Efficacy in Measuring Financial Knowledge: “Don’t Know” Survey Responses

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When people say they “don’t know,” … do they?

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This paper represents the authors’ views and not the views of the Investment Company Institute, its staff, or member firms.

How to score financial knowledge?

Q 1 → gave substantive answer → correct → get a score of one
Q 2 → gave substantive answer → incorrect → get a score of zero
Q 3 → chose DK → get a score of zero
Q 4 → gave substantive answer → correct → get a score of one
Q 5 → chose DK → get a score of zero

Total score = 2 / 5

Assumes that both incorrect and DK responses indicate "absence of knowledge".

Investigation

Part 1: Secondary Data Analysis

Estimate the potential correlations between Big Five personality traits and the propensity to choose DK (Study 1).

Demonstrate changes in correlations between the objective financial knowledge score and behavioral outcomes depending on how DK is addressed in scale construction (Study 2).

Part 2: Data Collection and Analysis

Examine how reduced validity influences empirical modeling of the knowledge effect.

Demonstrate changes between the objective financial knowledge score and financial well-being depending on how DK/RA is addressed in scale construction.

Part 1 Results-Study 1 (HRS Data)

- We conducted logistic regressions and a linear regression with three dependent variables:
  (1) DK responses to individual knowledge questions
  (2) Any DK response
  (3) The count of DK responses.

- We found a *significant association* between personality traits and the propensity to select a DK response.
  - Openness (-) and Agreeableness (+)

Part 1 Results-Study 2 (NFCS Data)

- Estimated regressions for financial outcomes (retirement preparedness, emergency funds, and risk tolerance).
  - For each outcome variable, we estimated:

    Model 1: No inclusion of DK response

    Model 2: Inclusion of the binary variable of any DK response

    Model 3: Inclusion of the count of DK responses.

- The associations between financial knowledge and financial outcomes became *significantly attenuated* when DK response was controlled for.
  - We found negative association between DK response and financial outcomes.

Part 2: Data Collection and Analysis Treatment Groups

Groups A & B	**Preface:** Here are some multiple choice questions. Many people don't know the answer to these questions. Substantive response answer choices ONLY.
Groups C & D	**Preface:** Here are some multiple choice questions. Many people don't know the answer to these questions. Substantive response answer choices AND ‘Don’t Know’ and ‘Prefer not to say’.
Groups E & F	**Preface:** Here are some multiple choice questions. Many people don't know the answer to these questions, but even if you are not sure please select your best guess for each question. Substantive response answer choices AND ‘Don’t Know’ and ‘Prefer not to say’.
Groups G & H	**Preface:** Here are some multiple choice questions. Many people don't know the answer to these questions. You will receive a higher compensation for higher scores, so even if you are not sure please select your best guess for each question. Substantive response answer choices AND ‘Don’t Know’ and ‘Prefer not to say’

Part 2: Summary of Results

Financial knowledge maybe under-estimated when DK is presented.

Giving DK response reduces validity of the scale; but increases the reliability of the scale.

A preface to encourage substantive response does not help prevent respondents from choosing DK.

Inclusion of a preface to encourage selecting a substantive answer, has little influence on the summary financial knowledge score.

Additional incentive for each correct answer response did not have an impact on the summary financial knowledge scores.

What do Guesses tell us about "DK's"

Main Points:

(1) People who report they don't know, may.

(2) Guess – you may be pleasantly surprised!

(3) However, people who guess a good percentage of the time are different from those who guess, say, once.

Is guessing associated with differences in *(a)* confidence, *(b)* interest in delegation, or *(c)* trust?

(1) Some suggestive evidence.

(2) A couple of regressions that consider factors ***{a, b, c}*** in unison.

➔ **Findings suggest that a "*Don't Know*" responses embed traits beyond knowledge of questions.**

Don’t know? Try guessing!

Data from Fisch & Seligman – Trust, Financial Literacy, and Financial Market Participation

Guessing cannot hurt

Forcing people to guess instead of just accepting the “DK” response is informative.

