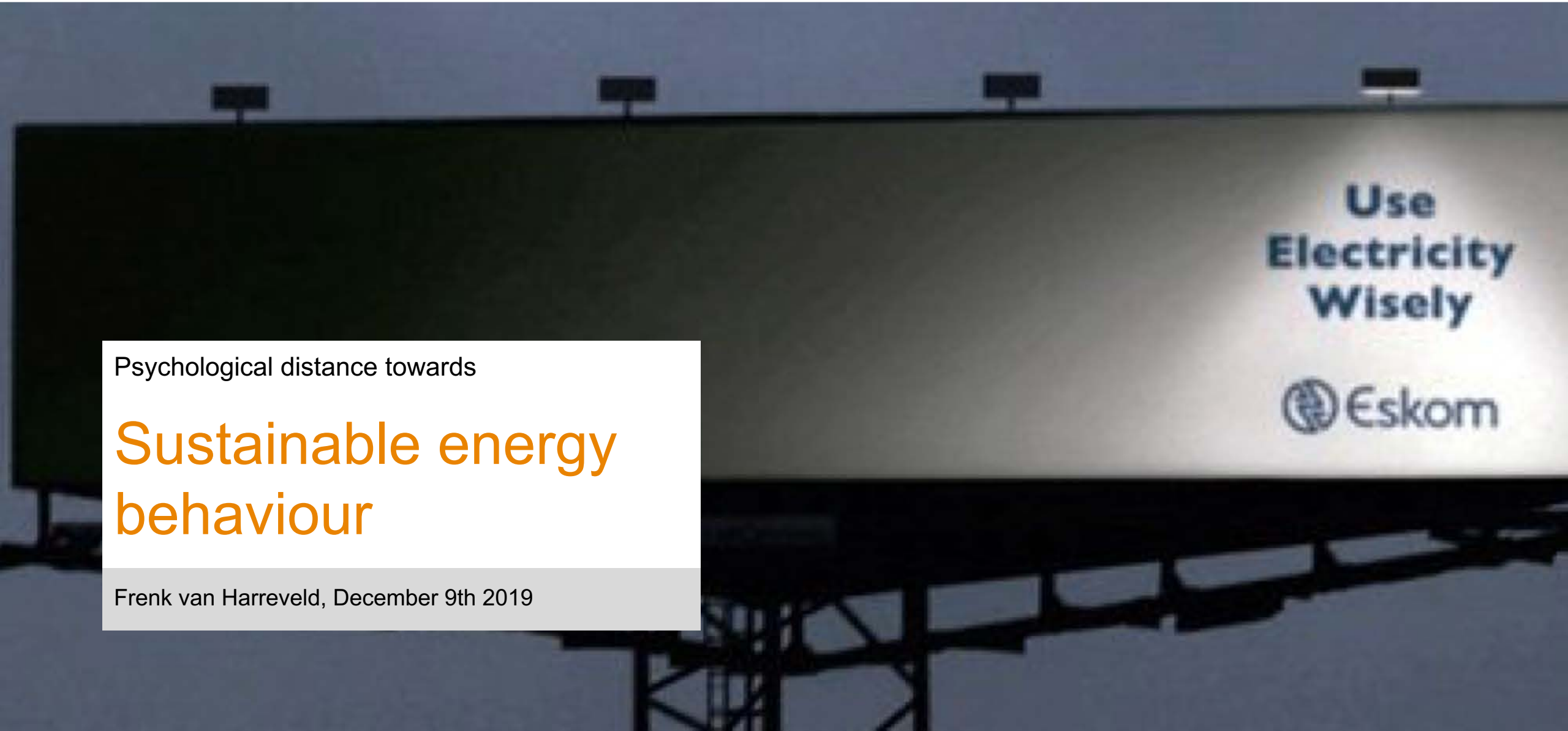
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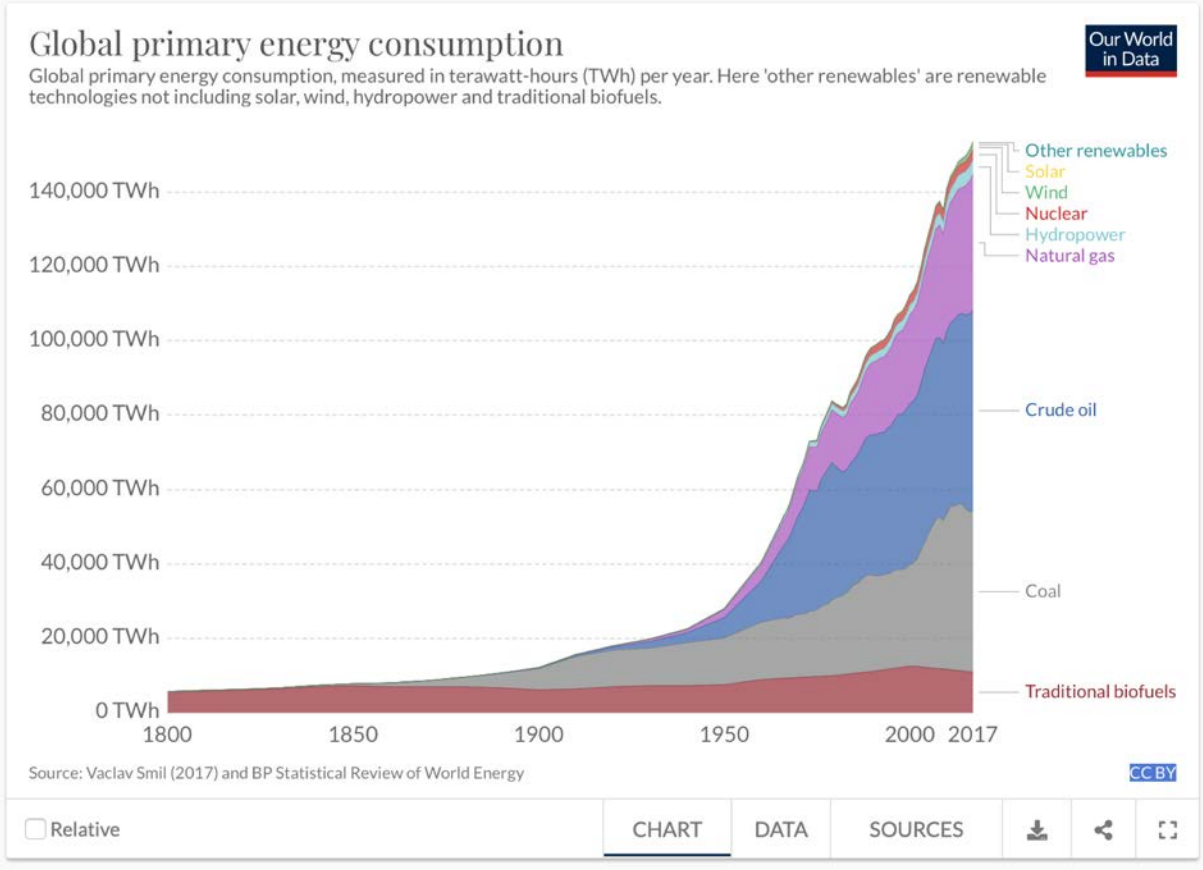


