Introduction

- These slides are posted solely to accompany Matthew's lectures at the 2016 Russell Sage Summer Institute in Behavioral Economics.

- They are not edited carefully as stand-alone notes, and are not intended for general circulation.

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Camp Outline & More Perspectives

I. Logistics, Etc.
  A. Camp Etiquette
  B. Schedule
  C. Office Hours
  D. Questions?
II. Topics Covered and Uncovered
III. Orientation of Camp/Field

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Introduction

Camp Etiquette

Names

- Address David and me and visitors by first names.
- And you are?
  - Wear name tags — *throughout* — for us and for speakers
  - Seating...
  - be forgiving of the aged

Bears:

- Stay distant ... when in Rome, stand where the Romans stand.
- The evolutionary story that wasn't ...
  - We find babies of dangerous species ugly, not tempted to approach!
- If comes towards you
  - Try blasphemous cussing! (doesn't work)
  - Make noise (does work) Fight back (won't be needed)

Introduction

Talks and Schedule

- 9:30 means ... 9:30 (not 9:31+).
  - *W/o us having to herd.*
- 11:00 means ... 11:00 (not 11:01+).
  - *W/o us having to herd.*
- 2:00 means ...

- End times are end times.
  - (So 10:40 means 10:40, etc.)
- Breaks: Short ones are short (and let speakers escape after talk.)
- Speakers set rules during talks.
  - Several Q&A sessions, ask any questions

Introduction

Office Hours

- Will all have individual "office hours" to discuss your research, or any questions that would benefit from focused, one-on-one discussion.
  - None of us will be able to read material ahead of time
  - Come reasonably prepared
- Sign up with sheets provided.
  - Deadline: Tomorrow 2 pm *sharp*.
  - Sign up for 3 to (all) 6 and give ranking of interest.
  - We will tell you slots Wedneday dinner or Thursday morning.
  - Do not sign up for a professor at your home institution.
  - When speakers over-subscribed, we assign slots by your expressed priority, **topic match**, fairness, zodiac sign, and randomness.
  - Up to 30 hours 30-minute slots of individual office hours!
  - 12 hours of group office hours

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- Also 15 hours of "group"/drop-in office hours.⇌
  - Also can be used for same types of things, just not pre-planned.⇌
  - Will ask you to sign up by 11am the day of office hours.⇌
- Notes:⇌
  - Talk during meals, etc. is primary⇌
  - Please don't ask visiting faculty for special meetings.⇌
  - But separate scheduling with home-institution faculty permitted!⇌

Questions on logistics?⇌

- E.g., whether must be on time to sessions?

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Introduction

Topics Covered

- Psychological Evidence, Modeling, and Methods
  - David & me & George this week
  - Stefano next week
  - David & me last day
- Economic and Policy Implications
  - Justin & Supreet this week
  - Ulrike & Stefano & Raj & David next week

Introduction

Things not covered enough because of time constraints

- Psychology, heuristics/biases, framing effects, mental accounting
- Hedonics/happiness

Things not covered because less on topic

- Classical rational-choice models.
  - Missing because you already know it, *not* because unimportant
  - If this were the only nine days of your economics education, we would teach you virtually no behavioral economics.
- Evolutionary theory/deriving human nature from "first principles".
  - Feel uneccessary to figure out how humans became this way.
  - Not behavioral to derive psych from (whose?) "first principles" rather than evidence.
  - Any hypothesis about humans now that is of economic or social interest, no matter source, is a good thing.
- "Non-psychological bounded rationality".

Introduction to Psychology & Economics

A repeat-lots-of-what-David-said Approach

Use and embrace the$\rightleftharpoons$

- **substance**$\rightleftharpoons$
- **techniques**, and$\rightleftharpoons$
- **goals**$\rightleftharpoons$
  - search for tractable models with economic consequences,$\rightleftharpoons$
  - not mere psychological accuracy,$\rightleftharpoons$
  - and taste for comparative statics,$\rightleftharpoons$
  - calibrational relevance, and$\rightleftharpoons$
  - empirical implementability$\rightleftharpoons$

of standard economic analysis, but focus on introducing psychological factors heretofore under-emphasized by economists.

