Princeton E-ffiliates Partnership

PRINCETON UNIVERSITY

andlinger center
for energy+the environment

Behavioral Science and the Environment: The Human Dimension

November 20th, 2015

E-filliates Annual Meeting

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Outline of Talk

PART 1 – BEHAVIORAL SCIENCE AND THE ENVIRONMENT

PART 2 – PRO-SOCIAL BEHAVIOR, EMPATHY, AND INTRINSIC MOTIVATION

PART 3 – THE POWER OF SOCIAL AND INSTITUTIONAL NORMS

PART 4 – HOW BEHAVIORAL SCIENCE CAN INFORM (ENERGY) POLICY

PART 5 – CONCLUSION

Behavioral Science and the Environment

- Behavioral science is an interdisciplinary field of study which aims to systematically analyze and investigate (human) behavior and decision-making through naturalistic observation and controlled experimentation.

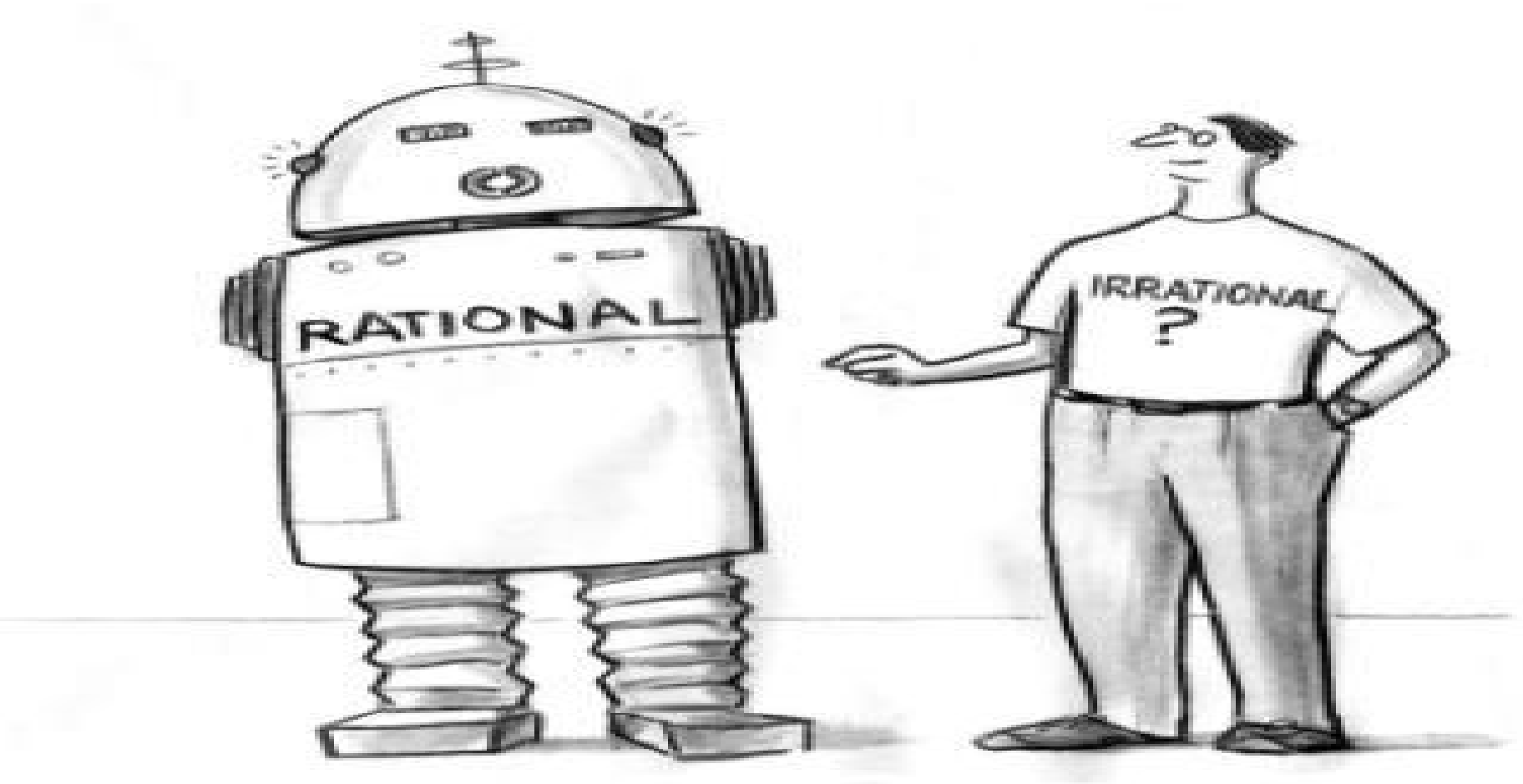
- Until recently, behavioral science has played a very limited role in informing public policy-making (Shafir, 2012).
  - Especially when it comes to climate, energy, and environmental policies (Dietz, Stern, & Weber, 2013; van der Linden, Maibach, & Leiserowitz, 2015).