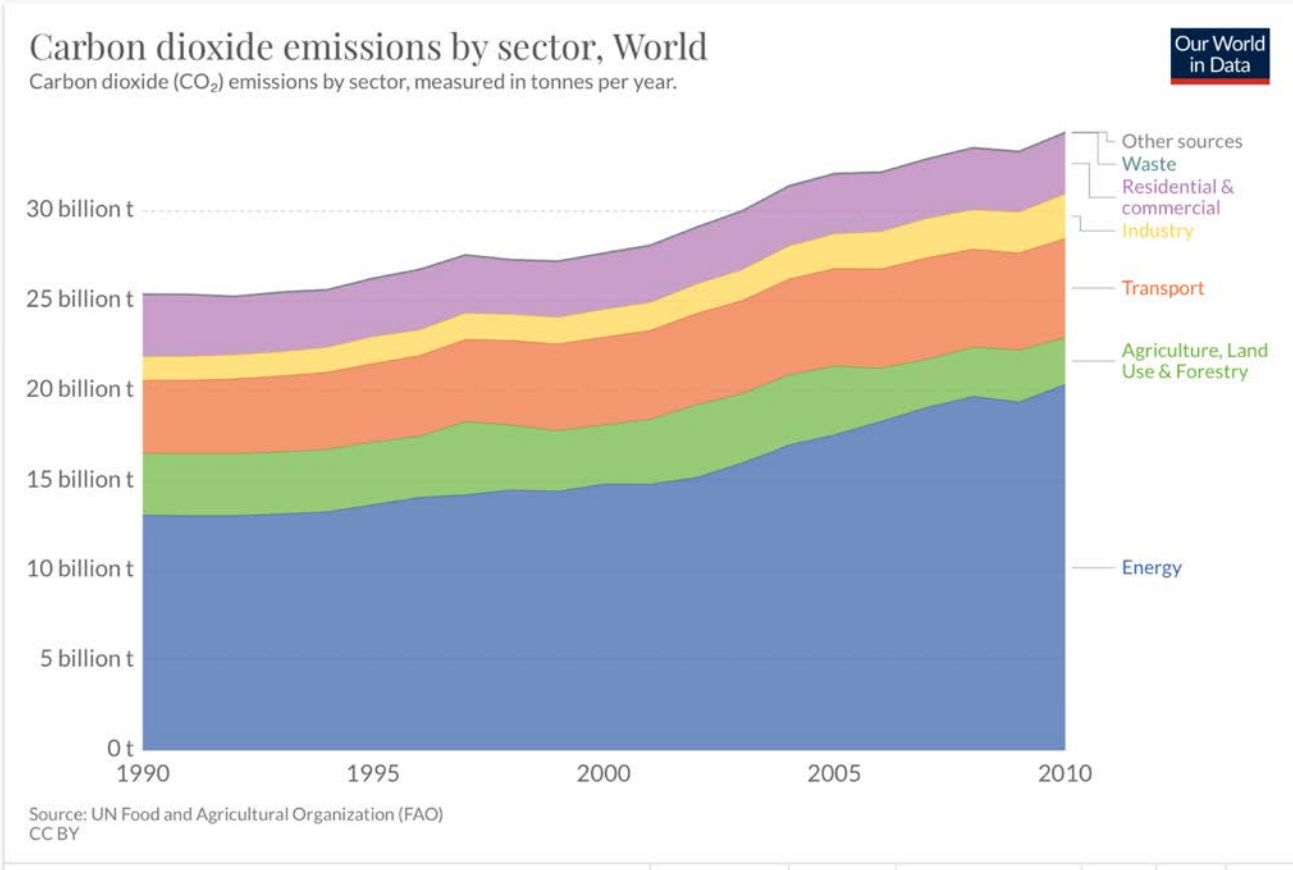
Psychological distance towards

Sustainable energy behaviour

Frenk van Harreveld, December 9th 2019

Wicked problem: Global energy addiction





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A change is gonna come?





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The psychology of sustainable behaviour

