



Motivated attention in climate change perception and action



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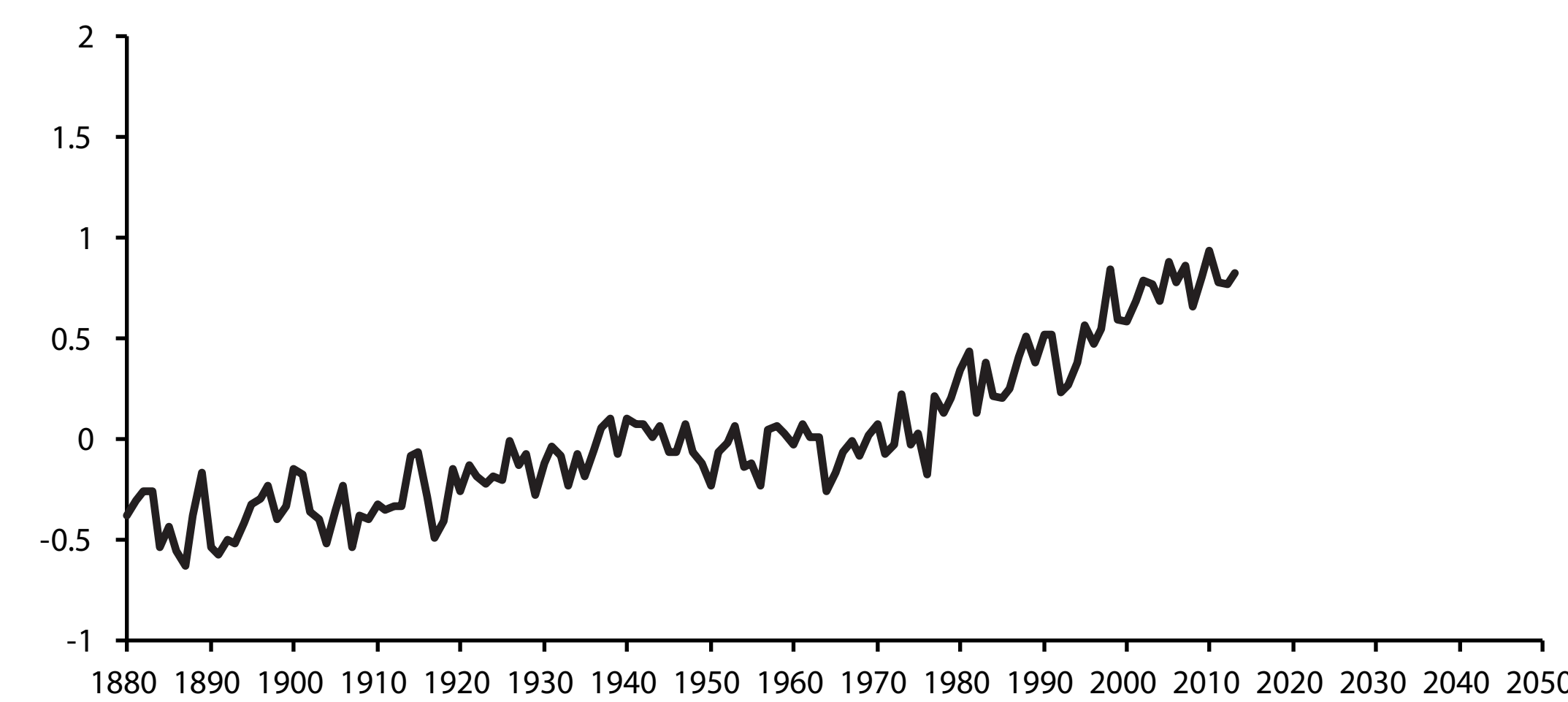
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How does motivated attention bias climate change perception and action?

General paradigm

Condition 1: Global temperature

The graph below shows the global temperature change from 1880 to 2014:



Estimation: What is average global temperature change from 1880 to 2014?

