS data, a cleaned and easy-to-use version of the HRS, which include RAND imputations of wealth, income, and medical expenditures.
- Sample selection criteria:
  - Financial respondents aged 50–80 in 1996-2014 (9 waves).
  - Observations for which imputations $\leq$ 20% of assets/debts.
  - We trim at the 1st and the 99th percentile of total wealth.
- Our final working sample consists of 16,243 individuals ($\approx$ 85% of the initial sample) observed on average for 3.7 waves.
- We also use data from the HRS Consumption and Activities Mail Survey (HRS-CAMS), a paper-and-pencil sub-survey on consumption expenditure fielded biennially in odd-numbered years.

Measures of wealth

- HRS collects detailed information on household wealth and its individual components, distinguishing between several asset categories.
- We mainly focus on total wealth, (non-housing) financial wealth, and their individual components.
- The net value of financial wealth is computed as the sum of financial wealth components less debt, that is, as:
  - Stocks, mutual funds, and investment trusts + Value of checking, savings, and money market accounts + Value of CD, government savings bonds, and T-bills + Other savings - Debts.
- Asset verification: Respondents are asked to verify or correct asset values reported in the previous and current wave whenever there is a large discrepancy (more than $50,000) between the two values.
  - Incorporating the corrections from this call-back procedure led to a drop in the variance of the change in the net worth of about 50% (Hill 2006).

Measures of memory

- Self-rated memory:
  - *How would you rate your memory at the present time?* Possible answers: Excellent, Very good, Good, Fair, Poor.
- Self-rated memory change:
  - *Compared to the last interview, would you say your memory is better now, about the same, or worse now than it was then?*
- Recall tests:
  - Consist of verbal registration and recall of a list of 10 words.
  - The respondent hears the list only once but the test is carried out two times: immediate and delayed recall.
  - Our memory score is the sum of the score in the two tests (0–20 range).
  - Density of memory score (proxy interviews excluded). ▸ Figure
- The survey also includes other cognitive tests (serial 7, backward 20, and total mental score). They are highly correlated with the recall tests, and we only use them for robustness checks.

