Building consensus for ambitious climate action through the *World Climate Simulation*

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MIT MANAGEMENT Sustainability Initiative

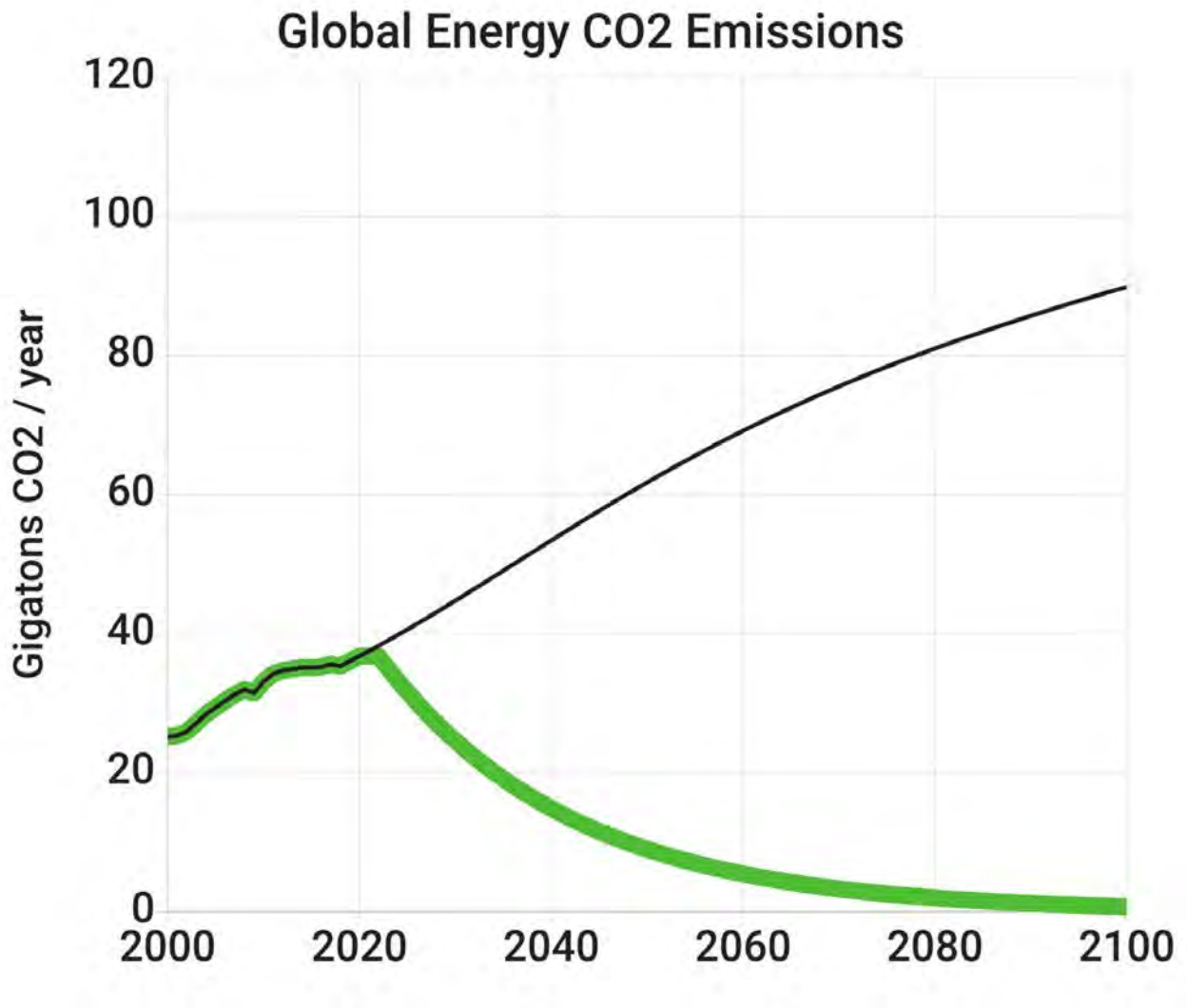
COE

COUNCIL for OPPORTUNITY in EDUCATION

AUBURN UNIVERSITY

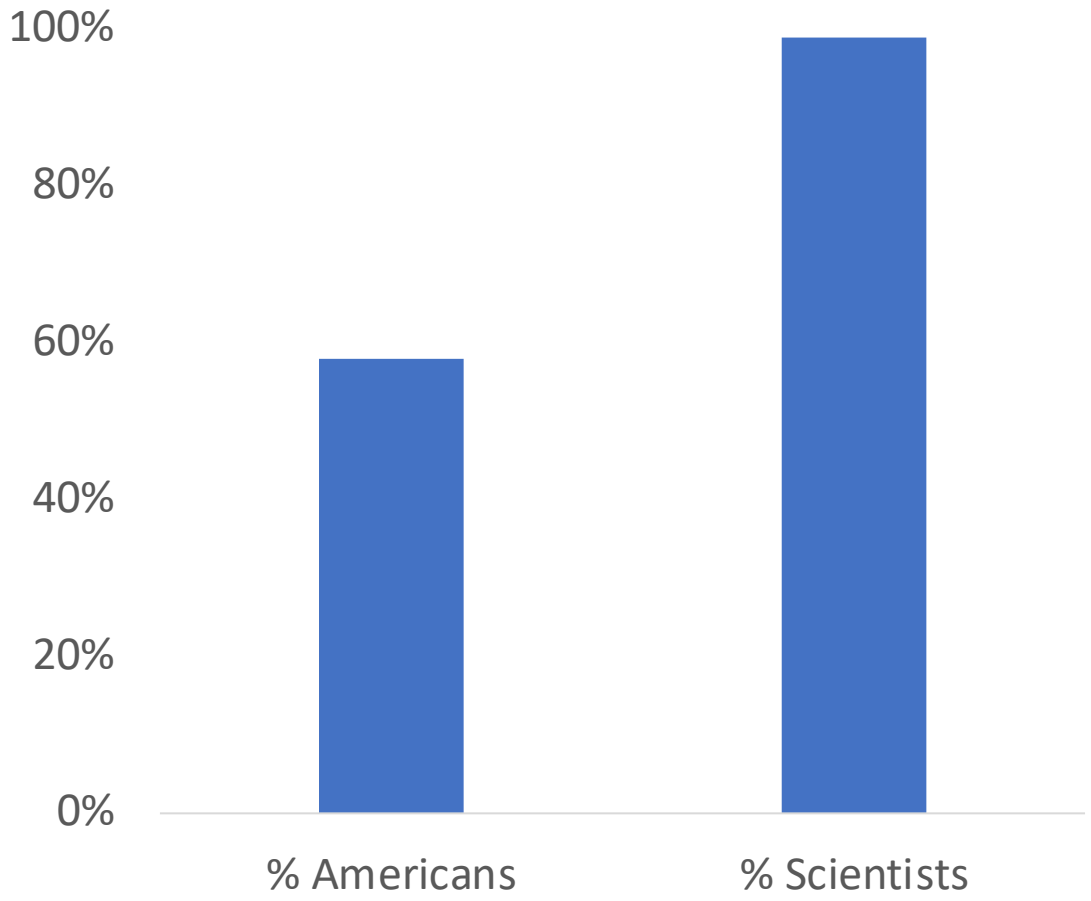
Full paper available here: https://www.essoar.org/doi/10.1002/essoar.10507402.1