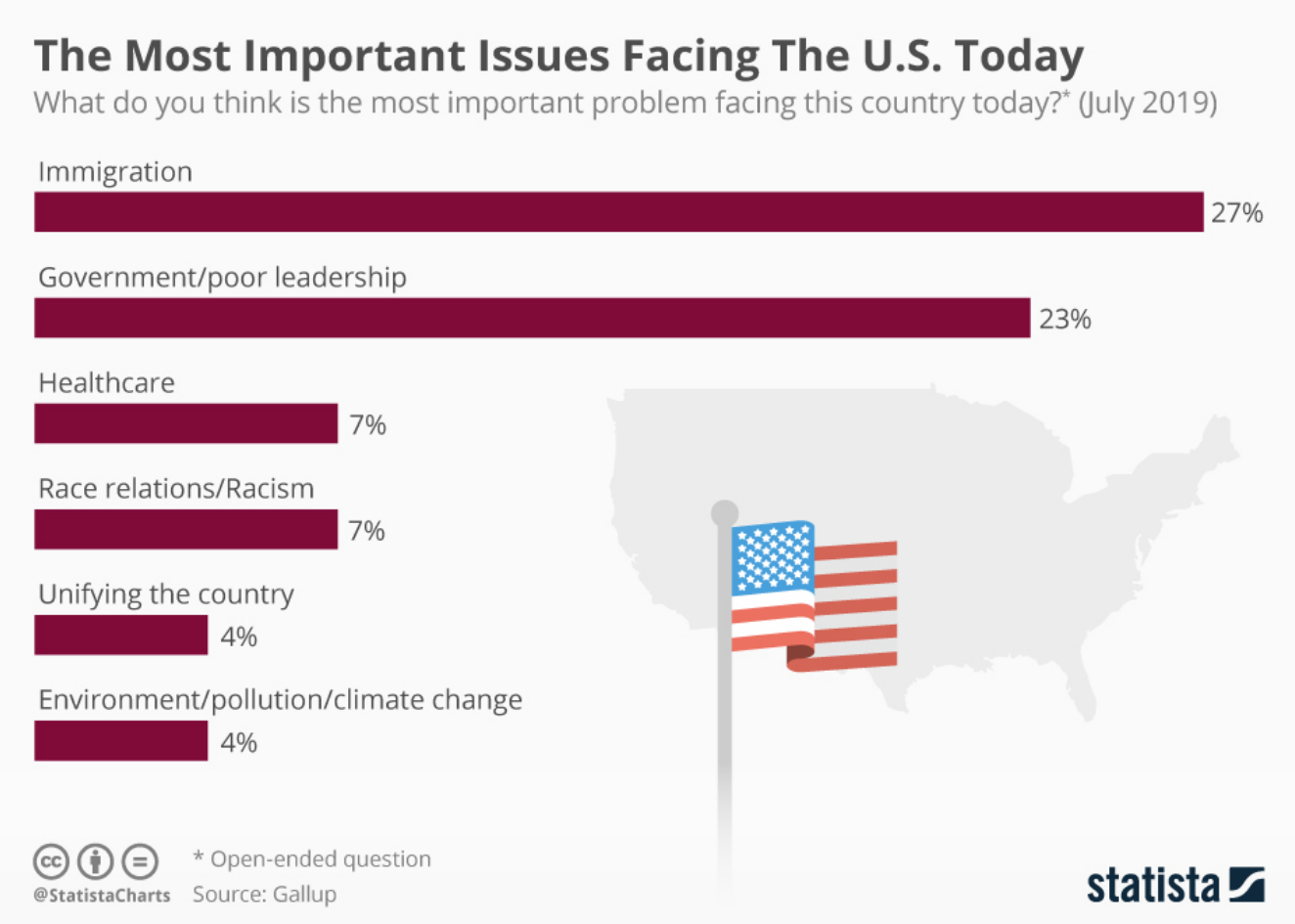


Willingness to pay

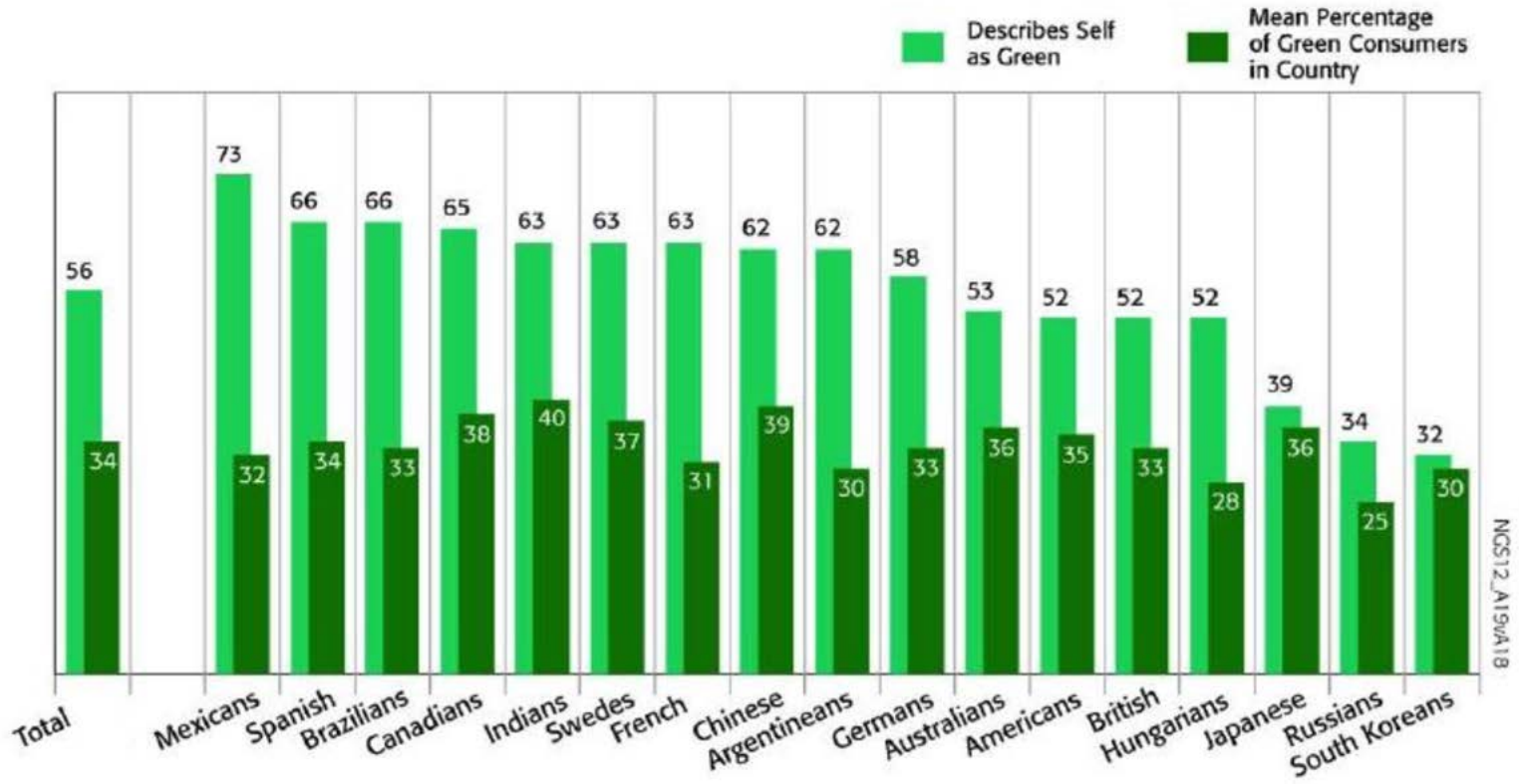




Perceived importance climate change



Mind the gap

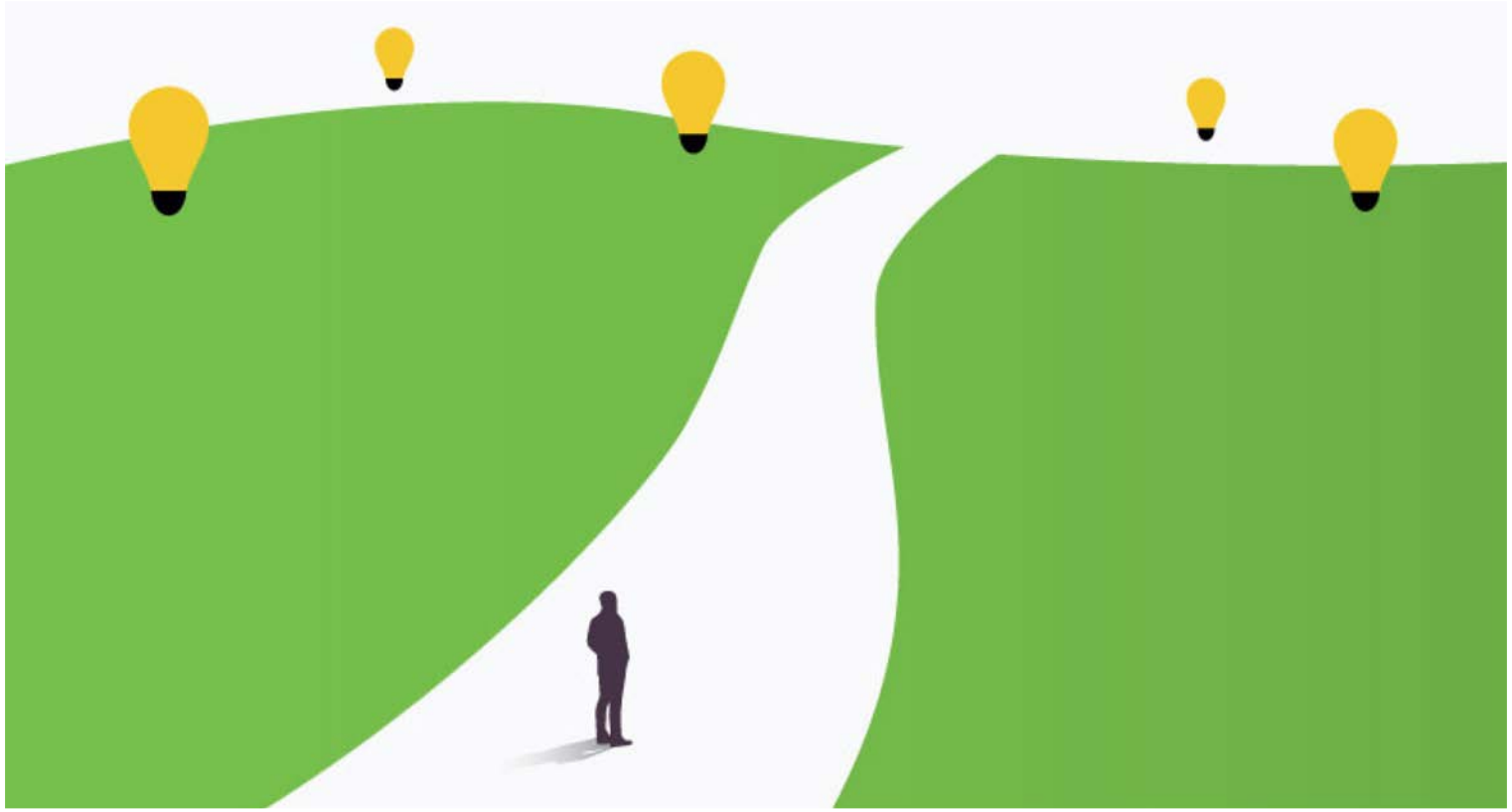


Terlau, W. & Hirsch, D. (2015). Sustainable Consumption and the Attitude-Behaviour-Gap Phenomenon - Causes and Measurements towards a Sustainable Development. *Int. J. Food System Dynamics 6*, 159-174