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Introduction

- Not everybody likes the term "behavioral economics".$\rightleftharpoons$ I don't!.$\rightleftharpoons$
  - Slander against other economists, who also study behavior.$\rightleftharpoons$
  - Whiff of "behaviorism" a la B.F. Skinner. And, in fact, a perspective here reflects a past one in psychology—we'll find it useful to talk about motives, thoughts, etc., not just observed behavior.$\rightleftharpoons$
  - My complaint: I am very interested in welfare, not just behavior.

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Introduction

Behavioral economics is *not* defined by a method (e.g., lab experiments) but by substance—disposition to integrate psychological factors historically unemphasized by economists but which we think matters for economics.⇌

- Laboratory experiments ... great when they can help.⇌
- Field experiments ... great when they can help⇌
- Natural experiments ... great when they can help⇌
- Structural analysis observational data ... great when it can help.⇌
- Formal models ... great when they can help.⇌
- Etc.⇌

Lest you think I am too wishy washy ...⇌

- Empirical uncuriosity or low empirical standards ... always bad.⇌
- Loud gum chewing ... always bad.

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Introduction

A short history of "Behavioral Economics" $\rightleftharpoons$

First Wave: Identify "anomalies" — ways that economic theory has been importantly wrong, and identify some alternative conceptualizations.$\rightleftharpoons$

Second Wave: Formalize some of the alternatives in precise models, and identify some empirical validations of these models.$\rightleftharpoons$

Third Wave: Fully integrate into mainstream economic analysis.$\rightleftharpoons$

- I'm a 2nd-waver.$\rightleftharpoons$
  - Hoping to become an anachronism$\rightleftharpoons$
  - Now entered the 3^{rd} Wave.$\rightleftharpoons$
  - But still a lot of 1^{st} and 2^{nd} wave.$\rightleftharpoons$
- Laibson (1994) launched 3^{rd} Wave?

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Introduction

New assumptions don't mean abandoning traditional methods.⇌

- Same set of tools⇌
- Same tolerance for imperfections⇌
  - Of course our models are not fully realistic — they couldn't be.⇌
  - All models are false — including those I present!⇌
    - Are they improvements?⇌
- Same intolerance of mistaking vagueness for perfection!⇌

Nor does it even mean abandoning traditional assumptions.⇌

- Limits to the correctness and applicability of these assumptions does not mean that they aren't often appropriate⇌
- Develop new models **without destroying the insights of old models** by embedding them together into the same models.

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Approaches to Incorporating Limits to Rationality⇌

1. Don't!⇌

- Our models can be improved by improving our understanding of U.⇌
- Against common image of battles over BE, much of it is about convincing economists certain behaviors are rational, **not** mistakes.⇌
- Don't cling desperately to bad rational explanations.⇌
- *Nor* cling desperately to familiar assumptions about preferences, and label all "anomalous" behaviors as mistakes.

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Introduction

"De Gustibus" for 21st Century:⇌

- Try model preferences people actually have.⇌
- Not mechanically *either* ⇌
  - what we always assumed *or* ⇌
  - what needed to call observed choices 100% rational.⇌
- Just what seems true enough, tractable enough, or important enough, based on good science, good economics, and good psychology.⇌
- Lots of cases where evidence seems clear one or the other.⇌
- Theory that accommodates a range of preferences and of errors⇌
- Methods for identifying decomposition of behavior into each⇌

A table we'll return to later:

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Introduction

What combinations of preferences and types of mistakes could explain the general pattern of modest-scale risk preferences we observe?$\rightleftharpoons$

	DMU(W)	"Classical PT"	"News-U PT"	
Fully rational	X	X	$(\checkmark)$	$\rightleftharpoons$
plausible errors	X	$(\checkmark)$	$\checkmark$	
Implausible errors	$\checkmark$	$\checkmark$	$\checkmark$	

- X $\equiv$ **can't** explain$\rightleftharpoons$
- $\checkmark \equiv$ could explain most/all instances.$\rightleftharpoons$
- $(\checkmark) \equiv$ could maybe explain in a scientifically serious way some of what we observe.

