

# Mechanism Design for Social Good

Provision and Targeting for Vulnerable Populations

EC 2020 Tutorial, June 25 and 26

**Session #2a**

Behavioral Perspectives

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# Yesterday: Game theoretic view of poverty



# Yesterday: tradeoffs:

Complexity and ordeals reduce:

Type II errors (award errors / fraud):

ineligible individuals getting benefits

but at cost of

Type Ia errors (incomplete take-up):

eligible individuals not applying for benefits.

<b>Country</b>	<b>Name of programme</b>	<b>Targeting accuracy for poorest quintile</b>	<b>Under-coverage (percentage of poor not reached)</b>
Brazil	Bolsa Escola	1.98	73
Chile	PASIS (Pensiones Asistenciales de Ancianidad y de Invalidez) (old-age benefits)	2.67	84
Chile	Subsidio Única Familiar (SUF) (cash transfers)	3.32	73
Colombia	Subsidized Health Insurance Regime (SHIR) (health social assistance)	1.68	26
Mexico	Oportunidades	2.9	40
United States	Temporary Assistance for Needy Families (TANF) (cash transfers)	3.31	About half of those eligible
United States	Food stamps	4.0	Around 50

Source: Peyre 2005.

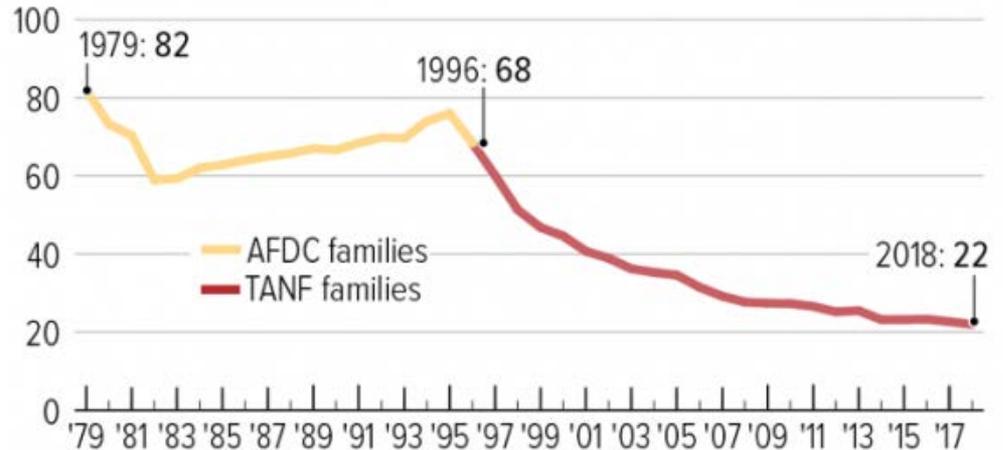
Problem:  
Not too *many* people getting benefits:  
but too *few* people getting benefits.

SNAP (Food stamps)  
In 2013, 15% of eligible people didn't  
apply

EITC (tax return for working poor)  
In 2009, 25% of eligible people didn't  
apply

## TANF's Reach Declined Significantly Over Time

Number of families receiving AFDC/TANF benefits for every 100 families with children in poverty



Note: TANF = Temporary Assistance for Needy Families, AFDC = Aid to Families with Dependent Children.

Source: CBPP analysis of poverty data from the Census' Current Population Survey and AFDC/TANF caseload data from Department of Health and Human Services and (since September 2006) caseload data collected by CBPP from state agencies.

# Behavioral considerations: outline

- Demand-side: why are eligible individuals not applying for benefits?
  - Complexity and cognitive demand of poverty
  - Higher discount rate / present bias
  - Awareness of need
- Supply-side: why are we so upset at type II errors?
  - Deservingness: unlucky vs lazy

# EITC experiment: take up and complexity

Sent to 35k tax filers in California who didn't claim the EITC in 2009, despite being eligible. (\$26 million unclaimed benefits)

 Department of the Treasury Internal Revenue Service Submission Processing Center Fresno, CA 93888-0405	<table border="1"> <tr><td>Notice</td><td>EIC0927</td></tr> <tr><td>Tax Year</td><td>2009</td></tr> <tr><td>Notice Date</td><td>November 2010</td></tr> <tr><td>Social Security Number</td><td>999-99-9999</td></tr> <tr><td>To Contact Us</td><td>1-800-829-1040</td></tr> <tr><td>Page 3 of 4</td><td></td></tr> </table>	Notice	EIC0927	Tax Year	2009	Notice Date	November 2010	Social Security Number	999-99-9999	To Contact Us	1-800-829-1040	Page 3 of 4	
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INTERNAL REVENUE SERVICE Submission Processing Center Fresno, CA 93888-0405	SIMPLE
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### Earned Income Credit Worksheet

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**Step 1** Read each statement listed below, and place a checkmark next to any that describes you.

My Social Security card reads "Not Valid for Employment," AND my Social Security card was issued so I could receive federally funded benefits such as Medicaid

I was an Earned Income Credit qualifying dependent of another person in 2009

You may be a qualifying dependent of another person if you live with your parents or other caretaker for more than half the year AND are either under the age of 19, are a student and under the age of 24, or are permanently or totally disabled at any age.

If you **checked any** of the above boxes, **you are not eligible** for the credit. Please do not continue completing this worksheet.

If you **did not check any** of the above boxes, **you are likely eligible** for the credit. Please continue to Step 2.

Please call 1-800-829-1040 or visit [www.irs.gov/efc](http://www.irs.gov/efc) for additional information regarding the above requirements.

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**Step 2** Sign and date the statement if you are eligible for the credit.

Under penalties of perjury, I declare that this information is true and correct to the best of my knowledge.

