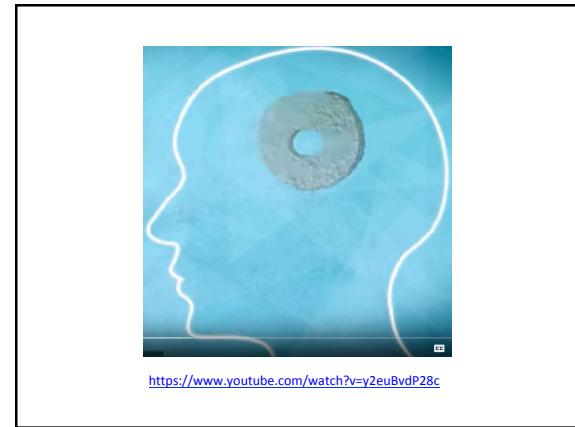


### Psychological Processes

- Assessment of future and distant risks
- Intuitive versus analytic processing
- Confirmatory bias
- Group identity
- Perception of scientific agreement

**1. Assessment of Future and Distant Risks**

- Less than half of Americans, 46%, think they will personally experience harm.
- Nearly half of Americans, 49%, think climate change will not start to harm people in the U.S. for 25 years or more, if ever.



**2. Emotion and Rational Thought**

<https://www.youtube.com/watch?v=y2euBvdP28c>

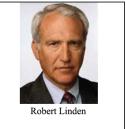
**3. Confirmatory Bias**  
(appears in different forms)

- We seek information that confirms our existing beliefs. ("confirmation bias" or selective attention)
- We interpret new evidence in ways that confirm our existing beliefs. ("biased assimilation")
- We readily accept and express support for ideas that confirm our existing beliefs; and carefully scrutinize and criticize ideas that challenge our existing beliefs. ("motivated reasoning")

*"Reasoning and Google can take you anywhere you want to go."*—Jonathan Haidt, New York University

## Experiment Showing Biased Assimilation (Kahan et al., 2011)

- Is this a trustworthy and knowledgeable expert on global warming?



Robert L. Mendelsohn

**Position:** Professor of Meteorology, Massachusetts Institute of Technology  
**Education:** Ph.D., Harvard University

## Results from Kahan (2011)

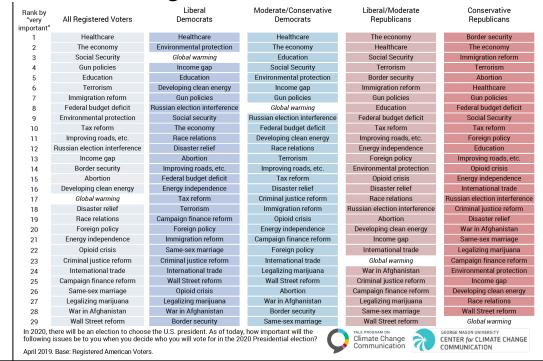
### Percentage Agreeing Author Is an Expert

	High Prior Belief	Low Prior Belief
Excerpt 1 ("beyond reasonable doubt")	88	23
Excerpt 2 ("premature")	47	86

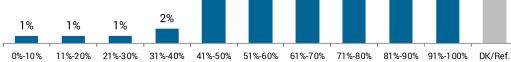
## 4. Group Identity

- Natural selection has favored cohesive groups with shared intentionality and increasing levels of “group-mindedness.”
- Humans have a strong tendency to conform to social norms, feel and share group-related emotions, and be influenced by the people around them and the groups they identify with.
- Our politics is one manifestation of our “groupishness.”
- With regard to climate change, we are politically polarized.