The emissions gap



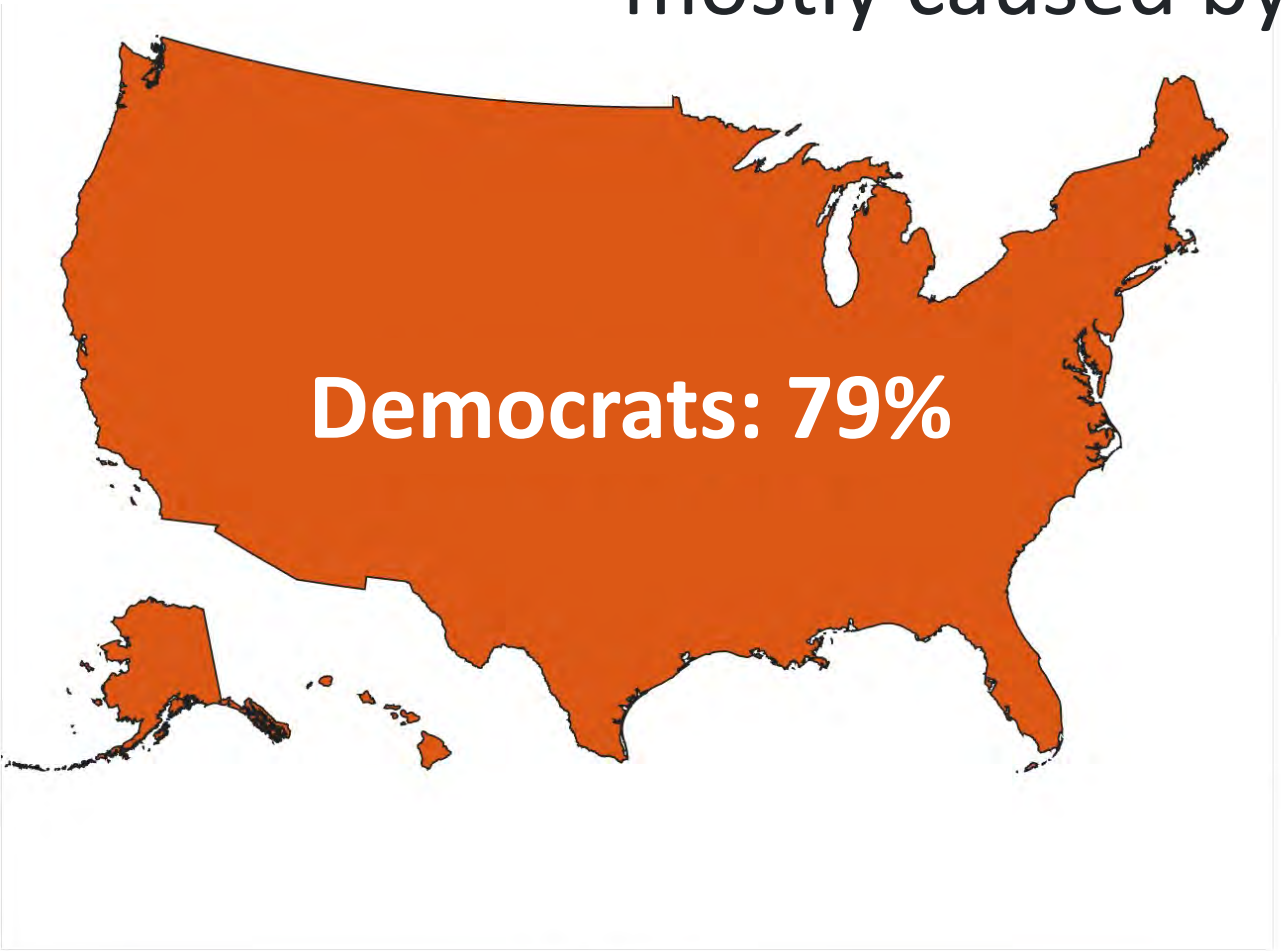
… and the belief gap

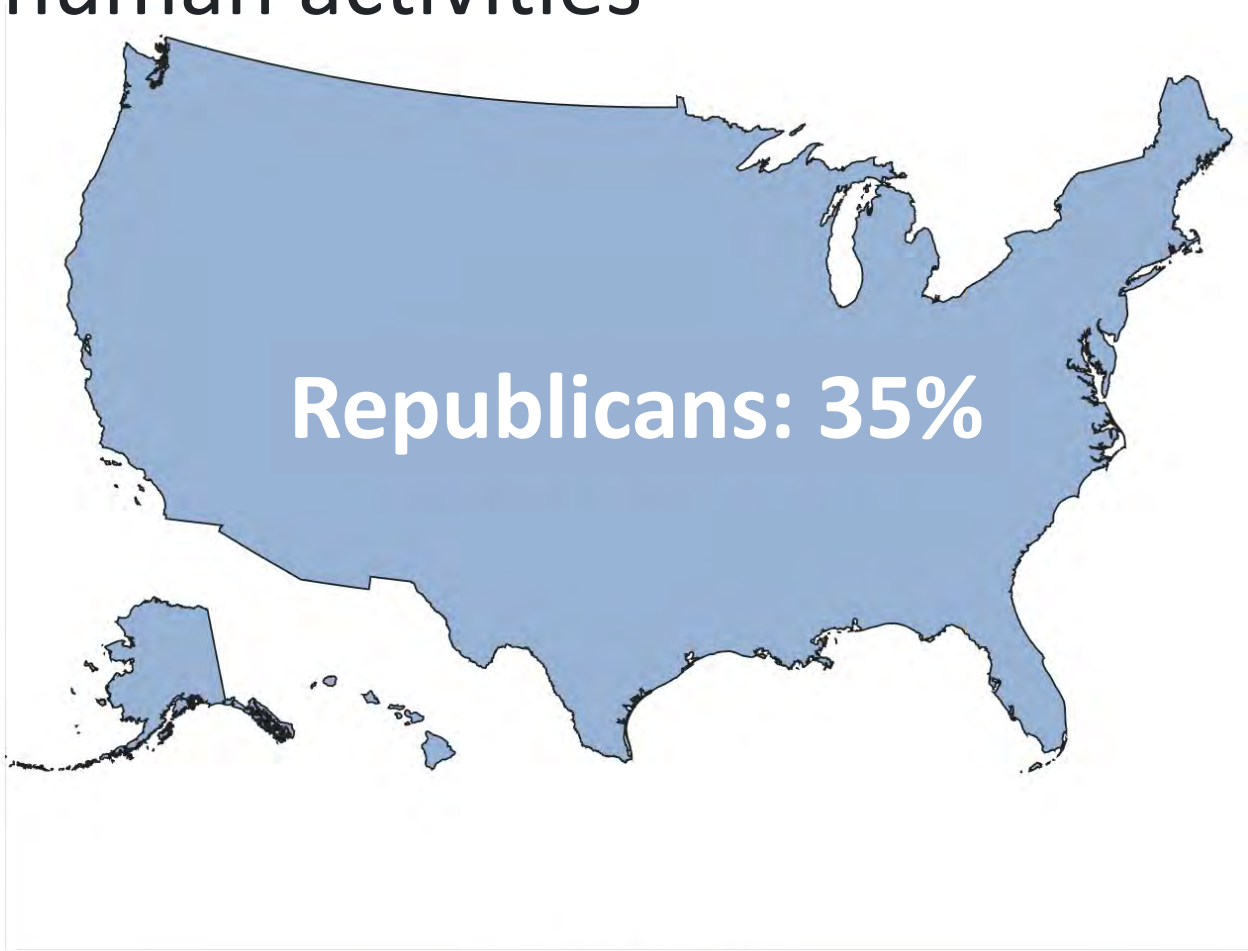
Believe that climate change is real and caused by human activity

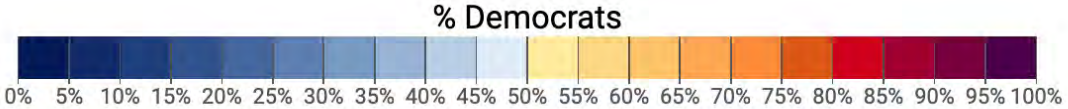


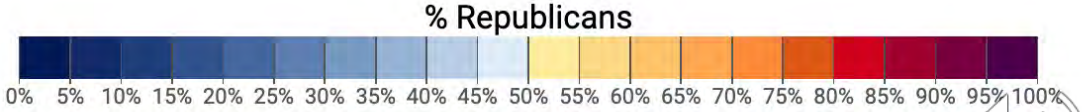
Source: Leiserowitz et al. (2018). P[illegible]ics & global warming, March 2018. Yale Univ.

Estimated % of registered voters who think global warming is mostly caused by human activities