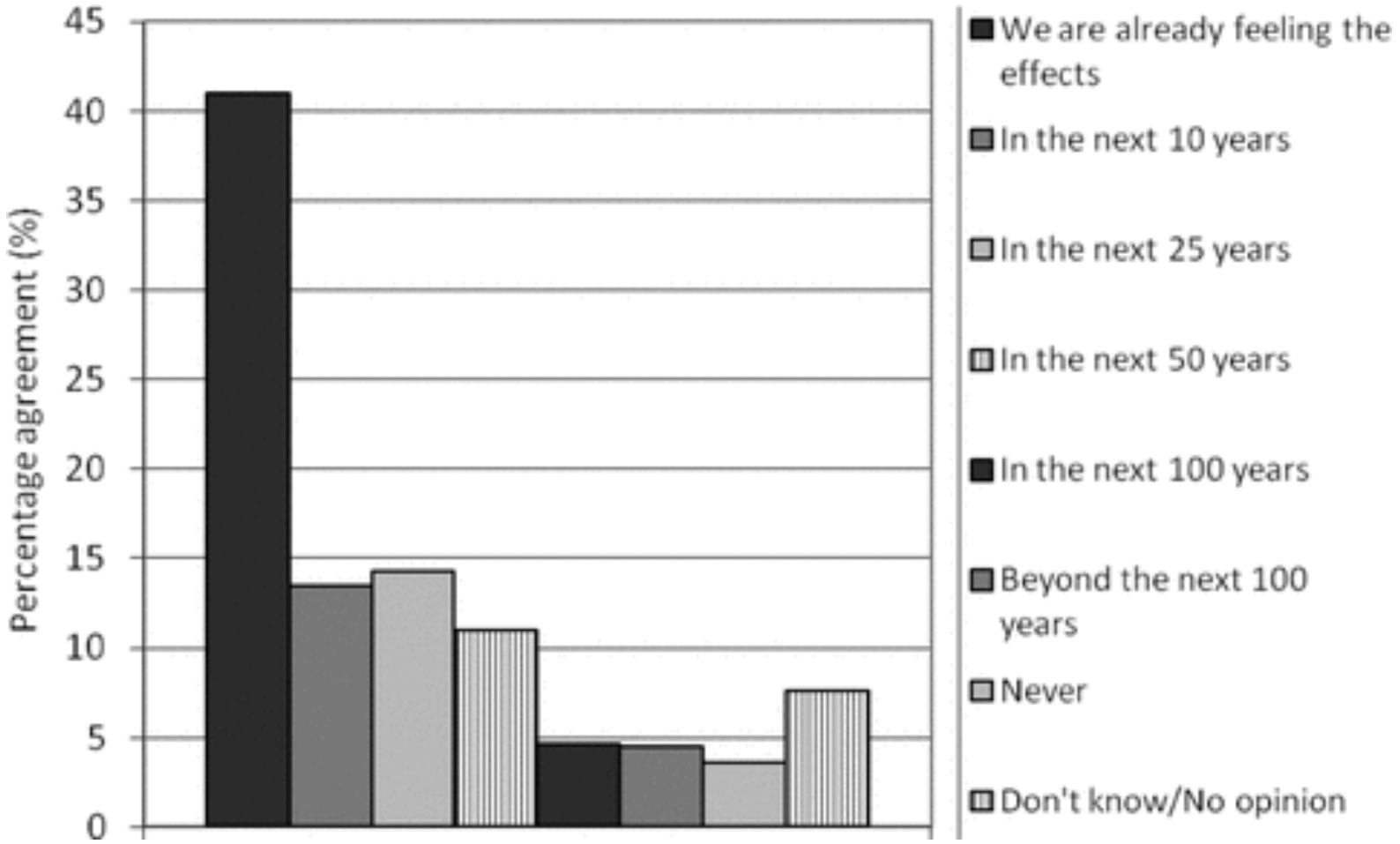
Psychological distance

"a cognitive separation between the self and other instances such as persons, events, or times."

Trope & Liberman (2003).