Introduction

Big big big (not so big at all) aside on how I am going to think about "preferences", utility, errors, etc.⇌

- Utility/happiness exist separate from observed choice.⇌
  - (So do beliefs!)⇌
- Using choice to ID preferences does not mean it defines them.⇌

Utility theory as *foundations* for choice theory, not the other way around.⇌

- We choose orange over apple because we like the orange better.⇌
  - Liking orange better not a representation of fact that we choose it.⇌
- Satisfaction from seeing somebody you hate trip not a representation of the fact that you will trip him if can get away with it.⇌
  - In fact, you may not—but still get satisfaction.⇌
- Retiring $200,000 poorer from constant stock trading ought not be represented by utility function decreasing in retirement wealth;⇌
  - Ought be "represented" by u-function increasing in retirement wealth, combined with mistaken beliefs.

Introduction

2. Show what limits explain, not what explains limits.⇌

- Often nothing explains it.⇌
- More importantly,⇌
  - It's not the traditional focus of economics.⇌
  - I think it *shouldn't* be a major focus of economics.⇌
  - Uncontroversially, should not be *unique* focus of economics.⇌

3. Understand human irrationality is not just about complexity.⇌

- Economists drawn to complexity explanations because:⇌
  - It's realism: intuitive appeal and reasonableness.⇌
- Attraction to computer science and math.⇌
- "Cognitive miser" appealing construct.

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Introduction

Lesson from psychology that many important errors:⇌

- Not from fact that getting the right answer is so hard⇌
- But because the wrong answer is so enticing⇌

"Bound Errors" vs "Astray Errors"⇌

- Realizing you'll have same self-control problem tomorrow as today isn't cognitively harder than thinking it'll be different.⇌
  - Convoluted, time-consuming stories for why we'll be better ...⇌
  - 1,000 reasons didn't start your diet or dissertation ...⇌ but tomorrow.⇌
- Planning future as if current craving state will last forever⇌
  - More complicated than using average!

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Introduction

A lot of cognitive energy recognizing patterns that are not there.⇌

- "covariation bias"⇌ (minimal dectable correlation?)⇌
- gambler's fallacy, hot-hand fallacy, etc.⇌
  - What you should think the next flip of a coin is:⇌ 50-50.⇌ Done.⇌
  - Instead: people think next flip depends on recent flips.⇌

Investors lose **lots** of money because don't use the simplest investment strategy of putting money in index fund.⇌

- See predictable patterns in stock markets that are not there.⇌
- Don't ask the question: "Why is this person trading with me?"⇌
- If *either* thought a lot less, or asked that one simple question more, would save lots of money.

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Introduction

Ways greater psychological realism can improve economic analysis

1. Explaining behavior studied by economists that traditional analysis has had difficulties explaining.⇌

- Equity-premium puzzle, low saving, nominal-wage rigidity, etc.⇌

2. Explaining behavior that one would have thought economists would have been studying—but haven't been.⇌

- My favorite category in some ways⇌
  - Reflects deep fact that theory influences topics of research. ⇌
  - Role of status quo and defaults.⇌
- Economists were not examining role of defaults and claiming small,⇌
  - We were not looking.

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Introduction

- Two types of "not looking at": $\rightleftharpoons$
  - we never set our eyes on, or $\rightleftharpoons$
  - quickly avert eyes when realize we couldn't say anything coherent.$\rightleftharpoons$
- Implicit and explicit small-scale insurance.$\rightleftharpoons$
  - Extended warranties, rental insurance, etc.$\rightleftharpoons$
  - products $\longrightarrow$ loss leaders!$\rightleftharpoons$
- Short-term, high-interest-rate borrowing.$\rightleftharpoons$
  - credit-card debt$\rightleftharpoons$
  - huge pawn industry, payday loans, rent-to-own furniture.

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Introduction

3. Beyond explaining behavior, better understand normative/hedonic effects of observed behavior.⇌

- In many domains, I think that this is the more important insight.⇌

4. Often by making our models more complicated but more realistic⇌

- Trade-off economists do all the time with familiar assumptions⇌
- *I* can credibly claim to need to dumb down my models. ⇌
- Can structural IO economists with kray computers, and theorists writing Baroque models? ⇌
- But also often by making our models less complicated and more tractable, especially in the long term after ⇌
  - we develop our skills with new models, and⇌
  - we realize we can nix certain complexities in classical models that have been added to try to match the evidence.