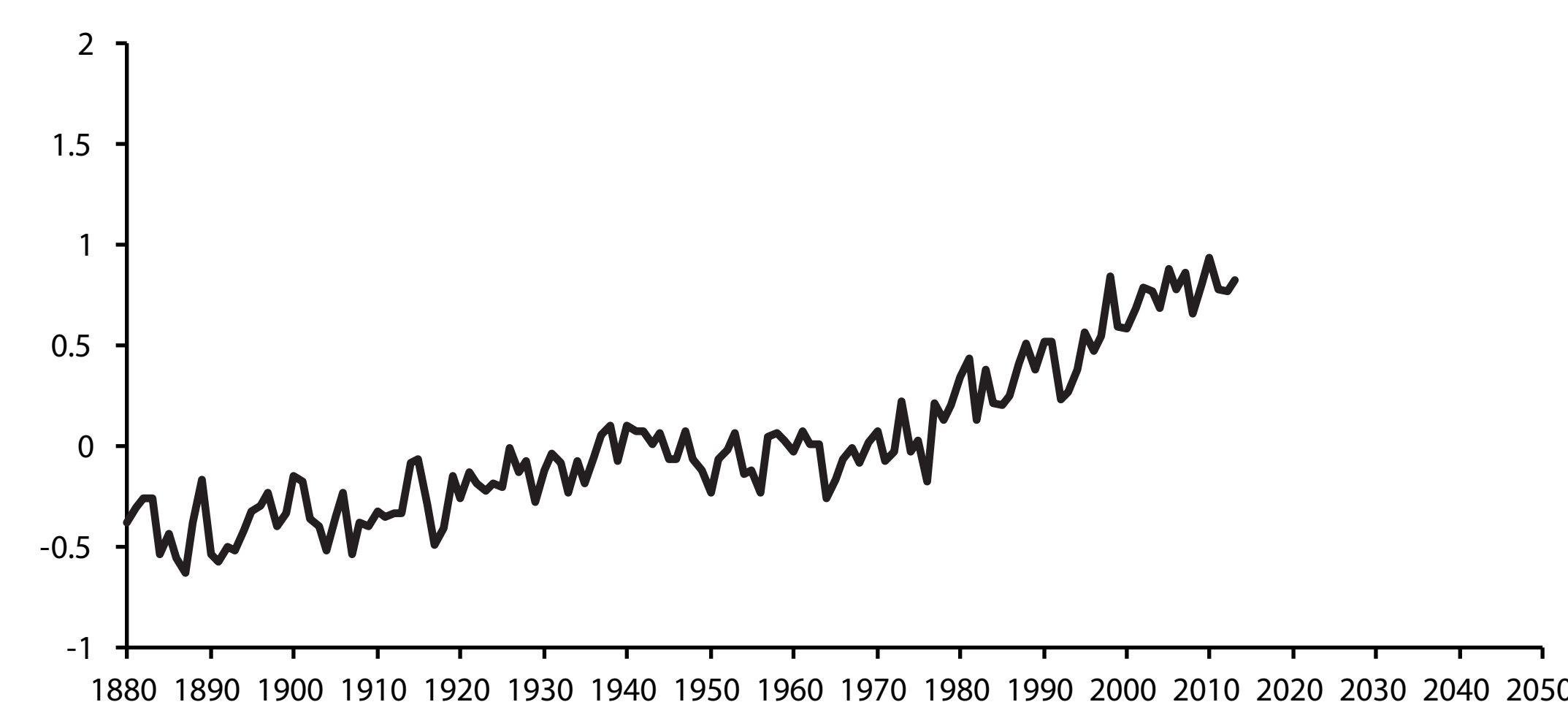
Prediction: What is your prediction about the average global temperature change from 2014 to 2050?

What is your political orientation?

(Rate on a scale from -5=very liberal to 5=very conservative)

