



Green Growth and Behavioral Economics

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Green Growth

- Economic growth that ensures that natural assets continue to provide resources and environmental services necessary for well-being
 - Requires technology *and* behavior change
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How Are (GG) Decisions Made?

Assumptions of Rational Actor model

- Choice follows from valuation and comparison of options
 - Valuation is
 - calculation-based
 - without information or capacity constraints
 - Valuation maximizes personal material welfare
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Are Assumptions Warranted?

- *Choice does NOT always follow from valuation*
 - *Valuation NOT always calculation-based*
 - Calculations are self-serving or myopic, and other modes often used
 - *Information or capacity constraints*
 - Bounded rationality
 - *Dimensions other than personal material welfare matter*
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Example: Barriers to Adopting Seemingly Win-Win EE Technology

- Rational-economic diagnoses
 - People don't know about them (Information deficit)
 - Principal—agent problems
 - Landlord pays electricity bill, tenant not incentivized
 - Energy efficiency not fully reflected in used home or car prices
- Psychological diagnoses
 - Many energy-use choices are automatic and habitual
 - Inertia
 - Fear of problems with new technology
 - Uncertainty avoidance
 - Upfront higher costs loom large, future savings heavily discounted and too small for attention
 - Behavioral solutions can address cognitive and motivational deficits

Green Growth Choices Discouraged by

- Inertia and status-quo biases
 - “Egocentric” biases and short time horizons
 - Existing behaviors largely automatic
 - Hard to change with economic incentives
 - Inadequate feedback to motivate and maintain behavior change
 - Failure to meet goals does not evoke natural fear
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Cognitive Deficits

- Attention an extremely scarce resource
 - Basketball video demonstration
 - <http://www.youtube.com/watch?v=vJG698U2Mvo>
- Attention thus “local” and often myopic
 - Future outcomes not discounted exponentially
 - Steep discounting of future benefits because focus is on “now” (“impatience,” hyperbolic discounting)
 - Outcomes not evaluated in absolute fashion, but relative to a reference point
 - “Compared to what?”
 - Prospect theory (Kahneman & Tversky, 1979)
 - Risk-aversion *and* risk-seeking
 - Loss aversion

Motivational Deficits

- Human needs
 - *Material* (money, physical survival)
 - *Psychological* (feeling in control, feeling effective)
 - *Social* (feeling connected, concern for future generations)
 - Goals can conflict
 - influence decisions *only when activated*
 - Goal activation (“priming”)
 - People vote differently when polling station is a church vs. a public school
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How are preferences constructed? (“Query Theory”)

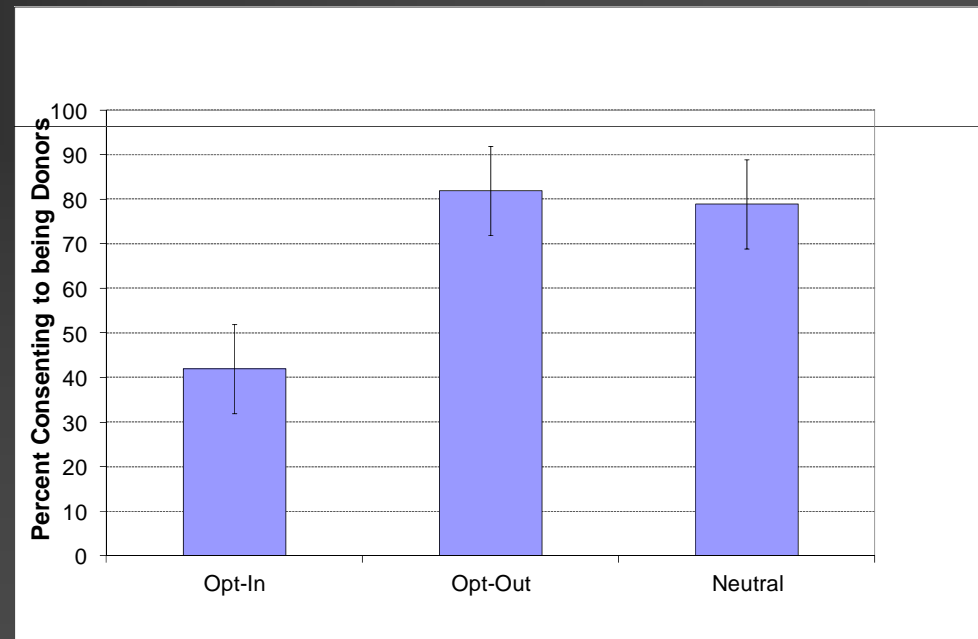
- Process of “arguing” with yourself
 - *Automatic and not conscious*
- Action alternatives evaluated sequentially
 - Normatively irrelevant task characteristics determine order of queries
- Order of evaluation shapes balance of evidence
 - First query generates more arguments
- Order is a function of
 - What the choice default is, if there is one
 - Behavioral default, i.e., status quo, business as usual
 - How alternatives are described/labeled
 - Does one option appeal? Does one option put you off?