Grade with Guessing

Grade without guessing	0	2	3	4	5	6	7	8	9	10	Total
0	1	0	0	0	0	0	0	0	0	0	1
1	0	1	0	0	0	0	0	0	0	0	1
2	0	5	1	0	0	0	0	0	0	0	6
3	0	0	20	6	1	0	0	0	0	0	27
4	0	0	0	47	14	1	0	0	0	0	62
5	0	0	0	0	62	14	4	1	0	0	81
6	0	0	0	0	0	132	13	1	0	0	146
7	0	0	0	0	0	0	114	20	2	0	136
8	0	0	0	0	0	0	0	108	25	0	133
9	0	0	0	0	0	0	0	0	89	5	94
10	0	0	0	0	0	0	0	0	0	34	34
Total	1	6	21	53	77	147	131	130	116	39	721

Guessing may yield pleasant surprises!

Data from Fisch & Seligman – Trust, Financial Literacy, and Financial Market Participation

Comparing actual score, with post quiz estimates

Estimated number correct	*Actual number correct, including guesses*: 0	1	2	3	4	5	6	7	8	9	10
0	*69%*			1	1		1		1		16%
1					1				1		
2					4	7	8	1	2		
3			2	2	7	9	7	9	3		
4				3	8	10	15	10	7	2	1
5			2	7	10	22	29	25	18	6	1
6				3	9	9	31	31	24	16	5
7			2	3	7	9	34	3	25	28	7
8				1	5	11	17	19	34	31	1
9					1		2	4	11	23	9
10	*6%*			1			3	2	4	1	6

"Blue Sky Guesses"

Guessing

However, people who guess a large percentage of the time are different.

they do not perform as well

Trust

M Turk sample

quiz is out of 10, up to seven guesses possible

# Guesses	score average	score median	Percent of sample
0	70%	7	68%
1	68%	7	25%
2	63%	6	6%
3	59%	6	1%
4	48%	5	1%
5	40%	4	0%
-			

Risk

Centiment sample

quiz is out of six, guesses always available

# Guesses	score average	score median	Percent of sample
0	58%	4	50%
1	61%	4	26%
2	56%	3	11%
3	51%	3	7%
4	52%	3	3%
5	39%	2	2%
6	43%	3	2%

Is a “Don’t Know” response a… “Tell”

Are certain factors more -or- less correlated with “Don’t Know” responses?

(a) Confidence

Is a lack of confidence associated with “don’t know” responses?

Simple cross tabs with gender as the basis – based on the work of several.

Confidence: Reports of Don't Know and subsequent guess performance by gender & sample

		Centiment (*Risk, WP*)						M Turk (*Trust, 2022*)					
		Self		Financial	*Answering Don't Know (DK)*			Self		Financial	*Answering Don't Know (DK)*		
Gender		Assessment		Literacy	1 or more	# DK |1+	% correct |1+	Assessment		Literacy	1 or more	# DK |1+	% correct |1+
Male		**63.4%**	>	**60.0%**	39.5%	1.9	47.4%	**62.8%**	<	**70.6%**	26.7%	1.3	35.2%
	n	*463*		*463*	*463*	*183*	*183*	*403*		*404*	*404*	*108*	*108*
Female		51.2%	<	54.8%	59.9%	2.1	46.4%	54.3%	<	66.0%	39.7%	1.3	**43.0%**
	n	*568*		*568*	*568*	*340*	*340*	*317*		*317*	*317*	*126*	*126*
Overall		56.7%		57.1%	50.7%	2.0	46.7%	59.1%		68.6%	32.5%	1.3	39.4%
	N	*1031*		*1031*	*1031*	*523*	*523*	*720*		*721*	*721*	*234*	*234*

(b) Financial decision delegation

Do those who answer "don't know" responses show increased preference for delegation?

Financial literacy & DK responses by preferences for delegation:	**Centiment data** *Risk (WP)*			**M Turk** *Trust (2022)*		
	average quiz score	*# DK | 6*	pct. of sample	*average quiz score*	*# DK | 7*	pct. of sample
completely independent -	*56%*	*16%*	30%	*77%*	*5%*	3%
-	*55%*	*13%*	14%	*69%*	*6%*	19%
neutral / colaborate -	*56%*	*20%*	29%	*67%*	*6%*	33%
-	*60%*	*12%*	13%	*64%*	*8%*	25%
completely delegate -	*60%*	*21%*	15%	*58%*	*7%*	20%
overall (regardless of degree of delegation)	*57%*	*17%*	N=1,031	*69%*	*6%*	N=721

<--more delegation

Notes: Answer choices varied a bit across surveys. Quiz scores formatted to place in context of both datasets.

