



Beliefs about Climate Change

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Center for Coastal Physical Oceanography and Institute for Coastal Adaptation & Resilience, Old Dominion University, Fall 2023 Virtual Seminar Series, September 2023

Overview

Public opinion and climate change

Climate change belief system network

- What is the structure of the climate change belief system network?
- Which beliefs are most central?

Climate Beliefs

- *Knowledge deficit*
- Political beliefs (ideology and partisanship)
- Cultural worldviews (cultural theory)
- Environmental orientation (New Ecological Paradigm)
- Scientific consensus as a “gateway belief”
- Solution aversion

Climate Beliefs

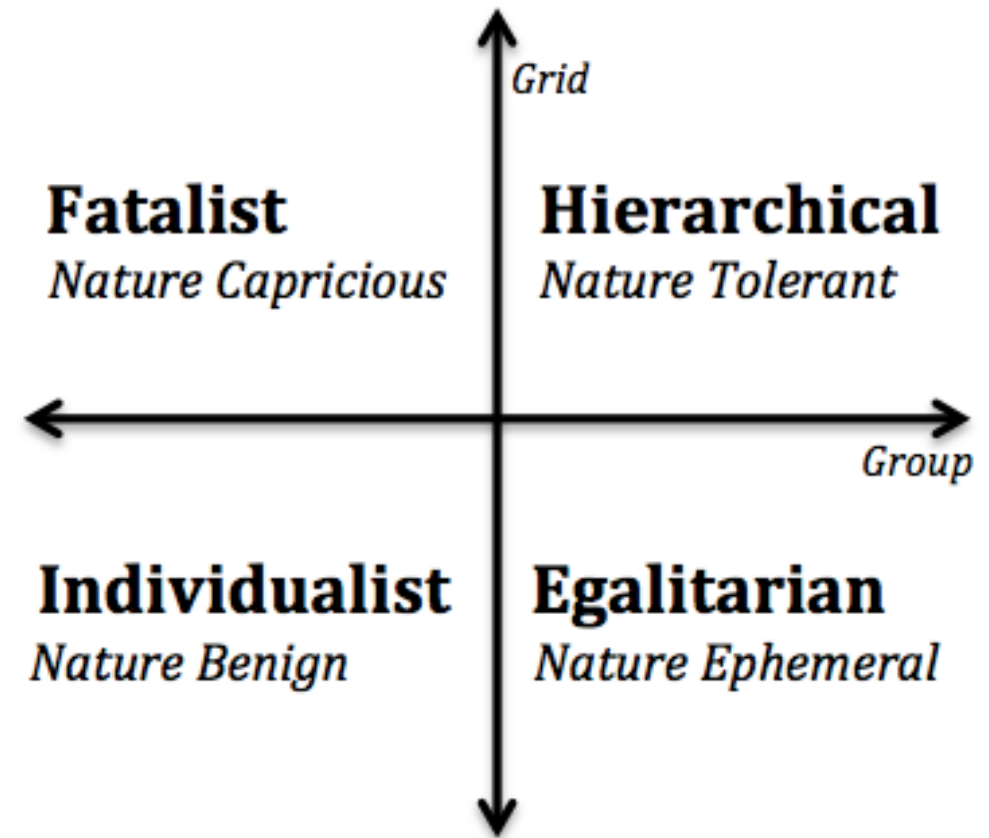
Political beliefs (ideology and partisanship)

- Conservatives/Republicans vs. Liberals/Democrats (Bugden 2022; Hamilton 2011; McCright 2011; McCright and Dunlap 2011)
- Elite-driven (Brulle, Carmichael, and Jenkins 2012; Carmichael and Brulle 2017; Krosnick et al. 2006; Merkley and Stecula 2018, 2021; Tesler 2018)

Climate Beliefs

Cultural worldviews (cultural theory)

