

# Evaluating the Impact of Financial Education as Part of Public Assistance Programs: Evidence from a Field Experiment

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# Policymakers Turn to Financial Literacy Strategies

“I believe you will find that economic education is one of the best investments you can make for your own future and for the future of your family, your community, and our nation.”

—Ben S. Bernanke Chairman Board of Governors of the Federal Reserve System Washington, D.C. (2006)

- Common theme in US and abroad

# Financial Literacy Education

- Widespread use of education programs
- Theory: Improve knowledge → Improve behavior
  - How to manage budget
  - Understand credit and banking terms
  - Able to access and use information
  - Practice making financial choices
- Low-income populations show relatively lower levels of financial literacy
  - Mistakes and misinformation not limited by income, however

# Financial Literacy as Public Policy

- Policymakers frequently refer to financial literacy education as a component of policy solutions
- 2008 President's Advisory Council on Financial Literacy (Executive Order no. 13455)
  - “to increase the level of financial literacy among Americans”
- Financial education part of bankruptcy, food assistance, foreclosure, unemployment, incarcerated and other programs
- Despite this durable rhetoric, there is a paucity of research showing the effect of financial education

# Financial Literacy Research

- 26 studies of financial literacy education in non-retirement planning settings

## Two Types

- Pre-post test methods with no controls (9/26)
  - Quasi-experiments using non-random controls
- **Variety of contexts**
    - Homeownership, bankruptcy, ADD/IDAs, credit repair
    - Mix of mandated and non-mandated contexts
- **Authors tend to make strong claims**
    - Most link program and/or knowledge gains to behavior improvements

# Problems in Past Literature

- Selection bias
  - Problem of unobserved factors: E.G. ‘motivation’
  - Meier and Sprenger (2007) show studies biased towards the *overestimation* of results due to time preferences
- Self-reported outcomes (upward bias: Agnew & Szyman, 2005)
- Short follow-up periods
- Heterogeneous treatment and/or sample

## Many avenues for bias

- Only 4 studies used randomized approach (& 2 failed)
  - Effects of descriptive studies appear large
    - Quasi-experiments modest
      - » Randomized experiments very small

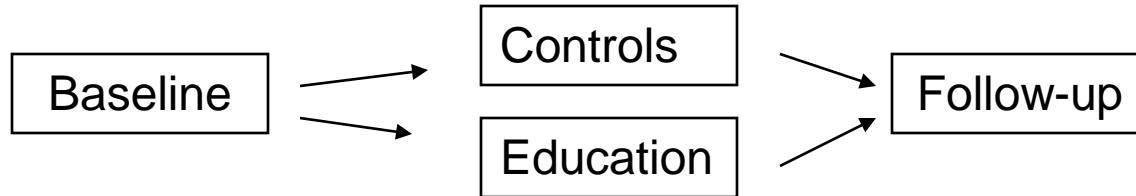
# Field Experiment

- Section 8 Housing Voucher Program
  - Long Island NY
  - Operated by CDC Long Island, nonprofit agency under NY state contract
  - Clients re-certify income and other qualifications annually (or as they change)
  - 181 clients in Family Self Sufficiency Program
  - Requirement to take Financial Fitness
    - Program can only train half of the client volume per year
    - Set up experiment to randomize assignment to course timing

# Experimental Design

- 181 clients required to take financial literacy to continue to receive housing subsidy (all very-low income)
  - 144 clients consented to participate
  - Of 37 non-consenting, 22 leaving program
  - Consent random [77% v. 82%,  $\chi^2=.91$   $p=.34$ ].
- Assigned by odd-even IDs
  - 73 “treatment”
  - 71 “control”
    - prohibited from completing the course for one year (wait list)

# Study Design



- 50-item survey, Credit report, Accounts
  - Clients received \$60 if completed both surveys
- Attrition not random (*82% v. 94%, chi2=5.12 p=0.02*).
  - 17 incomplete: 13 treatment group and 4 control
    - Due to death (0;2), noncompliance (5;1) or exiting program (13;1)

# Course

- “Financial Fitness” = five sessions
  - Banking, managing credit & debt, savings, budgeting, fraud
  - Standardized curriculum
  - All courses provided at main office every month by same staff
  - September 2005 to September 2006 for treatment group
    - After this date for control group
- Completed their baseline data the month before began taking financial literacy courses
  - Follow-up data collection took place 12 months later.
- Most completed the 5 courses in one month or less
  - Failure to comply could jeopardize eligibility for a housing voucher.