\_\_\_\_\_  
Your signature

\_\_\_\_\_  
Date

 Department of the Treasury Internal Revenue Service Submission Processing Center Fresno, CA 93888-0405	<table border="1"> <tr><td>Notice</td><td>EIC0927</td></tr> <tr><td>Tax Year</td><td>2009</td></tr> <tr><td>Notice Date</td><td>November 2010</td></tr> <tr><td>Social Security Number</td><td>999-99-9999</td></tr> <tr><td>To Contact Us</td><td>1-800-829-1040</td></tr> <tr><td>Page 3 of 4</td><td></td></tr> </table>	Notice	EIC0927	Tax Year	2009	Notice Date	November 2010	Social Security Number	999-99-9999	To Contact Us	1-800-829-1040	Page 3 of 4	
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INTERNAL REVENUE SERVICE Submission Processing Center Fresno, CA 93888-0405	COMPLEX (1 out of 2)
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My filing status in 2009 was "married filing separately"

I was not a U.S. citizen (or resident alien) for any part of 2009

I filed Form 2555 (Foreign Earned Income) or Form 2555-EZ (Foreign Earned Income Exclusion) in 2009

My investment income was greater than \$3,100 in 2009

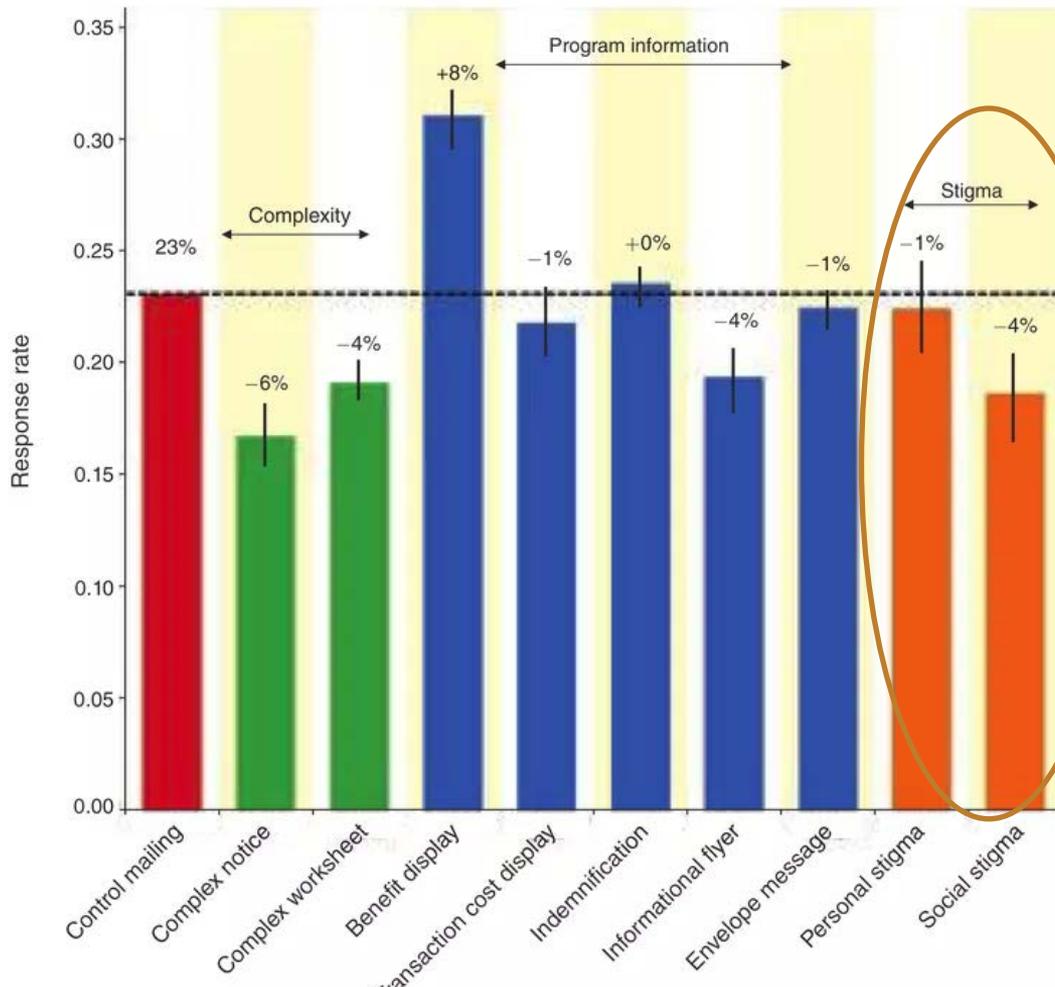
I did not have earned income in 2009

If you **checked any** of the above boxes, **you are not eligible** for the credit. Please do not continue completing this worksheet.