(c) Trust

Are less-trusting people more likely to respond with “don’t know?”

<--more trusting

Financial literacy & DK responses by reported degree of trust:	**Centiment data** *Risk (WP)*			**M Turk** *Trust (2022)*		
	average quiz score	*# DK | 6*	pct. of sample	*average quiz score*	*# DK | 7*	pct. of sample
you can't be too careful -	*54%*	*20%*	32%	*66%*	*5%*	12%
-	*60%*	*15%*	15%	*68%*	*5%*	29%
-	*57%*	*19%*	27%	*71%*	*6%*	10%
-	*62%*	*11%*	14%	*69%*	*4%*	42%
most people can be trusted -	*54%*	*13%*	12%	*68%*	*2%*	7%
overall (regardless of degree of delegation)	*57%*	*17%*	N=1,031	*683%*	*5%*	N=273

Notes: Quiz scores formatted to plaxce in context of <u>both</u> datasets.

Preliminary Regressions

Regressions bringing together the themes we've explored

	Probit		Ordinary Least Squares	
Dependent variable:	Any "*Don't Know*" response		Number of "*Don't Know*" responses	
Sample:	Centiment		Centiment	M Turk
{N}:	1,031		1,031	720
Confidence | Self-Assessed Financial Knowledge	**-0.45** ***		**-0.38** ***	**-0.19** ***
percent	0.04		0.04	0.03
Degree of preference for delegation	-0.06 *		0.00	-0.05 *
scale (1-5 increasing in preference)	0.03		0.03	0.03
General Trust	-0.02		-0.02	-0.09 *
scale 1-5 (increasing in trust)	0.03		0.03	0.05
Female	**0.31** ***		**0.23** ***	0.08
binary {0, 1}	0.09		0.08	0.06
Education	**-0.06** ***		**-0.09** ***	0.00
scale (1- 7, increasing in completed degree)	0.02		0.02	0.02
constant	1.55 ***		2.35 ***	1.38 ***
	0.19		0.17	0.19
R-squared	*0.14* (pseudo)		*0.15*	*0.08*

*** p<0.01, ** p<0.05, * p<0.1, coefficients which are statistically significant at or above 95 percent CI in bold.

Conclusions

Things to take away from the talk

Our findings suggest that a “*Don’t Know*” responses embed traits beyond knowledge of questions.

While there is likely a lot embedded in any survey response,

that is certainly the case for a “Don’t Know” response.

To learn all we can from a sample, we can

allow people to say they “Don’t Know,” and then also do their best to respond.

…Perhaps especially if we care not only about financial literacy, but also about

financial engagement and financial well-being.

Key Takeaways

There is threat to validity associated with including DK response in financial knowledge surveys.

The reduced validity may impact the evaluation of financial education interventions.

We need to consider how to design financial knowledge surveys in accordance with recommendations from educational testing.

Include questions central to the financial education program or intervention being evaluated.

Guessing

There are differences in rates of success by sample and by question as well:

	Centiment data Risk (WP)		M Turk data Trust (JPEF 2022)			
Correct | responding *"I don't know"* (DK) & then being prompted to guess:	Percent guessing		Correct | *DK*	Percent guessing	Random chance	Options (#)
C & M nominal interest at 2 percent	53%	11%	80%	1%	33%	3
C & M inflation v. nominal interest	36%	11%	55%	2%	33%	3
C & M single stock risk vs. mutual fund	50%	34%	36%	3%	50%	2
C & M E(return) increases with risk?	36%	17%	59%	4%	33%	3
C & M risk return char of two projects	58%	17%	57%	5%	33%	3
C invest $10k which single project	48%	12%			50%	2
M DC retirement plans promise fixed payments			30%	18%	50%	2
M properties of mutual funds include:			37%	11%	17%	6

It depends *who* you trust

Data from Fisch & Seligman – Trust, Financial Literacy, and Financial Market Participation (2022)

Errata on trust by type of person (since we had the data anyway).

