First Findings of a Novel, Variable Rewards Based Adherence Intervention in Uganda

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Study goals

- Study based on behavioral economics principles

1. Do HIV clients show decision-making errors ('biases')?

2. Do these biases result in suboptimal adherence?

3. Can a simple adherence lottery improve adherence?

Outline

1. Behavioral Economics (BE) in 2 minutes or less…

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2. How BE applies to HIV as a chronic disease

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1. Behavioral Economics (BE) in 2 minutes or less…

2. How BE applies to HIV as a chronic disease

3. Presentation of RAP (Rewarding Adherence Program): variable rewards / lottery study

Motivating the Use of Behavioral Economics:

1. People often know what is good for them and start with good intentions

BE Insights for studying health behaviors:

1. People often know what is good for them
2. But something ‘always comes up’

BE Insights for studying health behaviors:

1. People often know what is good for them
2. But something 'comes in between'

3. Often people end up doing things they later regret

… this is true for a wide range of behaviors that BE has studied:

- Overeating

- Alcohol abuse

- Smoking

- Medication adherence

Lacking: Applications in HIV

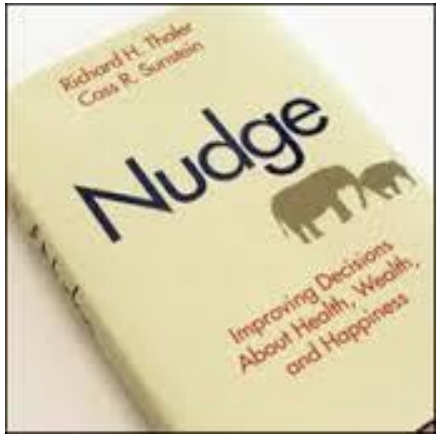
What is behavioral economics?

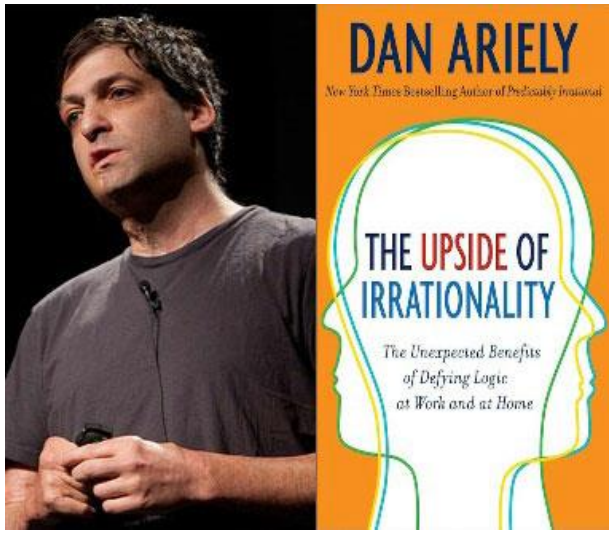
- Different from traditional economics that assumes that people
  - "…can think like Albert Einstein, store as much memory as IBM's Big Blue, and exercise the willpower of Mahatma Gandhi" (Thaler and Sunstein, 2008)

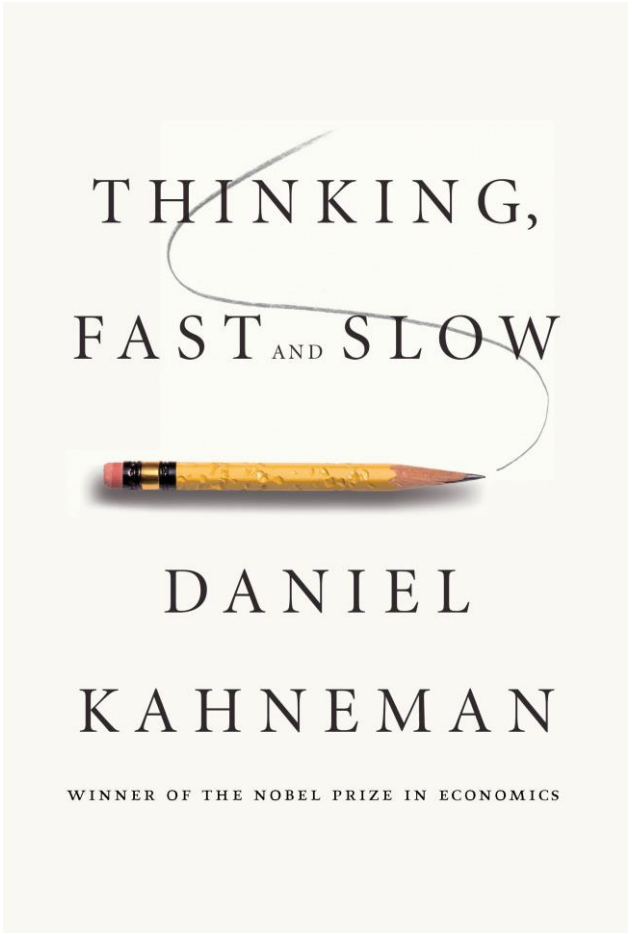
- BE studies decision-making mistakes ('biases') that are systematic and predictable