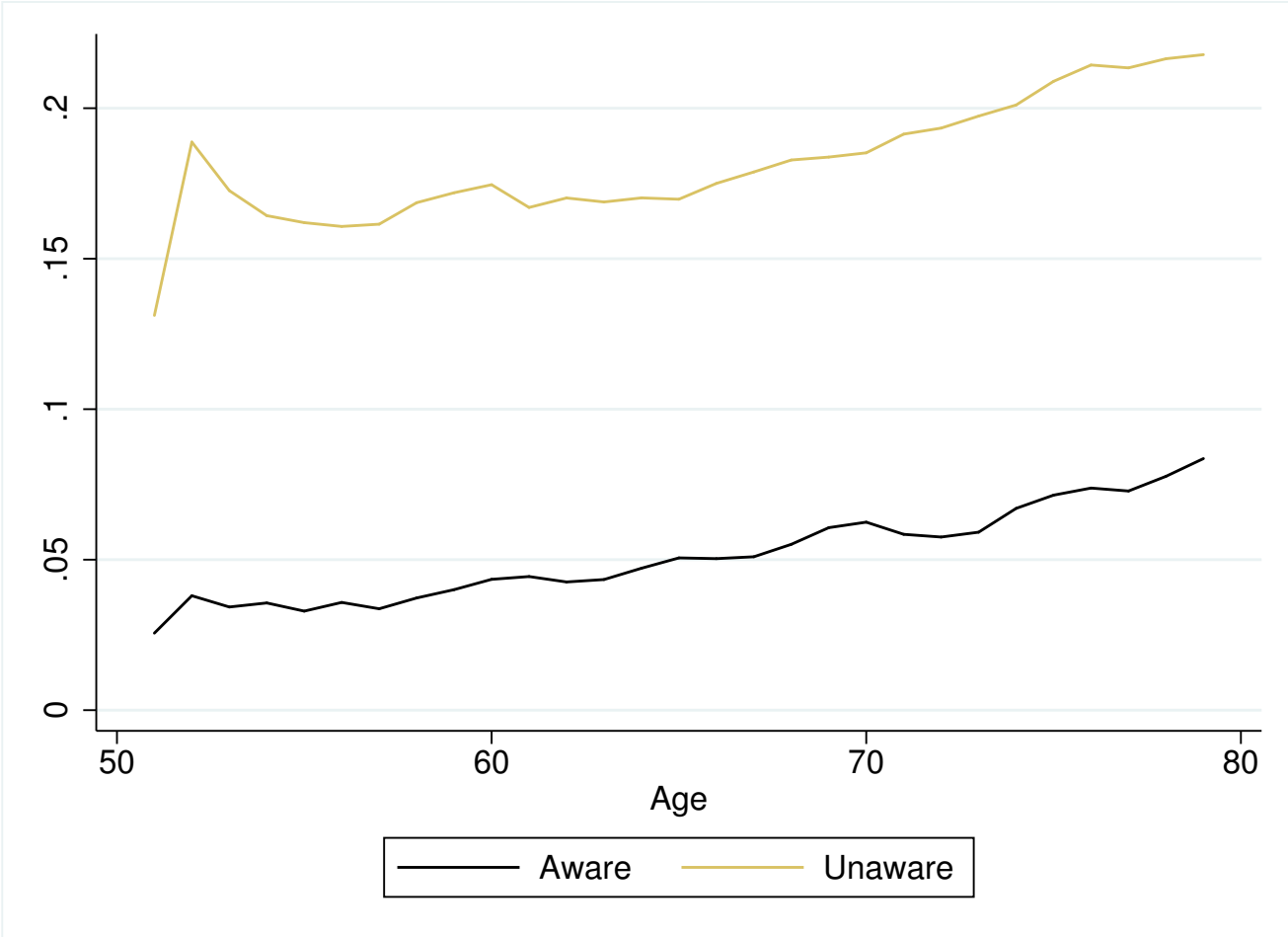
Severe memory losses

- We focus on memory losses that are severe.
- We consider two alternative definitions:
  - Severe absolute memory loss: Decline of 3 points or more across waves ($\approx$ 1 standard deviation of the change in the memory score).
  - Severe relative memory loss: Decline of 20% or more across waves ($\approx$ 1st quintile of the change in the memory score).
- The absolute definition is taken from the neuropsychological literature (Nasreddine et al. 2005) but may understate cognitive decline among respondents with poor initial memory scores (floor effect).
- We use both definitions but, unless stated otherwise, only present results based on the relative definition.

Self-rated vs. assessed memory

	Severe relative memory loss		
Self-rated memory change	No	Yes	Total
Stable or improved	60.8%	18.8%	79.6%
Worse	14.8%	5.6%	20.4%
Total	75.6%	24.4%	100.0%

Fraction of memory loss aware and unaware by age



Who is more likely to be aware?

- Probit estimates of the probability of a severe memory loss and of the probability of being unaware given a severe memory loss. ▸ Table
  - Education, good health, wealth, being a female or working "protect" from experiencing a severe memory loss.
  - Most of these protecting factors instead only weakly affect the probability of being unaware.
    - Age and education are actually (weakly) negatively correlated with awareness.
    - People with better initial memory or health are less likely to be aware.
    - Having children is associated with greater awareness but not with greater probability of a severe memory loss.
- No relation between predicted financial wealth changes and the probability of a severe memory loss or of being unaware of it. ▸ Predicted financial wealth

Baseline model

$$\Delta W_{it} = \alpha + \beta_1 Aware_{it} + \beta_2 Unaware_{it} + \beta_3 Pessimist_{it} + \boldsymbol{\gamma}^\top \boldsymbol{X}_i + \boldsymbol{\delta}^\top \boldsymbol{Z}_{it} + \psi_t + U_{it},$$

where:

- ΔW_{it} is change in wealth (total, financial, or subcomponents) for individual i between waves $t-1$ and t ($1,000 at 2014 prices);
- $Aware_{it}$ is a binary indicator equal to one if individual i experiences a severe memory loss between the two waves and self-rates her memory as declining;
- $Unaware_{it}$ is a binary indicator equal to one if individual i experiences a severe memory loss between the two waves but self-rates her memory as stable or improving;
- $Pessimist_{it}$ is a binary indicator for not presenting a severe memory loss but self-rating own memory as worse;
- $\boldsymbol{X}_i$ is a vector of time-invariant regressors: sex, race and years of education;
- $\boldsymbol{Z}_{it}$ is a vector of time-varying regressors: quadratic age term, controls for marital status, labor force status, and census division;
- δ_t is a survey year effect;
- U_{it} is a random error assumed to be mean independent of the regressors.

Remarks

- Since ΔW_{it} represents wealth changes, the model parameters have a different interpretation than for a model in levels:
  - β_0 measures the expected value of ΔW_{it} for a reference individual, namely someone with $\boldsymbol{X}_i = \boldsymbol{Z}_{it} = 0$ who does not present a severe memory loss and self-rates own memory as the same or better;
  - $\beta_1 - \beta_2$ measures the difference in the expected value of ΔW_{it} for two individuals with the same values of $\boldsymbol{X}_i$ and $\boldsymbol{Z}_{it}$, one aware and the other unaware of the severe memory loss.
- We control for differences in the initial wealth and memory levels:
  - Wealth changes may be expected to be larger for people with a larger initial amount of wealth.
  - Wealthy people are less likely to experience a severe memory loss (but more likely to be unaware).
- We fit the model to all financial respondents (FR) in the previous wave. We also fit a version of the model to all respondents with a severe memory loss between adjacent waves.

Estimated baseline model

	All fin. resp. (FR)		All resp. w/severe mem. loss	
			FR	Non FR
	(1)	(2)	(3)	(4)
Memory loss	-22.660***			
	(5.089)			
Aware		-5.262		
		(9.018)		
Unaware		-27.227***	-20.001**	-6.508
		(5.541)	(9.099)	(13.143)
$\beta_1 - \beta_2$		-21.965**		
		(9.578)		
Obs.	57011	57011	13912	6265
Mean W	380.435	380.435	344.523	481.868
Mean Δ W	7.485	7.485	-.281	9.376
N	16243	16243	9695	4526
Initial wealth and memory	Yes	Yes	Yes	Yes

Notes: Observations are weighted using the HRS respondent-level weights. We use robust standard errors clustered at the individual level. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Difference-in-differences

- We also estimate a multi-period difference-in-differences (DiD) model for individuals who experienced at least one memory loss event while in the sample.
- Treated and controls:
  - The treated are those who are unaware of their memory loss.
  - The controls are those who are aware.
- The DiD model:

$$\Delta W_{it} = \alpha + \beta\, Unaware_i + \sum_{s \geq -S}^{S} (\gamma_{1s} + \gamma_{2s}\, Unaware_i)\, 1[\tau_{it} = s] + \boldsymbol{\delta}^\top \boldsymbol{Z}_{it} + \psi_t + V_{it}.$$

  where τ_{it} is the "event year", defined so that $\tau_{it} = 0$ for the year in which we observe the first severe memory loss event for individual i.
- The coefficients of interest are the γ_{2s}, which represent the sequence of DiD coefficients for the unaware individuals.
- Issues:
  - Need a balanced sample of individuals observed for at least $S + 1$ periods before and S period after the event of interest.
  - Although we set $S = 1$ (with $\tau_{it} = -2$ as reference), we end up with a relatively small sample (only 2,125 individuals).