Financial literacy & DK responses by reported degree of trust:	M Turk Research Samples (*Trust, 2022*)								
	People like yourself			**Financial Advisor**			*General (repeated)*		
<--*more trusting*	*average quiz score*	*# DK | 7*	pct. of sample	*average quiz score*	*# DK | 7*	pct. of sample	*average quiz score*	*# DK | 7*	pct. of sample
do not trust them at all -	*64%*	*6%*	1%	*74%*	*6%*	4%	*66%*	*5%*	12%
find it hard to trust them -	*70%*	*7%*	4%	*71%*	*4%*	14%	*68%*	*5%*	29%
neutral -	*67%*	*6%*	13%	*71%*	*5%*	29%	*71%*	*6%*	10%
tend to trust them -	*68%*	*4%*	53%	*67%*	*4%*	46%	*69%*	*4%*	42%
trust them a great deal -	*70%*	*4%*	28%	*61%*	*5%*	7%	*68%*	*2%*	7%
overall (regardless of degree of delegation)	*69%*	*5%*	N=720	*69%*	*5%*	N=720	*68%*	*5%*	N=273

Notes: Quiz scores formatted to plaxce in context of <u>all three trust questions</u>.

Current Approach to Measuring Financial Knowledge

- Possibly distorting our understanding of the depth of financial illiteracy and its effect on financial behaviors.
  - **DK/RA options:**
    - **introduces systematic error associated with the propensity to guess** (Cronbach, 1946; Mehrens & Lehmann, 1984; Nunnally, 1972; Stanley & Hopkins, 1972).
    - **reflect respondents' personality traits such as self-confidence, competitiveness, and risk aversion** (Cronbach, 1946; Hirschfeld, Moore, & Brown, 1995; Sherriffs & Boomer, 1954).

Conceptual Framework:
Four Behavioral Stages of Knowledge

Fully Informed

Respondent can identify the correct answer.

Misinformed

Respondent makes a confident judgement but is mistaken.

Partially Informed

Respondent uses partial understanding to rule out some incorrect options.

Uninformed

Respondent has no knowledge related to the question.

Mondak and Davis (2001)

Conceptual Framework: Four Behavioral Stages of Knowledge

- This conceptual model suggests that the effect of financial knowledge should be understood separately as:
  - (a) differences in outcomes between those who are fully/partially informed and those who are misinformed, and
  - (b) differences in outcomes between those who are fully/partially informed versus uninformed.

The past research on financial literacy has not systematically modeled these two different constructs and possibly misattributed identified effects.

Methods: Data Description

Study 1

- Health and Retirement Study (HRS)
  - Leave-Behind (LB) Questionnaires
  - Financial Advice and Capacity at Older Ages Module
- Final sample, N=946

Study 2

- Pooled dataset from the 2009, 2012, 2015, and 2018 waves of the National Financial Capability Study (NFCS).
  - The NFCS data provides benchmark information on Americans' financial capability.
- Sample consists of person-level observations across four waves.
  - N= 96,649

Measurement of Variables

Big Five Personality Traits

- Grouping of personality traits:
  - Neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (Costa & McCrae, 1992).
- In the HRS, the respondents were given a description,
  - "Please indicate how well each of the following describes you," and asked to indicate whether they feel, for instance, moody, worrying, nervous, or calm, on a scale of 1 (*a lot*) to 4 (*not at all*).
  - The summary score is the average of these responses.

Financial Behaviors

- We considered two behavioral outcomes and one risk preference in the NFCS.
  - **Retirement preparedness:** respondents indicate whether they have ever tried to figure out how much to save for retirement.
  - **Emergency saving:** binary indicator of whether respondents set aside emergency or rainy day funds that cover the expenses for three months.
  - **Risk tolerance:** a scale of 1-10, with a high score representing greater willingness to take risks.

Table 1. Financial knowledge questions, HRS and NFCS	
Variable	Description
Both datasets	
Compound Interest	Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?
Inflation	Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?
Risk	Buying a single company's stock usually provides a safer return than a stock mutual fund.
HRS dataset only	
Life annuity	Buying a life annuity usually provides a safer income stream than investing in a mutual fund
NFCS dataset only	
Bonds	If interest rates rise, what will typically happen to bond prices?
Mortgages	A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less.
Subjective Financial Knowledge	On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?