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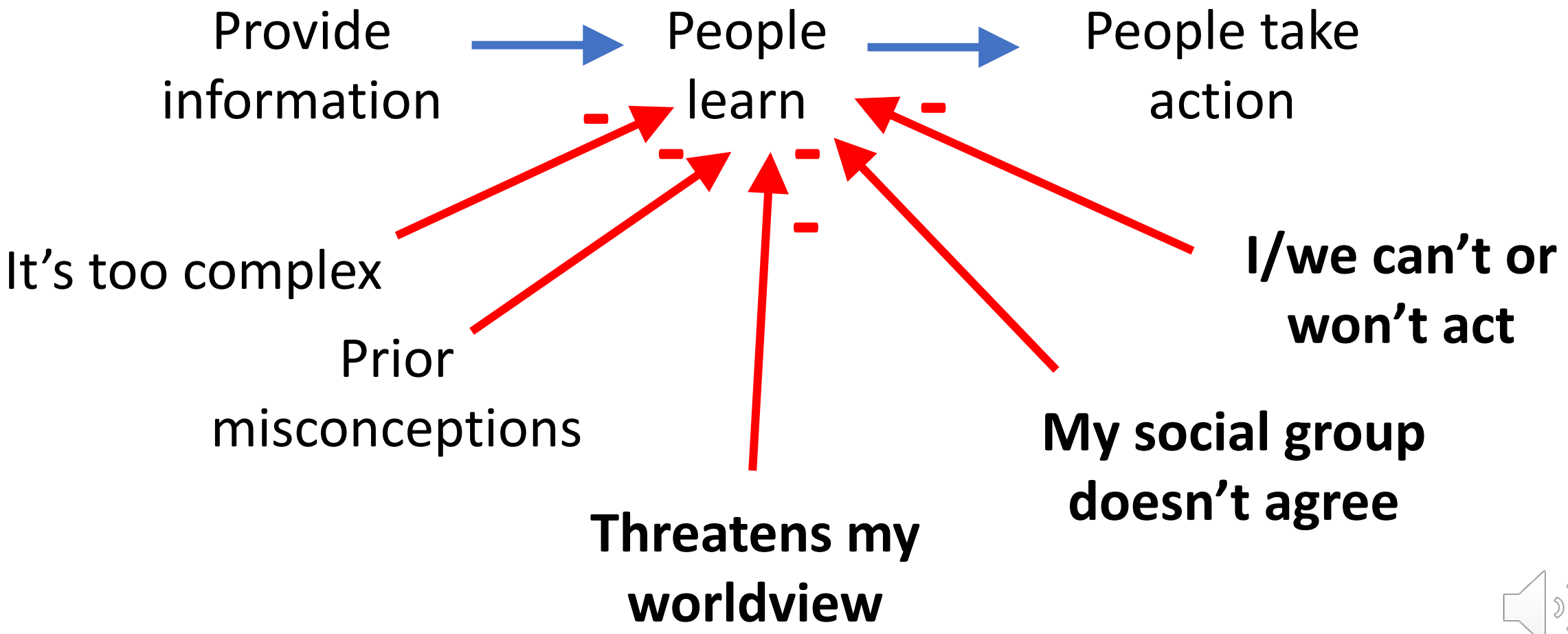
UtahState University

YALE PROGRAM ON Climate Change Communication

Factors that affect if/how we process information



‘Cultural cognition’ thesis

- **Identity-protective** motivated reasoning
- We unconsciously assimilate or reject new information in a way that **reinforces our connections with a social group**
- ‘Sociopolitical worldview’
- **‘Communitarian-egalitarians’** value interdependence and equal status across gender, age, heritage, ethnicity
- **‘Individualist-hierarchs’** value individual freedom, competition, and clearly defined social hierarchies

Kahan et al. 2012. DOI:10.1038/nclimate1547

Can a combination of role-play and interactive simulation overcome barriers to learning AND depolarize climate change?

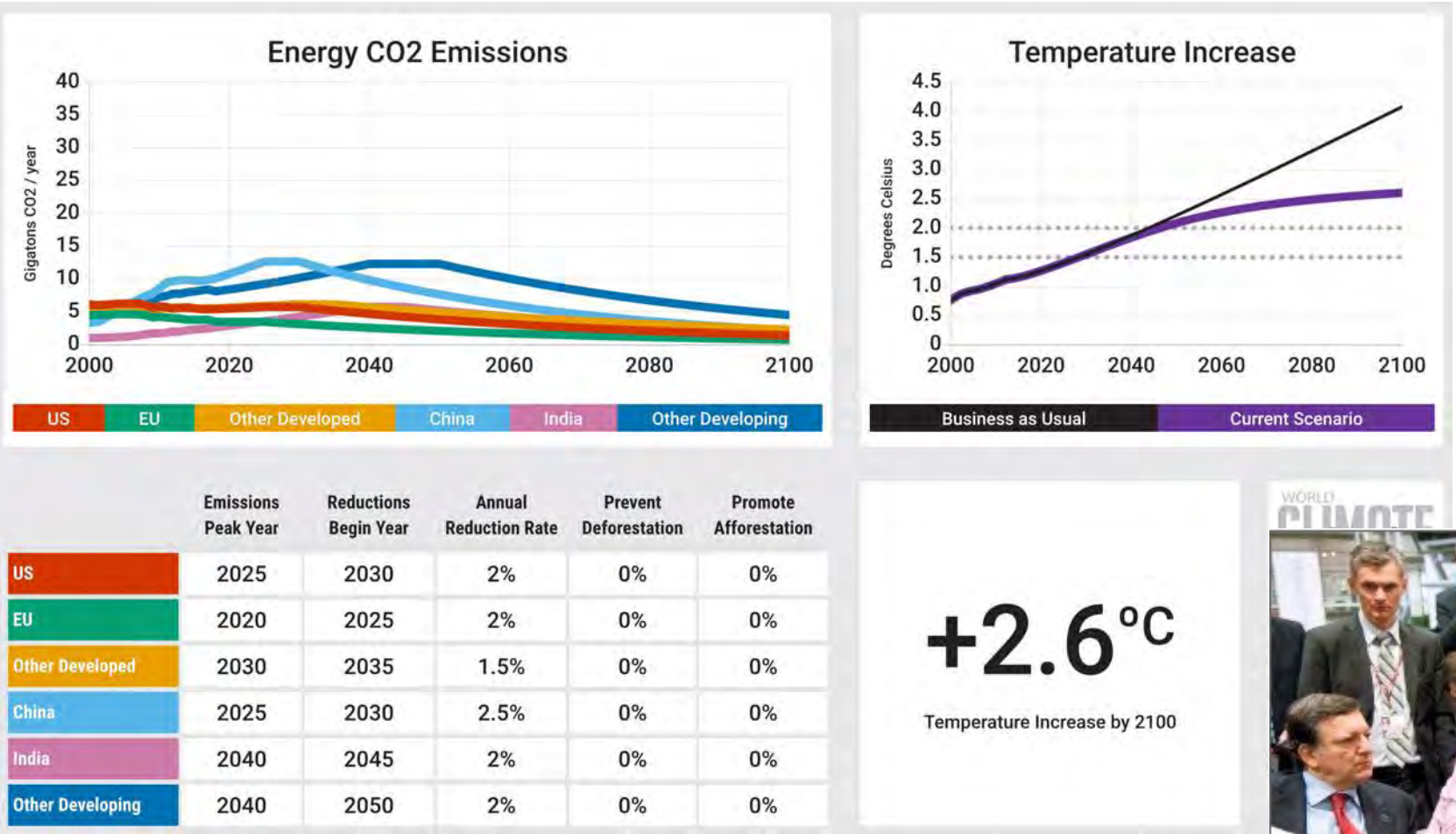
- **Facilitated deliberation** with a clear objective can reduce polarization and enable effective problem-solving (Dryzek et al. 2019).