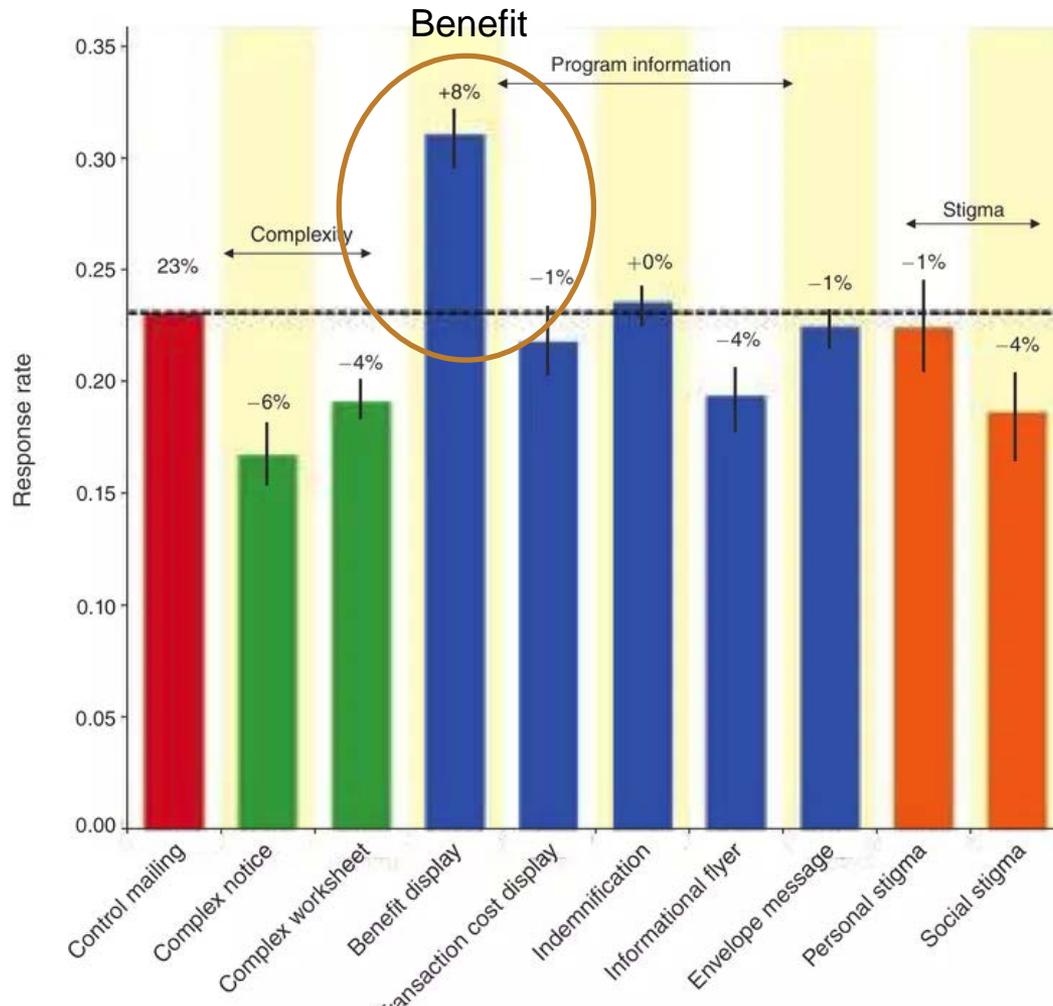
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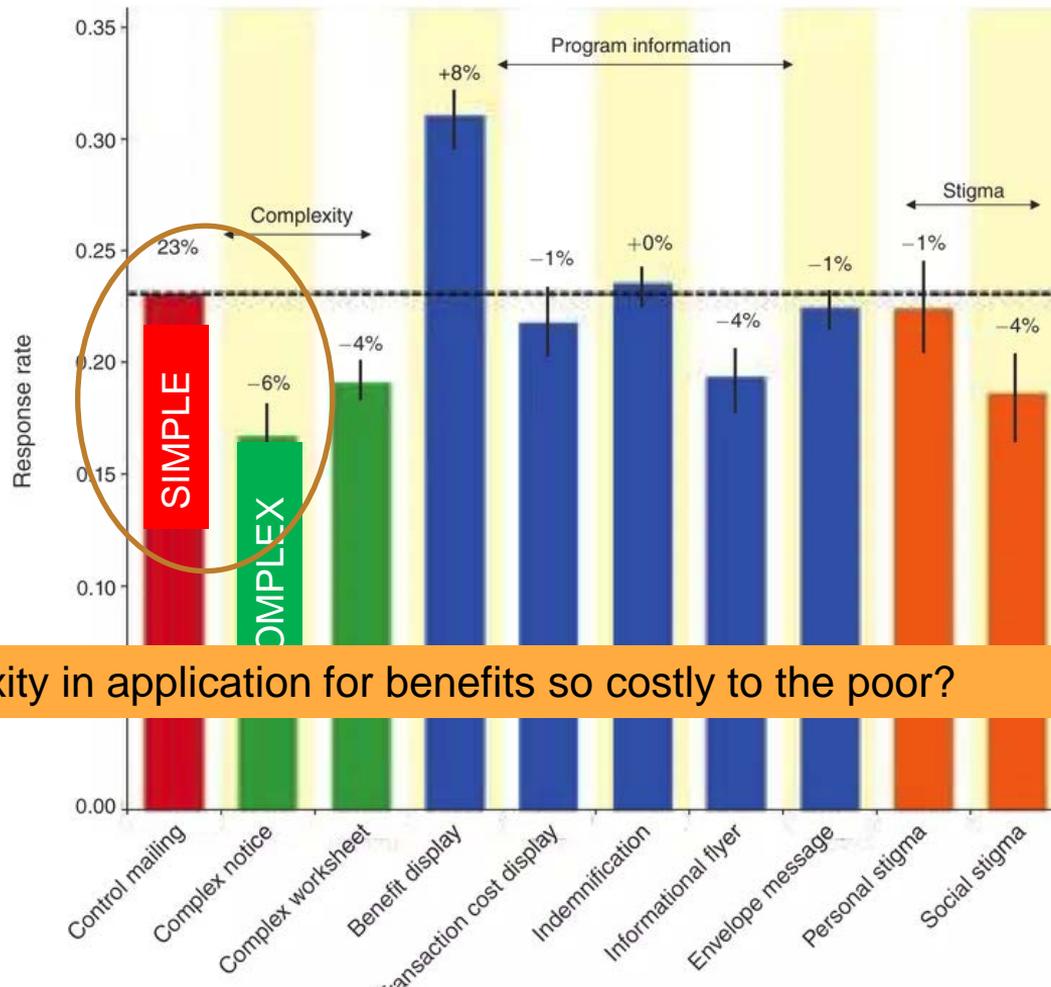
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Personal stigma reducer: “You may have earned a refund due to your many hours of employment,” Moffitt, 1983





Why is complexity in application for benefits so costly to the poor?