Estimated DiD model

	Total wealth			Financial wealth		
	Basic controls	All controls	Financial wealth>0	Basic controls	All controls	Financial wealth>0
	(1)	(2)	(3)	(4)	(5)	(6)
$\tau = -1$	20.652	15.017	4.759	6.405	-3.792	-14.184
	(43.231)	(30.355)	(37.602)	(27.692)	(16.316)	(17.912)
$\tau = 0$	-45.234	-36.743	-64.113 **	-26.905	-28.585	-46.208 *
	(28.390)	(25.401)	(31.990)	(22.103)	(19.321)	(24.993)
$\tau = 1$	8.048	8.366	-1.369	20.220	8.507	2.511
	(30.339)	(24.039)	(30.318)	(23.333)	(14.672)	(18.326)
Obs.	8500	8500	6268	8500	8500	6268
N	2125	2125	1567	2125	2125	1567
Mean W	425.143	425.311	531.914	104.957	105.014	139.004
Mean ΔW	12.583	12.633	11.187	-1.185	-1.159	-3.772

Notes: The table shows the results of DiD model which compares the wealth changes of aware and unaware respondents around the first severe memory loss event. Significance levels: *** < 0.01, ** < 0.05, * < 0.1.

Extensions of the baseline model

- Wealth changes by quartile of initial wealth. ▸ Table
- Wealth changes by component. ▸ Table
- Net financial wealth changes by ownership and quartile of initial financial wealth. ▸ Table
- Financial wealth changes by component (FR with positive initial financial wealth). ▸ Table

Wealth changes by quartile of initial wealth

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	1st quartile	2nd quartile	3rd quartile	4th quartile
	(1)	(2)	(3)	(4)
Aware	-5.074 *	-.215	-5.579	35.536
	(2.919)	(5.180)	(10.329)	(31.562)
Unaware	-2.795	-2.815	-15.992 ***	-43.748 **
	(1.978)	(2.809)	(5.623)	(18.067)
$\beta_1 - \beta_2$	2.280	-2.600	-10.413	-79.284 **
	(3.180)	(5.617)	(11.136)	(33.646)
Obs.	16680	14434	13374	12523
N	6721	6365	5761	4311
Mean W	26.855	130.917	360.175	1160.615
Mean ΔW	20.396	22.391	45.213	-59.534

Wealth changes by component

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	Total	Financial	IRAs	Housing	Real estate	Business
	(1)	(2)	(3)	(4)	(5)	(6)
Aware	-5.262	-2.360	-2.655	-2.141	.003	.004
	(9.018)	(5.216)	(2.687)	(2.308)	(.003)	(.004)
Unaware	-27.227***	-17.528***	-5.138***	-1.908	-.002	.002
	(5.541)	(2.945)	(1.534)	(1.715)	(.002)	(.002)
$\beta_1 - \beta_2$	-21.965**	-15.168***	-2.483	.233	-.005	-.002
	(9.578)	(5.349)	(2.779)	(2.569)	(.004)	(.004)
Obs.	57011	57011	57011	57011	57011	57011
N	16243	16243	16243	16243	16243	16243
Mean W	380.435	96.698	58.734	150.088	32.514	26.713
Mean ΔW	7.485	-1.549	2.923	11.413	-.003	-.003

Net financial wealth changes by ownership and quartile of initial net financial wealth

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	No financial wealth	Positive financial wealth	3rd wealth quartile	4th wealth quartile
	(1)	(2)	(3)	(4)
Aware	-3.559***	1.999	-3.583	15.571
	(1.215)	(7.178)	(5.795)	(19.868)
Unaware	1.053	-21.565***	-10.313***	-34.672***
	(1.409)	(3.788)	(3.512)	(10.500)
$\beta_1 - \beta_2$	4.612***	-23.564***	-6.731	-50.243**
	(1.482)	(7.396)	(6.247)	(20.213)
Obs.	17265	39746	11868	12039
N	8011	12963	5280	4200
Mean W	2.636	137.557	85.118	345.956
Mean Δ	12.729	-6.898	12.569	-37.741

Financial wealth changes by component (FR with positive initial financial wealth)

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	Stocks	Private bonds	Gov't debt	CDs	Checking/ savings	Other savings
	(1)	(2)	(3)	(4)	(5)	(6)
Aware	-1.909	.053	-.102	.956	-1.357	3.958 *
	(5.401)	(1.194)	(.256)	(1.463)	(2.091)	(2.378)
Unaware	-11.887 ***	.281	-.148	-1.483 **	-4.106 ***	-4.063 ***
	(2.581)	(1.003)	(.210)	(.650)	(1.063)	(1.230)
$\beta_1 - \beta_2$	-9.978 *	.228	-.045	-2.439	-2.749	-8.021 ***
	(5.350)	(1.433)	(.295)	(1.535)	(2.180)	(2.469)
Obs.	39746	39746	39746	39746	39746	39746
N	12963	12963	12963	12963	12963	12963
Mean W	66.007	8.987	2.971	15.832	34.090	15.613
Mean ΔW	-4.337	-.155	1.195	.295	.657	-2.164

Bad investment decisions?