Defaults “work” for multiple reasons

- Minimize effort
 - Capitalize on people being “passive”
 - Implied endorsement of default
 - Arguments for default option get processed/queried first
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Illustration: Choosing to become an Organ Donor *(Johnson & Goldstein, Science, 2003)*

- n=176 Web participants
- “You are moving to a new state. In that state, everyone (is/is not) a organ donor unless they (choose not to/choose to) be. Click here to change...”
- Neutral Condition: You must make a choice.



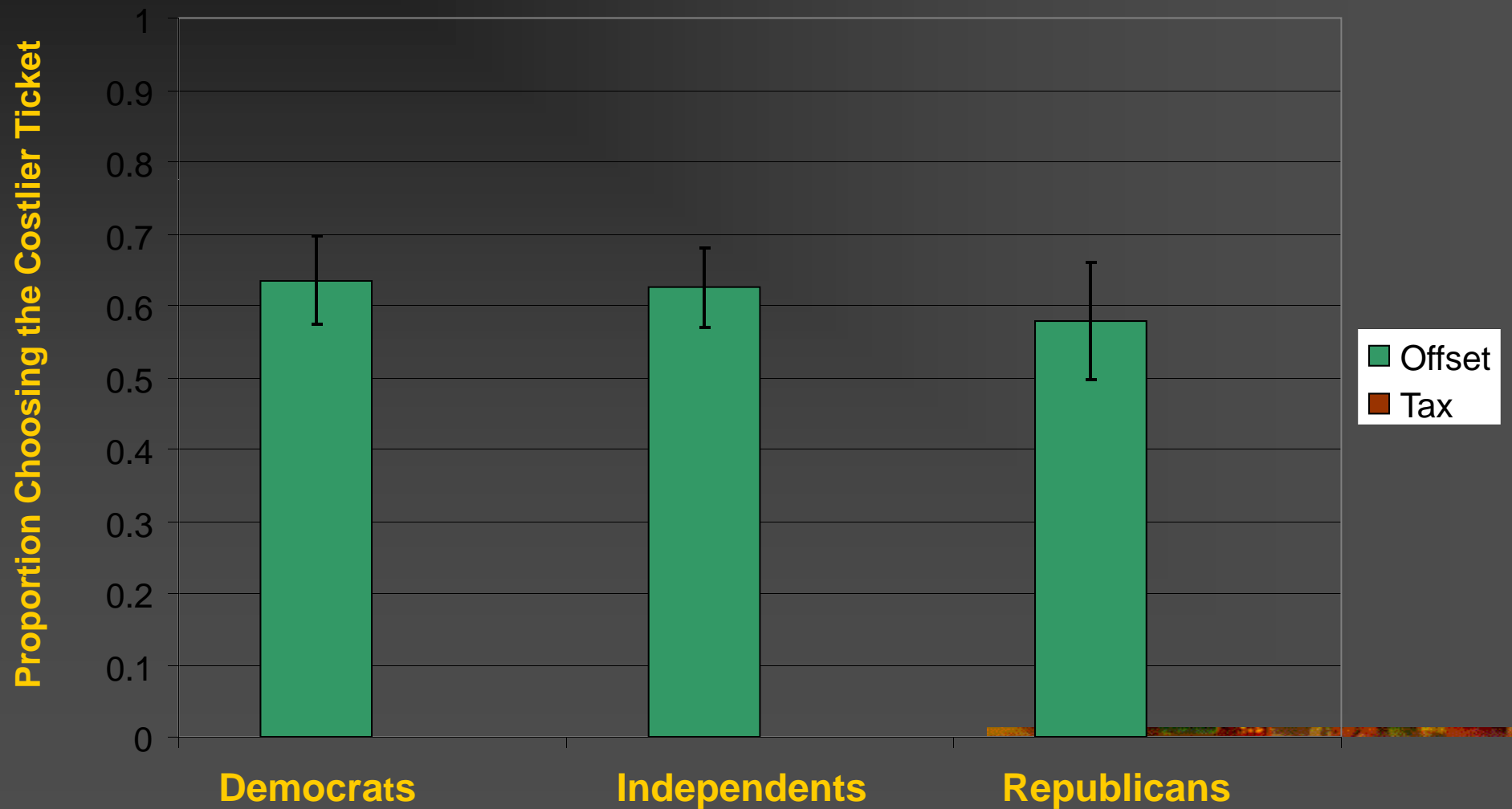
Option Labels Matter: Paying for Carbon Footprint of Travel