- National implementation of changes in individual lifestyles and behaviors could reduce direct emissions from households by 20% or 7.4% of US national emissions (Dietz et al., 2009).

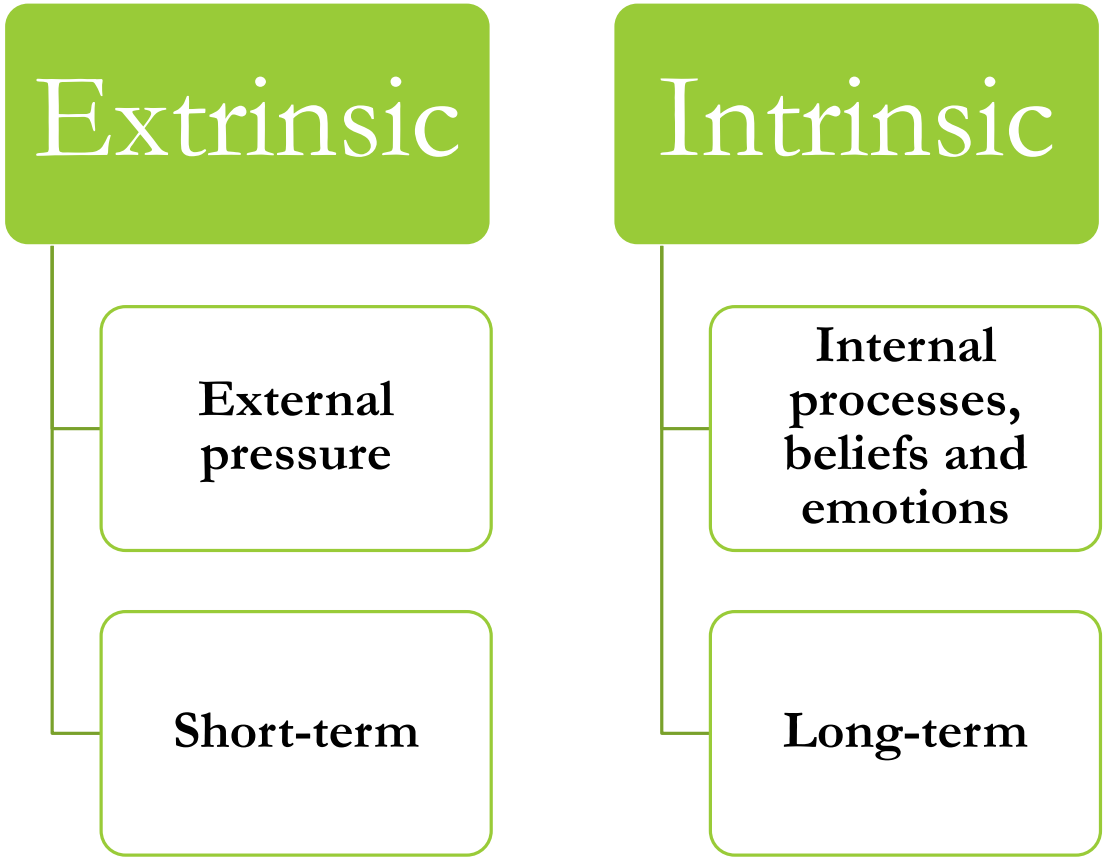
Dietz et al. 2009. Household actions can provide a behavioral wedge to rapidly reduce US carbon emissions. *Proceedings of the National Academy of Sciences USA*, **106(44), 18452-18456.**