- ***World Climate Simulation*** **enables people to learn – and feel – for themselves about climate change**, motivating science-based climate action (Rooney-Varga et al. 2018).
- Findings hold for participants who oppose government regulation of free markets

The *World Climate Simulation*

- Engaging, interactive role-play simulation
- All facilitation and participant materials are freely available
- Participants take on the role of **policymakers and leaders** who are charged with **negotiating** a global agreement to address climate change.

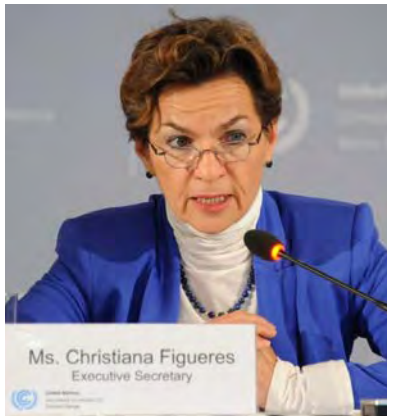
C-ROADS climate policy model

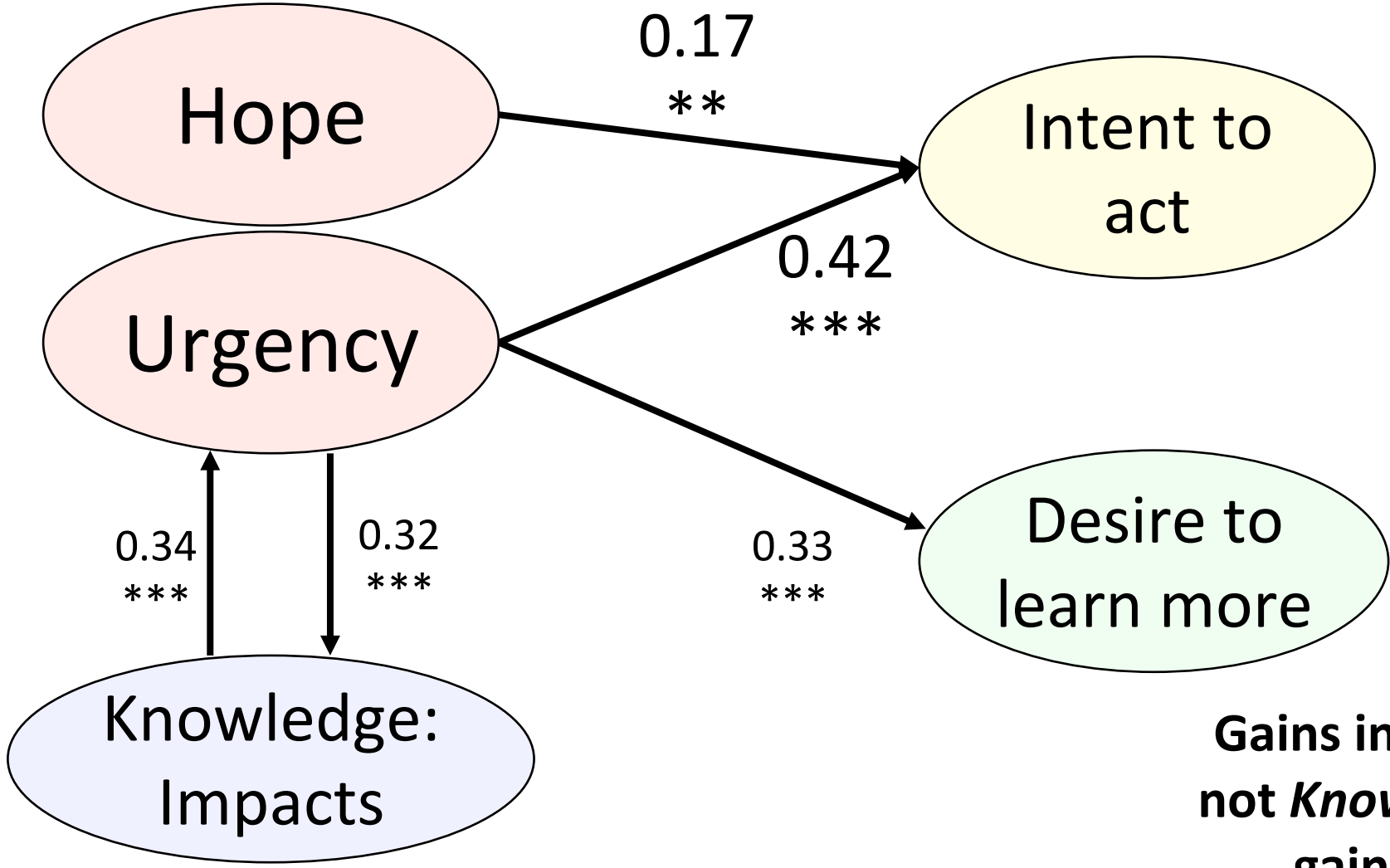


	Emissions Peak Year	Reductions Begin Year	Annual Reduction Rate	Prevent Deforestation	Promote Afforestation
US	2025	2030	2%	0%	0%
EU	2020	2025	2%	0%	0%
Other Developed	2030	2035	1.5%	0%	0%
China	2025	2030	2.5%	0%	0%
India	2040	2045	2%	0%	0%
Other Developing	2040	2050	2%	0%	0%