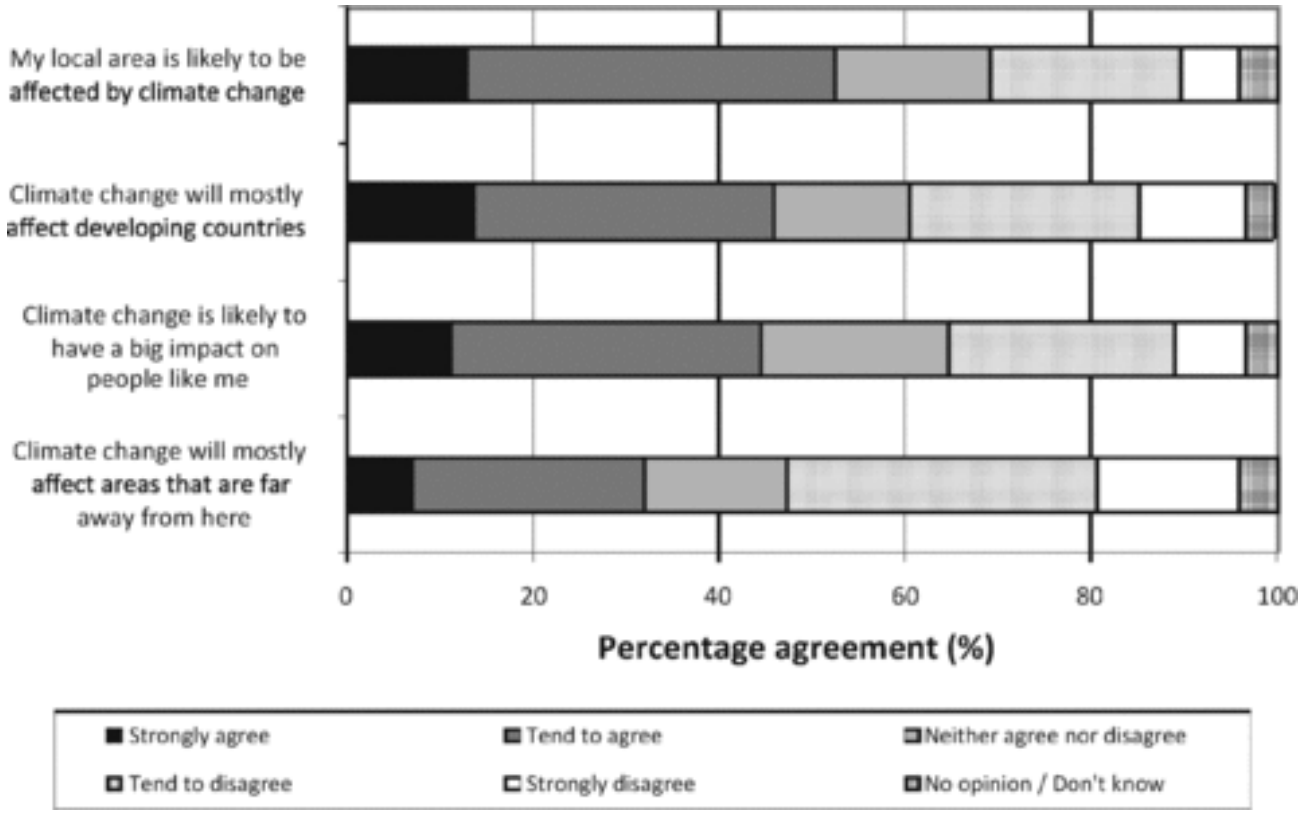
1. Time

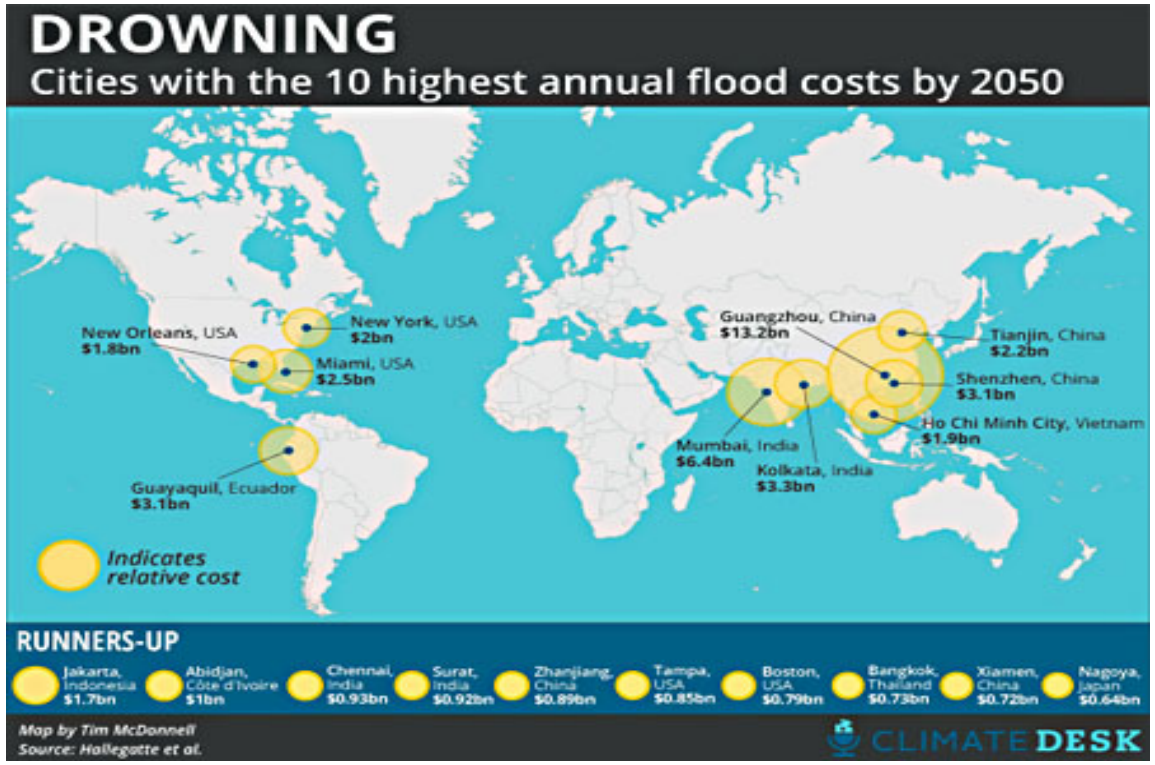


Spence, A., Poortinga, W., & Pidgeon, N. (2011). The Psychological Distance of Climate Change *Risk Analysis*, *32*, 957-972.

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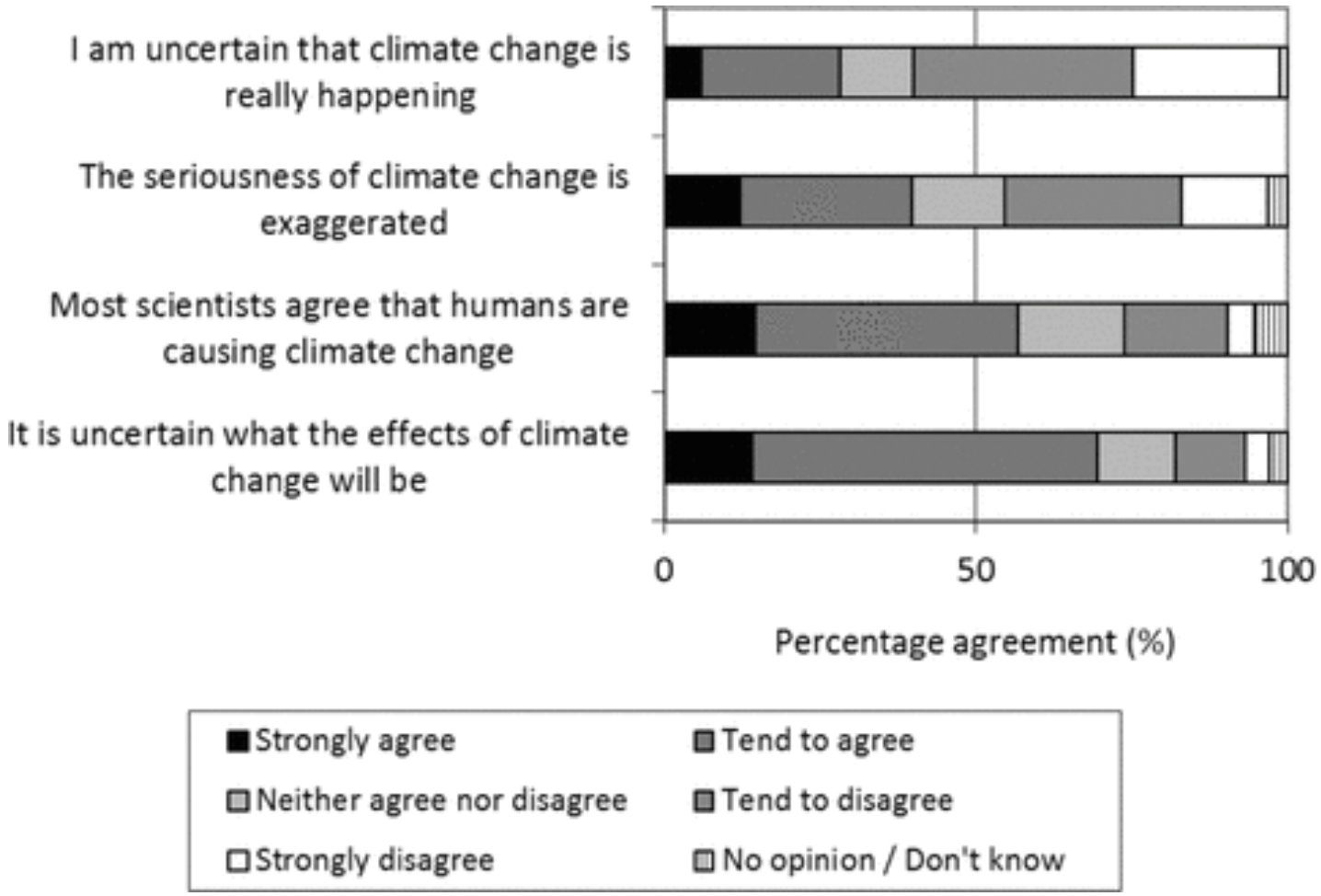
2. Geographic (and social) distance