# Poverty impedes cognitive function?

## Yes:

- Mani et al (Science, 2013)
- Haushofer & Shapiro (QJE, 2019)

## No:

- Carvalho et al (AER, 2016)

Still an open question

# (The mere thought of) poverty impedes cognitive function

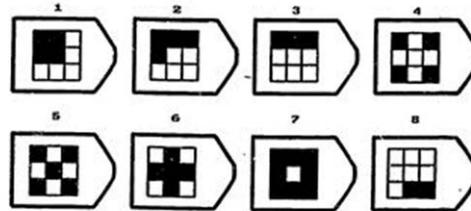
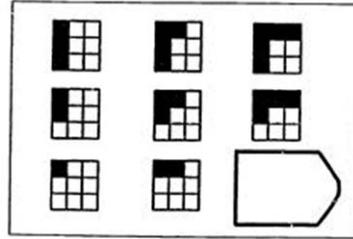
Study 1: experimentally induce thoughts about finance, measure cognitive function

- People walking through mall n=101.
- Rich (70k) vs poor shoppers (20k)
- Imagine Car repairs: \$150 (Easy), \$1500 (Hard)

*“Your car is having some trouble and requires \$X to be fixed. You can pay in full, take a loan, or take a chance and forego the service at the moment... How would you go about making this decision?”*

- While thinking about this, do cognitive tests. (25c per correct answer)
- Give answer on car repairs after finished with cognitive tests.

# The cognitive tests: Raven's Matrices



- Common component in IQ tests.
- Measure of fluid intelligence (solve problems in novel situations)

# The cognitive tests: Cognitive Control Task

Now state the colors as fast as you can

Row 1 **Red** **Blue** **Green** **Yellow**

Row 2 **Yellow** **Green** **Blue** **Red**

Row 3 **Green** **Red** **Yellow** **Blue**

From John Gosbee, MD, MS, VA National Center for Patient Safety

Again, state the colors as fast as you can

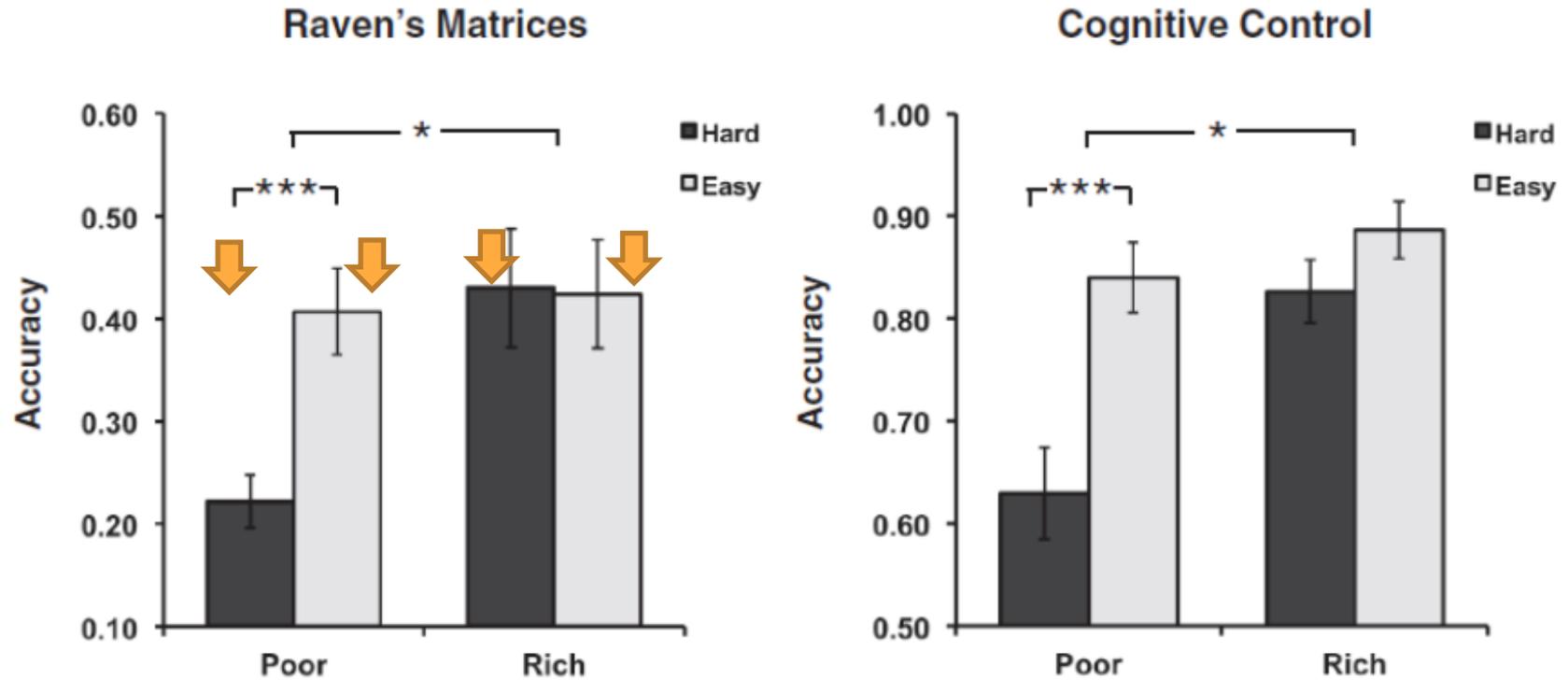
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From John Gosbee, MD, MS, VA National Center for Patient Safety

- One example is the Stroop test.
- Measure of speed of processing incongruent stimuli / cognitive control.