“Suppose you are purchasing a round trip flight from Los Angeles to New York city, and you are debating between two tickets, one of which includes a [carbon tax/offset]. You are debating between the following two tickets, which are otherwise identical. Which would you choose?”

Ticket A	Ticket B
\$392.70 round trip ticket includes a carbon tax [offset]	\$385.00 round trip ticket

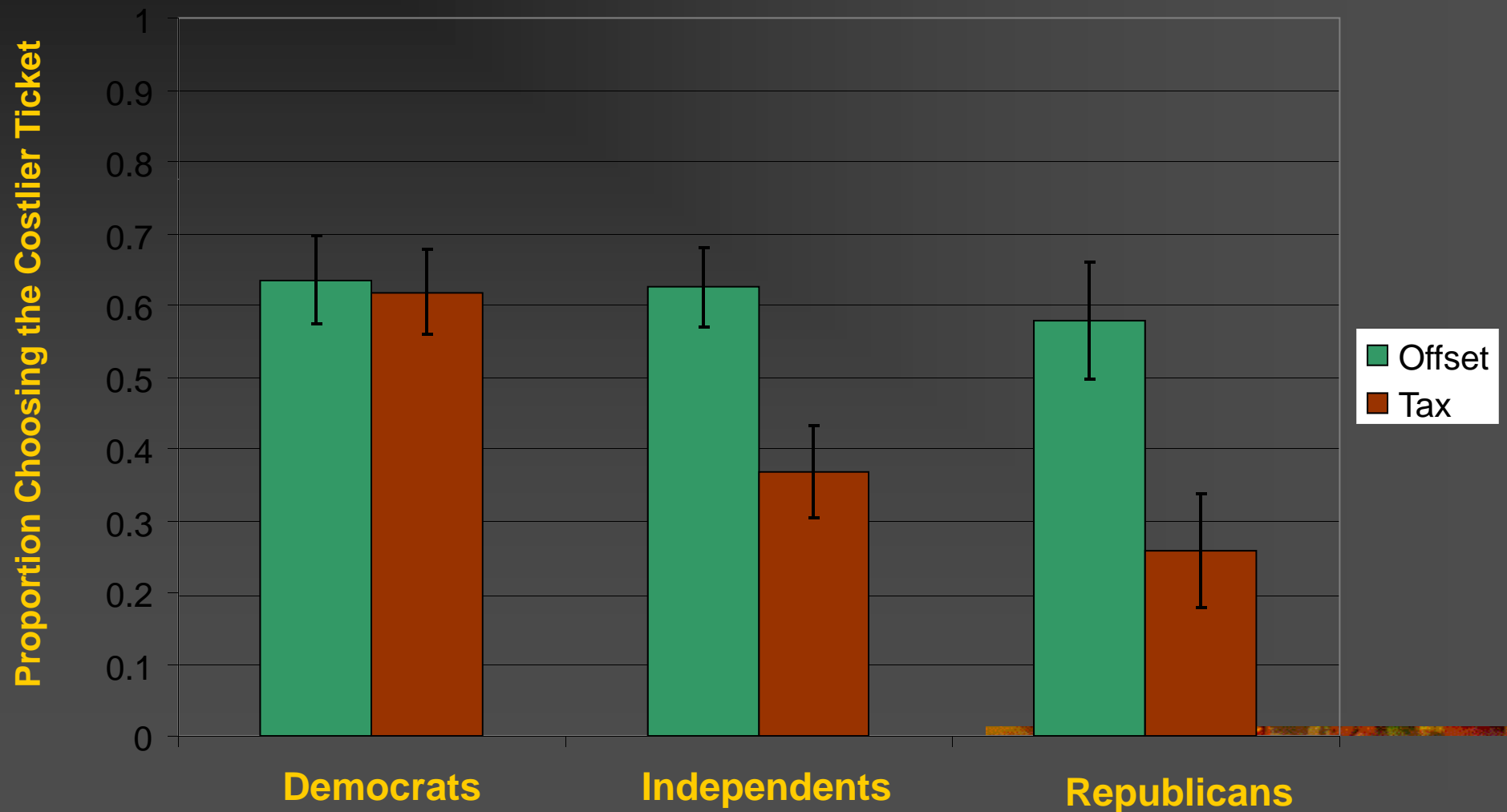
Dirty Word or Dirty World study

(Hardisty, Johnson, Weber, *Psychological Science*, 2010)



Dirty Word or Dirty World study

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Motivating green behavior change

- Financial/material motivations
 - Smaller than rational models suggest
 - Due to excessive discounting or loss aversion
 - But can be increased by careful framing of choice options
 - Aggregation of benefits over time, emphasis co-benefits (job creation, energy security)
- Also use other motivations
 - Natural desire to improve
 - With detailed and timely feedback about energy use and improvements in energy use
 - Natural desire to compete
 - With relative comparisons to performance of others and friendly competition incentives

How to Encourage Green Growth Choices?

- Decisions get made in qualitatively different ways
 - “by the head” → calculation-based decisions
 - “by the heart” → emotion-based decisions
 - “by the book” → rule-based decisions
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Green Growth Choices

in *calculation-based* decisions

- Make green-growth choice option the default
 - In building codes and other infrastructure decisions
 - Attractive labels for green-growth choice options
 - Emphasize co-benefits and avoid hot-button associations
 - Create new goals by new metrics
 - Measures and feedback get attention
 - Smart grid and smart metering technology
 - Online fuel-efficiency displays (Toyota Prius)
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Green Growth Choices

in *emotion-based* decisions

- Tempting to scare people into “right” behavior