- Cultural worldviews are based on ideal social structures and relationships
- *Grid* dimension that reflects the importance of rules and clearly defined roles in society
- *Group* dimension that reflects the importance of group cohesion and well-being
- Grid and group combine to form four cultural worldviews and associated myths of nature



Climate Beliefs

Cultural worldviews (cultural theory) and climate change

(Jones 2011; Nowlin 2022; Nowlin and Rabovsky 2020)

- Egalitarians most concerned
- Individualists least concerned
- Hierarchs are mixed
- Fatalists not concerned
- *Cultural cognition* (Kahan et al. 2012; Kahan, Jenkins-Smith, and Braman 2011)

Climate Beliefs

Environmental orientation (New Ecological Paradigm)

- The New Ecological Paradigm (NEP) scale measures *"beliefs about humanity's ability to upset the balance of nature, the existence of limits to growth for human societies, and humanity's right to rule over the rest of nature"* (Dunlap et al. 2000, 427)
- A *pro-environmental orientation* is associated with concern for the natural world generally, and climate change specifically (Nowlin 2019; Ziegler 2017)

Climate Beliefs

Scientific consensus as a “gateway belief”

- Experimental research design
- Exposure to a consensus message leads to agreement with the scientific consensus and increased support for climate action (S. L. van der Linden et al. 2015; Van Der Linden 2021; S. van der Linden, Leiserowitz, and Maibach 2019)

Climate Beliefs

Solution aversion

- One explanation for polarization across political beliefs
(Campbell and Kay 2014)
- Opposition to the *solution* leads to skepticism about the *problem*
- The logic:
 - Climate change solutions involve government regulations
 - Conservatives/Republicans are skeptical of government
 - Therefore, they become skeptical of the climate change

Belief Systems

- A set of interrelated and connected beliefs
- Hierarchical
 - Deep core → Policy core → Secondary aspects
- Network
 - Nodes are beliefs and edge are the connections

Measures and Analysis

Data and Analysis

- Original survey data from a nationally representative sample of the US population collected in October 2017
- **Measures**
 - Ideology and partisanship
 - Cultural worldviews
 - NEP scale
 - Climate change
 - Climate policies

Measures

Political beliefs

- Ideology: self-placement 1 (strongly liberal) to 7 (strongly conservative) scale
 - Mean: 3.99
- Partisanship: Party attachment and strength 1 (strong Democrat), 4 (independent), 7 (strong Republican)
 - Mean: 3.88

Measures

Cultural Theory

- Hierarchical: $\alpha = 0.74$
 - *The best way to get ahead in life is to work hard to do what you are told to do*
 - *Society is in trouble because people do not obey those in authority*
 - *Society would be much better off if we imposed strict and swift punishment on those who break the rules*
- Egalitarian: $\alpha = 0.82$
 - *What society needs is a fairness revolution to make the distribution of goods more equal*
 - *Society works best if power is shared equally*
 - *It is our responsibility to reduce differences in income between the rich and the poor*

Measures

Cultural Theory

- Individualist: $\alpha = 0.76$
 - *Even if some people are at a disadvantage, it is best for society to let people succeed or fail on their own*
 - *Even the disadvantaged should have to make their own way in the world*
 - *We are all better off when we compete as individuals*
- Fatalist: $\alpha = 0.8$
 - *The most important things that take place in life happen by chance*
 - *No matter how hard we try, the course of our lives is largely determined by forces beyond our control*
 - *For the most part, succeeding in life is a matter of chance*

Measures

New Ecological Paradigm (NEP) scale

- *The balance of nature is very delicate and easily upset*
- *Humans live on a planet with very limited room and resources*
- *Humans are seriously abusing the environment*
- Mean = 5.32
- $\alpha = 0.75$

Measures

Climate Change

- Happening: -4 (extremely sure it's *not* happening) to 4 (extremely sure it *is* happening)
 - Mean = 2.37
- Risk: 0 (no risk) to 10 (extreme risk)
 - Mean = 6.95
- Scientific consensus: 1 (Most scientists think climate change is happening), 0 (all other responses)
 - Mean = 0.63