Just thinking about financial stress impedes cognitive function of the poor (but not the rich)

# Less financial stress after post harvest payments

464 small plot sugarcane farmers in India who made over 60% of their income from sugarcane surveyed before and after harvest

Dependent variable	Full sample: Household + time fixed effects
	Panel A
Belongings pawned (last 15 days: 0 = no, 1 = yes)	Column 1 -0.566*** [0.058]
Observations	924
Mean: 0.41 (0.78 pre-harvest, 0.04 post-harvest)	
Loans outstanding (0 = no, 1 = yes)	-0.885*** [0.033]
Observations	922
Mean: 0.56 (0.99 pre-harvest, 0.13 post-harvest)	

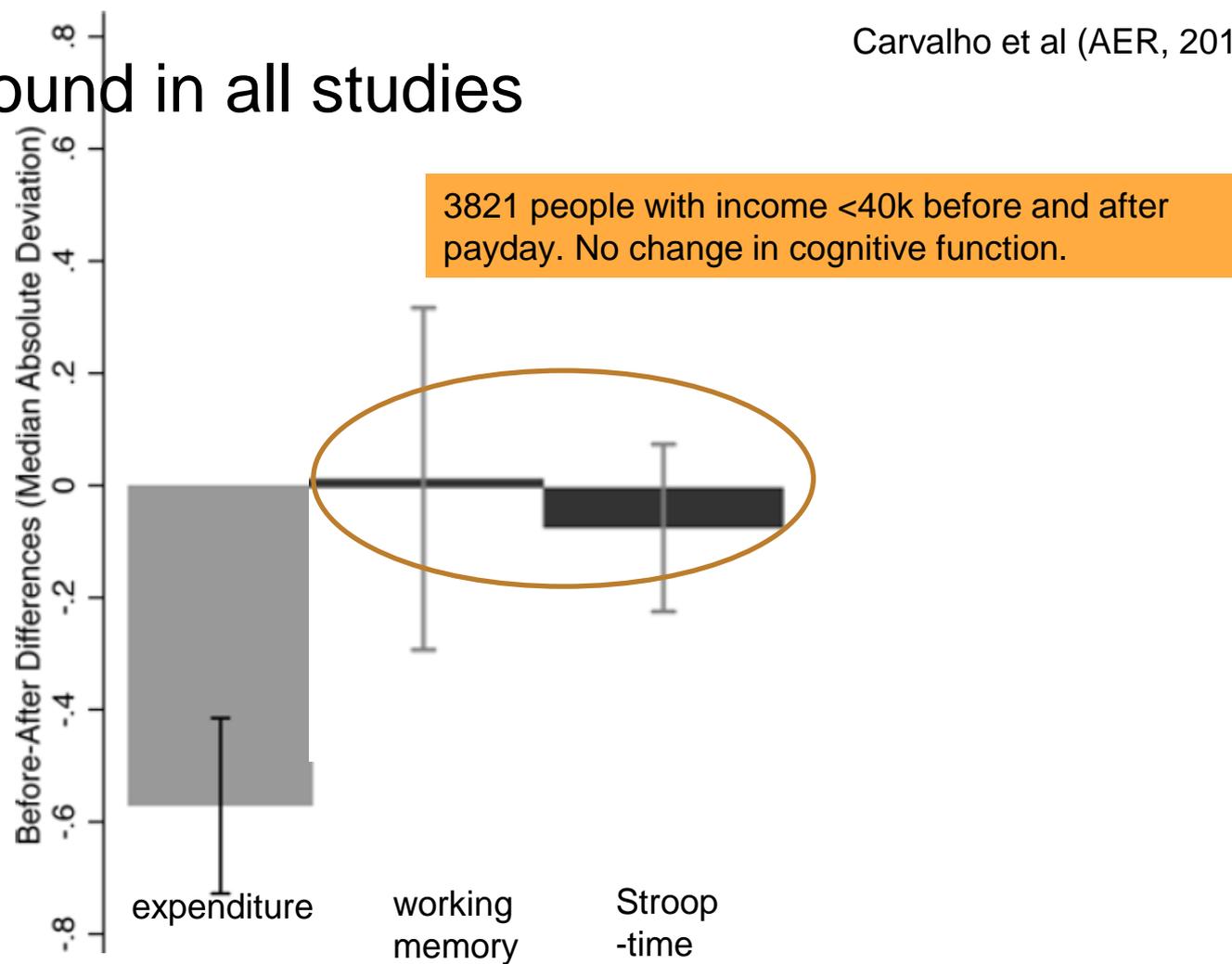
Haushofer & Shapiro (QJE, 2019): less stress / depression after cash transfer

# Higher cognitive scores after post harvest payments

Not due to learning. Similar score to 100 farmers who only took test once (after harvest).

Dependent variable	Full sample: Household + time fixed effects
Raven's accuracy (Min = 0; max = 10) Observations Mean: 4.9 (4.35 pre-harvest, 5.45 post-harvest)	Column 1 1.367*** [0.256] 920
Stroop-time taken (In seconds) Observations Mean: 138.94 (146.05 pre, 131.83 post-harvest)	-30.582*** [5.923] 904

# But.. not found in all studies



# Behavioral considerations: outline

- Demand-side: why are eligible individuals not applying for benefits?
  - Complexity and cognitive demand of poverty
  - Higher discount rate: present bias
  - Awareness of need
- Supply-side: why are we so upset at type II errors?
  - Deservingness: unlucky vs lazy

# Discounting the future: present bias

If the poor are less willing to take costly action now (e.g. apply) for future benefits than the non-poor, take-up rate will be lower among the poor.

$$u(x_0) + \beta \sum_{t=1}^T \delta^t u(x_t)$$

Tanaka, et al (AER, 2010): Vietnam: lower income, lower  $\beta$  (more present biased).

Dohmen et al (QJE, 2018): 76 countries, impatience corr w/ poverty.