 - Graphic depictions of environmental or social consequences of business-as-usual
- Yet, fear appeals *problematic*
 - Humans not hard-wired to worry about distant threats
 - Even if effective, fear appeals work only very briefly
 - Finite pool of worry
 - Increase in worry about one hazard decreases worry about other hazards
 - Single action bias
 - Tendency to engage in single corrective action
 - *Results in rebound effects in energy use contexts*

Green Growth Choices in *rule-based* decisions

- Much behavior is habitual
 - If—then rules often designed to inhibit calculation-based decisions
 - Use social learning and imitation by getting prominent and trusted agents to model green growth choices
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Recommendations

- Shift from calculation- or emotion-based to rule-based decision processes
 - use social norms to overcome myopic self-interest
 - Use automatic processes (social learning and imitation)
 - to modify undesired automatic behavior
 - Judicious choice of reference points and option labels
 - avoid hot button issues
 - Use passive decision processes by setting low-carbon default options
 - building codes, transportation or other infrastructure decisions
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Knowledge *and* Action Gaps

- Test theories about human motivation and cognition in developing countries
 - Evaluate policy options not solely on efficiency and equity but also behavioral and political feasibility
 - Involve psychologists and political scientist to design and test ensembles of interventions in the field
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The Psychology of Climate Change Communication

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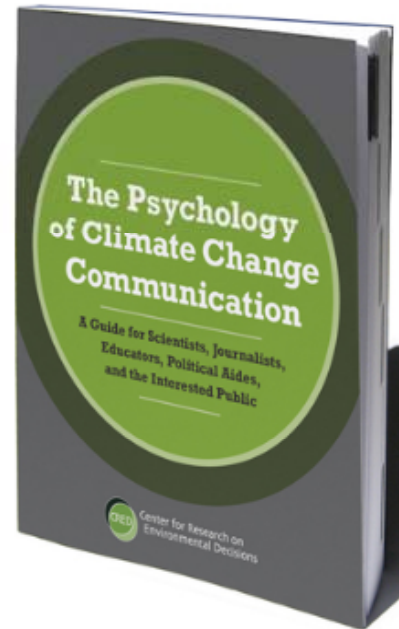
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The Psychology of Climate Change Communication

A Guide for Scientists, Journalists, Educators, Political Aides, and the Interested Public

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