- Wealth losses are concentrated among wealthier financial respondents who are unaware of their cognitive decline, and mainly involve the value of their financial assets.
- Financial respondents who experience a severe memory loss tend to show better cognitive performance at the baseline.
- They may be more likely to be overconfident about their ability and less likely to delegate financial decision to others.
- This interpretation is also supported by an investigation of the HRS Assets Change Module (respondents who report owning stocks or shares in mutual funds are asked about their stock market activity in the last two years). ▸ Table

Alternative interpretations

Can our findings be explained by some motive for rational disinvestment that differs for aware and unaware respondents, or by differences in their observable/unobservable characteristics?

- Health: Table
  - Subjective life expectancy.
  - Out-of-pocket health expenditure.
- Missing values or misreporting of financial assets: Table
  - Different patterns of missing values or imputations.
  - Different patterns of misreporting (using the HRS asset verification procedure).
- Portfolio composition: Table
  - Differences in ownership of risky assets.
  - Differences in share of risky assets given ownership.
- Others:
  - Differences in consumption patterns.
  - Differences in bequests or transfers to children.

Reverse causality?

- Wealth shocks may negatively affect health via increasing stress (Schwandt 2018).
- Unlikely to explain differences between aware and unaware respondents.
- Predicted financial wealth changes are uncorrelated with our measures of cognitive decline and awareness. ▸ Predicted financial wealth

A framework for interpreting our results

- Following Lusardi et al. (2017), consider a 2-period model in which a consumer with initial income y decides cognitive investment i and savings s to maximize:

$$u(c_1, c_2) = \log(c_1) + \beta \log(c_2),$$

subject to the constraints

$$c_1 = y - i - s, \quad c_2 = R\, s,$$

where:

  - $\beta \in (0, 1)$ is the discount factor;
  - returns R depend on cognitive investment, $R = \gamma + \delta i$ with $i \geq 0$;
  - γ is the basic return for a passive investor ($i = 0$);
  - δ is the productivity of cognitive investment for an active investor ($i > 0$).

- Assuming $\gamma > 0$, s^* and i^* are both linear in income:

$$s^* = \tau \tilde{y}, \quad i^* = s^* - \frac{\gamma}{\delta} = \tau \tilde{y} - \frac{\gamma}{\delta},$$

with $\tau = \beta/(1 + 2\beta)$ and $\tilde{y} = y + \gamma/\delta$.

- Notice that $i^* > 0$ only if $y > \bar{y} = \gamma(1 + \beta)/(\beta\delta)$.

Adding a cognitive shock

- Before choosing i and s, consumers are hit by a cognitive shock

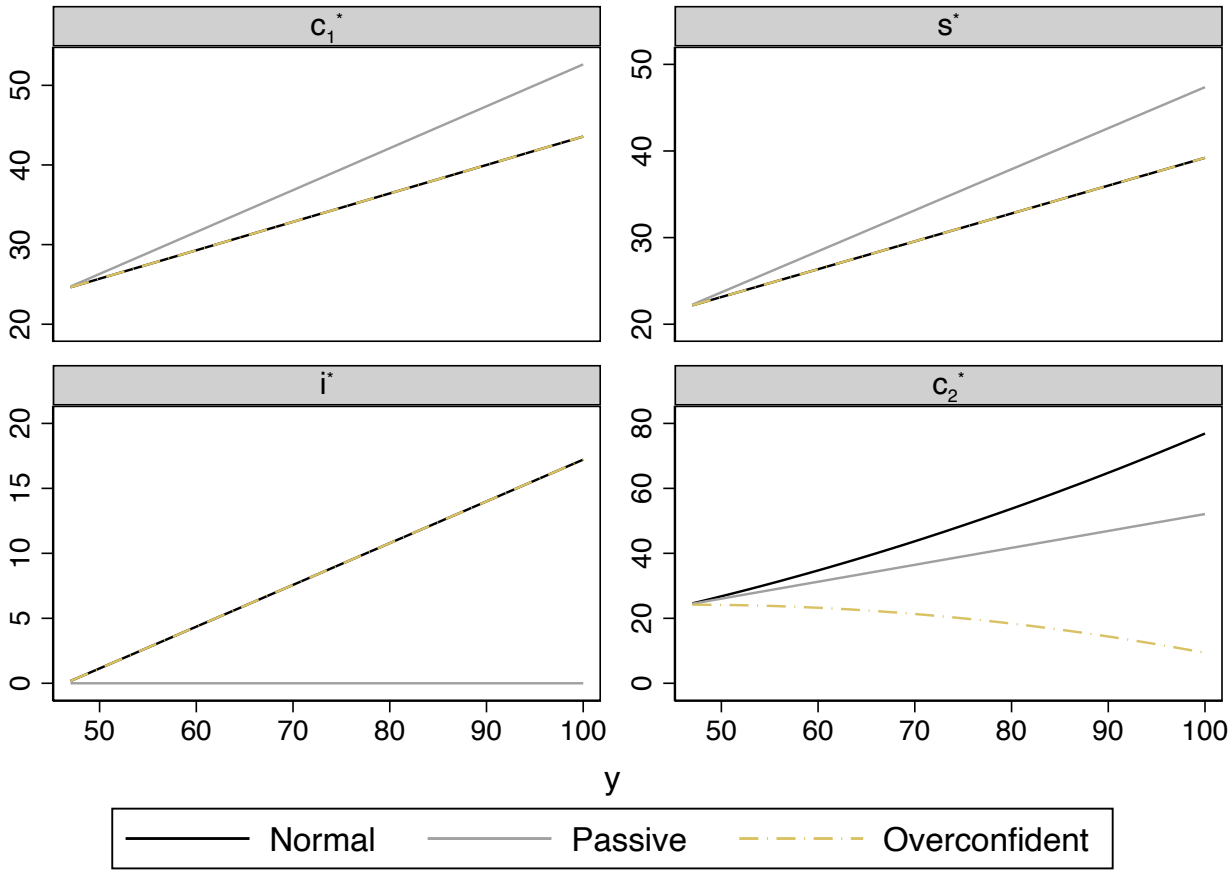
$$d = \begin{cases} 1 & \text{with probability} \quad p, \\ -1 & \text{with probability} \quad 1-p, \end{cases}$$