Measures

Climate Policy

- Support for various policies on a 1 (strongly oppose) to 7 (strongly support) scale
 - **IntAgree**: 5.07
 - **Renew**: 5.89
 - **Nuclear**: 4.09
 - **Tax**: 4.79
 - **EPA**: 5.35
 - **CapTrade**: 4.75
 - **GeoEng**: 5.32

Network Analysis

- Beliefs are the nodes, and the edges are *partial correlation coefficients*
- Undirected
- Weighted by the strength of the partial correlations
- Regularized using “least absolute shrinkage and selection operator” (LASSO)

Results

Results: Network

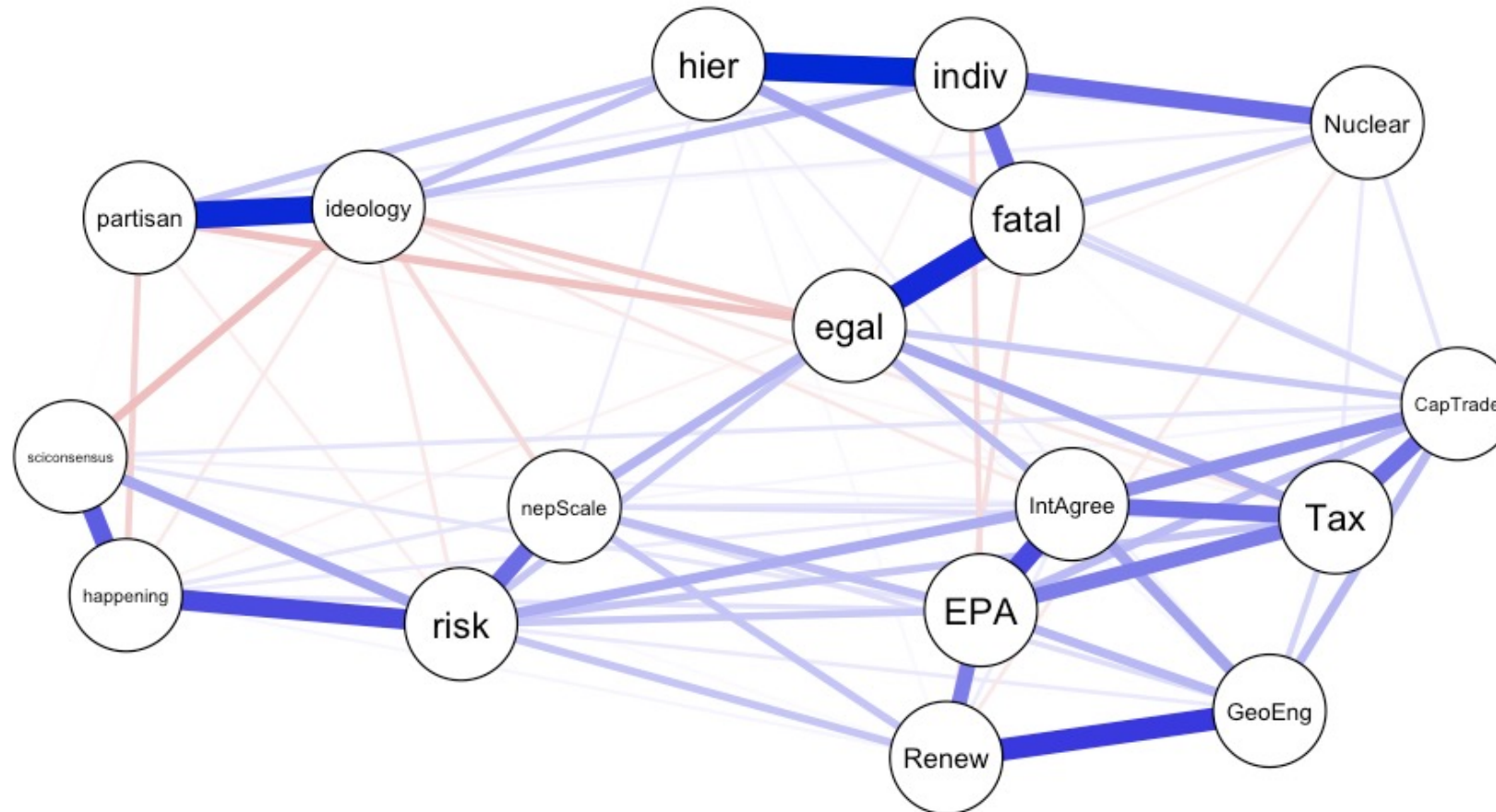


Figure 1: Climate Change Belief System Network