# Dataset

- 127 clients with complete data at both baseline and 12-month follow-up periods.
  - 60 treatment
  - 67 control
- Small sample
- Potential for bias due to choice/selection

**Means and Standard Deviations for  
Treatment and Control Groups at Baseline:  
Administrative Data**

	Treatment	Control
Total Savings	1,186	1,776
	(3,130)	(7,492)
Credit Score (FICO)	577	566
	(70)	(70)
Total Debt	11,520	14,520
	(12,805)	(12,730)
Total Income *	23,239	19,382
	(12,147)	(11,284)
Welfare Receipt	0.16	0.17
	(0.37)	(0.38)
Less than High School	0.16	0.21
	(0.37)	(0.41)
Household Size	3.92	3.94
	(1.88)	(1.87)
Female client	0.96	0.93
	(0.20)	(0.26)
Single headed household	0.73	0.68
	(0.45)	(0.47)
Age	39.30	39.06
	(7.82)	(7.17)
* t=1.9		

# Impact Specifications

**If attrition is random:**

Regression-adjusted impact estimate:

$$Y_{\text{follow-up}} = \beta_1 Y_{\text{baseline}} + \beta_2 X_{\text{Treatment}} + \varepsilon$$

*B2 dummy provides impact of treatment group*

*Difference in Differences estimate Treatment on the Treated*

# Impact Specifications

## Propensity Score Weighting

$$\begin{aligned} \text{Prob}(\text{completed}) = & \beta_1 \text{ age} + \beta_2 \text{ age}^2 + \beta_3 \text{ financial knowledge} \\ & \text{index} + \beta_4 \text{ debt\$} + \beta_5 \text{ bankruptcy} + \beta_6 \text{ savings} + \beta_7 \text{ household size} \\ & + \beta_8 \text{ rent subsidy} + \beta_9 \text{ income} + \beta_{10} \text{ white} + \beta_{11} \text{ welfare} + \beta_{12} \\ & \text{\#delinquencies} + \beta_{13} \text{ Length of time in program} + \varepsilon \end{aligned}$$

- 
- Score =  $\text{prob}(\text{completed})_{\text{hat}}$ 
    - Scores grouped by quintile
  - Weight =  $\# \text{ controls in quintile} / \# \text{ treatments}$
  - Weight = 1 for all treatments; calculated weight for controls

# Propensity Scores

- Attrition in randomized experiments not uncommon
  - Multiple methods for resolving issue (LaLonde, 1986; Orr, 1999)
- Typically a quasi experimental technique
  - Propensity score weights require fewer assumptions about distribution
    - Relaxes the linearity and normality assumptions required by selection models.
    - Identify counterfactuals using a semi-parametric approach.
- Used as weights
  - Weighted variation as proposed by Orr, Lam and Bell (2007)

# Weighted vs. Unweighted

	Un weighted		Weighted	
	<b>Mean</b>	<i>Std Dev</i>	<b>Mean</b>	<i>Std Dev</i>
<b>Year in FSS Program</b>	<b>3.67</b>	<i>1.45</i>	<b>3.63</b>	<i>1.50</i>
<b>Household size</b>	<b>3.93</b>	<i>1.87</i>	<b>3.78</b>	<i>1.89</i>
<b>Rent Subsidy Amount</b>	<b>1,589</b>	<i>291</i>	<b>1,518</b>	<i>303</i>
<b>Total Debt</b>	<b>11,852</b>	<i>12,773</i>	<b>11,907</b>	<i>12,511</i>
<b>Total Income</b>	<b>19,938</b>	<i>12,680</i>	<b>21,615</b>	<i>12,926</i>

# Weighted Specification

**If attrition not random:**

Weighted regression-adjusted impact estimates:

$$[Y_{\text{follow-up}}]^*w = [\beta_1 Y_{\text{baseline}} + \beta_2 X_{\text{Treatment}} + \varepsilon]^*w$$

# Weighted Exposure Specification

- Vouchers more valuable for higher rent, larger families with low incomes
- Longer time in FSS means longer time to build up escrows

**Weighted regression-adjusted impact with controls for exposure to voucher subsidy and FSS provisions:**

$$[Y_{\text{follow-up}}] * [w] = [\beta_1 Y_{\text{baseline}} + \beta_2 \text{Treatment} + \beta_3 \text{Months in FSS} + \beta_4 \text{Household size} + \beta_5 \text{Rent level} + \beta_6 \text{Total income} + \varepsilon] * [w]$$

# Diff-in-Diff Estimated Effects

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	Estimated Average Treatment Effect on Treated	<i>t</i>	Weighted Estimate	<i>t</i>	Weighted Estimate with Program Controls	<i>t</i>
<b>Administrative Data:</b>						
Amount in Checking Account	-\$738	[0.94]	-\$351	[1.62]	-\$319	[1.61]
Amount in Savings Account	\$489	[2.17]*	\$454	[2.35]*	\$474	[2.41]*
Receive Welfare (TANF)	-0.057	[0.76]	0.064	[0.95]	0.071	[1.26]

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# Estimated Effects, Con't

	Estimated Average Treatment Effect on Treated	<i>t</i>	Weighted Estimate	<i>t</i>	Weighted Estimate with Program Controls	<i>t</i>
<b>Credit Report:</b>						
Delinquencies Reported	-0.131	[0.88]	-0.224	[1.19]	-0.222	[1.25]
Discharges Reported	0.354	[1.01]	0.309	[0.84]	0.336	[0.92]
FICO Credit Score	0.333	[0.03]	20.19	[1.43]	20.805	[1.73]+
Number of Credit Cards	0.695	[1.96]+	0.424	[1.08]	0.464	[1.30]
Total Dollars in Debt	\$2,533	[1.64]	\$2,241	[1.29]	\$2,276	[1.29]