Table 2. DK response and Big Five personality traits, HRS (Significant Results in Green)

Outcome:	DK Compound	DK Inflation	DK Risk	DK Withdrawal	Any DK	# of DKs
	(1)	(2)	(3)	(4)	(5)	(6)
Neuroticism	-0.165	-0.072	0.166	-0.037	0.241*	0.010
	(0.243)	(0.290)	(0.141)	(0.255)	(0.135)	(0.045)
Extraversion	0.015	-0.207	0.127	0.228	[illegible]	0.025
	(0.310)	(0.370)	(0.186)	(0.334)	(0.178)	(0.058)
Openness	-0.835***	-0.636*	-0.717***	-0.756**	-0.646***	-0.233***
	(0.283)	(0.337)	(0.170)	(0.295)	(0.163)	(0.053)
Agreeableness	0.114	0.185	0.427	0.251	[illegible]	0.094
	(0.321)	(0.389)	(0.199)	(0.352)	(0.190)	(0.061)
Conscientiousness	-0.317	-0.006	-0.089	-0.054	-0.122	-0.036
	(0.400)	(0.478)	(0.235)	(0.423)	(0.225)	(0.074)

Notes: HRS 2014 and 2016. Logistic regressions are reported in columns 1-5; linear regression is reported in column 6. Standard errors in parentheses. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

Results-Study 2 (NFCS Data)

- Estimated regressions for financial outcomes.
  - For each outcome variable, we estimated:

    Model 1: No inclusion of DK response

    Model 2: Inclusion of the binary variable of any DK response

    Model 3: Inclusion of the count of DK responses.

- Covariates include:
  - Age
  - Gender
  - Race
  - Educational background
  - Marital status
  - Health insurance ownership
  - Employment status
  - Household income
  - Homeownership
  - Census division dummies

Positive correlation between objective financial knowledge and dependent variables.

	DV1: Retirement Planning			DV2: Rainy Day Funds		
Variables	Coefficient (S.E.)			Coefficient (S.E.)		
Objective Financial Knowledge	0.056***	0.032***	0.016*	0.033***	0.013***	0.008*
	(0.003)	(0.005)	(0.006)	(0.001)	(0.002)	(0.003)
Any DK		-0.124***			-0.105**	
		(0.013)			(0.010)	
# of DKs			-0.056***			-0.036***
			(0.006)			(0.004)

Notes: NFCS 2009, 2012, 2015, and 2018. Standard errors in parentheses. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

Lastly, we found mixed results on the association between objective financial knowledge and risk tolerance.

DV3: Risk Tolerance			
Variables	Coefficient (S.E.)		
Objective Financial Knowledge	0.179**	-0.015	-0.147*
	(0.032)	(0.047)	(0.058)
Any DK		-1.017***	
		(0.113)	
# of DKs			-0.458***
			(0.047)

Summary of Part 1: Secondary Data Analysis

Study 1

- We found a significant association between personality traits and the propensity to give DK response.
- Openness (-) and Agreeableness (+)

Study 2

- The associations between financial knowledge and financial outcomes became significantly attenuated when DK response was controlled for.
- We found negative association between DK response and financial outcomes.