Results: Betweenness Centrality

Betweenness

- Sits on the paths between nodes
- Acts as a bridge between nodes
- *Egalitarianism, individualism, risk, fatalism, climate policies*

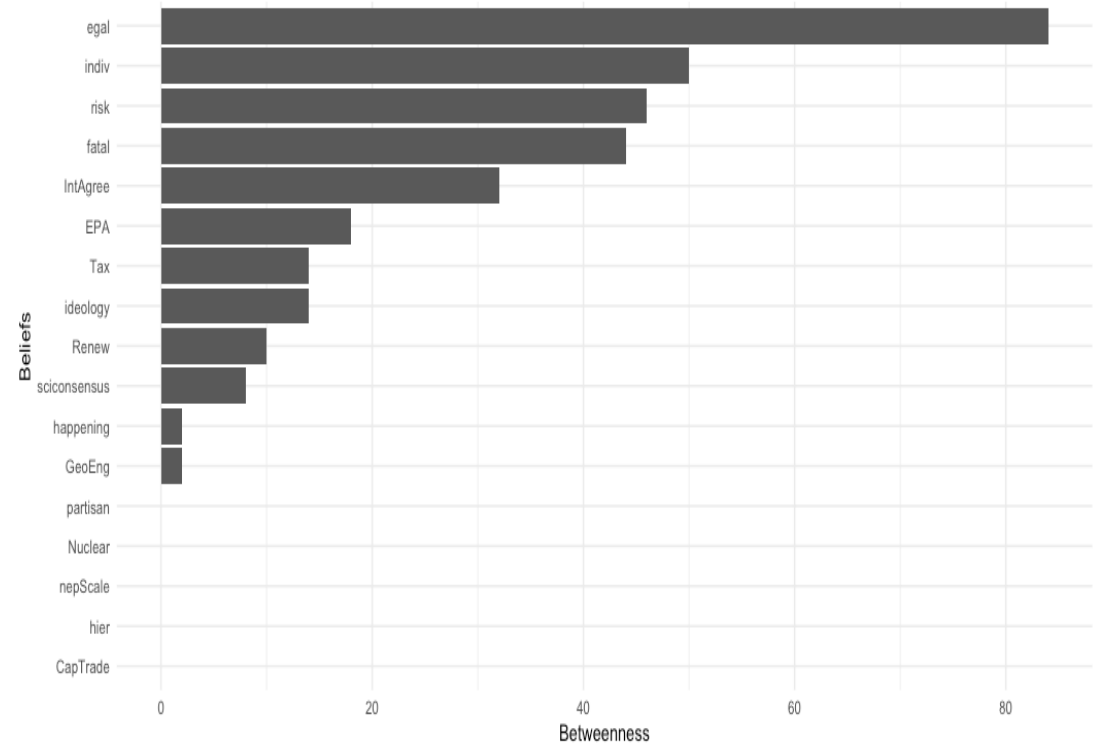


Figure 2: Betweenness Centrality

Discussion

- Network structure
 - Clustering of cultural worldviews, political beliefs, NEP and climate, climate policies
 - Nuclear energy
- Centrality
 - Cultural worldviews, climate change risk, climate policy
- Next steps
 - Individual belief systems
 - Changes in belief systems

Thank you!

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