  that affects the productivity of their cognitive investment so that $R = \gamma + \delta d i$.

- A positive shocks is always observed.
- If the shock is negative, it is observed by some consumers (the aware) but not by others (the unaware).
- When income is too low (i.e., $y \leq \bar{y}$), being unaware does not matter as no cognitive investment is made.
- For those with $y > \bar{y}$:
  - if $d = 1$, the best choice is to make a positive investment and earn $\gamma + \delta i > \gamma$;
  - if $d = -1$, the best choice would be to make no investment and just earn γ, which is what aware consumers do;
  - overconfident consumers instead make a positive investment thinking that $d = 1$, thus earning $\gamma - \delta i < \gamma$.

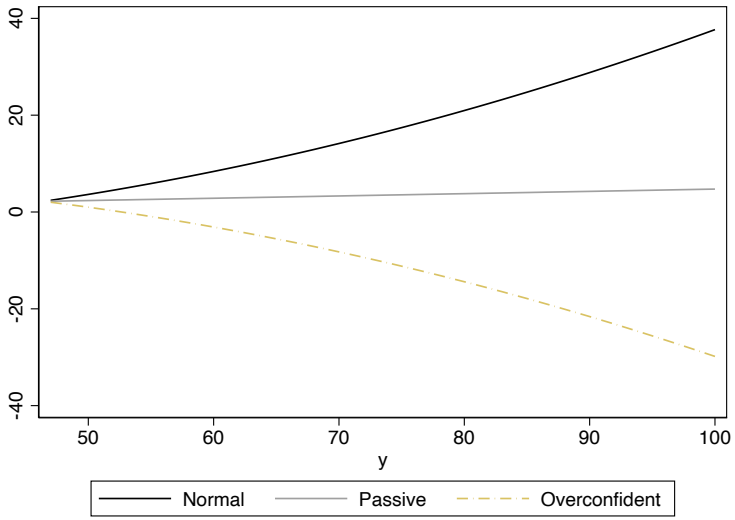
Model results: Consumption, savings and investment

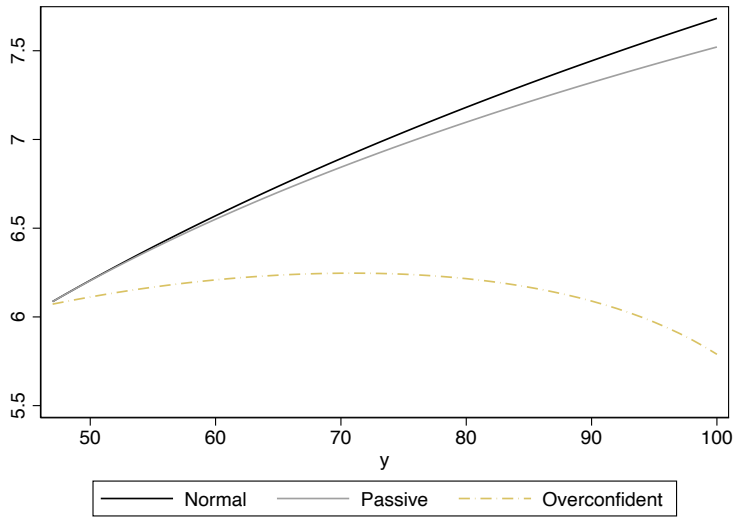
Initial consumption (c_1^*), savings (s^*), cognitive investment (i^*) and final consumption (c_2^*) by income (y) and investor type [$\beta = .90$, $\gamma = 1.10$, and $\delta = .05$]



Model results: Wealth changes and lifetime utility

Wealth changes (left) and lifetime utility (right) by income (y) and investor type





Robustness checks

- Log transformation. Table
- Memory loss definition (absolute, or different thresholds, 15 or 25%). Table
- Heterogeneity by age and employment status.
- Controls for initial health status.
- Flooring and ceiling effects.
- Inclusion of individual fixed effects.
- Income.