+2.6°C

Temperature Increase by 2100



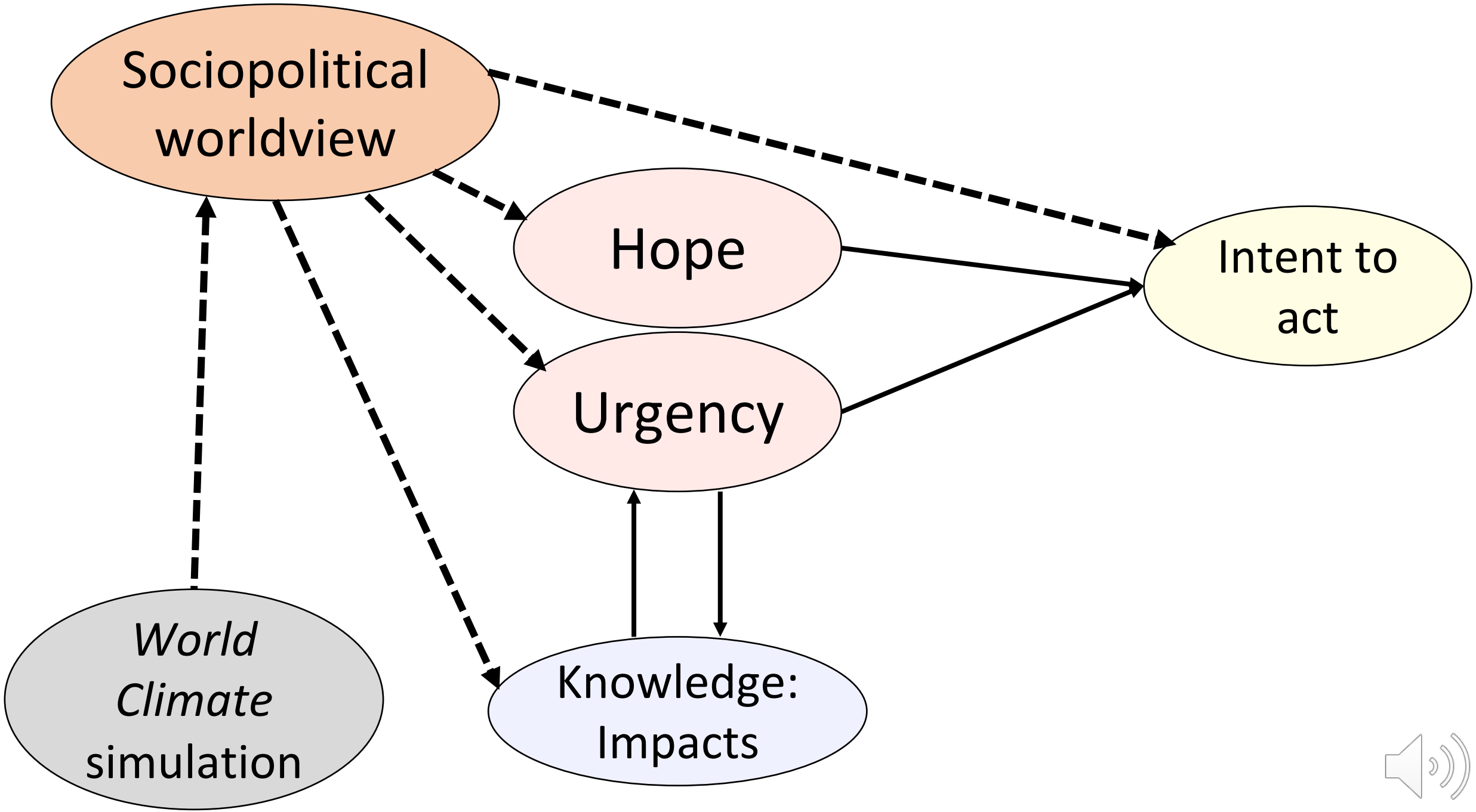


Gains in *Urgency* and *Hope*, not *Knowledge*, are linked to gains in *Intent to Act*

*** $p \leq 0.001$
** $p \leq 0.01$
* $p \leq 0.05$
+ $p < 0.1$

N = 2,042

Rooney-Varga et al. 2018. PLoS1.


Sociopolitical worldview
Hope
Intent to act
Urgency
World Climate simulation
Knowledge: Impacts

Experimental approach

- **Pre/post-survey design**
- **Sociopolitical worldview** (Kahan et al. 2012)
- Climate change **knowledge,** sense of **urgency and hope,** and **intent to take action** (constructs in Rooney-Varga et al. 2018)

Participants' comments: Social forces matter

- ***"Talking and debating with other groups made me see different perspectives…."***
- *"After this workshop* ***I realized that climate change is not an individual problem*** *anymore****. It needs collective efforts*** *of many countries to actively solve the wicked problem…"*
- ***"I did convert some non-believers in my cohort!***

Shifts in participants' worldview

- **Shift from more individualistic-hierarchical towards communitarian-egalitarian** worldview
  - (p <0.0001; effect size 0.3, N = 594)
- No statistically significant shift for participants with more communitarian-egalitarian worldview pre-simulation.
- Key finding: ***Worldview can and does shift as participants work together to achieve climate solutions through collective action***