- Open questions:
- Are the poor more impatient (do not want to wait) or liquidity constrained (cannot borrow, so cannot wait) ? Carvalho et al (AER, 2016)
- Impatience (and risk aversion) is correlated w/ cognitive ability. (Dohmen et al, AER 2010)

# Difference in 401k enrollment rate by income

<i>Compensation</i>	Have to opt-in	Have to opt-out	
<\$20K	12.5	79.5	+67
\$20-\$29K	24.5	82.8	
\$30-\$39K	42.2	88.9	
\$40-\$49K	51.0	91.8	
\$50-\$59K	61.6	92.8	+31
\$60-\$69K	59.7	94.7	
\$70-\$79K	57.9	91.5	
\$80K+	68.3	94.2	
<i>Sample Size</i>	N=4249	N=5801	

Do not take up commitment savings even if they can (and want to) due to procrastination in starting.

Author's calculations. The sample is 401(k) eligible active employees

# Take-up requires awareness of problem

- Transitional shelter for working homeless (room/board covered, have income)
- Linardi & Tanaka (JEBO, 2013) very low  $\beta$ . Low take up of commitment savings program in shelter (lockbox), also little/no savings outside shelter.

- Measure awareness of self-control problem as:

$$\textit{expected deviation (ED)} = \textit{ideal} - \textit{predicted saving}$$

- Observe savings in lockbox.

- Hypothesis:

$$\textit{expected deviation (ED)} \uparrow \textit{savings in lockbox} \uparrow$$

Effect larger for those with worse self-control problems (lower  $\beta$ )

# Take-up requires awareness of problem

Variables	(3) Savings	(4) Savings	(5) Savings (Heckman)
ED	7.20 <sup>*</sup> (3.79)	6.70 <sup>+</sup> (4.12)	9.82 <sup>**</sup> (4.17)
No incentive	-47.86 <sup>**</sup> (22.24)	49.95 <sup>**</sup> (24.23)	-54.71 <sup>**</sup> (26.52)
Income	0.57 <sup>***</sup> (0.06)	0.55 <sup>***</sup> (0.07)	0.56 <sup>***</sup> (0.03)

Every \$100 of predicted shortfall in ability to save predicts \$10 more put into shelter savings program.

# Take-up requires awareness of problem

**Table 4**

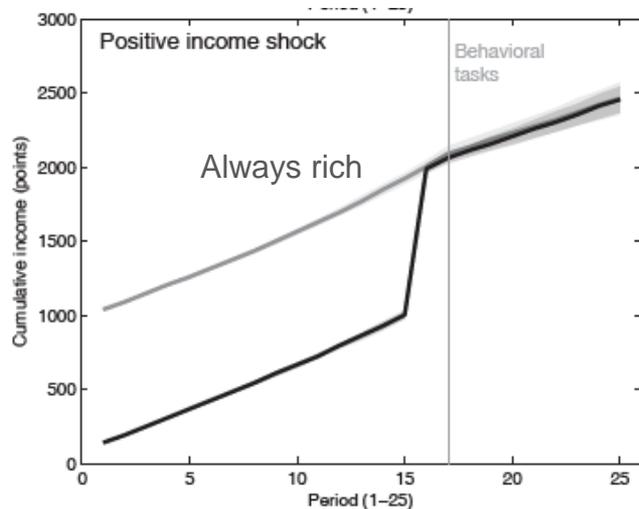
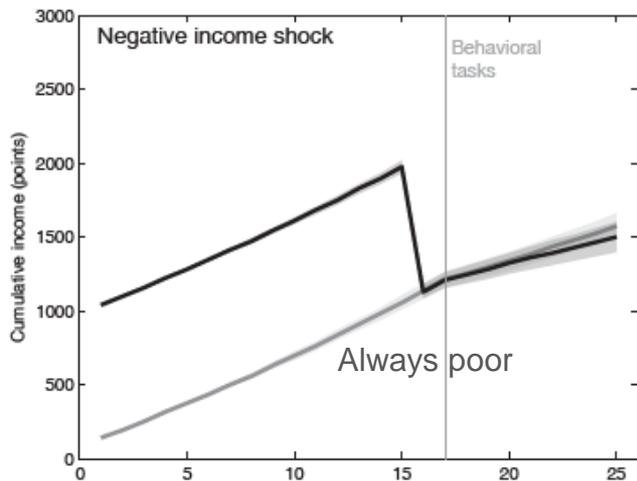
Heterogeneous effects of ED.

Effect of \$100 of ED on additional savings (\$)	Coef.	Std. err.
<i>Panel A:</i>		
Not homeless due to addiction	4.16	9.2
Homeless due to addiction	11.3	4.68

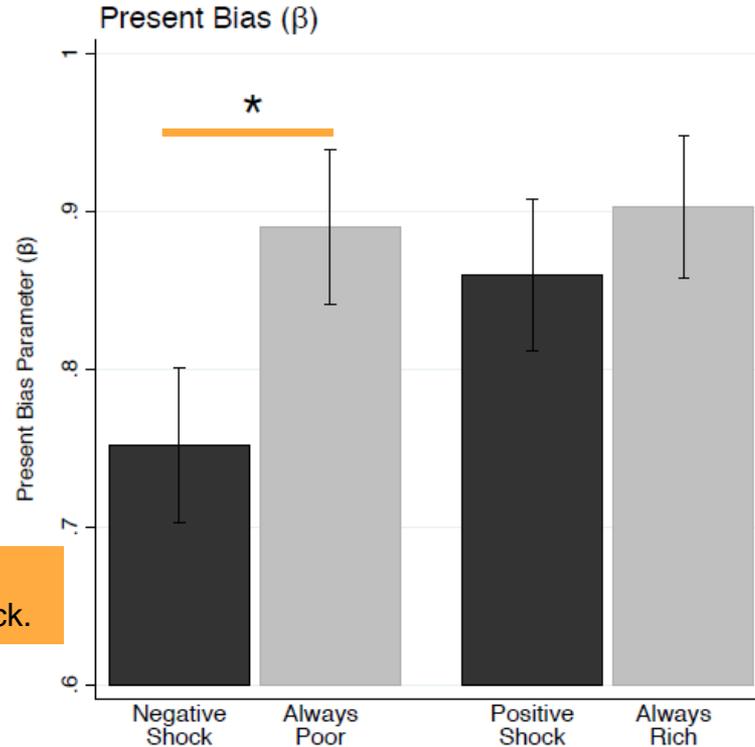
Effect driven by those with worse self-control problems. Lower  $\beta$  need more services but only those aware of own  $\beta$  use them.