Condition 2: Neutral

The graph below shows some value change from 1880 to 2014:



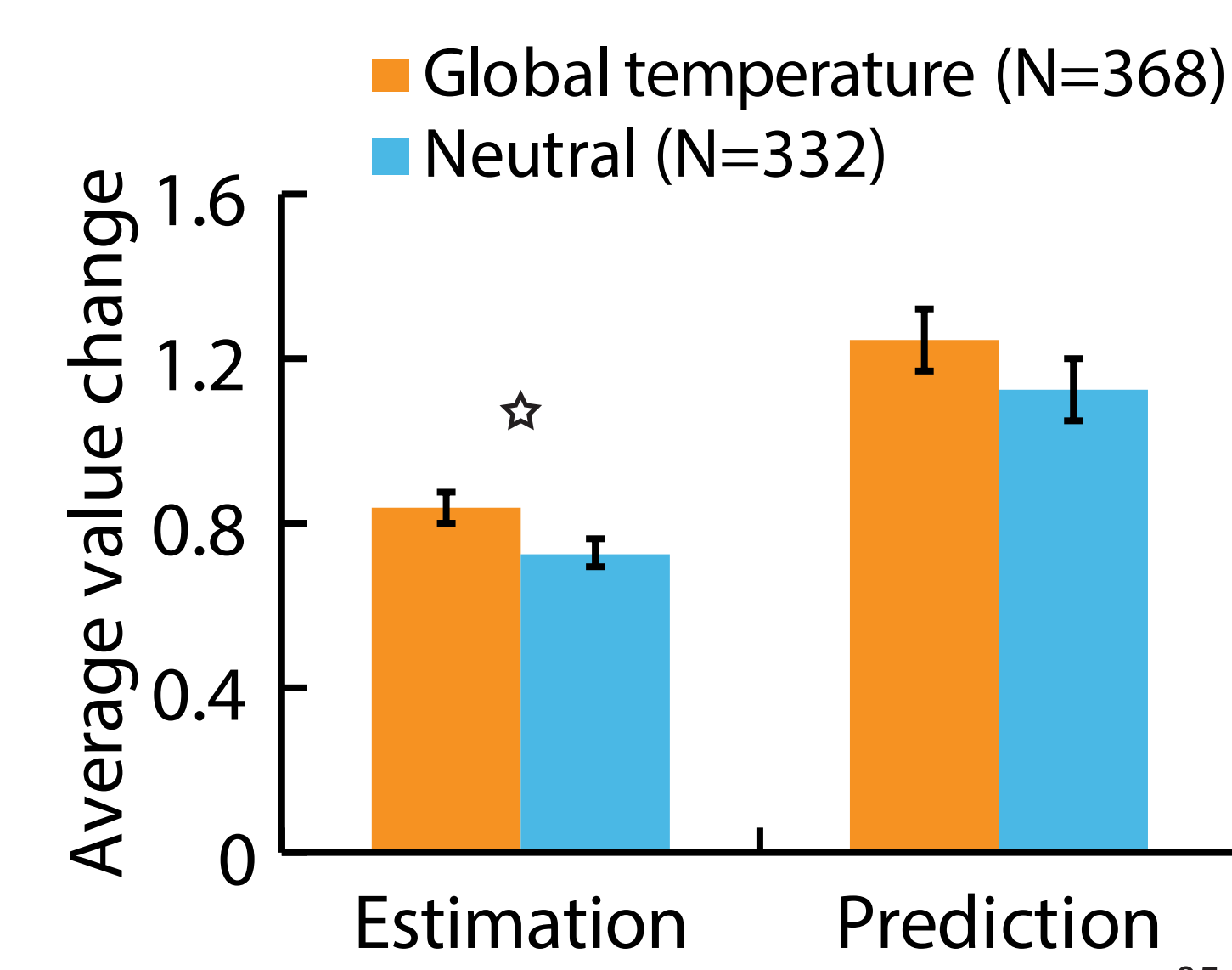
Estimation: What is average value change from 1880 to 2014?