Behavioral Science and the Environment

Homo Economicus **vs.** **Homo Sapiens**



Human Motivation



“Do-it-in-the-Dark” Energy Conservation Competition

Forbes College

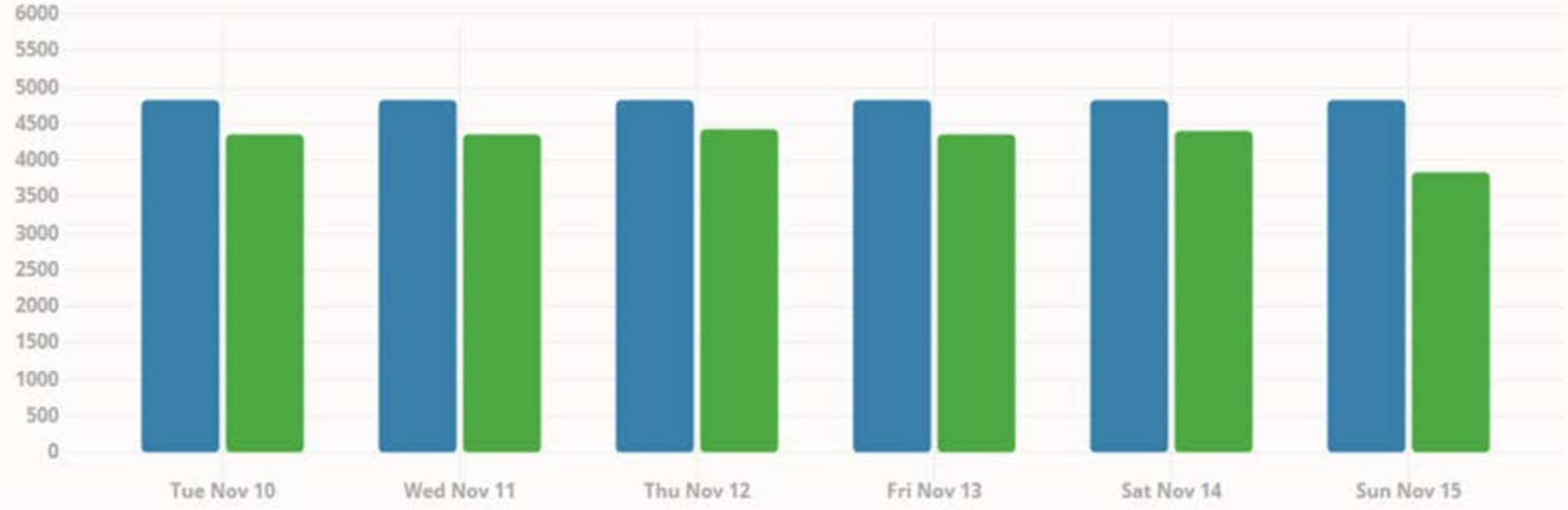
20.5%

BETTER THAN TODAY'S BASELINE

Instantaneous Demand: 212.0 kilowatts.

*That's **431.8 watts per student**, or enough energy for **36.0 laptops per student.***