# Poverty & present bias: correlation or causation?

- Lab experiment: randomly start as rich or poor, do real effort task

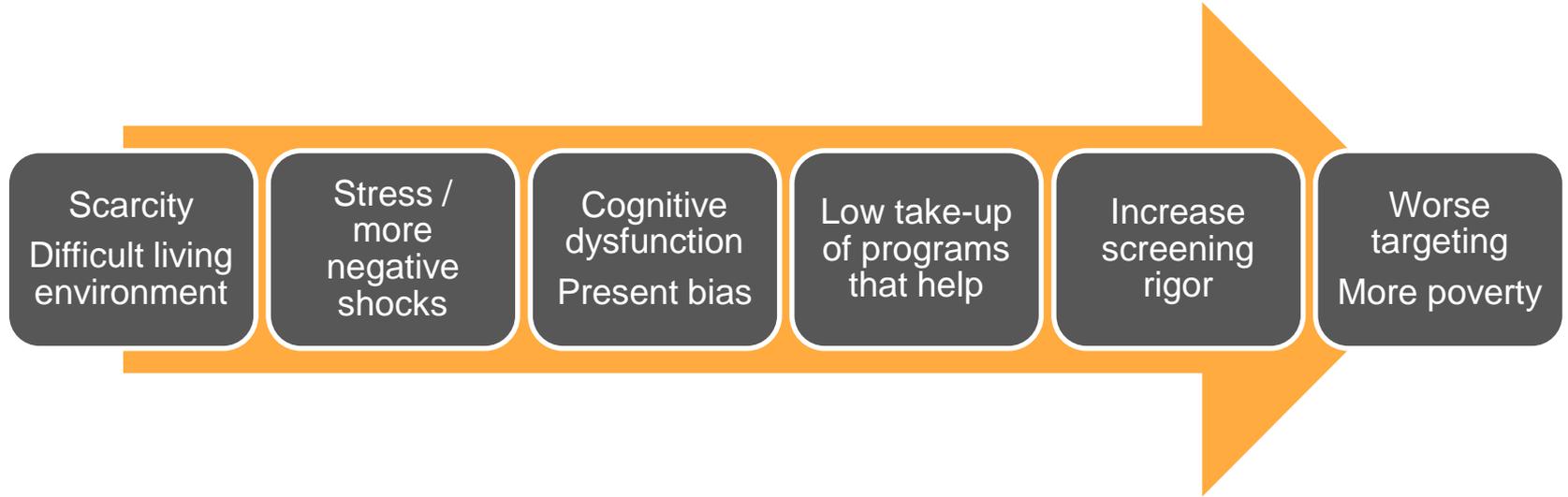


# Negative income shocks exacerbate present bias



Negative shock => drop in  $\beta$   
 It's not the income, it's the shock.

# In summary: behavioral view of targeting the poor



# Behavioral considerations: outline

- Demand-side: why are eligible individuals not applying for benefits?
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- Supply-side: why are we so upset at type II errors?
  - Deservingness: unlucky vs lazy

# Willingness to help depends on view of poverty

- Why are people poor?

## Lazy or Unlucky

- Well-documented: prefer to assist Unlucky:

Sick vs drunk (Piliavin, Rodin and Piliavin, 1969).

Accident – vs out partying (Betancourt, 1990).

Disabled vs drug use (Fong & Oberholzer-Gee, 2011)

Variation in these beliefs can explain differences in redistributive policy across democratic countries (Piketty 1995; Alesina, Glaeser, Sacerdote, 2001; Alesina and Angeletos, 2005)

# Framing poor as lazy leads to support for stricter req.

- 207 Danish undergrads presented with vignettes. “Imagine a man who receive social welfare benefits...”

**Table 3.** Anger and Compassion as Mediators of Effort Cues

Dependent Variable		Support for Stricter Requirements	Anger	Compassion
Model		1	2	3
Intercept		.57*** (.03)	.23*** (.03)	.60*** (.04)
Experimental Manipulation				
“fit”	Lazy Recipient	.20*** (.05)	.26*** (.04)	-.20*** (.05)
“work-related injury”	Unlucky Recipient	-.22*** (.05)	-.11* (.04)	.15** (.05)

# Gov framing of policy affect deservingness of poor

“There is no country that has fought poverty without attracting Foreign Direct Investment,”  
S. Musokotwane, Zambia finance minister



“More FDI needed to generate employment, cut poverty” (The Financial Express, 2014),

Field experiment in malls/ cafetaria in India.  
Survey, get Rs, provided vignette of poor living in slums, decide donation.  
Given more info about economic environment near poor, can revise donation.

Info about local factory:

Low skill (food/bev manuf)	High skill (IT)
Low skill but FDI-owned	High skill but FDI-owned

# Gov framing of policy affect deservingness of poor

**Table 3.** Effect of FDI Framing on Dictator's Likelihood to Reduce Her Donation.

	All (1)	"FDI not good" (2)	"FDI good" (3)
All sector pooled	0.12** (0.06)		
Sectoral breakdown			
Low-skill sector	0.23*** (0.08)	0.19 (0.13)	0.25** (0.10)
High-skill sector	0.001 (0.083)	-0.004 (0.134)	0.003 (0.099)

India: people 23% more likely to reduce donation when they learn that there's low-skill foreign-owned factory (FDI) near the poor. Effect is driven by belief that FDI is good for the poor.