Prediction: What is your prediction about the average value change from 2014 to 2050?

What is your political orientation?

(Rate on a scale from -5=very liberal to 5=very conservative)

Experiment 1: Perception of climate change evidence



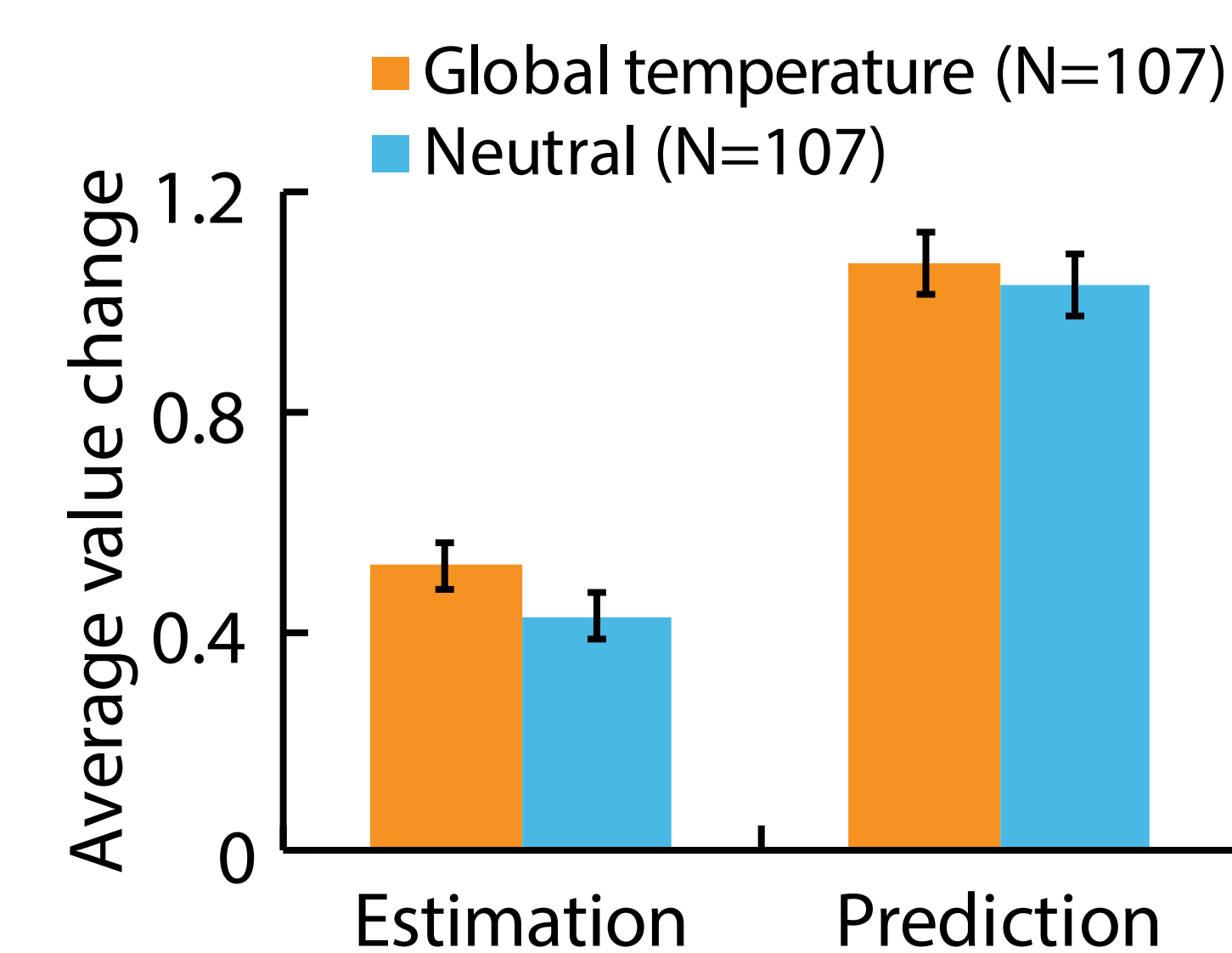
Higher estimation in the global temperature condition than in the neutral condition [$t(698)=2.06, p=.04, d=0.16$]