CONSUMPTION IN KILOWATT-HOURS/DAY : **BLUE** IS BASELINE, **GREEN** IS RECORDED CONSUMPTION



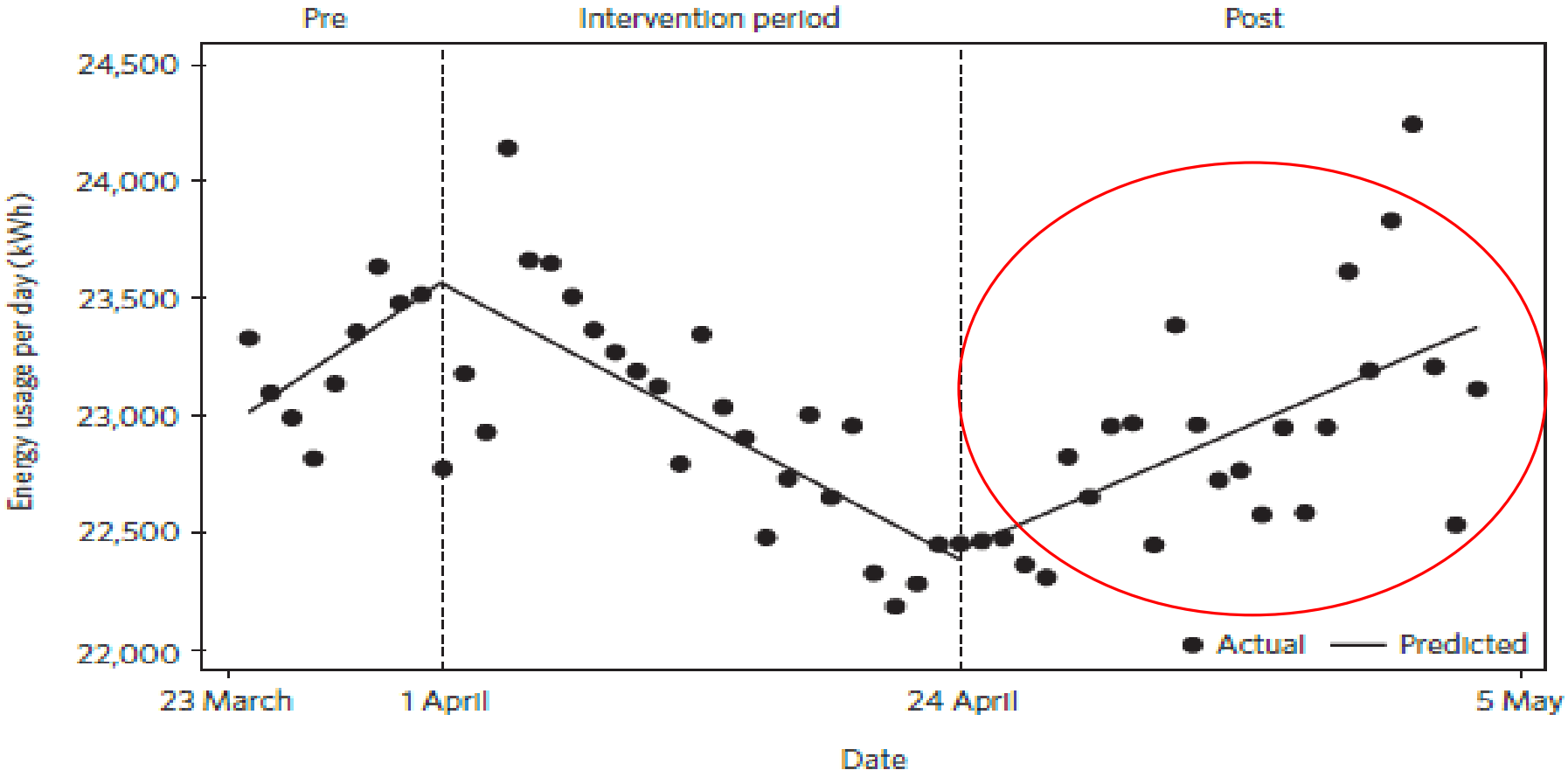


Figure 1 | Daily energy consumption before, during, and after the Do-It-in-the-Dark energy conservation competition in 2014. Estimates are obtained from an interrupted time series regression model (see Supplementary Information for full model specification). Aggregate energy usage represents the sum of de-trended daily energy consumption from all six residential colleges at Princeton University. The model controls for variation in local temperature trends over the period.

van der Linden, S. (2015). Intrinsic motivation and pro-environmental behaviour. *Nature Climate Change*, *5*(7), 612-613.

Types of Motivators

Where Our Trash Goes

OCT. 10, 2015

Luke Sharrett for The New York Times

A garbage tax (on trash that goes to the landfill) will likely do the exact opposite. Behavioral research has taught us that giving people the option to "buy out" of their environmental responsibility undermines their personal motivation to help.

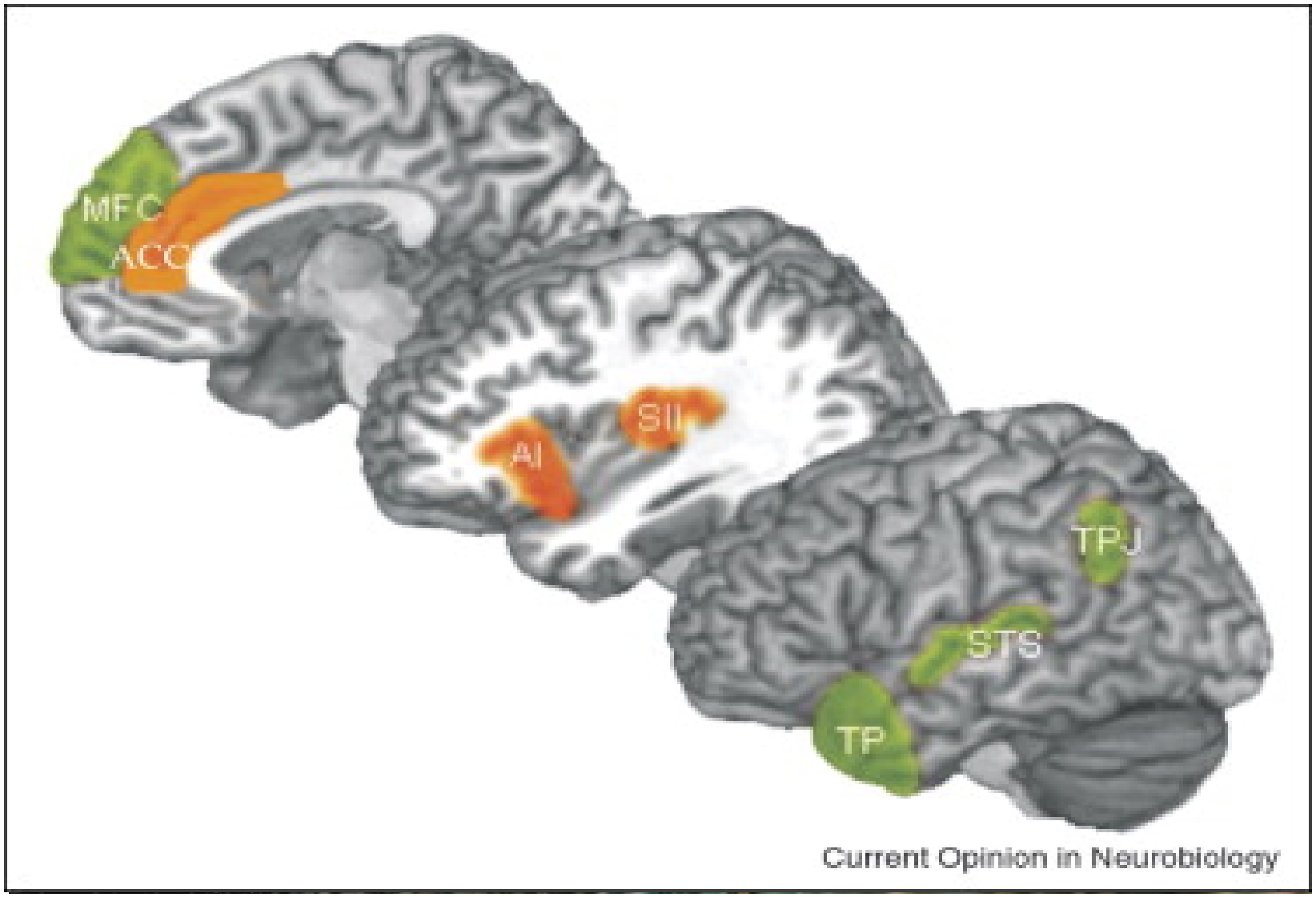
Long-term environmental problems call for long-term changes in human behavior.