Conclusions

- A large fraction of people who experience severe memory losses appear to be unaware of it.
- Compared to aware respondents, unaware respondents experience worse financial performances across waves.
- This effect is larger or less noisy for financial respondents.
- Financial losses are mainly driven by a decrease in the value of financial assets.
- Wealth losses are concentrated among financial respondents in the highest wealth quartiles, who scored better in the memory tests of the previous waves. This is consistent with an overconfidence interpretation.
- The data reject a large number of alternative explanations for our results.

Policy implications

- After the 2008 financial crisis, policymakers are strongly committed to improving the quality of financial decisions and the financial literacy of households.
- Our overconfidence interpretation suggests that, for older investors, what really matters is whether they are aware of their cognitive decline.
- Attempts to improve their financial literacy is unlikely to be effective.
- Incentivizing financial delegation might also not help:
  - Delegation itself requires non-trivial cognitive skills.
  - With asymmetric information, the agent (a family member or a financial consultant) might choose to maximize her own welfare.
- Policy interventions aimed at incentivizing the annuity market may be more consistent with our results.

Profiles of self-rated and assessed memory

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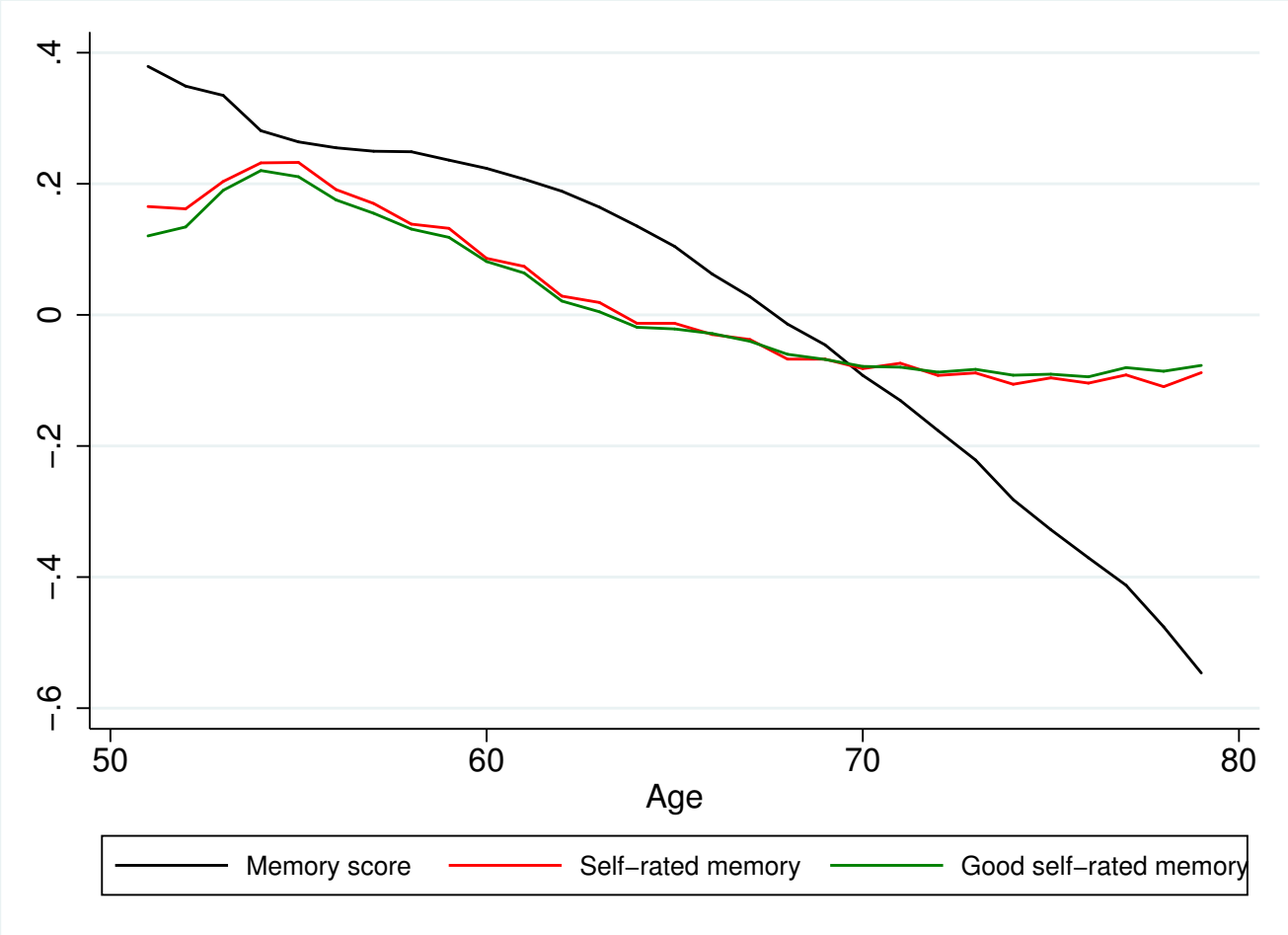