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Introduction

Ways greater psychological realism can harm economic analysis.⇌

- Destroys illusion that *any* model is literally correct.⇌
  - A sad sentence in an introduction to a book (with biographical sketches of some eminent people):⇌ **"The history of the Victorian Age will never be written: we know too much about it. For ignorance is the first requisite of the historian - ignorance, which simplifies and clarifies, which selects and omits, with a placid perfection unattainable by the highest art."**- Lytton Strachey, preface to *Eminent Victorians*⇌
- Don't use abandonment of ignorance as abandonment of appreciation for general insight.⇌
  - **"... let him bear in mind that his novel is not a transcript of life, to be judged by its exactitude; but a simplification of some side or point of life, to stand or fall by its significant simplicity."** - Robert Louis Stevenson (from *A Humble Remonstrance*)

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Introduction

An approach to developing more realistic theories$\rightleftharpoons$

- Most economic models: take theory of individual as *input*$\rightleftharpoons$

Economic models as I see them: $\rightleftharpoons$

- Take well-specified model of individuals, plug them into well-specified model of the environment, and see predictions. $\rightleftharpoons$
- Theoretical comparative statics. $\rightleftharpoons$
- Theory-guided empirics.$\rightleftharpoons$

Short articles with these perspectives: $\rightleftharpoons$

- May 2013 *AER*, June 2013 *JEL*$\rightleftharpoons$

Before more, a source of inspiration:

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Introduction

The Genius of David Kreps$\rightleftharpoons$ (and Wilson, Nash, Selten, Cho, Pearce, Bernheim, Fudenberg, and Levine, etc.)$\rightleftharpoons$

- Kreps has made predictions in thousands of economic situations!$\rightleftharpoons$
  - Why do I say that?$\rightleftharpoons$
  - Hint: he's never even thought about most of those situations.$\rightleftharpoons$
- Developed Solution Concepts/Refinements, completely portable.$\rightleftharpoons$
- Refinements different than alterations we aspire to.$\rightleftharpoons$
  - But the spirit of portable improvements of insights.$\rightleftharpoons$
- Pearce, Bernheim (rationalizability), Fudenberg and Levine (self-confirming) are "crudements", meant to ID bad refining.$\rightleftharpoons$
  - But also portable and often precise.

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Introduction

Model ourselves after refinement literature?⇌

- It changed (and improved!) economics.⇌

My own taste, is "PEEMS" — portable extensions of existing models. ⇌

- Formulate a modification of existing models that let you make alternative predictions **across domains**, ⇌ **limiting yourself as much as possible to the information—RHS variables—used in existing research**, ⇌and using as close to zero degrees of freedom in applying the new model ⇌
- Almost all cases fail to achieve this ideal, but aim to come close.

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Introduction

My lectures (& my life ...):⇌

- Take current model of individual, with all its assumptions.⇌
- Read and interpret *broad* evidence⇌
- If you think you notice patterned and important shortcoming:
  - Pick an un-used Greek letter...⇌
  - Toss it in with a bunch of clear RHS variables ...⇌
  - And model away.⇌

To illustrate the process, let us consider a hypothetical Greek letter:⇌

- "deppa", Þ.

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Introduction

Reframe the pre-existing model as implicitly or explicitly assuming some value for Þ (usually 0, 1, or ∞).$\rightleftharpoons$

- Normal-science empirics on mean and confidence interval of Þ.$\rightleftharpoons$

Theory:$\rightleftharpoons$

- fixing environment, comparative statics on Þ. $\rightleftharpoons$
  - And then, fixing new, improved Þ, can engage in the once and future core activity of economic theory: $\rightleftharpoons$
- comparative statics on environment.$\rightleftharpoons$

Examples:

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Introduction

Modifying Preferences$\rightleftharpoons$

- Becker, Fehr and Schmidt, Bolton and Ockenfels, Charness and Rabin on Social Preferences: ρ, σ.$\rightleftharpoons$
- Kahneman & Tversky, Machina, etc. on probability weighting$\rightleftharpoons$
- Bell, Loomes and Sugden, Gul, etc. on dissapointment aversion$\rightleftharpoons$
- Kahneman & Tversky, then Kőszegi and Rabin on Reference Dependence and Loss Aversion: λ, η, γ.$\rightleftharpoons$

Self Control$\rightleftharpoons$

- Strotz, Thaler, Loewenstein, and Laibson on Present Bias: β.$\rightleftharpoons$
- Strotz, O'Donoghue and Rabin on Naivety about Present Bias: $\widehat{\beta}$.