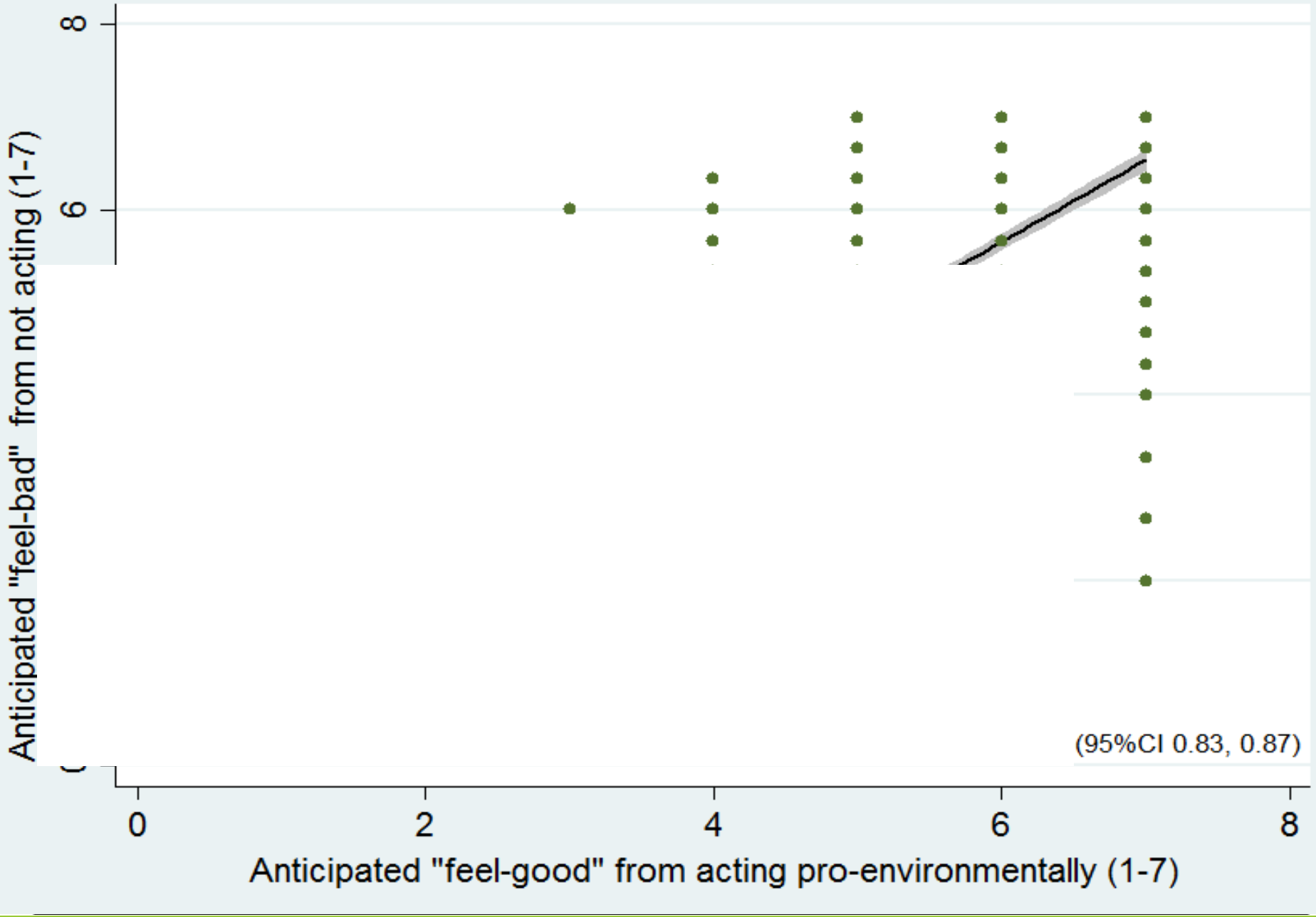
SANDER VAN DER LINDEN

Princeton, N.J.