# Estimated Effects, Con't

	Estimated Average Treatment Effect on Treated	<i>t</i>	Weighted Estimate	<i>t</i>	Weighted Estimate with Program Controls	<i>t</i>
<b>Self Report:</b>						
Financial Knowledge Index (0-4, 4= a lot)	0.523	[3.19]**	0.441	[2.17]*	0.446	[2.18]*
Grade self understanding of current interest rates	0.746	[3.63]**	0.854	[2.74]**	0.935	[3.59]**
Grade self understanding of own credit report	0.519	[2.64]**	0.576	[2.21]*	0.627	[2.57]*
Know a lot about credit	0.397	[1.97]*	0.239	[0.94]	0.269	[1.06]
Know a lot about investing money	0.247	[1.23]	0.372	[1.57]	0.403	[1.67]+
Know a lot about managing finances	0.621	[3.19]**	0.482	[2.16]*	0.488	[2.17]*
Learned a lot about managing money and using credit from training courses outside of school	1.06	[4.82]**	1.125	[4.92]**	1.185	[4.91]**

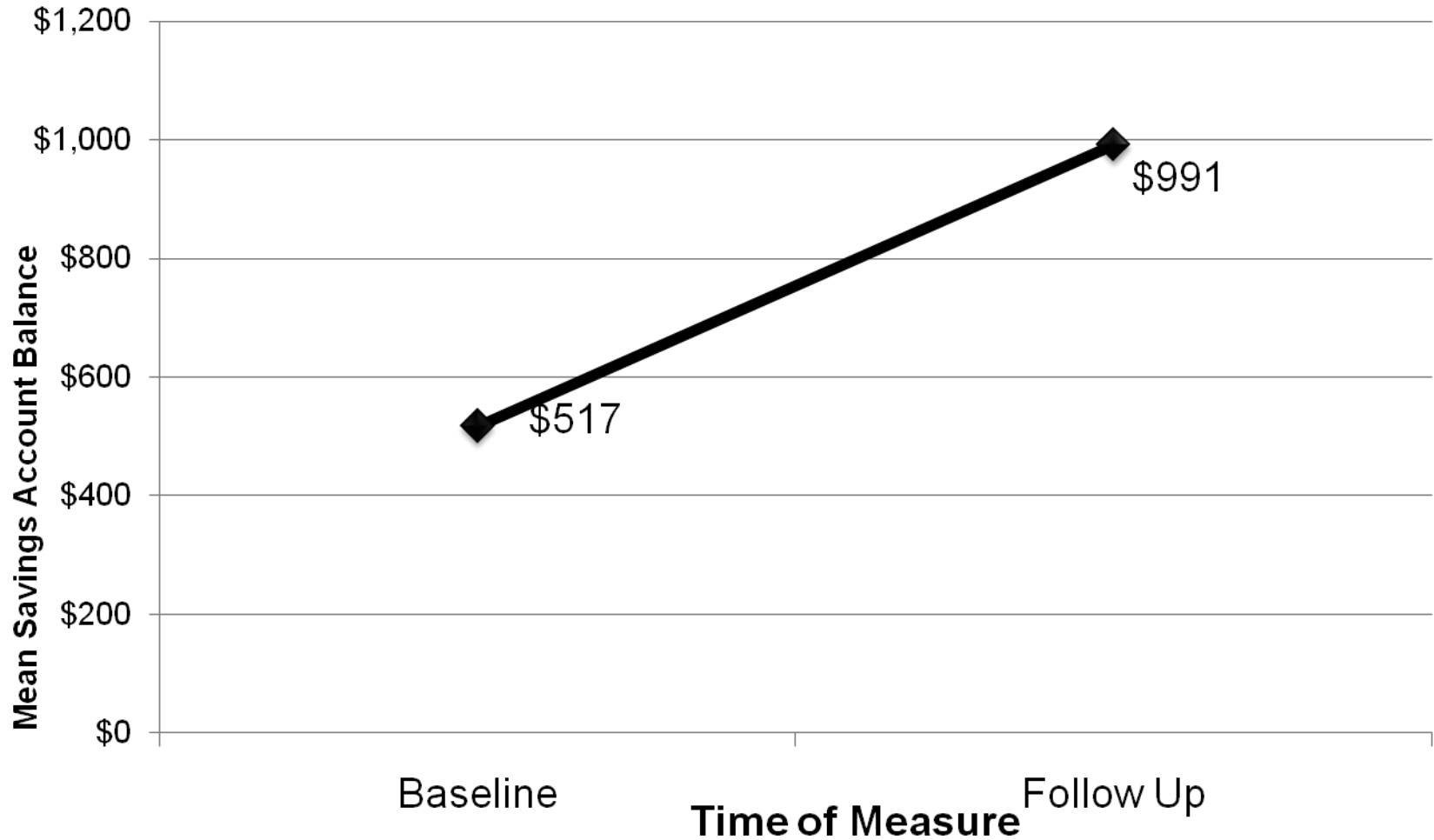
# Estimated Effects, Con't

	Estimated Average Treatment Effect on Treated	<i>t</i>	Weighted Estimate	<i>t</i>	Weighted Estimate with Program Controls	<i>t</i>