Density of memory score

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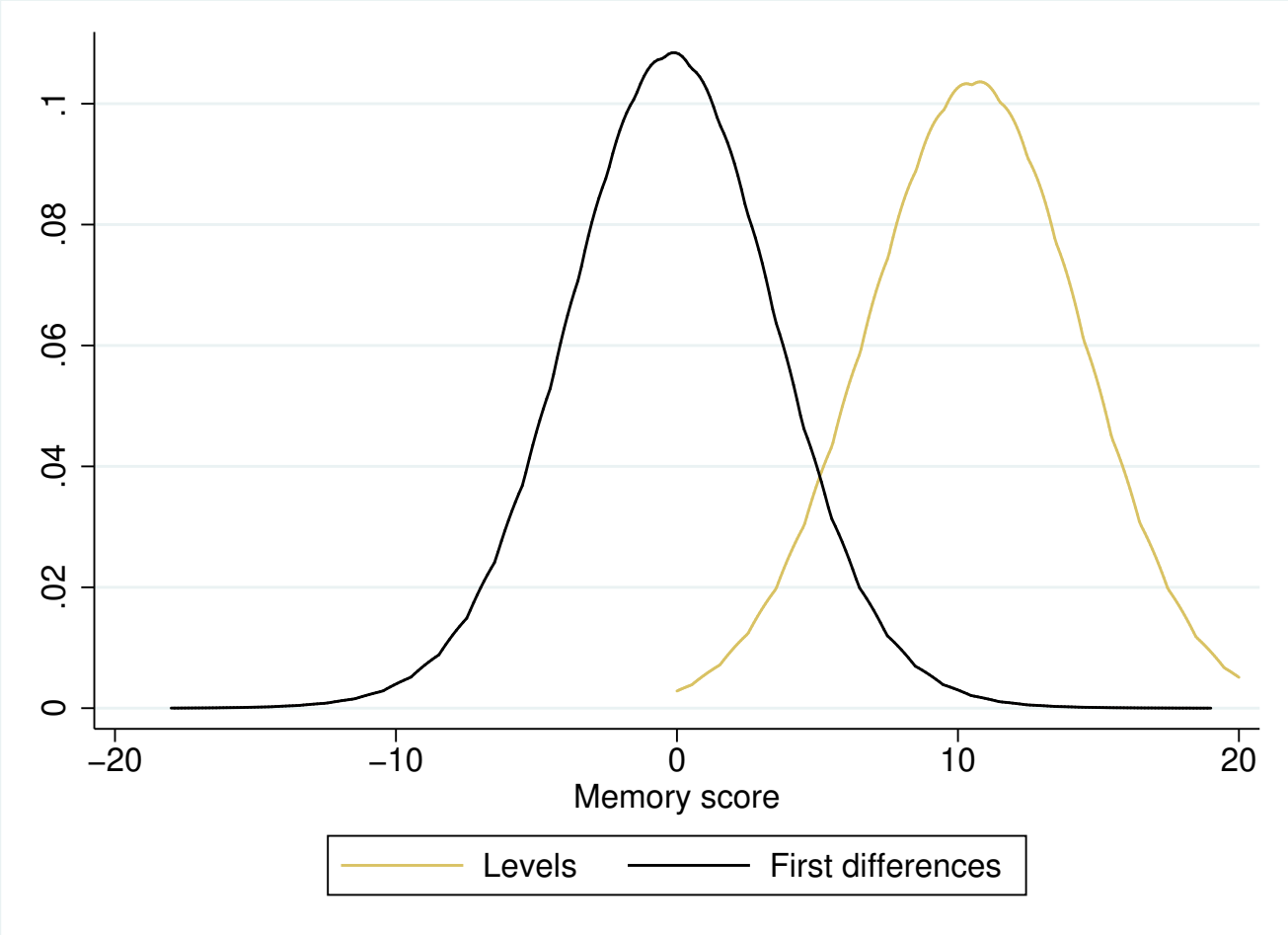

Probit estimates

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	Having a severe memory loss			Unaware, given severe memory loss		
	(1)	(2)	(3)	(4)	(5)	(6)
Age	.002 ***	.002 ***	.003 ***	-.002	-.002	-.002 *
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Alone_{t-1}	-.007 *	-.006	-.005	-.015	-.016	-.019 **
	(.004)	(.004)	(.004)	(.010)	(.010)	(.010)
Female	.030 ***	.077 ***	.077 ***	.033 ***	.045 ***	.044 ***
	(.003)	(.004)	(.004)	(.008)	(.008)	(.008)
Children	-.000	-.001	-.001	-.004 **	-.005 **	-.004 **
	(.001)	(.001)	(.001)	(.002)	(.002)	(.002)
Education	-.005 ***	-.017 ***	-.016 ***	-.001	-.004 **	-.006 ***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Working_{t-1}	-.020 ***	-.036 ***	-.030 ***	.051 ***	.046 ***	.019 **
	(.004)	(.004)	(.004)	(.009)	(.009)	(.009)
Q2 wealth_{t-1}	-.012 **	-.032 ***	-.028 ***	.024 **	.019	.003
	(.005)	(.006)	(.006)	(.012)	(.011)	(.011)
Q3 wealth_{t-1}	-.016 ***	-.048 ***	-.041 ***	.018	.010	-.016
	(.005)	(.006)	(.006)	(.013)	(.012)	(.012)
Q4 wealth_{t-1}	-.025 ***	-.064 ***	-.051 ***	.017	.007	-.042 ***
	(.006)	(.006)	(.006)	(.014)	(.014)	(.013)
Recall_{t-1}		.095 ***	.096 ***		.023 ***	.019 ***
		(.002)	(.002)		(.003)	(.003)
$\text{Very good health}_{t-1}$			-.026 ***			.100 ***
			(.004)			(.008)
$\text{ADL limitations}_{t-1}$			.023 ***			-.085 ***
			(.006)			(.011)
Obs.	80895	80895	80895	19545	19545	19545
N	22454	22454	22454	13740	13585	13585
Mean	.24	.24	.24	.24	.24	.24
Pseudo R^2	.012	.083	.085	.012	.016	.043

Notes: Observations are weighted using the HRS respondent-level weights. We use robust standard errors clustered at the household level. Significance levels: *** < 0.01, ** < 0.05, * < 0.1.