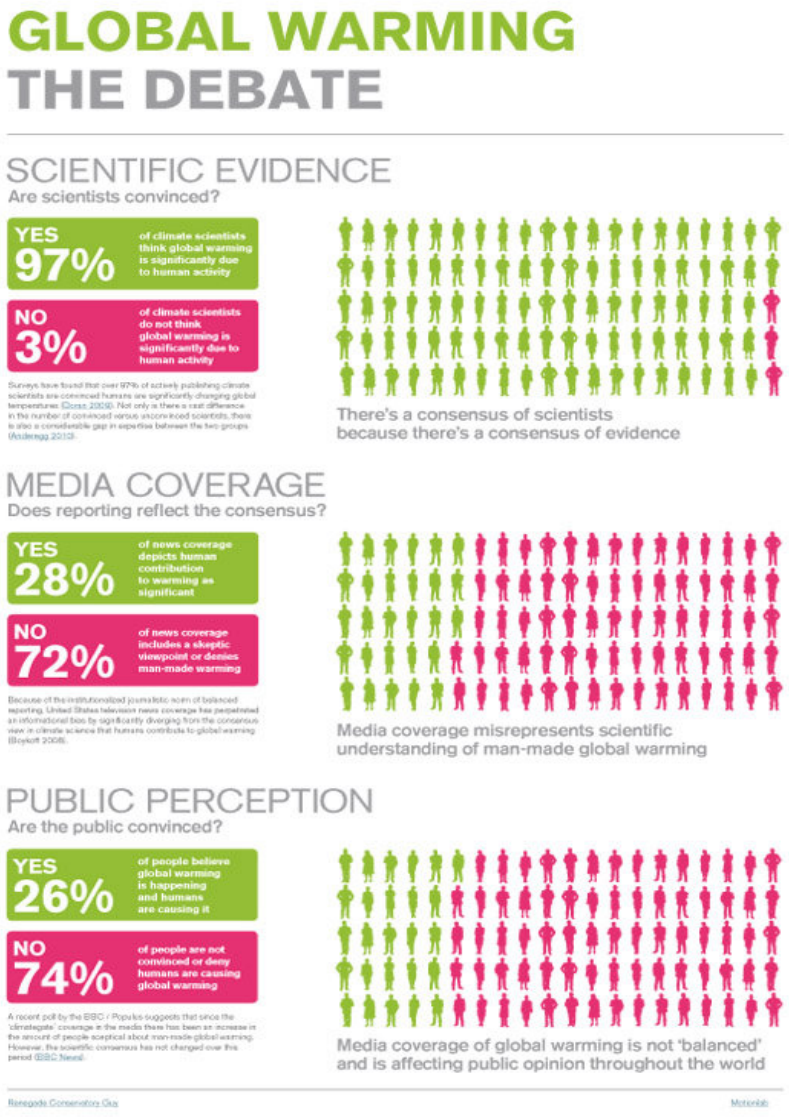


3. Uncertainty



Spence, A., Poortinga, W., & Pidgeon, N. (2011). The Psychological Distance of Climate Change. *Risk Analysis*, *32*, 957-972.