General mixed models test for interactions between worldview and learning impact

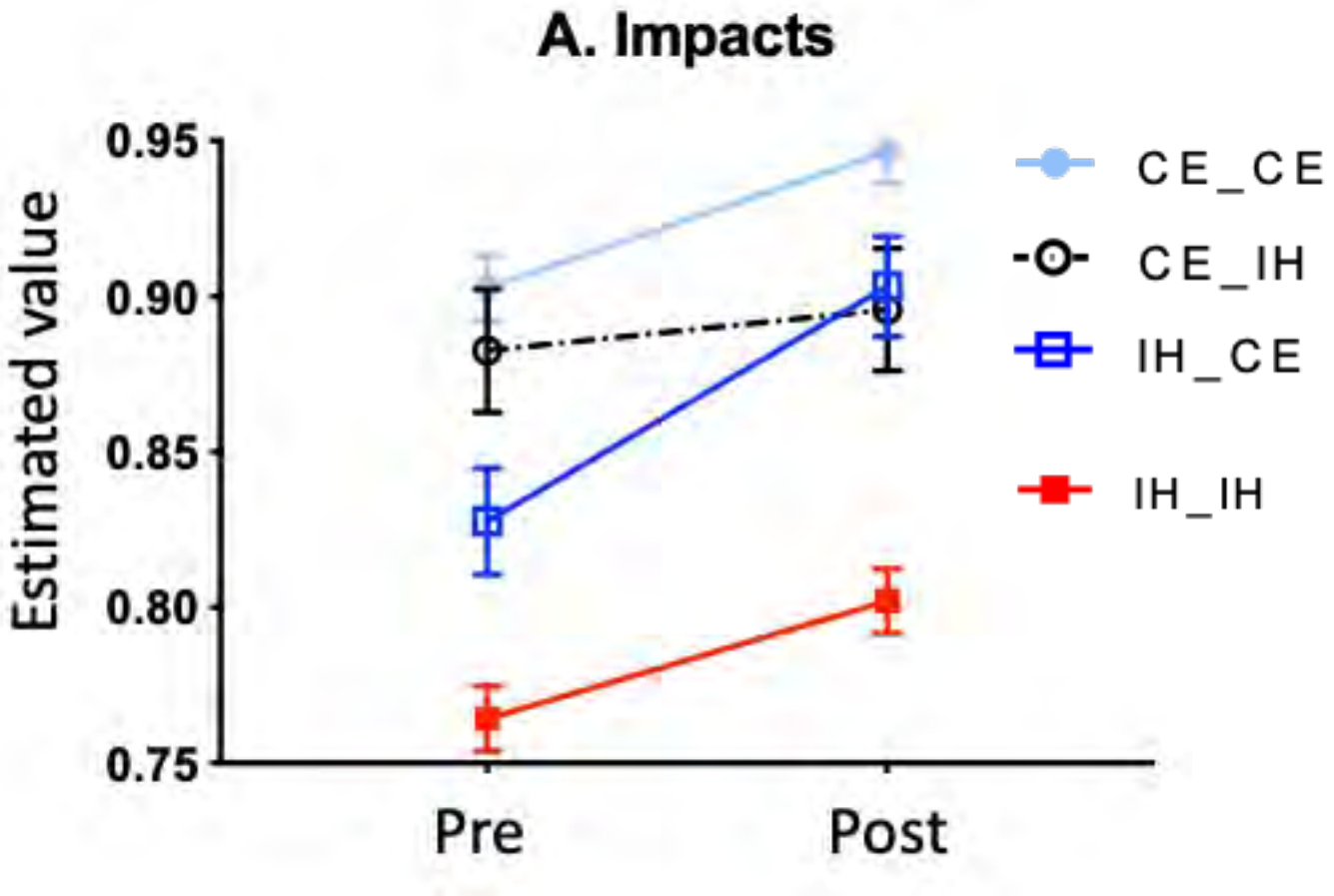
CE_CE
participants who begin and end simulation with more communitarian-egalitarian worldviews
N = 484

IH_CE
participants who begin simulation with more IH and end simulation with more CE worldviews
N = 109

IH_IH
participants who begin and end simulation with more individualist-hierarchical worldviews
N = 420

CE_IH
participants who begin simulation with more CE and end simulation with more IH worldviews
N = 88