No difference in prediction between the global temperature condition and the neutral condition [$t(698)=1.15, p=.25, d=0.09$]

Political orientation predicted estimation only in the global temperature condition [$\beta=-0.04, t(698)=2.08, p<.01$]

More liberalism is associated with a higher estimation of global temperature change

Experiment 2: Motivated attention to climate change evidence

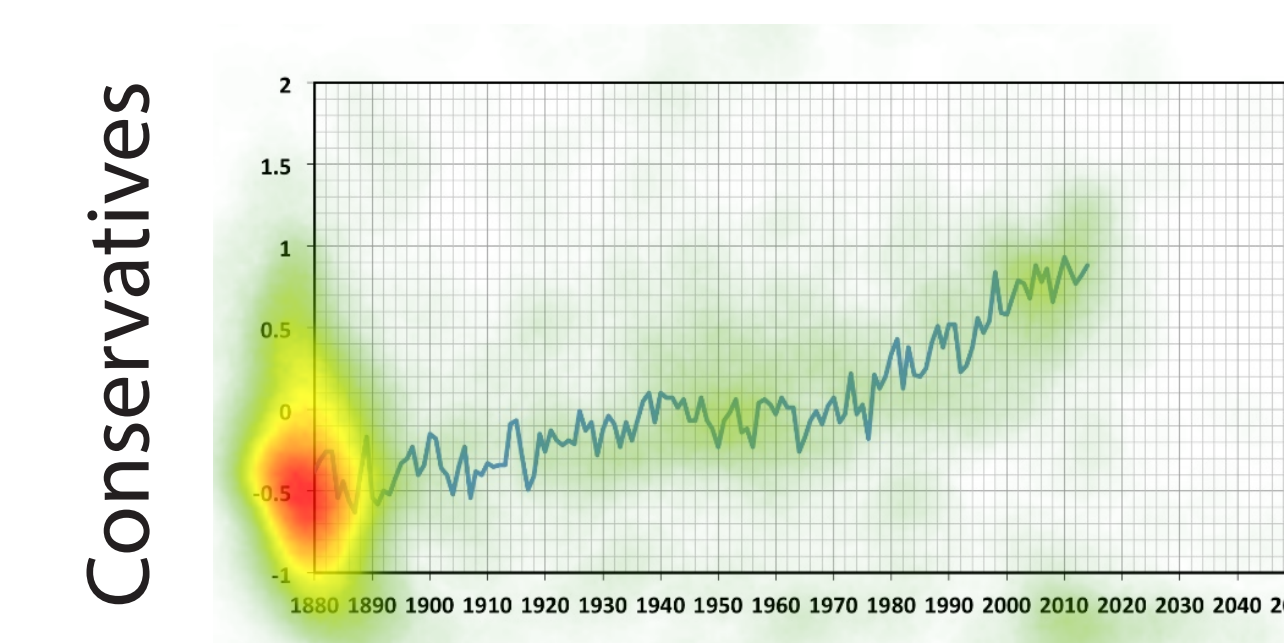
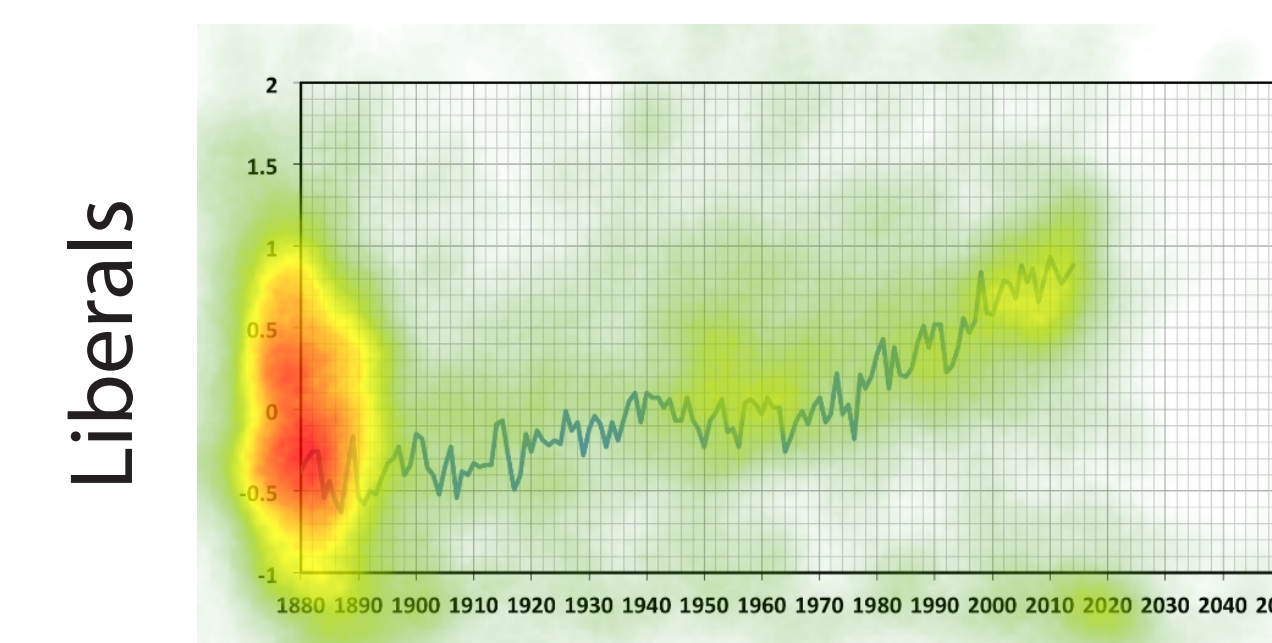