## Political Polarization: Climate Change and the 2020 Presidential Election



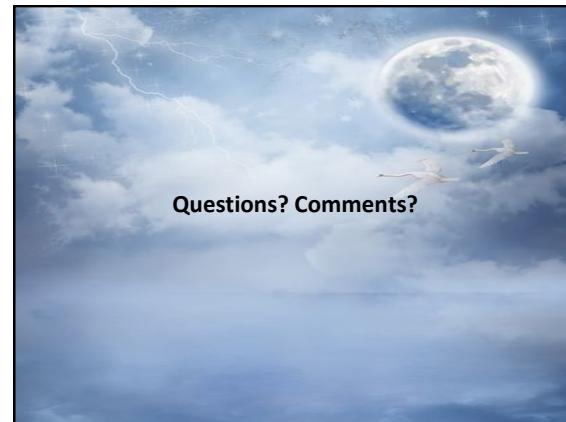
## 5. Perception of Scientific Agreement



To the best of your knowledge, what percentage of climate scientists think that human-caused global warming is happening? Please click on the slider bar below to indicate your answer. You can slide the indicator to the position that best describes your opinion. If the slider does not work, you can enter a number in the number box.

December 2018. Base: Americans 18+ (n=1,114).

CLIMATE CHANGE  
Communication



### Are we doomed by our human tendencies?

*"You almost couldn't design a problem that is a worse fit for our underlying psychology"*—Anthony Leiserowitz, Yale University

- The assessed risk of climate change is low (for most people).
- Emotionally based arguments are privileged, whereas rational or scientific arguments are disadvantaged.
- We are all subject to various forms of confirmatory bias.
- We are "groupish" and politically divided.
- Perceived scientific consensus is low (for many people).

### 1. Assessment of Future and Distant Risks—Reasons for Optimism

- To some extent, people can detect changes in local temperature and precipitation patterns that are borne out by climatic records.
- As extreme weather events increase in frequency and sea level rises, climate change will be seen as a greater risk—not by everyone, but by the majority of people.
- Climate communicators can emphasize the present and make the impacts and solutions locally relevant.

### 2. Emotion and Rational Thought—Reasons for Optimism

- Climate scientists and climate communicators are getting better at "speaking to both parts of the brain." They've learned that:
  - Scientific analysis, statistics, and graphs alone do not motivate people.
  - Images, videos, and personal stories are more effective in changing risk perceptions, beliefs, and willingness to take action.
  - The most effective communications target both processing systems.
  - Overly emotional appeals and sensational images can backfire.

### We Can Learn to Talk to Each Other's Emotional Elephant

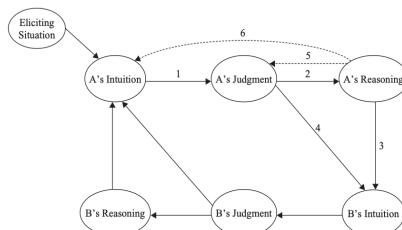


Figure 2. The social intuitionist model of moral judgment. The numbered links, drawn for Person A only, are (1) the intuitive judgment link, (2) the post hoc reasoning link, (3) the reasoned persuasion link, and (4) the social persuasion link. Two additional links are hypothesized to occur less frequently: (5) the reasoned judgment link and (6) the private reflection link.

### 3. Confirmatory Bias—Reasons for Optimism



- We can direct attention to non-politicized sources in an effort to combat selective attention to politically polarized and polarizing media.
- If we can improve public understanding of climate science and trust in scientists, biased assimilation will work in a pro-climate direction.
- The human tendency towards motivated reasoning can sometimes be overcome (e.g., when people talk to each other's emotional elephant or when Republicans receive scientific consensus messaging).

### 4. Group Identity—Reasons for Optimism

- "Moral framing" can shift conservatives' beliefs and behaviors.
- It may be possible to create narratives that could engage people on the right in a constructive dialogue about climate change.

### Moral Foundations Theory

- *Care* makes us sensitive to harm, suffering, and need.
- *Liberty* makes us sensitive to oppression, threats to individual liberty.
- *Fairness* makes us sensitive to inequality, not receiving equal treatment, or disproportionality, getting more than what was earned.

Recommended book:  
Haidt, Jonathan (2012). *The righteous mind: Why good people are divided over politics and religion*. Vintage Books.

### Moral Foundations (continued)

- *Loyalty* makes us sensitive to betrayal, whether someone is or isn't behaving as a loyal member of a group.
- *Authority* makes us sensitive to subversion, undermining authority.
- *Sanctity* makes us sensitive to degradation, such as threats to our health or sacred values.