<b>Self Report:</b>						
Financial Behavior Index (0-4, 4=good)	0.529	[4.54]**	0.548	[4.27]**	0.547	[4.17]**
Grade self at following budget	0.552	[2.91]**	0.492	[2.17]*	0.488	[2.13]*
Grade self at planning for financial future	0.765	[3.83]**	0.83	[3.40]**	0.858	[3.57]**
Grade self at providing for family	0.437	[2.23]*	0.469	[2.07]*	0.476	[2.04]*
Grade self at managing finances	0.621	[3.19]**	0.482	[2.16]*	0.488	[2.17]*

# Estimated Effects, Con't

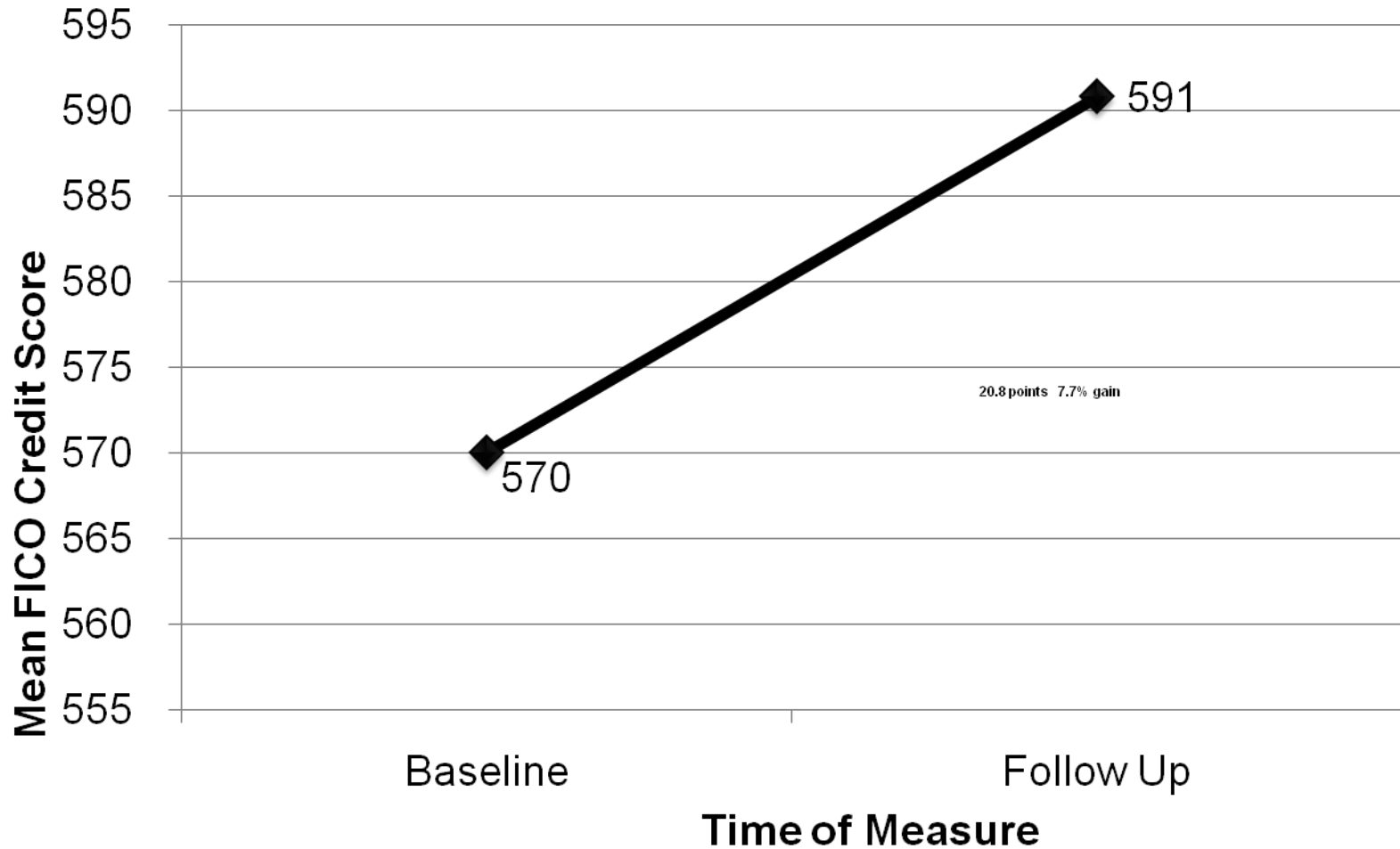
	Estimated Average Treatment Effect on Treated	<i>t</i>	Weighted Estimate	<i>t</i>	Weighted Estimate with Program Controls	<i>t</i>
Financial Worry Index (0-4, 4=always)	-0.184	[1.21]	-0.214	[1.15]	-0.218	[1.16]
Self Esteem/Control Index (0-4, 4=always)	-0.133	[1.01]	-0.152	[1.09]	-0.149	[1.08]
Stress Symptoms Index (0-4, 4=always)	-0.039	[0.32]	-0.051	[0.35]	-0.051	[0.35]