Estimation was predicted by dwell time at the rising phase of the graph [$\beta=0.000094, t(101)=2.09, p=.039$] only in the global temperature condition

For liberals (below 0 on the political orientation scale), more dwell time on the rising phase of the curve was associated with a higher estimation of the global temperature change [$\beta=0.00014, t(66)=2.70, p=.009$]

However, for conservatives (above 0), more dwell time on the flat phase was associated with a lower estimation of global temperature change [$\beta=-0.00025, t(17)=-2.02, p=.06$]

Fixation heatmaps



Liberals may prioritize the rising phase of the curve, but conservatives may prioritize the flat phase

Experiment 3: Actions to mitigate climate change

Paradigm

Task: move the mouse to reveal the graph



Pledges:

1. Climate-related: I pledge to stand with The Nature Conservancy as we call on U.S. leaders to stand strong on climate change.
2. Non-climate-related: I pledge to not cut food aid to low income children.

Donations:

1. Environmental organization: Would you be willing to donate to Natural Resources Defense Council?
2. Non-environmental organization: Would you be willing to donate to World Vision?

Results

Signing a climate-related pledge

	No	Yes
Conservatives	27	4
Liberals	25	23

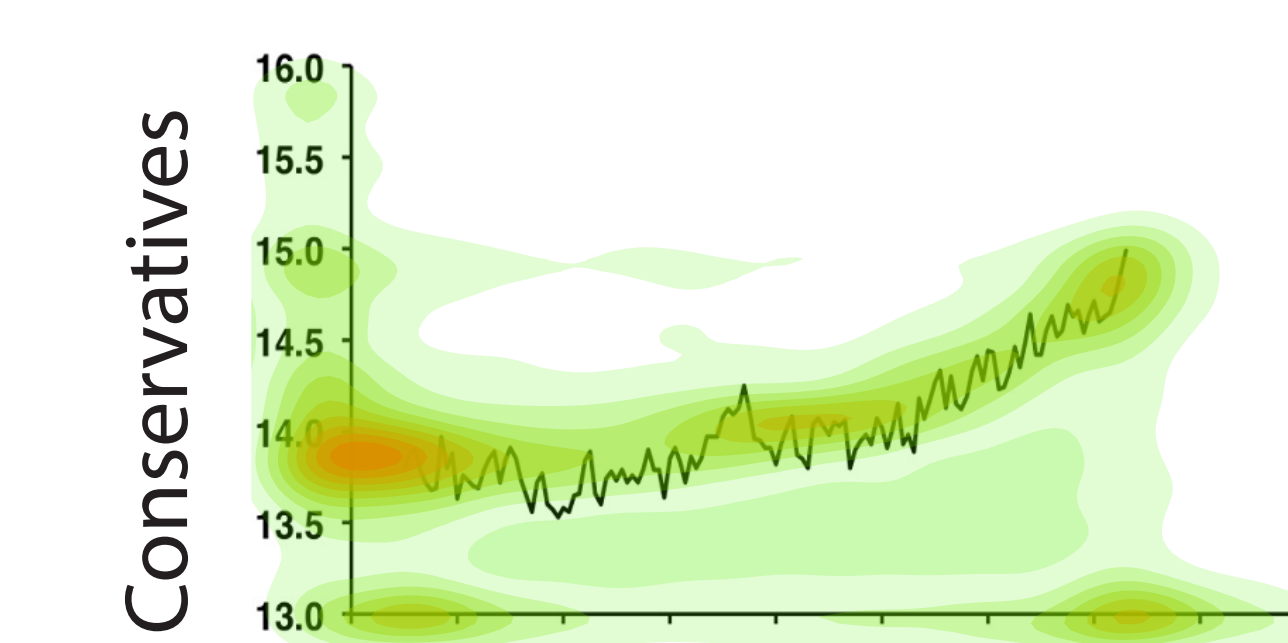
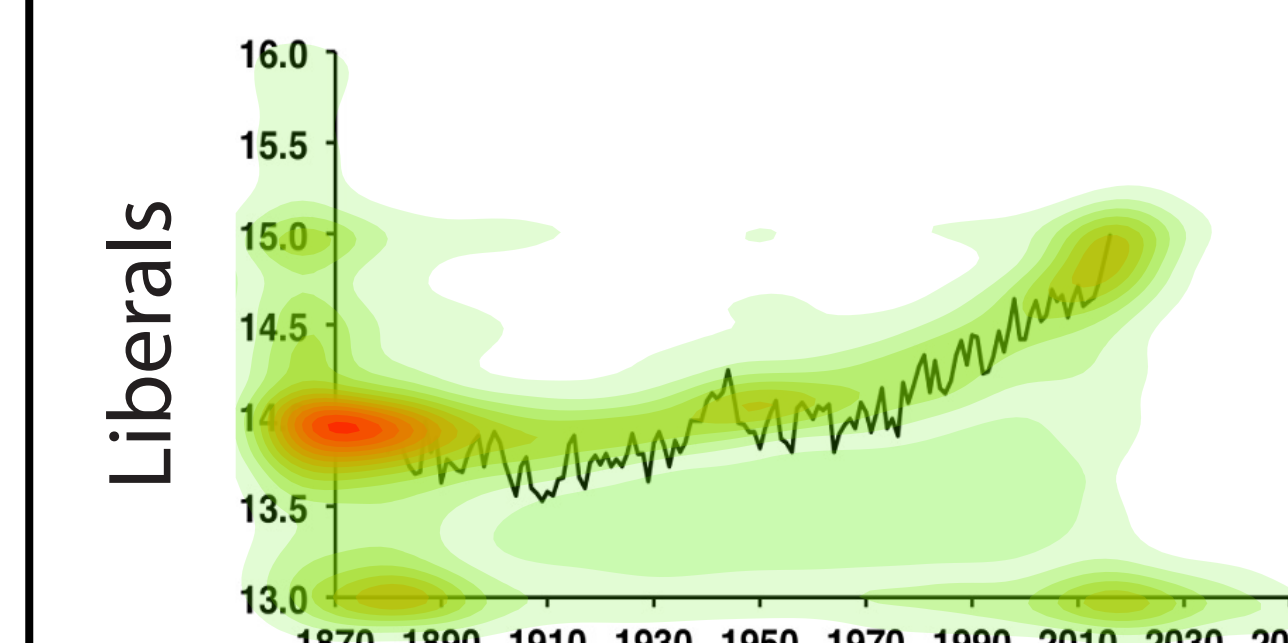
In the global temperature condition, conservatives were less likely to sign a climate-related pledge [$\chi^2(1)=10.82, p=.001$], or numerically less likely to donate [$\chi^2(1)=0.92, p=.34$] than liberals