Part 2: Data Collection and Analysis

Data Description

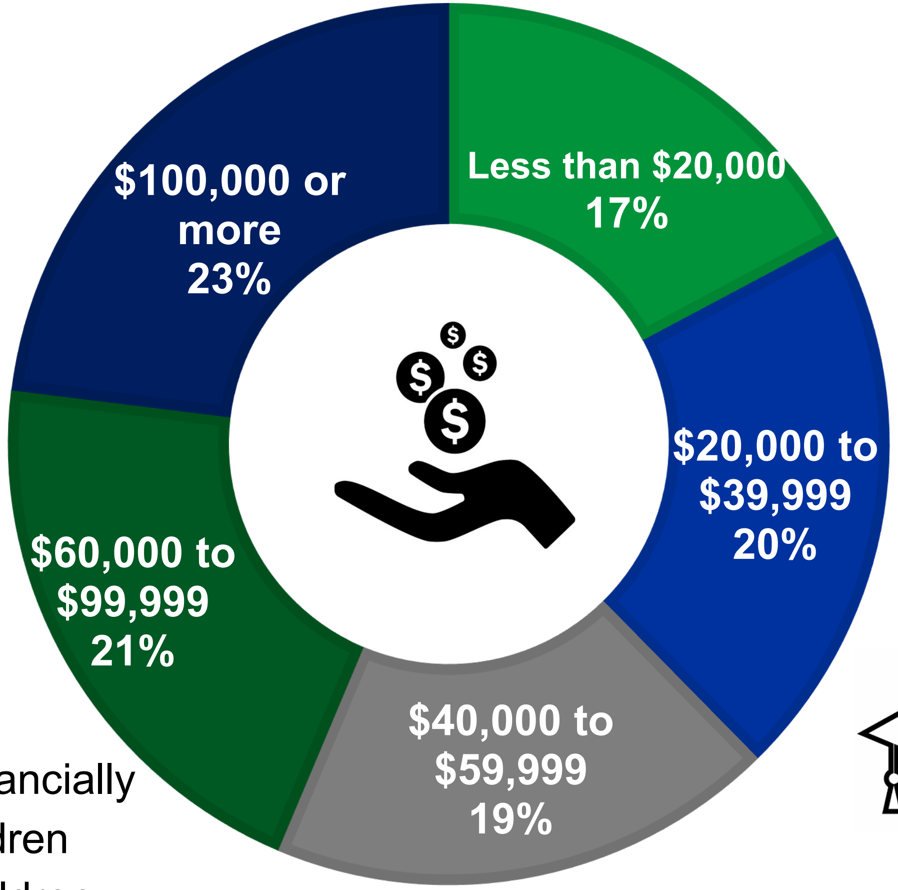
- Participants recruited using Qualtrics Panels with Qualtrics Research Services.
  - May - June 2021.
- Limited to:
  - Residing in the United States
  - Between 25 and 65 years of age.
- Survey had 55-62 total questions.
  - Background financial information
  - Financial knowledge questions
  - Demographic questions
- N = 3,593

Sample Description

64.30% Female
35.39% Male

51.88% Married
30.99% Single
11.19% Divorced

50.77% Have Children
21.27% Do Not Have Financially Dependent Children
32.74% Do Not Have Children



55.0% Employed Full-Time/ Self-Employed
10.69% Unemployed
8.66% Retired
10.25% Disabled

24.59% Less than HS/HS/GED
21.67% Some college
12.09% Associate’s
25.73% Bachelor’s
15.93% Graduate/Professional

Sample Description

55.28% **had** estimated the amount they need for retirement.

53.23% **did not have** investments beyond their retirement accounts.

55.20% **have** 3 months' worth of emergency savings.

79.47% **had not** used alternative financial services in the last 12 months.

84.74% **had not** taken a hardship withdrawal from their retirement account in the last 12 months.

4.79 avg. subjective financial knowledge

(1= very low, 10= very high).

4.79 avg. risk tolerance (1= very low risk, 10= very high risk).

Treatment Conditions

1	Whether the DK/RA responses are present or not.
2	Whether the DK/RA responses are discouraged in the preface.
3	Whether DK/RA responses are discouraged through incentive for higher scores.

Variables of Interest

Financial Knowledge Questions

- 5 Content Areas:
  - Debt & Credit
  - Insurance
  - Budgeting
  - Taxes
  - Estate Planning
- Long-form: 14 items
- Short-form: 7 items

Items on the next slide

Financial Well-Being

- CFPB Financial Well-being Scale
  - 10-item scale

Sociodemographic Variables

- Age
- Gender
- Education
- Race/ethnicity
- Marital status
- Employment status
- Household income
- Homeownership
- Dependent children