# Savings Account Balance

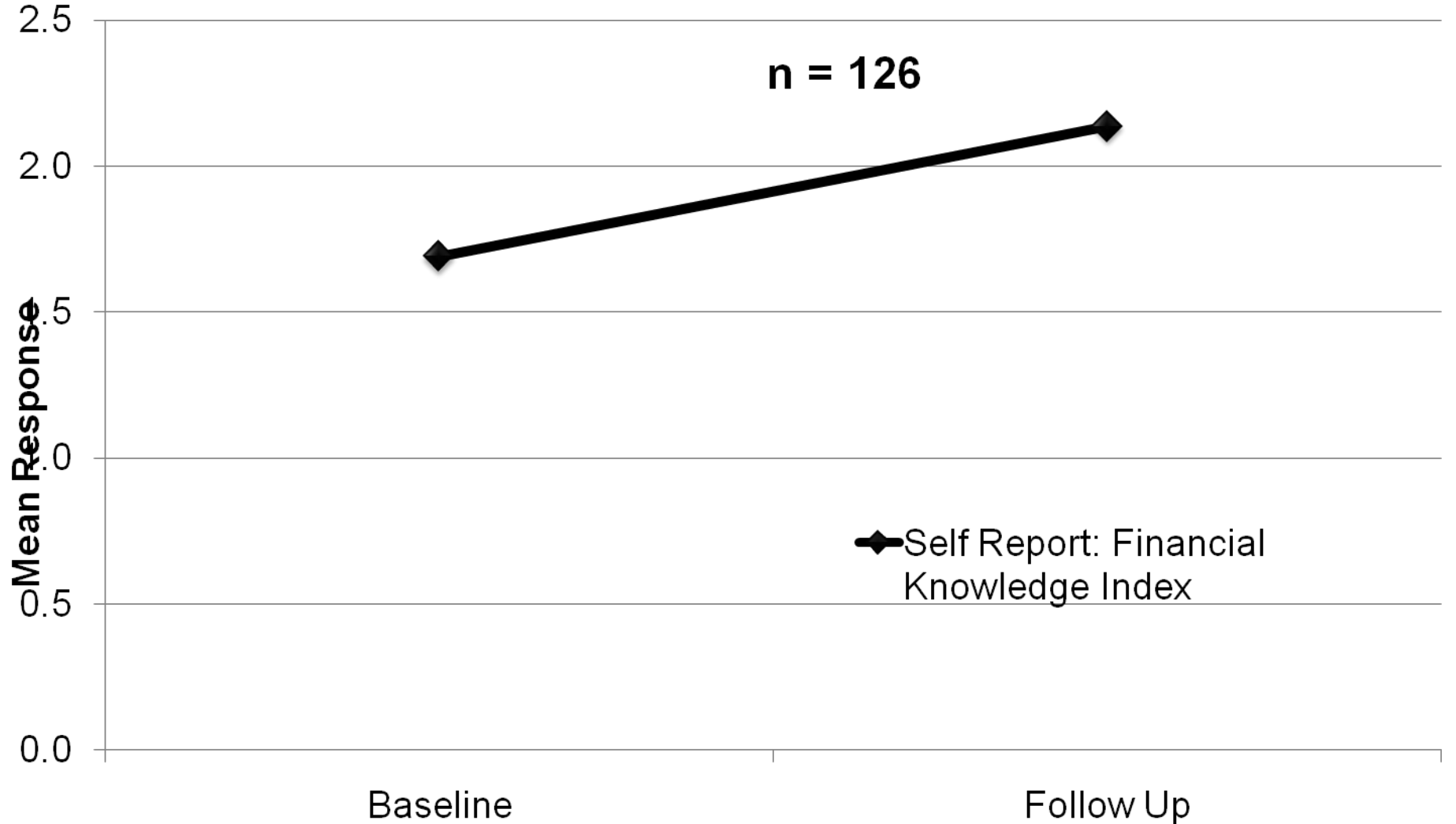


# Credit Score