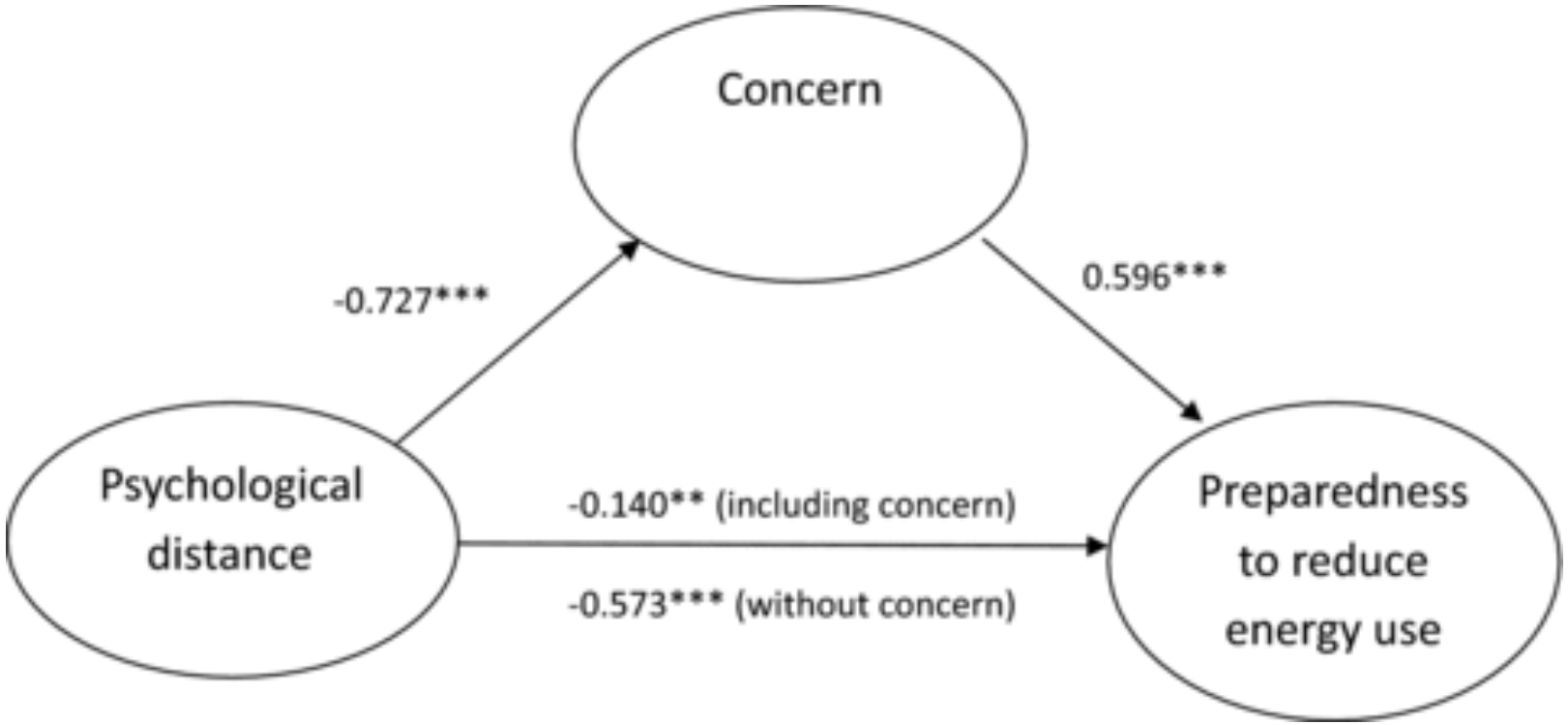
Uncertainty in the media







Psychological distance and energy use

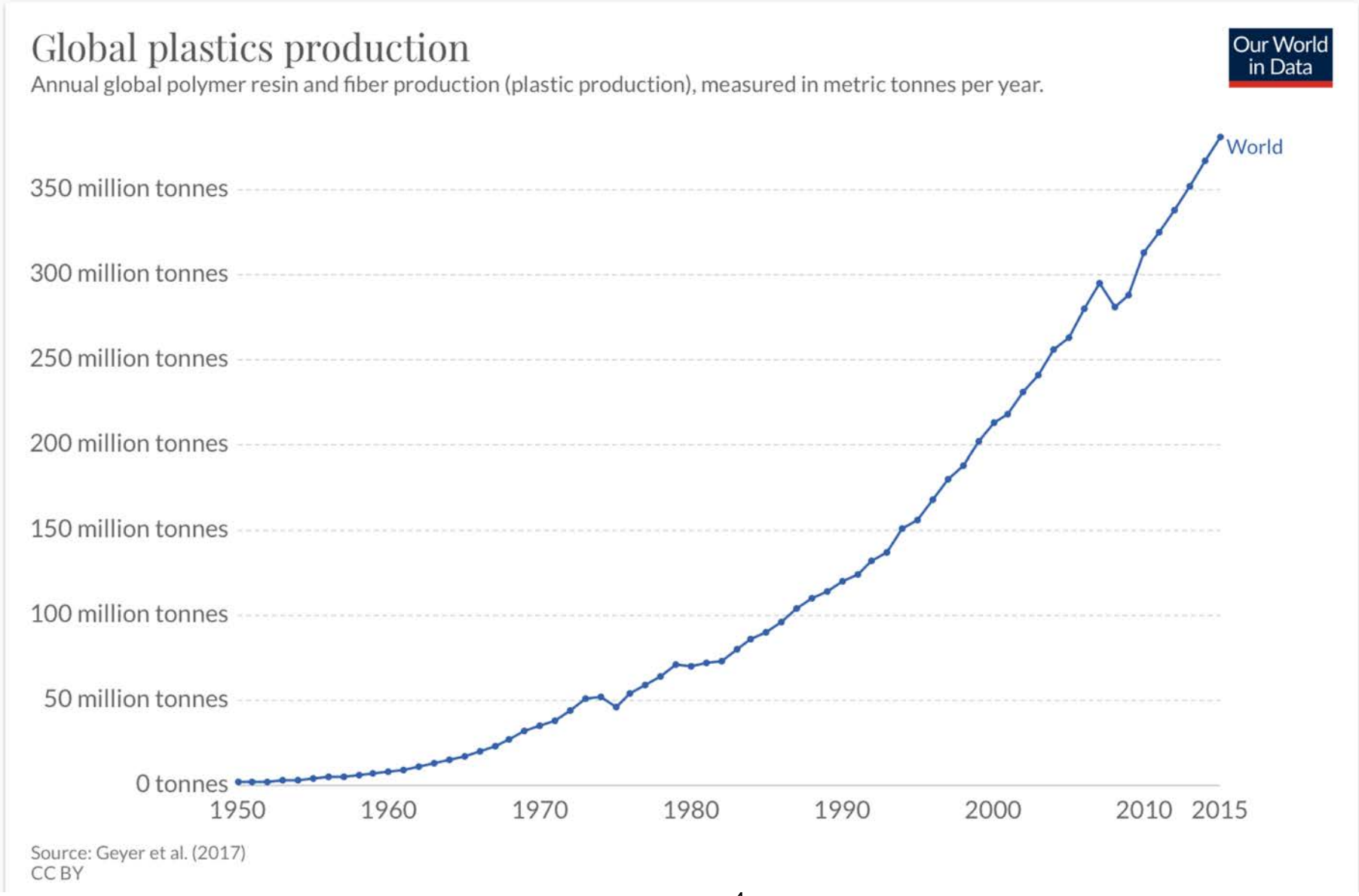


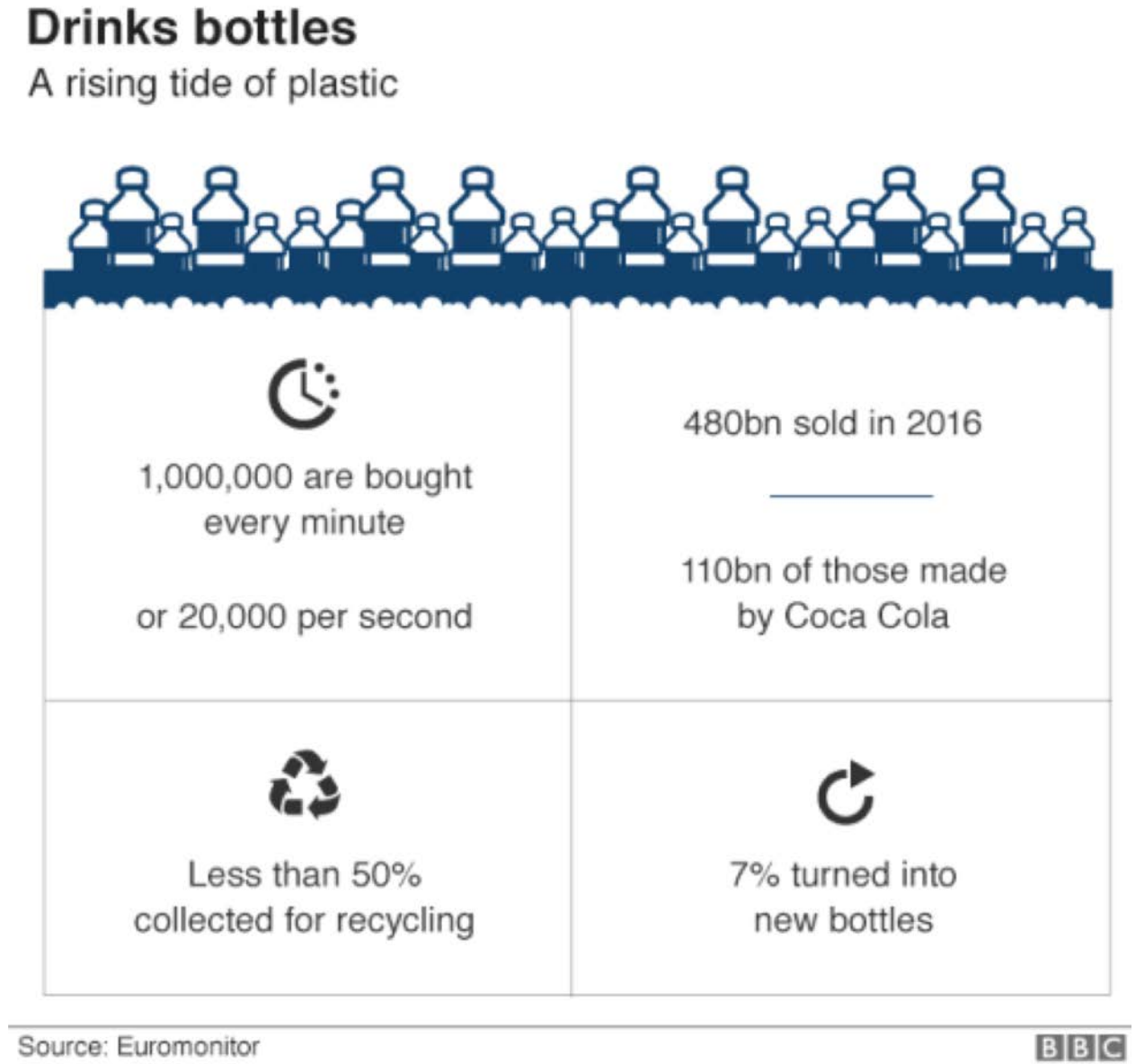
Spence, A., Poortinga, W., & Pidgeon, N. (2011). The Psychological Distance of Climate Change. *Risk Analysis*, *32*, 957-972.

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Reducing distance to sustainable behaviour: plastic

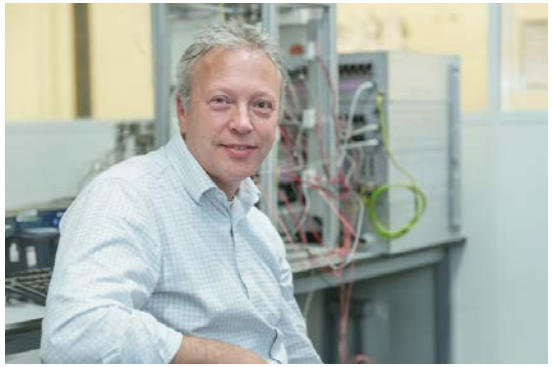



Global plastics production
Annual global polymer resin and fiber production (plastic production), measured in metric tonnes per year.
Our World in Data
World
350 million tonnes
300 million tonnes
250 million tonnes
200 million tonnes
150 million tonnes
100 million tonnes
50 million tonnes
0 tonnes
1950
1960
1970
1980
1990
2000
2010
2015
Source: Geyer et al. (2017)
CC BY


Drinks bottles
A rising tide of plastic
1,000,000 are bought every minute
or 20,000 per second
480bn sold in 2016
110bn of those made by Coca Cola
Less than 50% collected for recycling
7% turned into new bottles
Source: Euromonitor
BBC