# Those who seek information react to negative signal of poor

- Give to low-income public housing resident (50-50 disabled vs drug user)
- In **no choice** treatment, subjects are **either told** why their recipient is poor **or not**.

**TABLE 2 – MEAN TRANSFERS**

		Information	
		Yes	No
No choice	Disability	4.31 (3.80) <i>N</i> =35	3.03 (3.29) <i>N</i> =30
	drug use	2.56 (3.60) <i>N</i> =39	

# Those who seek information react to negative signal of poor

- Give to low-income public housing resident (50-50 disabled vs drug user)
- In the **choice** treatment, subjects can **buy info** (\$1) on why their recipient is poor

**TABLE 2 – MEAN TRANSFERS**

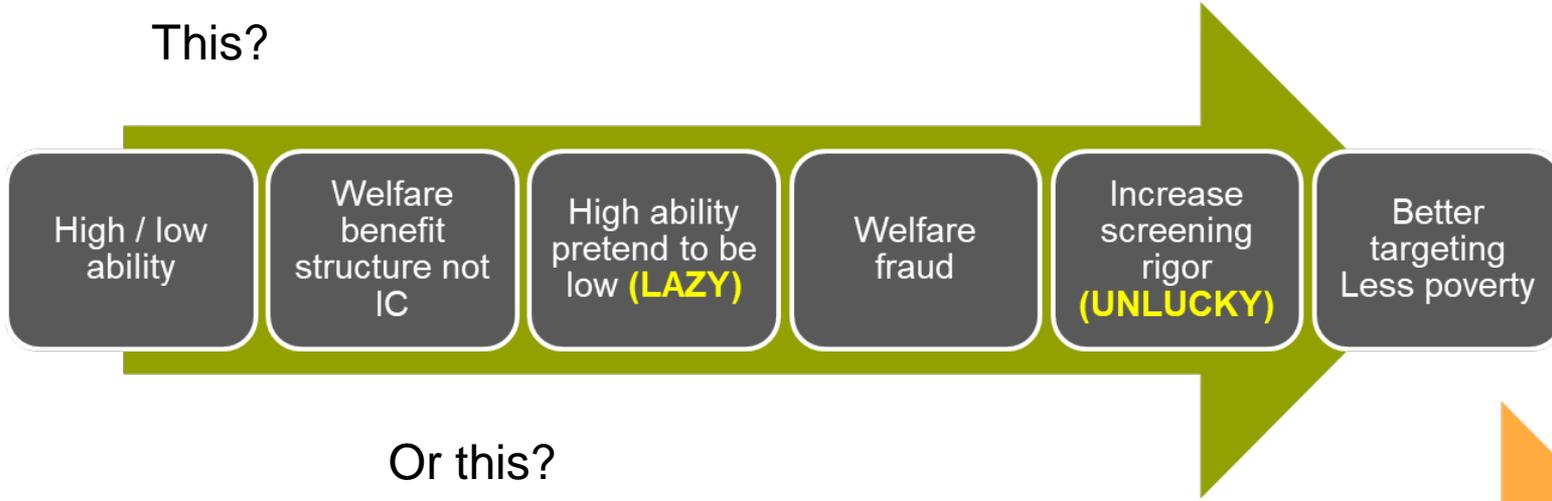
		Information	
		Yes	No
No choice	Disability	4.31	
	drug use	4.55 <i>N=55</i>	3.03
Choice	drug use	2.56	1.97 <i>N=50</i>
		0.62 <i>N=59</i>	

↓

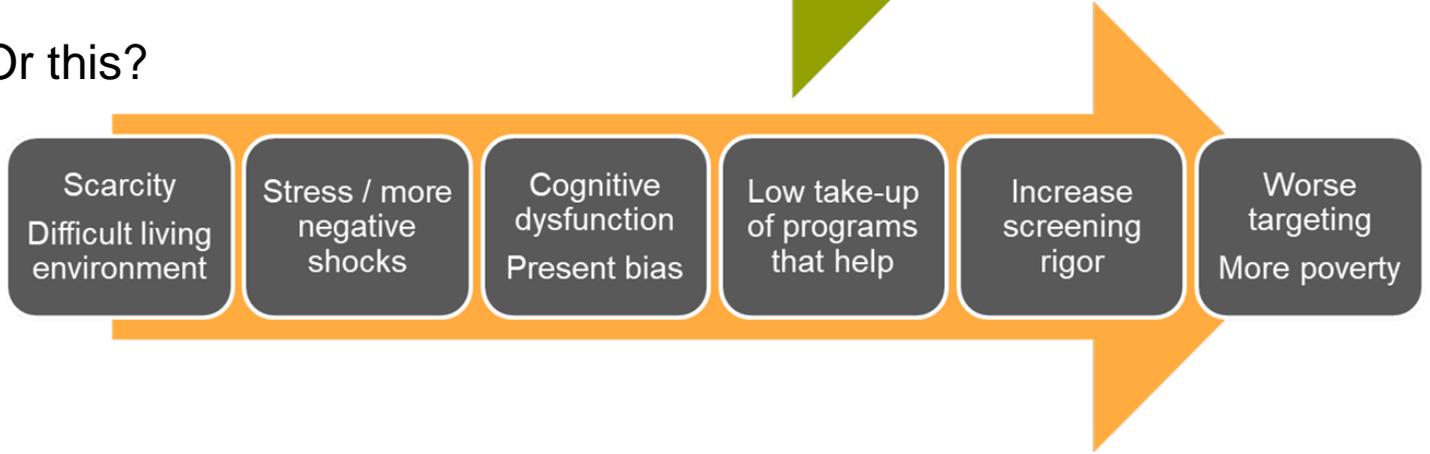
# How to help the poor depends on why you think people are poor



This?



Or this?



Thank you!