Ownership and share of risky assets given ownership

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	Ownership of risky assets		Share of risky assets	
	(1)	(2)	(3)	(4)
Aware	-.009	-.016	.002	-.005
	(.008)	(.014)	(.018)	(.019)
Unaware	-.005	-.011	.015	.006
	(.005)	(.009)	(.011)	(.011)
$\beta_1 - \beta_2$	.004	.005	.013	.011
	(.009)	(.015)	(.020)	(.021)
Obs.	57011	25897	14176	11696
N	16243	8132	5365	4347
Mean	.261	.452	.440	.563
3rd-4th wealth quartile	No	Yes	No	Yes

Financial wealth changes by stock market activity

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	Stock market active	Stock market inactive	Inactive & no stocks
	(1)	(2)	(3)
Aware	15.703	5.584	-2.543
	(32.508)	(15.708)	(6.350)
Unaware	-54.981***	-10.550	-9.640**
	(20.293)	(11.779)	(4.262)
$\beta_1 - \beta_2$	-70.684**	-16.134	-7.098
	(35.579)	(17.917)	(7.208)
Obs.	5498	7421	44092
N	2908	4100	14434
Mean W	342.636	168.370	53.968
Mean ΔW	1.959	-9.141	-.635

Subjective life expectancy and health expenditure

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	Subj. life expectancy		Out-of-pocket exp.	
	(1)	(2)	(3)	(4)
Memory loss	-.369		.038	
	(.412)		(.155)	
Aware		-1.474 *		.161
		(.764)		(.487)
Unaware		.106		.023
		(.448)		(.140)
Obs.	42804	42804	47493	47493
N	13376	13376	14927	14927
Mean	48.763	48.763	3.218	3.218

Missing values and misreporting

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	Fraction of financial wealth imputed (1)	Incomplete/missing value of stocks (2)	Any asset misreported (3)	Any fin. asset misreported (4)
Aware	-.001	.002	-.008	-.006
	(.002)	(.008)	(.009)	(.006)
Unaware	.000	.006	-.007	-.008 *
	(.001)	(.006)	(.006)	(.004)
Obs.	56973	13256	56973	56973
N	16284	5012	16284	16284
Mean	.060	.111	.090	.051

Predicted financial wealth

- We use the information on the composition of financial wealth of an individual in a given wave and information on market returns by asset category to predict her total financial wealth in the next wave.
- Suppose individual i is interviewed in month t and re-interviewed at $t+m$.
- Given her initial wealth in asset category j, W_{ijt}, we predict the value of her wealth in that category at $t+m$ by

$$W^*_{ij,t+m} = W_{ijt} \prod_{s=t+1}^{m} (1 + r_{js}),$$

where r_{js} is the return on asset category j between months $s-1$ and s.

- The predicted value of total financial wealth is then computed by adding up the predicted values of all asset categories. ▸ Back ▸ Table

Actual and predicted financial wealth changes

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	Memory loss	Unaware	Dependent variable: Actual Δ Wealth		
	(1)	(2)	(3)	(4)	(5)
Predicted Δ Wealth	.000	-.000	.593***		.593***
	(.000)	(.000)	(.025)		(.025)
Unaware				-27.227***	-23.394***
				(5.541)	(4.839)
Aware				-5.262	-6.416
				(9.018)	(7.983)
Obs.	57011	13912	57011	57011	57011
N	16243	9695	16243	16243	16243
Mean	.244	.765	380.435	380.435	2.720

Log differences of total wealth by quartile of initial wealth

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	1st quartile	2nd quartile	3rd quartile	4th quartile
	(1)	(2)	(3)	(4)
Aware	-5.074 *	-.215	-5.579	35.536
	(2.919)	(5.180)	(10.329)	(31.562)
Unaware	-2.795	-2.815	-15.992 ***	-43.748 **
	(1.978)	(2.809)	(5.623)	(18.067)
$\beta_1 - \beta_2$	2.280	-2.600	-10.413	-79.284 **
	(3.180)	(5.617)	(11.136)	(33.646)
Obs.	16680	14434	13374	12523
N	6721	6365	5761	4311
Mean W	26.855	130.917	360.175	1160.615
Mean ΔW	20.396	22.391	45.213	-59.534

Alternative definitions of severe memory loss (FR with positive initial financial wealth)

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	Absolute definition		Relative definition	
	(1)	(2)	(3)	(4)
Aware	-6.344	-7.776	-.095	-.071
	(7.404)	(10.939)	(.081)	(.058)
Unaware	-16.631***	-22.892***	-.058	-.140***
	(4.282)	(5.872)	(.050)	(.037)
$\beta_1 - \beta_2$	-10.287	-15.116	.036	-.068
	(8.080)	(11.714)	(.088)	(.062)
Obs.	40696	27086	38925	27019
N	13336	9309	12891	9296
3rd-4th wealth quartiles	No	Yes	No	Yes
Age & year	Yes	Yes	Yes	Yes
Socio-dem.	Yes	Yes	Yes	Yes
Initial wealth & memory	Yes	Yes	Yes	Yes