Habits as Adaptations: An Experimental Study

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jointly with
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Introduction

How do people respond to changing incentives?

Puzzling behavior: choice inertia

- inertia in consumption
- brand loyalty
- status quo bias

Habits in macroeconomics

Assuming *preferences for habits*

$$u(c_t - c^{t-1})$$

Justification: Better fit to data (e.g. Constantinides 1990; Fuhrer, 2000)

Problems:

1. No microfoundations
   evidence for inertia $\neq$ evidence for preferences for habits
2. Modeling choice of c^{t-1} not obvious
   - aggregate past consumption, past individual consumption, specific cathegories of goods (Schmitt-Grohé and Uribe, 2007)
3. No comparative statics predictions

This paper: Testing microfoundations of choice inertia

Microfoundations of choice inertia

Habits in psychology:

- *"Automated responses triggered by cues to alleviate cognition costs"* (e.g. Lally et al., 2010)
- Cue = element from history which (empirically) correlates with optimal current choice

Research questions

1. Do habits arise to save on cognition/information costs?
2. How are cues selected?
   - Mechanically?
   - In a predicted way (optimally)?

$\Rightarrow$ a model of costly information acquisition (Steiner, Steward, and Matějka, 2017)

Preview

One binary perception task in each of two periods

Time separable utility

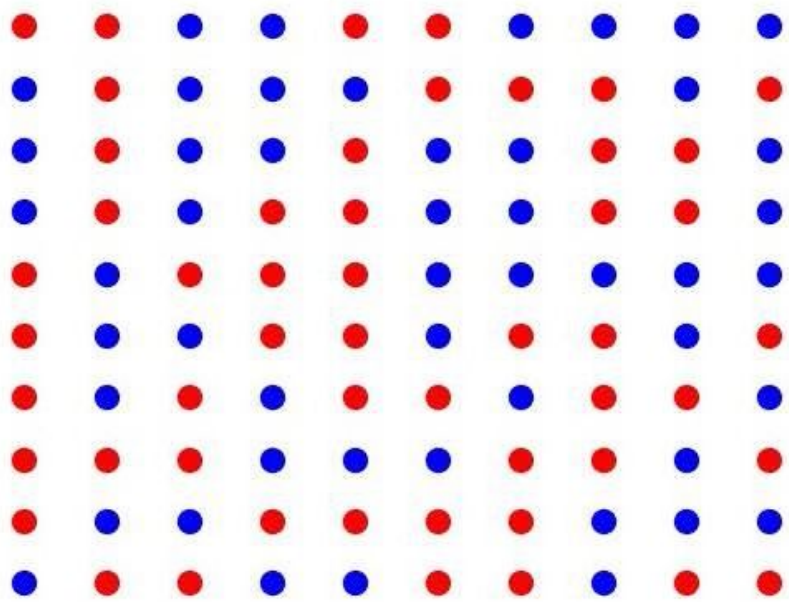
Treatments:

- predictions on when habit arises, its strength, and cue selection

Summary:
Habits and cue selection as second-best adaptations

Outline

Caplin and Dean (2014)



- 100 red and blue dots
- Two states: 49 red dots vs. 51 red dots
- Task: determine the predominant color
  - cognitive cost $\Rightarrow$ cost-benefit analysis

Our paper: Two periods

Two-period task

1. State at $t = 1$ drawn from uniform prior

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6. Correct answers for both periods revealed

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8 different treatments (each subject faces half of them)

Definitions

Definition: Habit

DM forms a habit if payoff-irrelevant elements of history predict continuation behavior.

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Definition: Cues

$z \in \{a_1, \theta_1\}$ is the cue for the habit if

1. $\Pr[a_2 = 1 | \theta_2, z, w] = \Pr[a_2 = 1 | \theta_2, z]$ and
2. $\Pr[a_2 = 1 | \theta_2, z = 1] > \Pr[a_2 = 1 | \theta_2, z = 0]$

where w is the complementary variable from $\{\theta_1, a_1\}$.

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Treatments and hypotheses

Weak treatments (W)

high stake ($s = \$10$)	*no feedback (N)*	*feedback (F)*
independent (I)	**no** habit	**no** habit
correlation (C) *low ($\gamma = 0.75$)*	**weak** habit cue a_1	**weak** habit cue θ_1

Strong treatments (S)

low stake ($s = \$7$)	*no feedback (N)*	*feedback (F)*
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Correlation $\Rightarrow$ habits as a way to save on costly effort

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Which cue? $\Rightarrow$ depends on its information content

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How strongly? $\Rightarrow$ depends on cost and probability of possible mistakes

Outline

Overview

University of California, Santa Barbara

4 sessions, 76 subjects

- 2 sessions ‘Weak’ treatments, 2 sessions ‘Strong’ treatments

Logit regressions: separately for each treatment

LHS: $a^n_{2,i}$

RHS: $const.$, $a^n_{1,i}$, θ^n_1 , θ^n_2, $session$, $score^n_i$, $score^n_i \theta^n_2$

a_t action at $t = 1, 2$
θ_t state at $t = 1, 2$
$score$ (adjusted) total number of correct answers
$session$ a session dummy

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Interested in how θ_1 and a_1 predict a_2.

Results

		a_1	θ_1	θ_2
	Indep. F	-.021 (.036)	0.71 (.043)	**.681*** (.032)**
Weak	Indep. N	.034 (.041)	-.026 (.049)	**.692*** (.054)**
	Corr. F	.017 (.032)	**.258*** (.058)**	**.611*** (.046)**
	Corr. N	**.191*** (.051)**	.002 (.036)	**.629*** (.067)**
	Indep. F	-.031 (.037)	.009 (.040)	**.632*** (.045)**
Strong	Indep. N	.037 (.045)	-.034 (.044)	**.700*** (.036)**
	Corr. F	-.033 (.204)	**.498*** (.098)**	**.425*** (.121)**
	Corr. N	**.511*** (.110)**		**.367*** (.098)**

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4. Lower stakes and higher correlation $\Rightarrow$ stronger habits

Challenges and questions

Internalizing continuation value of information?

- No feedback treatment (correlated states)
  - $\Rightarrow$ $\uparrow$ continuation value of information
  - $\Rightarrow$ accuracy in period 1 (should) $\uparrow$

- BUT Aggregate accuracy (high and) homogeneous across treatments and periods

$\Rightarrow$ Myopia?