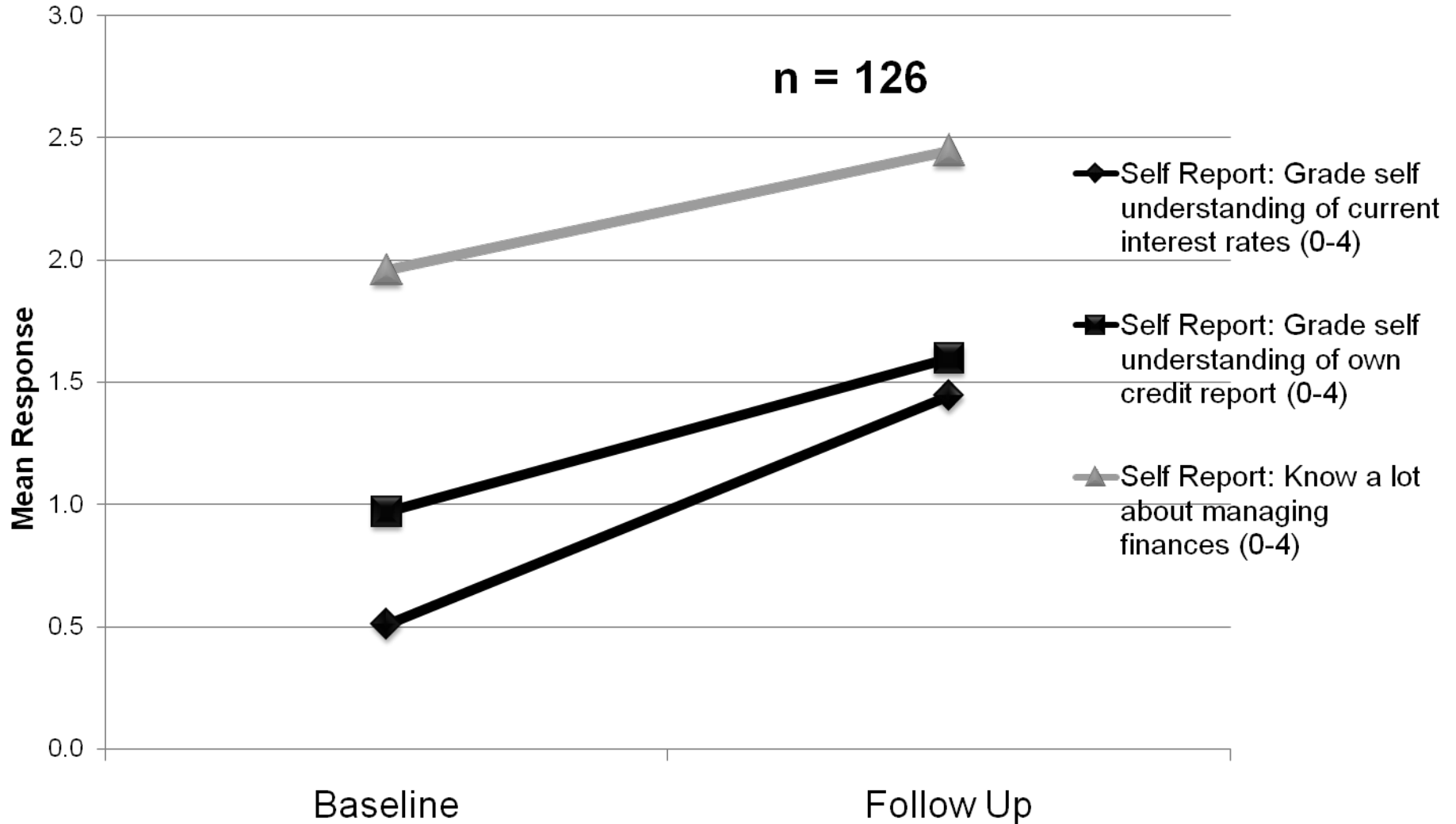
Estimated \$600 savings on 4-year \$10,000 auto loan