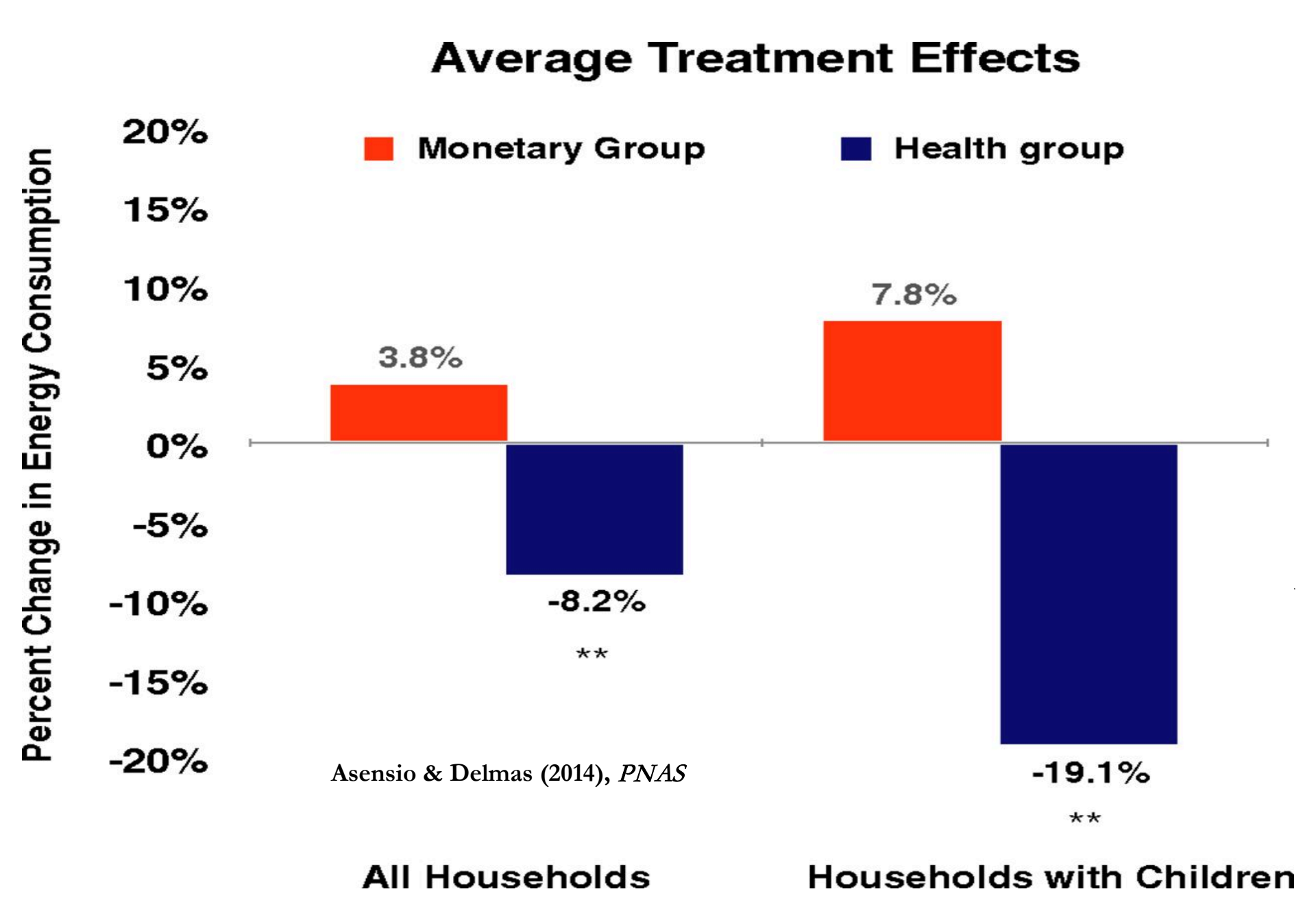
Insights from psychological science

Empathy as an Evolved Capacity





van der Linden, S. (2015). The Social-Psychological Determinants of Climate Change Risk Perceptions, Attitudes, and Behaviors: A National Study. *Environmental Education Research*.