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Introduction

Errors in Statistical Reasoning$\rightleftharpoons$

- Camerer, Grether and Plott on Base-Rate Neglect$\rightleftharpoons$
- Rabin and Vayanos on belief in LSN: $(\alpha, \delta)\rightleftharpoons$
- Benjamin, Rabin, and Raymond on non-belief in LLN: $\psi.\rightleftharpoons$

Quasi-Maximization Models$\rightleftharpoons$

- Loewenstein, O'Donoghue, & Rabin on underappreciating taste change: $\alpha\rightleftharpoons$
- Barberis and Huang, then Rabin and Weizsacker on narrow bracketing: v

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Introduction

"Behavioral Game Theory" $\rightleftharpoons$

- Stahl, Camerer and Ho, Crawford, on cognitive hierarchies.$\rightleftharpoons$
- McKelvey and Palfrey on QRE.$\rightleftharpoons$
- Eyster and Rabin on informational under- and mis-inference: χ, υ.$\rightleftharpoons$

Early days, but goal in long run be a degree of freedom.$\rightleftharpoons$

- Let's start to take our best shot:

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Introduction

Let's start being ambitious ... $\rightleftharpoons$

- Under- and Naive Inference:$\rightleftharpoons$
  - Classical: $\chi = 0, \upsilon = 0$
  - Better: $\chi = .5$, $\upsilon = .3\rightleftharpoons$
- Projection Bias:$\rightleftharpoons$
  - Classical: $\alpha = 0$
  - Better: $\alpha = .5\rightleftharpoons$
- LA and DS over changes, not just absolute levels.$\rightleftharpoons$
  - Classical: $\eta = 0$, $\lambda = .618$, $\alpha = 1.618$, $\gamma = 2.618$
  - Better: $\eta = 1$, $\lambda = 3$, $\alpha = .88$, $\gamma = .6\rightleftharpoons$
- Present bias and naivety about it:$\rightleftharpoons$
  - Classical: $\beta = \widehat{\beta} = 1$
  - Better: $\beta = .7$, $\widehat{\beta} = .9\rightleftharpoons$
- Etc.

Introduction

- In judging models,$\rightleftharpoons$
  - both old and new, and in formulating your own new models...$\rightleftharpoons$
- Realize all (useful) models are false ... try to improve$\rightleftharpoons$
- Ask two things of both others' and own theories:$\rightleftharpoons$
  - What do they rule out? What is inconsistent with them?$\rightleftharpoons$
  - What do they say outside the exact context they are illustrated in?$\rightleftharpoons$
- **Models should be general in their applicability and specific in their implications**.$\rightleftharpoons$
  - Not the other way around. $\rightleftharpoons$
- And two more questions should ask ...$\rightleftharpoons$
  - Are they true? (in the sense of improving upon previous models)$\rightleftharpoons$
  - Are they quantitatively important in important economic contexts?$\rightleftharpoons$
- And now for odd-sounding question ...

Introduction

Leaving out:$\rightleftharpoons$

- Many alternative models that intrinsically introduce degrees of freedom and incomparability to existing models.$\rightleftharpoons$
  - Not an evil thing, or bad science.$\rightleftharpoons$
  - But it *is* different science, and far "weaker" progress in terms of making predictions.

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Introduction

Better to explain 8% or 8,000% of how current theories wrong?⇌

- What does the question mean?⇌
- Comes out of many (friendly) arguments:⇌
- My vision of what "we" are up to:⇌
  - Improving existing theory⇌
  - Not creating perfection⇌

Introduction

- Defensiveness of a theorist:⇌
  - Of course our models are not fully realistic⇌
  - All models are false — some are useful.⇌
- Prickly/puzzled about emphasis on testing theories⇌
  - Discovering the theory is false!⇌
- But especially prickly when ⇌
  - It is false in ways that **all** models are false.⇌
  - Especially when conceived as improved parameters.