Donating to an environmental organization

	No	Yes
Conservative	24	7
Liberal	31	17

However, among conservatives, those who focused more on the rising phase of the curve were marginally more willing to sign a climate-related pledge [$r(29)=0.32, p=.08$] or donate to an environmental organization [$r(29)=0.32, p=.08$]

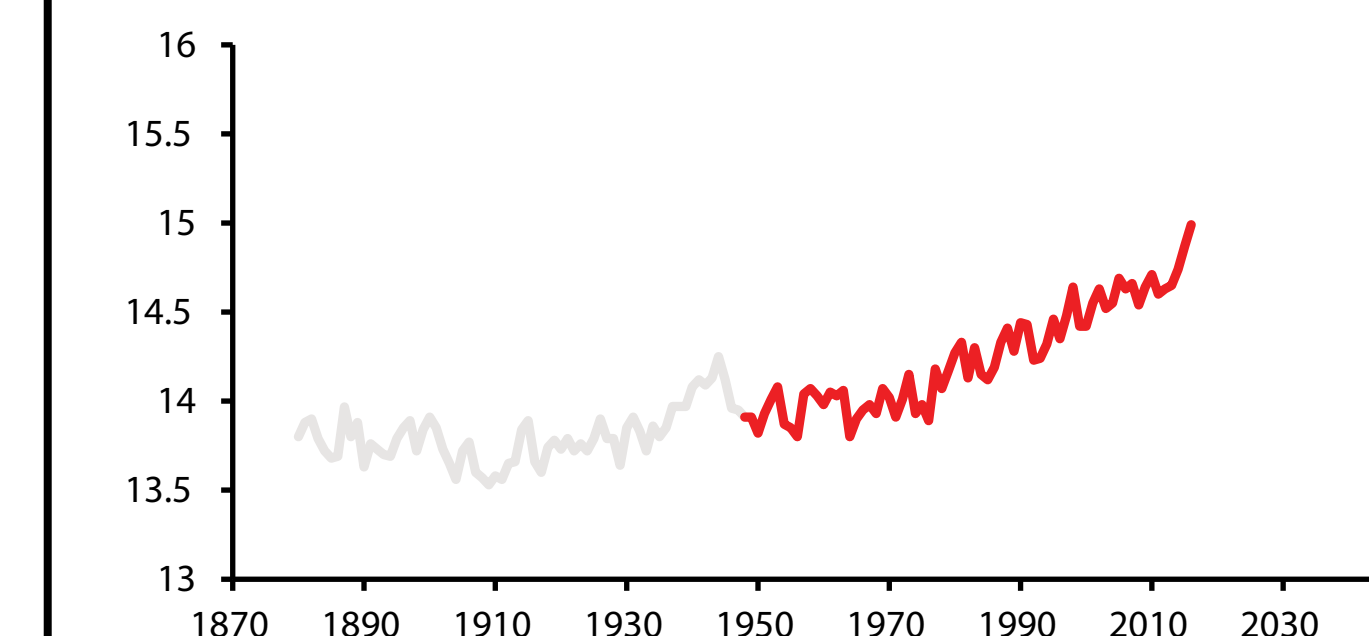
Fixation heatmaps



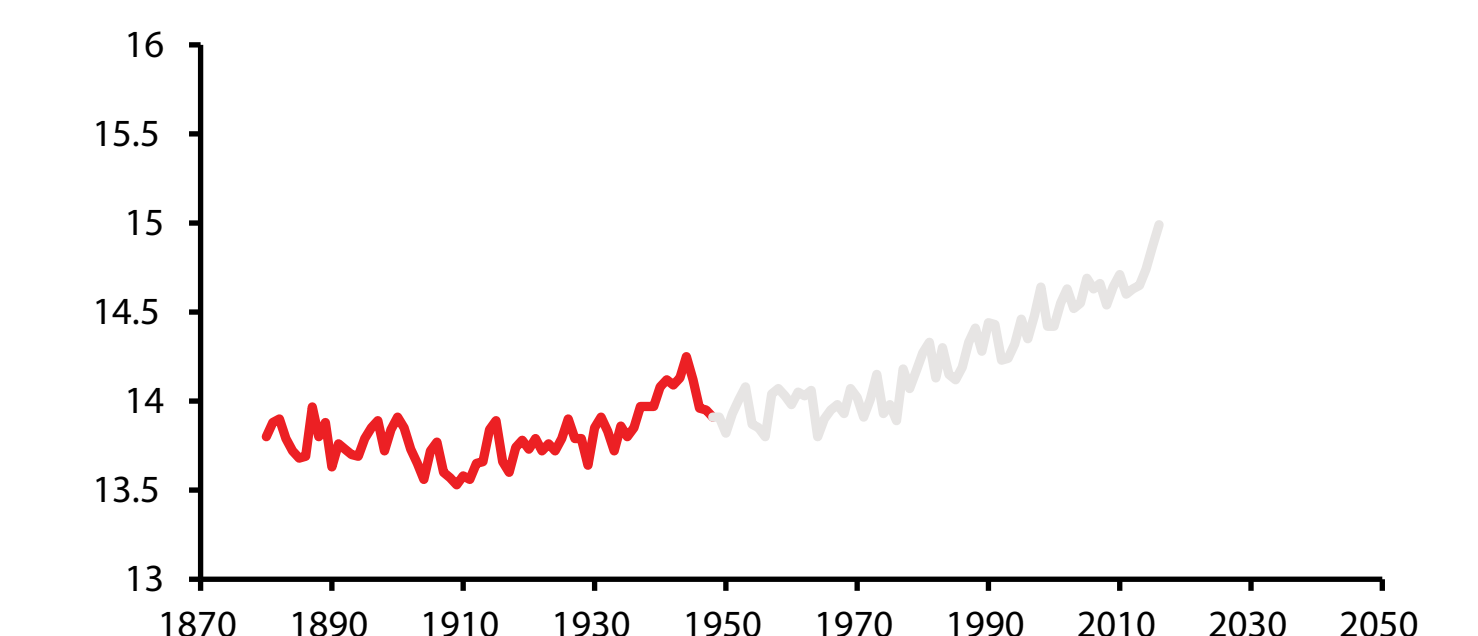
Attention to the rising phase is associated with more actions to mitigate climate change among conservatives