Asensio & Delmas (2014), *PNAS*

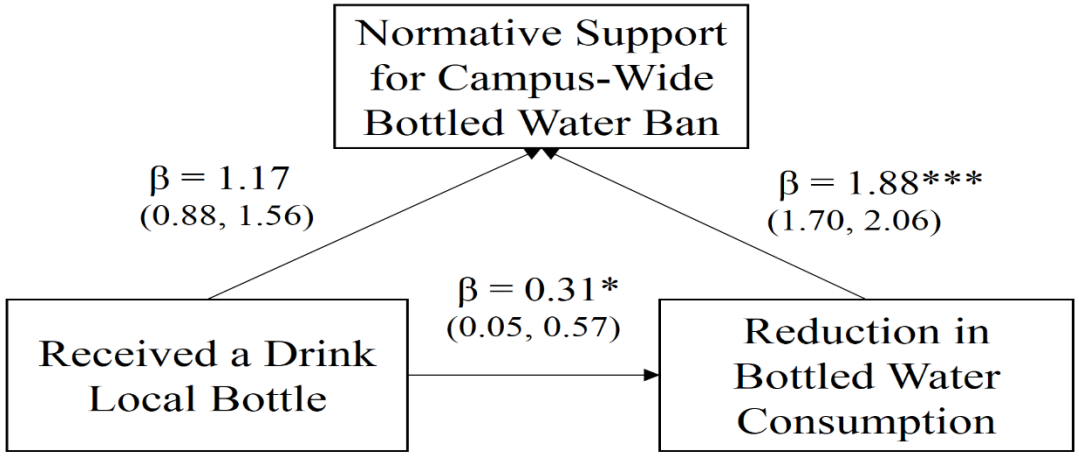
The Power of Social and Institutional Norms


November Neighbor Comparison
You used 28% MORE energy than your efficient neighbors.
EFFICIENT NEIGHBORS
1,450*
YOU
1,851
ALL NEIGHBORS
2,759
* This energy index combines electricity (kWh) and natural gas (therms) into a single measurement.
GOOD
WHO ARE YOUR "NEIGHBORS"?
ALL NEIGHBORS
Approximately 100 occupied nearby homes that are similar in size to yours (avg 2,023 sq ft) and have both electricity and natural gas service.
You used 74% MORE
This costs you about

Institutional Norm-Signaling

- An institution's decisions and innovations signal what behaviors are common or desired within a group (Tankard & Paluck, 2015).
- Institutional norm-signaling can influence behavior by setting the "anchor" or "default" behavior for the group.
- Setting a "sustainable" alternative as the default may lead people to think that it is a prototypical behavioral choice for the group.

The Princeton Drink Local Program



*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. $N = 986$. Coefficients predicting normative support are odds-ratios (OR). 95% confidence intervals are provided in parentheses.

University wide survey (N = 1,302)

Behavioral science can inform (energy) policy

Table 1. Overview of Key Psychological Lessons and Policy Advice

Psychological lesson	Policy guideline	Example policy recommendation
1. The human brain privileges experience over analysis	Highlight relevant personal experiences through affective recall, stories, and metaphors.	The National Park Service (NPS) gives concrete examples of how climate change has already harmed natural resources in specific parks.
2. People are social beings who respond to group norms	Activate and leverage relevant social group norms to promote and increase collective action.	Government climate science agencies could improve efforts to highlight descriptive norms (e.g., the scientific consensus on human-caused climate change).
3. Out of sight, out of mind: reduce psychological distance	Emphasize the present and make climate change impacts and solutions locally relevant.	NASA and The National Oceanic and Atmospheric Administration (NOAA) are supporting efforts to enable TV meteorologists to educate their viewers about current local climate change impacts.
4. Nobody likes losing but everyone likes gaining	Frame policy solutions in terms of what can be gained (not in terms of what is lost).	The Environmental Protection Agency's (EPA) "Clean Power Plan" focuses on cleaning up the nation's fuel supply, which will help clean up the nation's air and water, providing direct health benefits to all Americans.
5. Tapping the potential of human motivation	Leverage intrinsic motivation to support long-term environmental goals.	The President, Congress, and all federal agencies should be openly aspirational in designing climate policy initiatives that tap into citizens' deeply held motivations for building a better tomorrow.

van der Linden, S., Maibach, E., & Leiserowitz, A. (2015). How to Improve Public Engagement with Climate Change: Five "Best Practice" Insights from Psychological Science. *Perspectives on Psychological Science.*