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Introduction

Frustrating empirics:$\rightleftharpoons$

- Old type of non-identification test:$\rightleftharpoons$
  - Rejecting a behavioral model when classical explanation makes the same (good) prediction.$\rightleftharpoons$
- New type of non-identification test$\rightleftharpoons$
  - Rejecting a behavioral model when both it and the classical model make bad predictions.$\rightleftharpoons$
- At least realize how these translate into classical econometrics.$\rightleftharpoons$
  - "I don't need $\beta < 1$ to explain this" is not evidence against $\beta = .7$... $\rightleftharpoons$ **unless** $\beta = .7$ does **worse** than $\beta = 1$.$\rightleftharpoons$
  - "You can't explain my data with $\beta < 1$" is not evidence against $\beta = .7$...$\rightleftharpoons$ **unless** $\beta = .7$ does **worse** than $\beta = 1$.$\rightleftharpoons$
  - "$\beta < 1$ can't explain this self-control looking thingy" and "$\chi > 0$ this example of WC-looking thingy" have proper scientific role.$\rightleftharpoons$
    - And should be used to provoke further improvements $\rightleftharpoons$
    - But when used to favor status quo, they are bad science.

Introduction

What does this have to do with the question?$\rightleftharpoons$

- These new genre of non-identification tests are all about picking on theories for not explaining everything.$\rightleftharpoons$
  - Only getting 8% of what's wrong with classical theory ... $\rightleftharpoons$

But I am much more bothered by:$\rightleftharpoons$

- The massive number of explanations & new alternatives that do way *worse* than classical models in *massive* number of domains.$\rightleftharpoons$
- And near universal lack of focus on that.

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Introduction

Almost no culture of that in our community:$\rightleftharpoons$

- In an anomalies-driven program, a tempting logic:$\rightleftharpoons$
  - The thing we are trying to explain is the **holes** in classical theory.$\rightleftharpoons$
  - Not the successes.$\rightleftharpoons$
- But unless attend to the non-holes, you'll under-appreciate:$\rightleftharpoons$
  - How good the existing models are$\rightleftharpoons$
  - How bad your model is$\rightleftharpoons$
- And won't be developing theories that can replace current theories. $\rightleftharpoons$
  - It may not be the goal to come up with general improvements. $\rightleftharpoons$
  - But if it is, it is manifest nonsense to ignore the non-holes.$\rightleftharpoons$
- Only group worse than behavioral economists at focusing solely on holes ... $\rightleftharpoons$ anti-behavioral economists, armed with "explainawaytions".

Introduction

New theories that explain 8,000% are bad general theories.$\rightleftharpoons$

- The old theory is superior 79 times as often as the new theory.$\rightleftharpoons$
  - If your theory were applied, would it destroy the stuff Economics 101 gets *right?*$\rightleftharpoons$ E.g., would all of consumer theory be shut down?$\rightleftharpoons$
- If prices don't fit in your theory, what could economists do with it?$\rightleftharpoons$
- Etc.

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Introduction

Aside:

- Me (and many others) have screeded against the other type of 8,000% theories:$\rightleftharpoons$
  - vague ones, degrees of freedom $\longrightarrow$ 80 different behaviors in given context can be "explained"—1 observed.$\rightleftharpoons$
    - we need language for contrasting low-powered theories that rule little out to ones that are high-powered.$\rightleftharpoons$
    - And obviously for ex post models of particular data ... which are begging to be 8,000% models.$\rightleftharpoons$
- Today's point: high-powered ones need to be stress tested across contexts.

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Introduction

Concrete examples?$\rightleftharpoons$

- Why do bounded-rationality models (complexity-type, and some inattention-type) arguments leave me so cold?$\rightleftharpoons$
  - E.g., bizarre ones for status-quo effects, u-game rejections$\rightleftharpoons$
  - Because I can think of the 79 examples of equally complex (simple) tasks that people get right$\rightleftharpoons$

Additional examples to get me in trouble...