Short Form & Long-Form Items	Long-Form Only Items
You are comparing two loans that have different repayment periods (terms) but otherwise have the same loan features and requirements. The longer the repayment term is, the total interest you'll pay on the loan is:	You are interested in building up a good credit history. To improve your credit history, which of the following should do?
If you have multiple credit cards with balances totaling $5,000 and you are wanting to reduce your credit card debt. Each credit card has different monthly minimum payments, APRs, and balance amounts. In order to reduce the interest you pay, which card should you pay off first?	You went to the doctor and now have received a bill. You have already paid your deductible for your health insurance this year, but now you are billed for a percentage of covered expenses. The amount you are being billed for is:
You are selecting an insurance policy and you already determined what level of coverage you need. For the policy you selected, you are asked to choose between two deductible amounts. Which of the following is typically true with regard to your monthly payments? The higher deductible plan means that your monthly payments (premiums) will be…	Your monthly housing payment (mortgage or rent) is always $650. What type of budget expense is your monthly housing payment?
If you are calculating your net worth, you would need to subtract all of your liabilities from your…	You have several assets: cash on hand, a car, stocks, and a house. Which of these assets is your most liquid asset?
If the total amount of money you received during a given month exceeds the total you owe in your fixed and variable expenses (e.g., rent, groceries) for that month, which of the following is true?	You purchase a house that is a higher value compared to your previous house in the same neighborhood. What will likely happen with your taxes the next year?
If you file your annual federal income taxes and receive a refund, this means:	What do you subtract from your income to determine your taxable income?
Which is the most accurate statement regarding estate plans? Estate plans are the set of documents that specify what happens to the assets, property, and dependents of someone when they…	You decide you want to give an appointed person the right to make medical decision on your behalf, if you are not able to do so yourself. What estate planning document allows this?

Short Form Items

	Question	Answer Choices (correct selection is bold, choices not specific order)
1	You are comparing two loans that have different repayment periods (terms) but otherwise have the same loan features and requirements. The longer the repayment term is, the total interest you'll pay on the loan is:	• Lower than for a shorter-term loan • Higher than for a shorter-term loan • The same as for a shorter-term loan
2	If you have multiple credit cards with balances totaling $5,000 and you are wanting to reduce your credit card debt. Each credit card has different monthly minimum payments, APRs, and balance amounts. In order to reduce the interest you pay, which card should you pay off first?	• The card with the highest APR • The card with the highest balance • Make equal payments on all the cards • The card with the lowest balance
4	You are selecting an insurance policy and you already determined what level of coverage you need. For the policy you selected, you are asked to choose between two deductible amounts. Which of the following is typically true with regard to your monthly payments? The higher deductible plan means that your monthly payments (premiums) will be…	• …higher than for the lower deductible plan. • …the same as the lower deductible plan. • …lower than for the lower deductible plan.
6	If you are calculating your net worth, you would need to subtract all of your liabilities from your…	• ….total assets. • …annual taxes. • …annual income. • …total expenses.
9	If the total amount of money you received during a given month exceeds the total you owe in your fixed and variable expenses (e.g., rent, groceries) for that month, which of the following is true?	• You have extra money (surplus) available for discretionary spending and saving this month. • You have just enough money to pay your expenses this month. • You are short money (deficit) for this month's expenses.
10	If you file your annual federal income taxes and receive a refund, this means:	• You underpaid your federal taxes and are being billed for the difference between what you paid and what you owed. • You did not owe any federal taxes this year. • You overpaid your federal taxes and are being returned the difference between what you paid and what you owed.
13	Which is the most accurate statement regarding estate plans? Estate plans are the set of documents that specify what happens to the assets, property, and dependents of someone when they…	• die. • die or if they become incapacitated. • die and who handles the financial decisions if a person becomes incapacitated. • die and who handles the financial and healthcare decisions if a person becomes incapacitated.

Long Form Items (Only)

	Question	Answer Choices (correct selection is bold, choices not specific order)
3	You are interested in building up a good credit history. To improve your credit history, which of the following should do?	• Pay your balances on time • Increase the amount (percentage) of your credit lines you are using (credit utilization rate) • Apply for multiple new credit card accounts each month • Only pay your minimum monthly credit payments every other month
5	You went to the doctor and now have received a bill. You have already paid your deductible for your health insurance this year, but now you are billed for a percentage of covered expenses. The amount you are being billed for is:	• Copayment • Coinsurance • Premium • Explanation of benefits
7	Your monthly housing payment (mortgage or rent) is always $650. What type of budget expense is your monthly housing payment?	• Fixed Expense • Variable Expense • Discretionary Expense • Absolute Expense
8	You have several assets: cash on hand, a car, stocks, and a house. Which of these assets is your most liquid asset?	• Cash on hand • Car • Stocks • House
11	You purchase a house that is a higher value compared to your previous house in the same neighborhood. What will likely happen with your taxes the next year?	• Your property taxes will likely increase • Your property taxes will likely stay the same • Your property taxes will likely decrease
12	What do you subtract from your income to determine your taxable income?	• Deductions • Credits • Deductions and credits
14	You decide you want to give an appointed person the right to make medical decision on your behalf, if you are not able to do so yourself. What estate planning document allows this?	• Last will and testament. • Medical power of attorney. • Guardian trust. • Durable power of attorney.