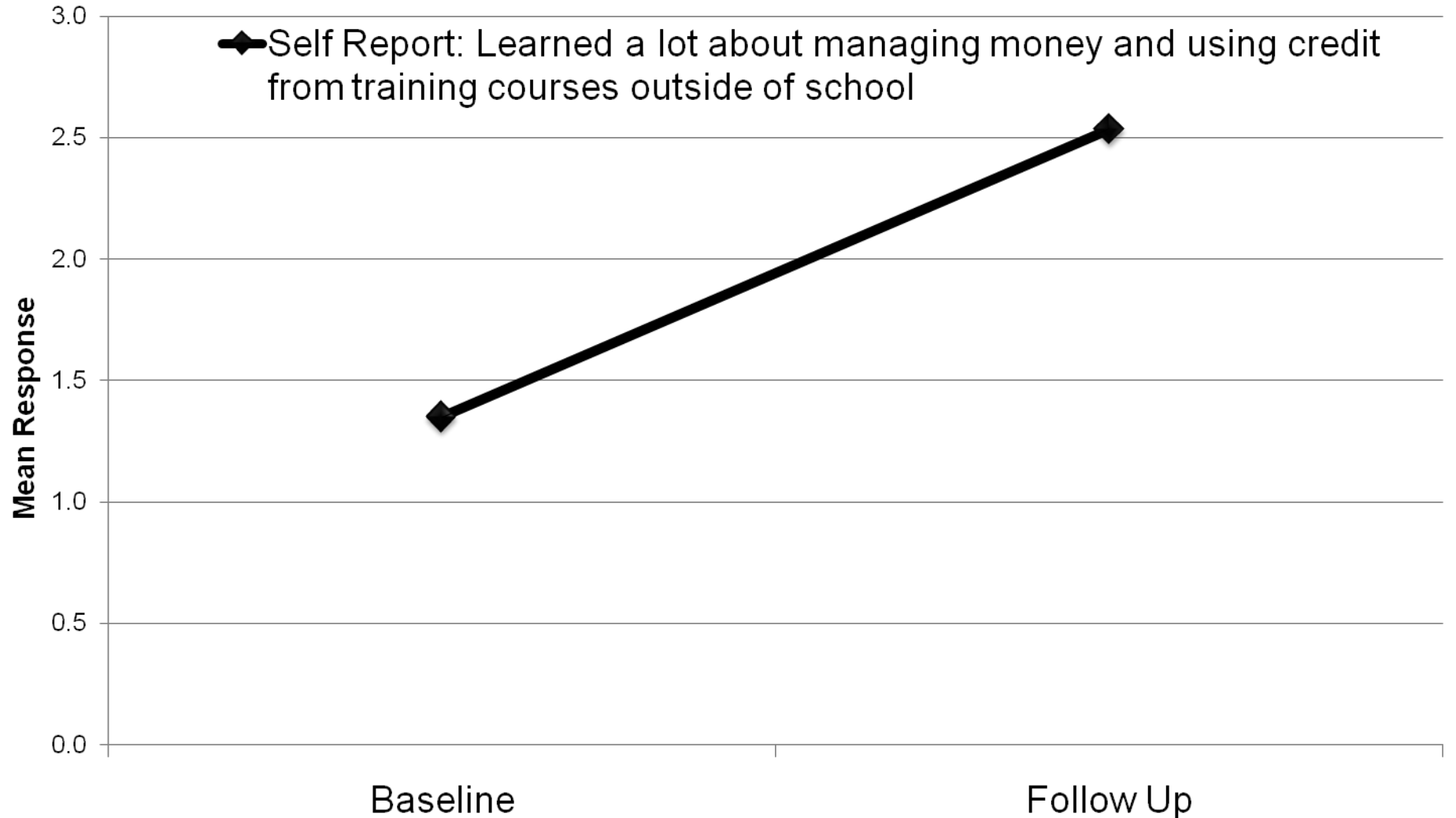
# Self-reported Knowledge Index



# Areas of Knowledge Improvement



# Where Learned Financial Topics



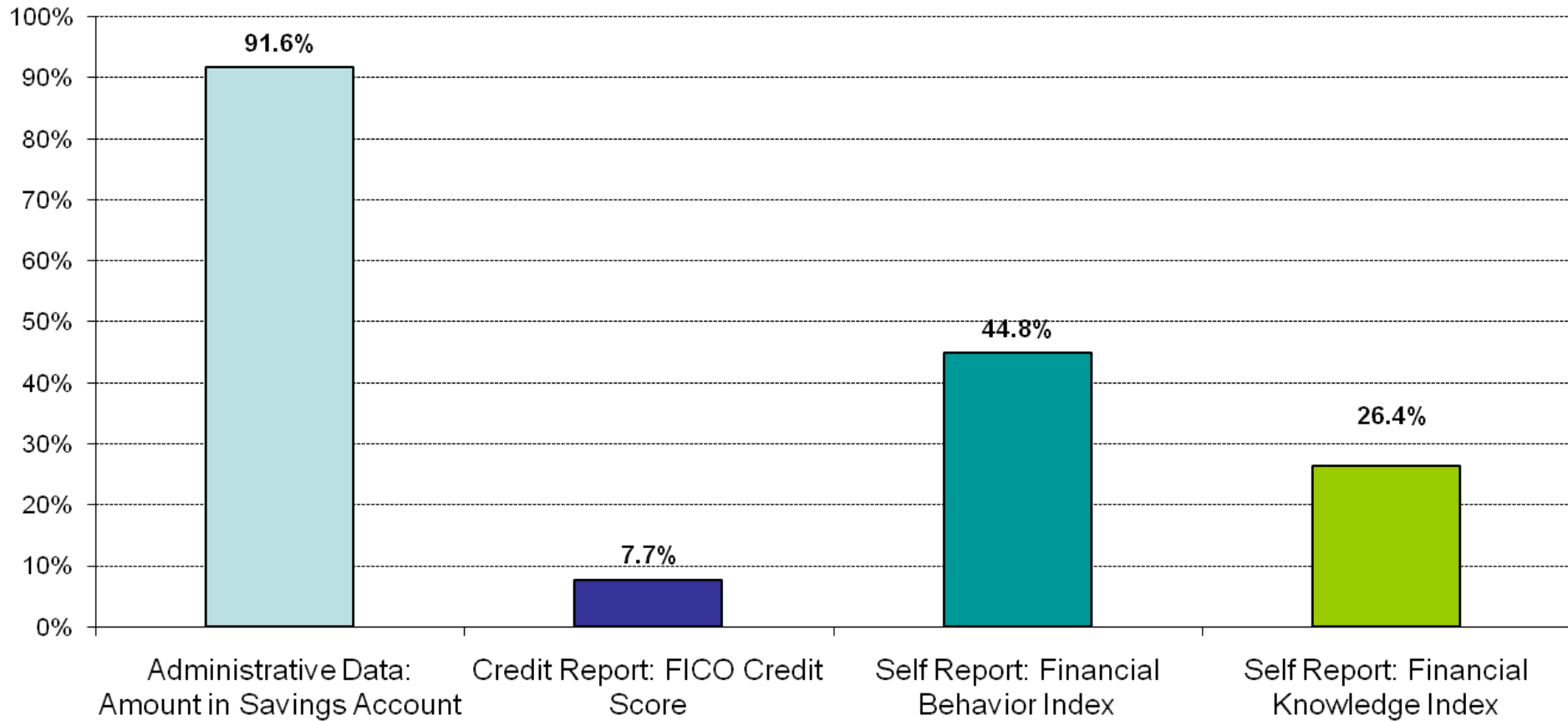
**n = 126**

# Contributions

- Small field experiment
  - Randomized
- Lots of observable data
  - Including objective metrics not just self-report
  - Behavior more than knowledge
- Mandated participation
- Longitudinal (short but practical)
  - Attrition...but (at least) partial solution

# Financial Literacy Field Study: Summary of Results

**Percent Change After Receiving 'Financial Fitness' Education**  
12-month changes by 60 clients vs. 67 in control group  
calculated using weighted estimator and controls



# Cautions

- Small sample
- Generalizable?
  - Low-income minority single women who obtained Section 8 subsidies in high-cost area.
  - clients enrolled in other programs
- Client challenges beyond finances common
- Consent and attrition issues
- Short study period

# Conclusions

- Mandatory financial literacy applied to very-low income mostly single mothers associated with positive changes in behavior
- Effects on savings appear strong
  - But may come at a cost of reduced checking and/or more debt
- Effects on credit report modest
  - But credit score a bit like GPA – takes time to pull up