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Introduction

For those developing new theories, verbal or mathematical:$\rightleftharpoons$

- State some things you are **ruling out** that are $\rightleftharpoons$
  - non-trivial, and $\rightleftharpoons$
  - not ruled out by alternative compelling models, $\rightleftharpoons$
  - **apply to some other settings besides exact one you're looking at,** $\rightleftharpoons$ ...
  - such as (say) last experiment you ran or data set you studied $\rightleftharpoons$ ... and proposed a completely different theory for.$\rightleftharpoons$
  - Don't give yourself a "bye" on these matters just because you haven't formalized/generalized your theory.$\rightleftharpoons$

And don't compare your unrestricted theory to restrictive ones and declare victory.

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Introduction

Conjectures (vague—and genuinely unsure)$\rightleftharpoons$

- Applied **globally**, probably $\rightleftharpoons$
  - Full rationality better than reinforcement learning$\rightleftharpoons$
  - Nash equilibrium better than cognitive hierarchy $\rightleftharpoons$
    - even in "first-time" play! $\rightleftharpoons$
  - Behindness aversion worse than pure self-interest$\rightleftharpoons$
    - probably all existing social preferences models strictly worse. $\rightleftharpoons$
- Applied globally, $\rightleftharpoons$
  - $\beta = .7$, $\widehat{\beta} = .9$ is often better, and never worse than, $\beta = \widehat{\beta} = 1$.$\rightleftharpoons$
  - QRE is better than Nash$\rightleftharpoons$
- Probably/Maybe globally ...$\rightleftharpoons$
  - cursed vs. Nash (but communication, etc.?)$\rightleftharpoons$
  - expectations-based reference dependence$\rightleftharpoons$
  - NBLLN

Introduction

One big problem with my claims ...⇌

- There are lots of deep and important papers that essentially are 8,000% theories.⇌

The case **for** 8,000% theories.⇌

- It is early days⇌
  - If explanations do feel right in particular domains, then clearly good science to articulate.⇌
  - Then we work on boundary conditions⇌
  - And often extreme forms of models useful⇌
  - Fine, but maybe more emphasis on boundary conditions⇌
- Maybe we really *are* about explaining the holes ...⇌
  - Grand theories get us in trouble ⇌
  - Maybe we ought to go down menu of theories while looking at the data

↬

Introduction

Major genre of 8,000% theories these days?$\rightleftharpoons$

- "Secondary mechanisms" mistaken as primary$\rightleftharpoons$
- And spun as alternatives to existing behavioral models, rather than vindications or foundations.$\rightleftharpoons$
  - Various types of rules of thumbs ... uncertainties ... ambiguities ... effort-aversions.... $\rightleftharpoons$
  - can 'explain' present bias, loss aversion, small-scale risk aversion ... $\rightleftharpoons$
  - But do they also explain prawn bias, lamp aversion, and small-scale rake aversion?$\rightleftharpoons$
  - Would these mechanisms really kick in if now and later really felt no different to people, losses and gains no different, and instinctive risk neutrality over small stakes?
- Would these mechanisms kick in without the primary bias?$\rightleftharpoons$
- They may be almost fully adequate as proximate explanations ...$\rightleftharpoons$
- But they may have almost no explanatory power in empirical work if we ask

Introduction

Another genre: $\rightleftharpoons$

- Theories with forces that tend to go opposite classical or other forces.$\rightleftharpoons$
- Especially interested in the valid ones$\rightleftharpoons$

"Theories" that **can't possibly** be **general** $\rightleftharpoons$

- More choice is bad$\rightleftharpoons$
- Incentives always backfire$\rightleftharpoons$

Research agenda **must** start moving to quantification/boundaries.$\rightleftharpoons$

- Will senior discounts on restaurants decrease senior demand?$\rightleftharpoons$
  - Primes them to think about their age$\rightleftharpoons$
  - So they will walk too slowly to the restaurant ... and never get there.

$\looparrowright$

Introduction

Scientific Seriousness$\rightleftharpoons$

- Not guerrilla warfare$\rightleftharpoons$
- We are not one *Ted* Lecture away from knowing the right policy when people make mistakes.$\rightleftharpoons$
  - (Assuming no mistakes takes a great deal of theory and evidence!)$\rightleftharpoons$
- Nor one experiment away from knowing economic relevance & size.$\rightleftharpoons$
- This literature & these lectures convey principles I believe to be true and important.$\rightleftharpoons$
  - Where I think economics gets things importantly wrong.$\rightleftharpoons$
  - Experiments and theory needed for empirical research.$\rightleftharpoons$
  - But the core of Economics is empirical evidence & measurement.$\rightleftharpoons$
  - We need lots more research on this.$\rightleftharpoons$
- "Existence-proof evidence" and new theories:$\rightleftharpoons$
  - the start of economic insight, not the culmination.