Results

Mean, Standard Deviation, and Cronbach Alpha of Financial Knowledge by Experimental Groups			
Experimental Groups	Financial Knowledge		
	Mean	SD	Alpha
Group A (7 questions, no DK, no preface)	3.72	1.92	0.657
Group B (14 questions, no DK, no preface)	8.12	3.10	0.758
Group C (7 questions, DK, no preface)	3.37	2.03	0.707
Group D (14 questions, DK, no preface)	7.18	3.71	0.833
Group E (7 questions, DK, preface)	3.60	1.98	0.689
Group F (14 questions, DK, preface)	7.37	3.59	0.816
Group G (7 questions, DK, Preface + incentive)	3.44	2.03	0.720
Group H (14 questions, DK, Preface + incentive)	7.16	3.68	0.828

Notes: SD, standard deviation; DK, don't know or refused to answer; Alpha: Cronbach's Alpha.

Results

Does having DK/RA alter the mean and standard deviation of financial knowledge score?, two-sample t test and variance ratio test

	N	Mean	SD		N	Mean	SD
Group A	449	3.72	1.92	**Group B**	451	8.12	3.10
Group C	456	3.37	2.03	**Group D**	453	7.18	3.71
H_0: mean(A)=mean(C)				**H_0: mean(B)=mean(D)**			
t statistics	2.71			**t statistics**	4.12		
p-value	0.007			**p-value**	<0.001		
H_0: sd(A) / sd(C)=1				**H_0: sd(B) / sd(D)=1**			
F statistics	0.89			**F statistics**	0.70		
p-value	0.23			**p-value**	<0.001		

Results

Does having a preface alter the mean and standard deviation of financial knowledge score?, two-sample t test and variance ratio test

	N	Mean	SD		N	Mean	SD
Group C	456	3.37	2.03	**Group D**	453	7.18	3.71
Group E	449	3.60	1.98	**Group F**	447	7.37	3.59
H_0: mean(C)=mean(E)				**H_0: mean(D)=mean(F)**			
t statistics	-1.73			**t statistics**	-0.80		
p-value	0.08			**p-value**	0.42		
H_0: sd(C) / sd(E)=1				**H_0: sd(D) / sd(F)=1**			
F statistics	1.05			**F statistics**	1.07		
p-value	0.63			**p-value**	0.49		

Results

Does offering compensation alters the mean and standard deviation of financial knowledge score?, two-sample t test and variance ratio test

	N	Mean	SD		N	Mean	SD
Group E	449	3.60	1.98	**Group F**	447	7.37	3.59
Group G	441	3.44	2.03	**Group H**	446	7.16	3.68
H_0: mean(E)=mean(G)				**H_0: mean(F)=mean(H)**			
t statistics	1.15			**t statistics**	0.88		
p-value	0.25			**p-value**	0.38		
H_0: sd(E) / sd(G)=1				**H_0: sd(F) / sd(H)=1**			
F statistics	0.95			**F statistics**	0.95		
p-value	0.58			**p-value**	0.60		

Results

Regressions of financial well-being on financial knowledge, a scale with DK/RA response.

	Groups C, E, G			Groups D, F, H		
	7-item scale			14-item scale		
	(1)	(2)	(3)	(4)	(5)	(6)
Financial knowledge score	0.48***	0.57***	0.69***	0.64***	0.47**	0.80***
	(0.18)	(0.20)	(0.22)	(0.17)	(0.19)	(0.21)
Any DK response		0.84			-1.52**	
		(0.78)			(0.77)	
Count of DK responses			0.38*			0.29
			(0.23)			(0.22)
N	1,345	1,345	1,345	1,344	1,344	1,344

***Notes*:** N, number of observations. Regressions control for age, gender, education, race/ethnicity, marital status, employment status, and household income.