- Design improves on many in literature, but still plagued by selection effects of attrition
  - Attrition bias appears to be downward

# Policy Implications

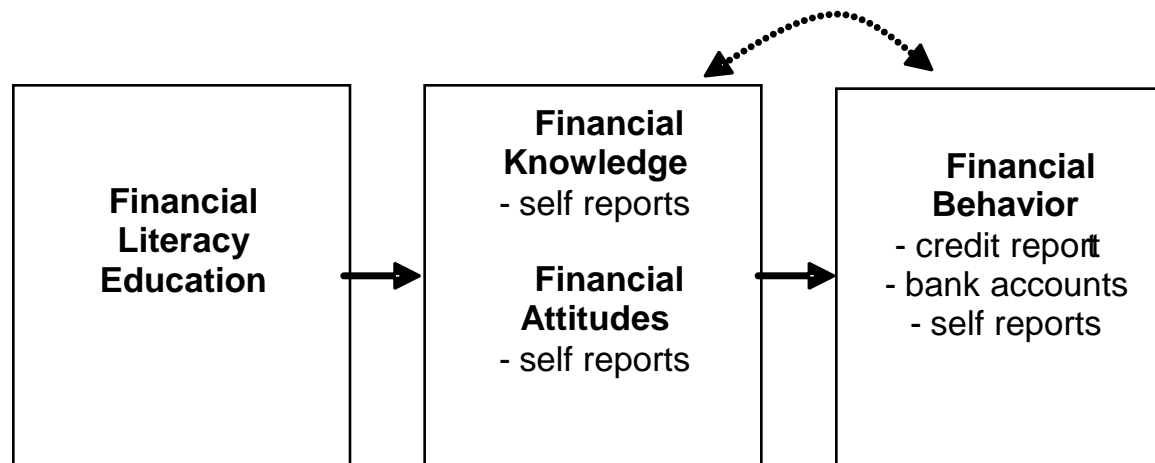
- If a policy goal is to facilitate financial decision making for targeted populations, mandated financial education may be useful
  - Mandating financial education for low-income consumers as part of public programs could help ‘uninformed’ populations improve financial behavior.
  - Much may depend on content and context
  - Need more and better experimental approaches
  - Costs are relatively low even if benefits modest

# Future Research

- Randomization can work
  - Too often dismissed by practitioners
- Longer-term outcomes of financial education
  - Credit status and knowledge may interact
- Financial “coaching” as longer-term knowledge and behavior change strategy
  - Application at tax time
- Better adaptations of education/counseling beyond mode/duration models
  - Technology, mix of modes, customization

# Linking to Behavior

- Exposure to Information → Changes in Behaviors (formal 'education')
- Experience Event → Gain Information ('hard knocks')



# Need for Large Scale Study?

- Randomized
- Linked to public programs
- Robust budget for long-term (3-5 years) tracking
- Across content, context, modes, durations
- Use of technology
- Costs and benefits