Introduction

Theme of camp: **scientific seriousness**:$\rightleftharpoons$

- even if "unfair", hope you are all subject to much higher empirical standards of$\rightleftharpoons$
  - fully disclosure of order of hypotheses,$\rightleftharpoons$
  - specification mining,$\rightleftharpoons$
  - *p*-hacking,$\rightleftharpoons$
  - theoretical assumption-hacking, $\rightleftharpoons$
- than previous researchers.$\rightleftharpoons$

Prediction:$\rightleftharpoons$ you *will* be held to these higher standards,$\rightleftharpoons$

- In psychology, in EE, in BE, etc.$\rightleftharpoons$
  - good for science, $\rightleftharpoons$
  - good for your souls $\rightleftharpoons$
  - but maybe not for careers

Introduction

But ... $\rightleftharpoons$

- While monster big fan, some caveats from an economic theorist:$\rightleftharpoons$
  - How reconcile the is-it-true-or-is-it-false? approach to theory testing with the all-theories-are-false and move-beyond-existence-proof-to-effect-size approach?$\rightleftharpoons$

Even the very best methodology seems ...$\rightleftharpoons$

- working from a metaphor of standards for human trials for drugs $\rightleftharpoons$
- But is much of evidence more like animal trials?$\rightleftharpoons$
  - Yes, learning something.$\rightleftharpoons$
  - Very hard to interpret effect sizes!

$\curvearrowright$

Introduction

Desperate need for quantitative hypotheses and theories...⇌

- When an identified effect goes opposite direction of an OBVIOUSLY existing effect, then, once providing 'existence proof' or 'proof of concept', we **MUST** actively start to:⇌
  - Specify clearly its domain of applicability⇌
  - Measure its size in a scientifically serious way.⇌
- To use these insights, **must** make progress on answering:⇌
  - when?⇌
  - how much?⇌

And without theory, measurement can be hard. ⇌ The best (intentionally) funny sign in the world ...
↬

Introduction

Introduction

General empirical wish list of an *enthusiastic* consumer⇌

- Report all hypotheses and 'pilots'.⇌
- Hypotheses, questions, and tests either:⇌
  - ex ante,⇌ or labeled as ex post, and timelined.⇌
  - Learning things, making mistakes, seeing unexpected provocative patterns worth reporting. Just be clear ...⇌
  - Report your decision rules for whether to gather more data.⇌
- **Grammar Lesson of the day:**⇌
  - **"Past Fudgitive"**:⇌ Verb tense used when the order of past events is obscured.⇌ Survives in modern English solely in the context of empirical research, and almost exclusively with the verb "hypothesize".⇌
  - **Usage:**⇌ "We hypothesized ... Our hypotheses were confirmed."⇌
  - **Say** explicitly: did you hypothesize that before results and as part of design?

↬

Introduction

The Fundamental Theorem of Precise Models:⇌

- They are wrong.⇌

The Fundamental Theorem of Imprecise Theories:⇌

- They are wrong too!⇌
- When too vague to commit to precise a priori predictions, researchers often never expose themselves to how they are wrong.⇌

Anonymous psychologist⇌ (I will call him "Danny K")⇌ defending economists to a roomful of psychologists (who were giggling at some of the sillier assertions of economists):⇌

- "One of the ways that psychologists avoid ever being completely wrong is that we avoid ever being completely clear."

↬

Introduction

When qualitative (quantitative below...)⇌

- It almost never matters qualitatively whether mistake/departures 100% vs less than 100%⇌
- The qualitative difference almost always 0% vs more than 0%.⇌
- So if you are interested in whether people use some information they should normatively use, don't look for whether they ignore it.⇌
- Look instead for under-use relative to the normative amount of use.⇌
  - Base-rate Neglect⇌
  - Koehler's (1991) diatribe against "base-rate neglect"

↬