- BE uses these biases as entry points for interventions → Part 3

What is behavioral economics?







Key BE biases

- Myopia (giving in to short-term temptations at expense of long-term health)
- Optimism (not realizing that one is myopic)
- Overconfidence (not taking enough precaution to stick to plans)

Part 2: Characteristics of ARV adherence that make it difficult to adhere

1. Costs immediate, benefits later → **Myopia**

2. Active decision-making required → **Overconfidence**

3. The benefits of ART are largely invisible (absence of disease) → **Salience**

4. Little feedback → **un-learning**

Part 3: Empirical Evidence of Biases and their Impact on Adherence

- NIMH-funded 3-year R34 at one clinic in Uganda's capital Kampala
- Rewarding Adherence Program (RAP)
- Clients have been in ART for at least two years and show treatment fatigue
- Research question: how can we 're-motivate' these clients?
- Constraint: severely resource-constrained environment

Behavioral Economics biases addressed

Answer: A lottery with eligibility criteria of good adherence

- **Myopia**: providing immediate benefits of a healthy behavior

- **Optimism / overvaluing of small probabilities**: leads to enrolment

- **Mood**: adding a fun element associated with adherence; CM

RAP implementation

<u>Low-tech prize drawing:</u>

Drawing cards out of

a bag, win when “6”

<u>Low cost:</u> **prizes cost 2-3 USD** per person / year.

RAP – study design

- 2 intervention groups, 1 control group (n=50 each)

  Intervention group 1: eligible if come on the day they are scheduled

  Intervention group 2: eligible based on 95% MEMS- cap measured adherence

  Control group: usual care

- Randomized treatment assignment

First empirical evidence on …

1. Prevalence of BE biases in a sample of HIV clients

2. Impact of biases on adherence

3. Impact of RAP intervention to counter biases

Finding 1: Behavioral biases are common

- 36% of the sample are myopic
- 89% think they will show perfect adherence over the next month
- 20% think they can outperform the ‘average’ clinic client (despite their showing adherence problems)

Finding 2: Behavioral biases predict adherence

- 27% of those with myopia show adherence >90%, vs. 42% of their more patient peers

- 30% of those who think they outperform others show >90% adherence, vs. 38% of less confident clients

Finding 3: The RAP intervention seems to work

- After 4 months, those in the intervention group have…
  - **8 % points higher mean adherence** (82% vs. 74%)
  - **16 % pts higher chance of showing 90% adherence** (48% vs. 32%)
    - 22 percentage points in directly incentivized vs. control group
- One-year results next year…

Conclusion

- Behavioral economics may be a valuable tool to think about adherence issues
- Pointed out main behavioral biases that are in the way of better adherence
- Results from an ongoing project in Uganda based on some of these insights
  - Behavioral biases are common
  - They impact adherence
  - An intervention targeting myopia shows promising short-term results

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Thank you!

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Priorities for future research

- How to sustain behavioral change: DeFulio and Silverman (2012) review 5 studies with post-intervention data; all fail to keep up effects

- Research on use of incentives in HIV populations has focused on U.S., projects in low and middle-income countries needed (Galarraga et al., 2013); also, most of these studies are on populations with substance abuse problems (DeFulio and Silverman, 2012).

- Related: cost-effectiveness

Behavioral biases matter for adherence reporting

- We measure ability to recall a string of five numbers
- We ask to calculate one-month adherence percentage of a hypothetical client
- 84% of participants over-estimate their MEMS-caps measured adherence
- 64% of participants can remember 2 numbers or less
- 60% of clients have difficulty calculating monthly adherence within +/- 5% points