### Moral Foundations and Politics

	Care/ harm	Liberty/ oppression	Fairness/ cheating	Loyalty/ betrayal	Authority/ subversion	Sanctity/ degradation
Liberals	H	M	M	L	L	L
Social Conservatives	M	M	M	M	M	M
Libertarians	L	H	M	L	L	L

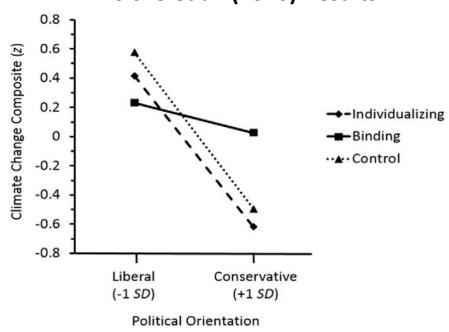
Key: H = High sensitivity  
M = Medium sensitivity  
L = Low sensitivity

### Moral Framing: Red, White, and Blue Enough to Be Green

(Wolsko et al., 2016)

- Participants were asked to read a pro-environment public service message emphasizing:
  - care/harm and fairness/justice (liberal framing), OR
  - loyalty, authority, purity, and patriotism (conservative framing)
- Participants answered questions measuring their climate change beliefs, conservation intentions, and willingness to make a donation to the Environmental Defense Fund.

### Wolsko et al. (2016) Results



### Narratives to Engage People on the Right

(Whitmarsh & Corner, 2017)

- "Left," "Center-right," and "Far Right" participants read a letter to a newspaper editor that emphasized:
  - avoiding waste and conserving energy,
  - national energy self sufficiency through solar and wind, OR
  - poor countries suffering most, despite being least responsible
- Outcome measures included agreement with and reaction to the letter, climate skepticism, risk perception and climate concern, support for government policy and lifestyle change, and willingness to act.

### Whitmarsh & Corner (2017) Results: Cautious Optimism

- The Waste narrative elicited broad agreement across the political spectrum, whereas the Justice narrative polarized the participants. BUT
- Far Right participants thought that the Waste narrative was exaggerated or hyperbolic.
- Evidence was thin for changing underlying beliefs to bring the political groups closer together.
  - For the Waste narrative, only climate skepticism showed convergence.
  - For the Great British Energy narrative, only support for lifestyle changes showed convergence.

Questions? Comments?

### 5. Perception of Scientific Agreement— Reasons for Optimism

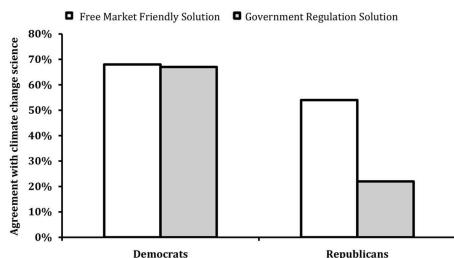
- Discussion of climate change among friends and family can increase people's belief in the scientific consensus on climate change.
- Belief in the science depends on the proposed solution!*
- "Consensus messaging" increases people's belief in the scientific consensus on climate change. And there are LARGER POSITIVE EFFECTS for conservatives, Republicans, and people with low prior belief in global warming (!)

### Solution Aversion

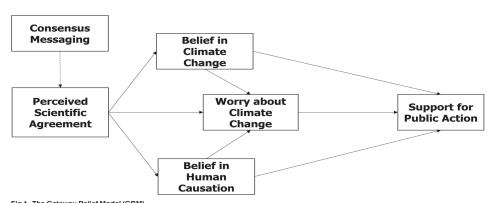
(Campbell & Kay, 2014)

- Participants were presented with one of two climate change solutions, either free market friendly or heavily regulatory.
- Republicans reported higher belief in human causation when the solution was free market friendly.
- When the solution was free market friendly, Republicans were more likely to agree with the scientists' prediction that there will be an increase of 3° F in the 21<sup>st</sup> century.

### Campbell & Kay (2014) Results



### Gateway Belief Model



Source: van der Linden, S., Leiserowitz, A., & Maibach, E. (2019). The gateway belief model: A large-scale replication. *Journal of Environmental Psychology*, 62, 49–58.