Experiment 4: Manipulating salience of climate change evidence

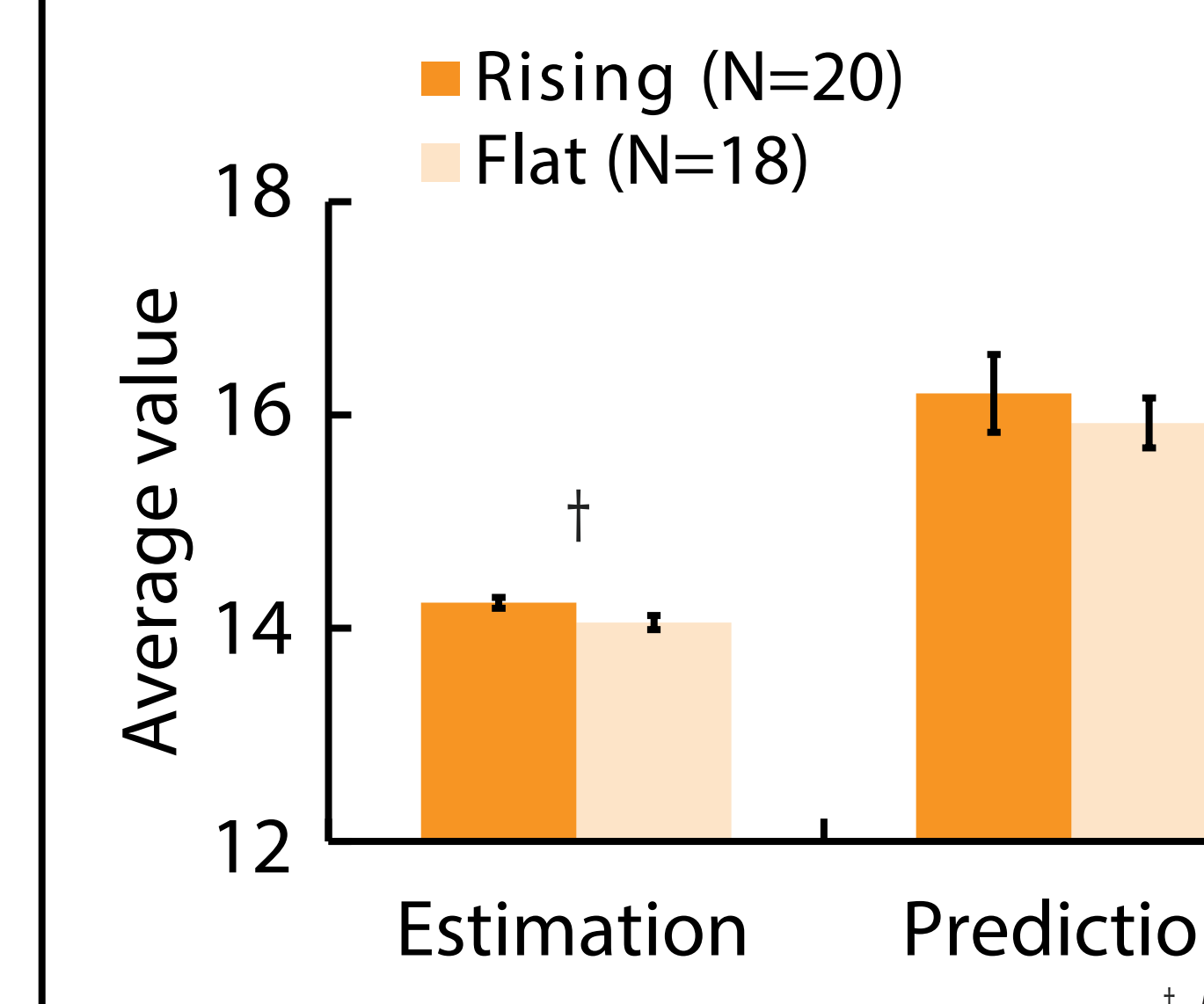
Condition 1: Rising phase in red



Condition 2: Flat phase in red



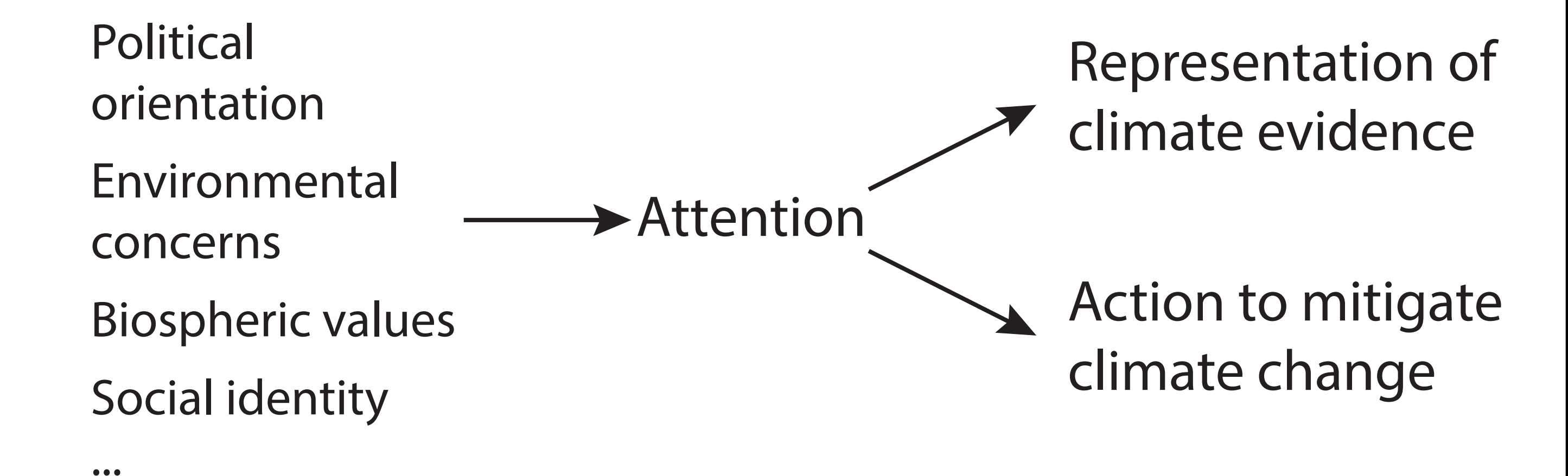
Results



Participants seeing the rising phase in red estimated marginally higher global temperature than participants seeing the flat phase in red [$t(36)=1.85, p=.07, d=0.59$]

Drawing attention to the rising phase may lead to a higher estimation of global temperature

Preliminary evidence for the motivated attention framework



References

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- Drummond, C., & Fischhoff, B. (2017). Individuals with greater science literacy and education have more polarized beliefs on controversial science topics. *Proceedings of the National Academy of Sciences*, 114, 9587–9592.
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- Kahan, D. M. (2015). Climate-science communication and the measurement problem. *Political Psychology*, 36, 1–43.