Interactions between **worldview** and knowledge about climate change *impacts*

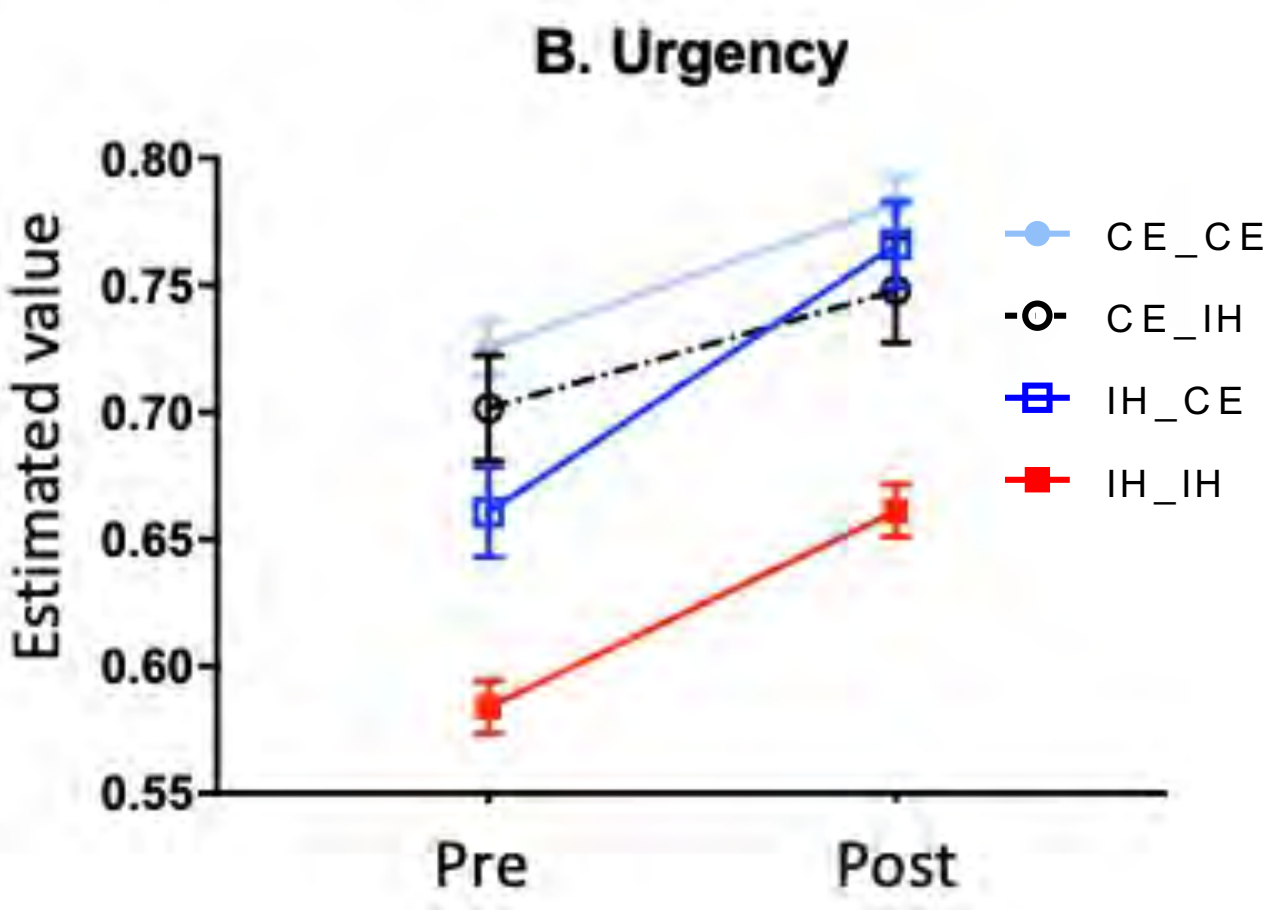


Key findings:

- **Worldview is correlated with knowledge about impacts**, with individualist-hierarchs (IH_IH) participants having the lowest level of knowledge and communitarian-egalitarians (CE_CE) highest (p <0.0001).

- **All worldview groups make significant gains pre- to post-sim** (p <0.0001).

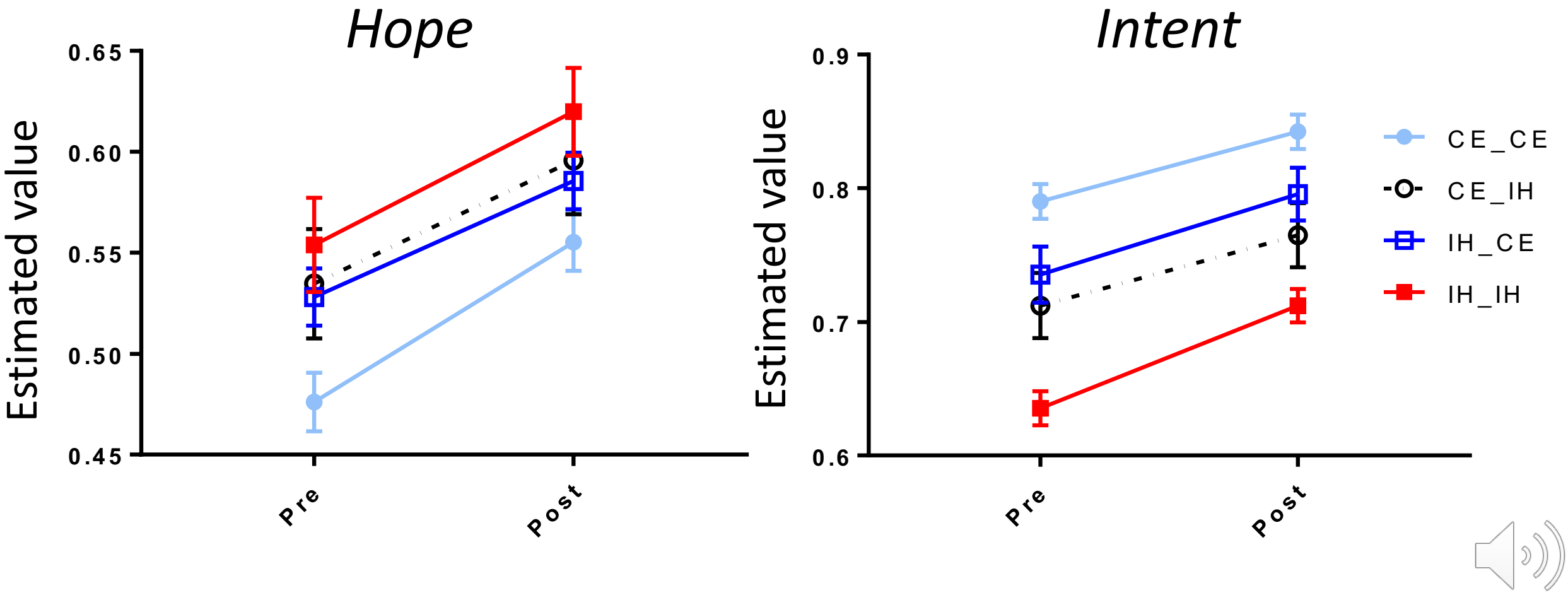
Interactions between **worldview** and sense of *urgency* about climate change



Key findings:

- **Worldview is correlated with sense of urgency**, with individualist-hierarchs (IH_IH) participants having the lowest level and communitarian-egalitarians (CE_CE) highest (p <0.0001).
- **All worldview groups make significant gains pre- to post-sim** (p <0.0001).
- **Greatest gains are made by individualist-hierarchs** (p <0.01)

Participants' sense of *hope* and *intent* to take action show similar trends:



Key findings

- **Sociopolitical worldview impacts climate change beliefs and attitudes** in our sample and in general population in US
- **Simulated experiences,** like *World Climate,* can **overcome social barriers to learning about climate change** and can even shift worldview, helping to **depolarize climate change**.
  - **Credible, expert information (C-ROADS)**
  - **Active learning**
  - **Facilitated deliberation**
  - **Messenger = participants**
  - **A shared objective**
  - **Simulated collective efficacy**

Next steps and thanks!

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