Conclusion

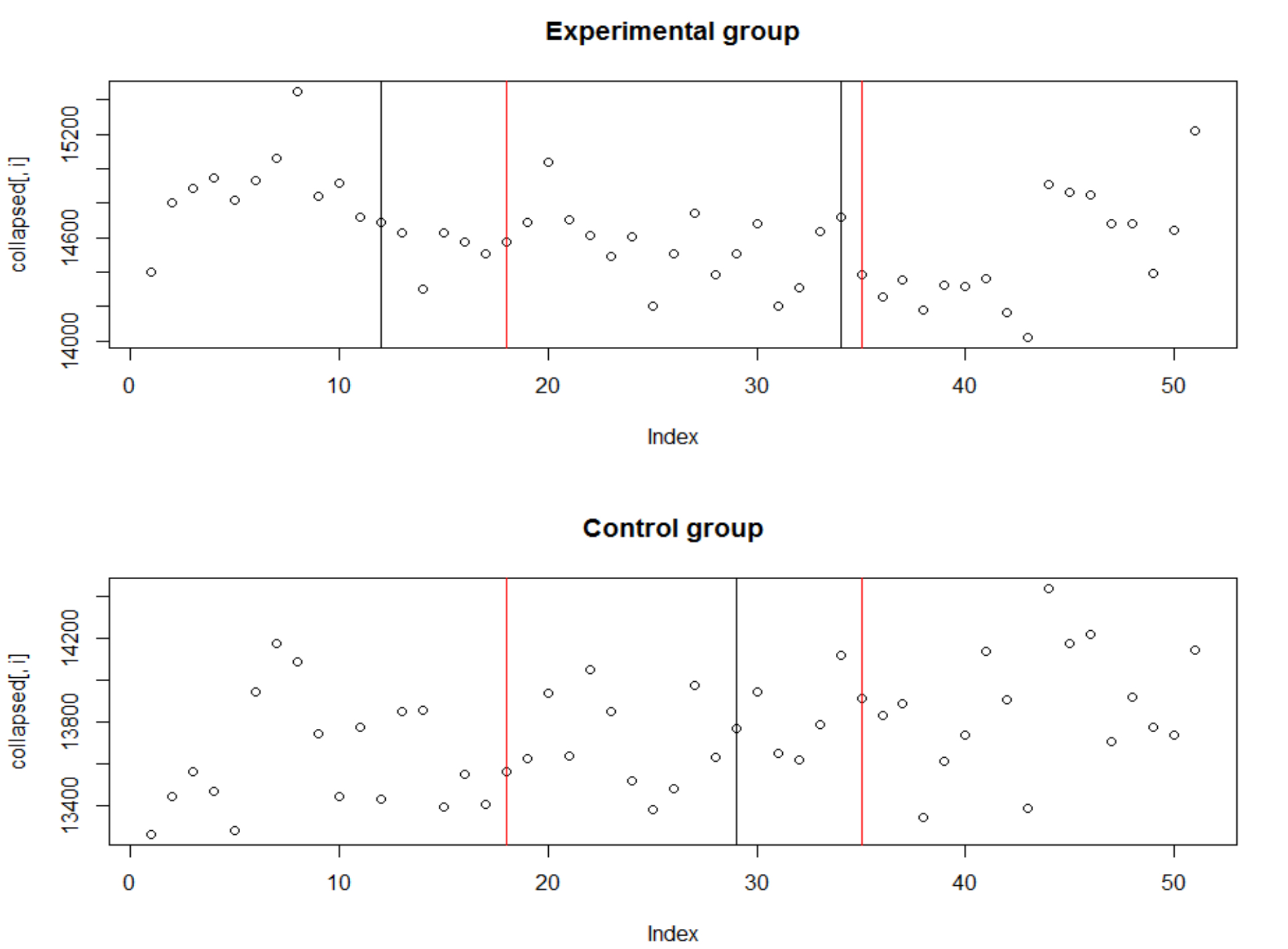
- Behavioral science has an important role to play:
  - Directly reducing household (carbon) emissions.
  - Building bottom-up support and for climate, energy, and environmental policies.

- Humans are not hopelessly irrational and not (always) motivated by money and external incentives.

- Behavioral science offers low-cost, scalable strategies to change human behavior in the long-term.

- Behavioral responses to (new) technology and policies can be modeled and should be integrated in environmental and economic models.

Thank you


Experimental group
collapsed[, i]
14000
14600
15200
0
10
20
30
40
50
Index
Control group
collapsed[, i]
13400
13800
14200
0
10
20
30
40
50
Index


Post
100% NATURAL
WHOLE GRAIN WHEAT
9 OUT OF 10
DOCTORS
RECOMMEND
POST SHREDDED WHEAT
TO HELP REDUCE
THE RISK OF
HEART
DISEASE*
SHREDDED
WHEAT
Original Big Biscuit
16 BISCUITS
NET WT 15 OZ (425g)