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'Regular' plastic

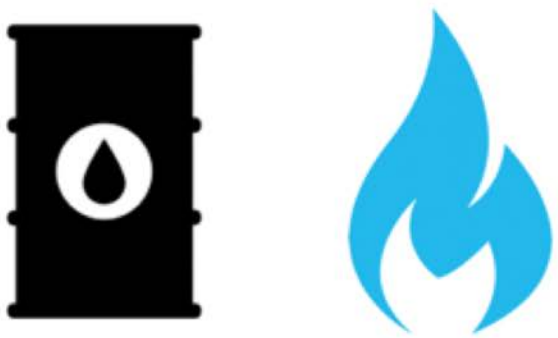
avantium

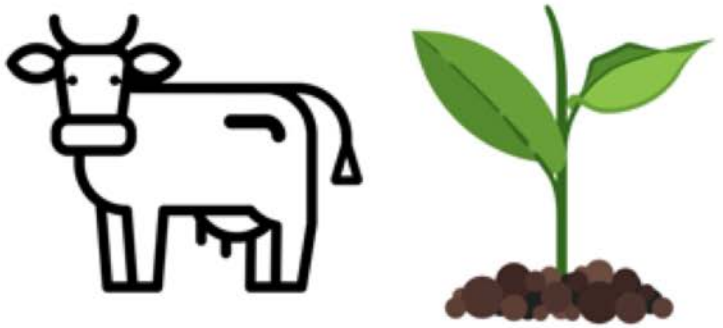
Bio-based plastic

LEGO

fossil feedstocks

biomass





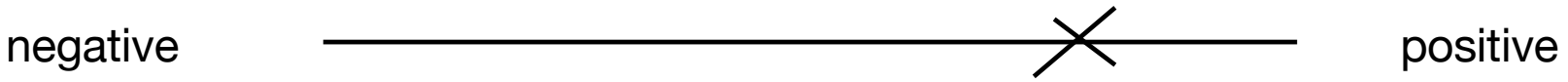
No additional CO_2

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Attitude

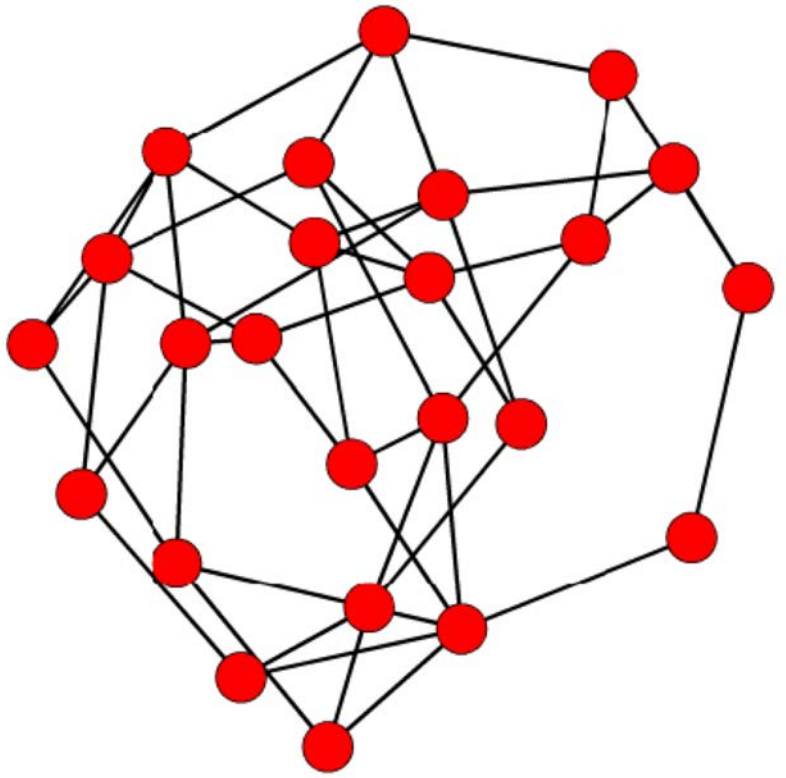
A psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor

Eagly and Chaiken (1993)



Causal Attitude Network (CAN) model

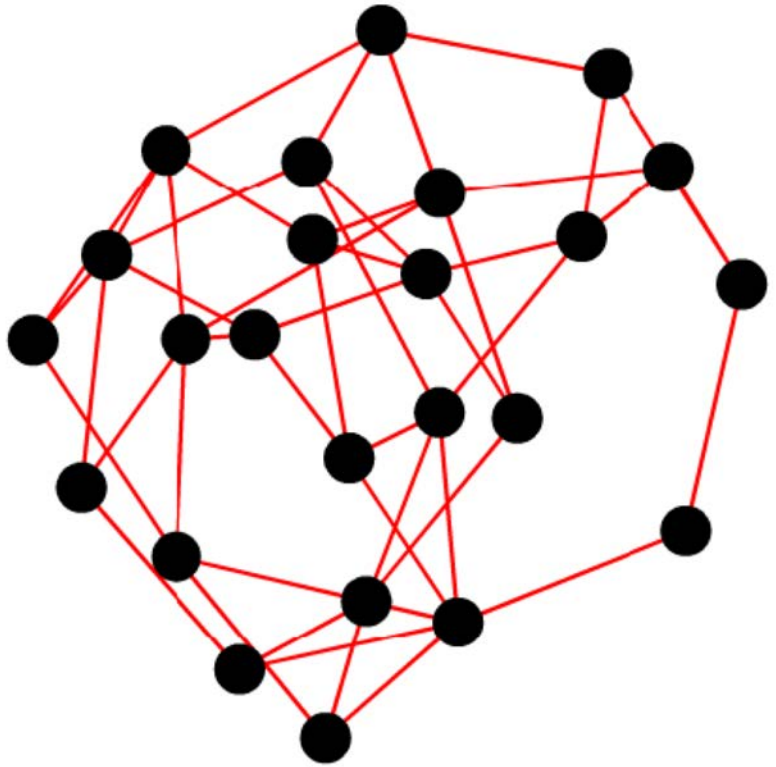
- Attitudes as networks consisting of interrelated nodes (evaluative reactions)
- Networks estimated with eLasso procedure (van Borkulo, 2014)



Dalege, J., Borsboom, D., van Harreveld, F., van den Berg, H., Conner, M., & van der Maas, H. L. J. (2016). Toward a formalized account of attitudes: The Causal Attitude Network (CAN) Model. *Psychological Review*, *123*, 2-22.

Causal Attitude Network (CAN) model

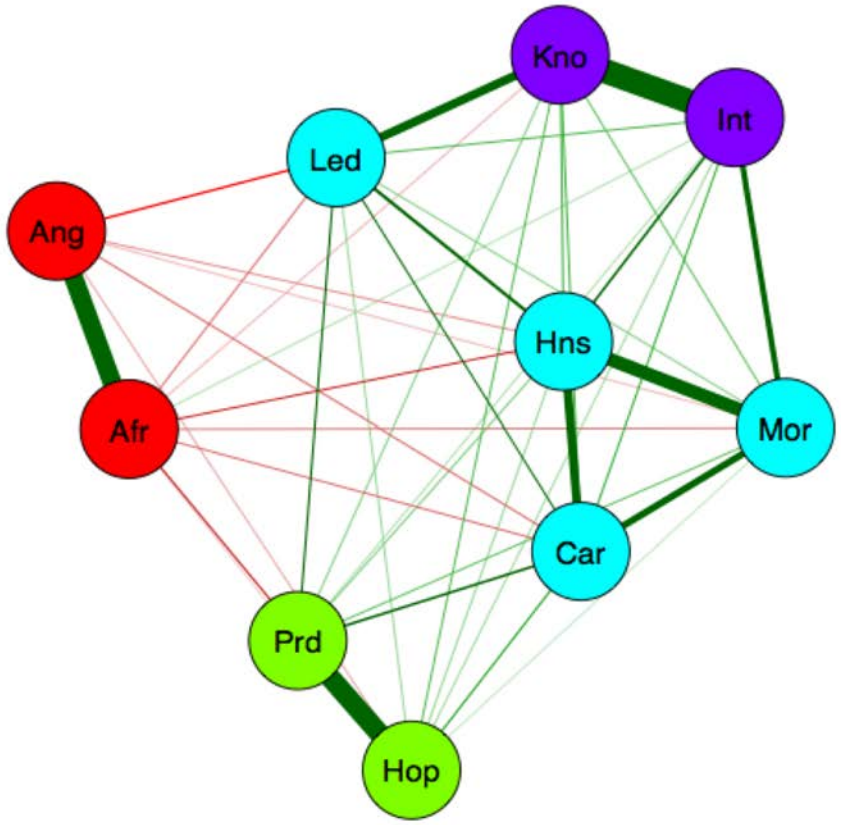
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Network inference I: Clustering algorithm

- ANES, N = 2040
- Negative and positive items beliefs and feelings about candidates
- Clusters of strongly connected nodes

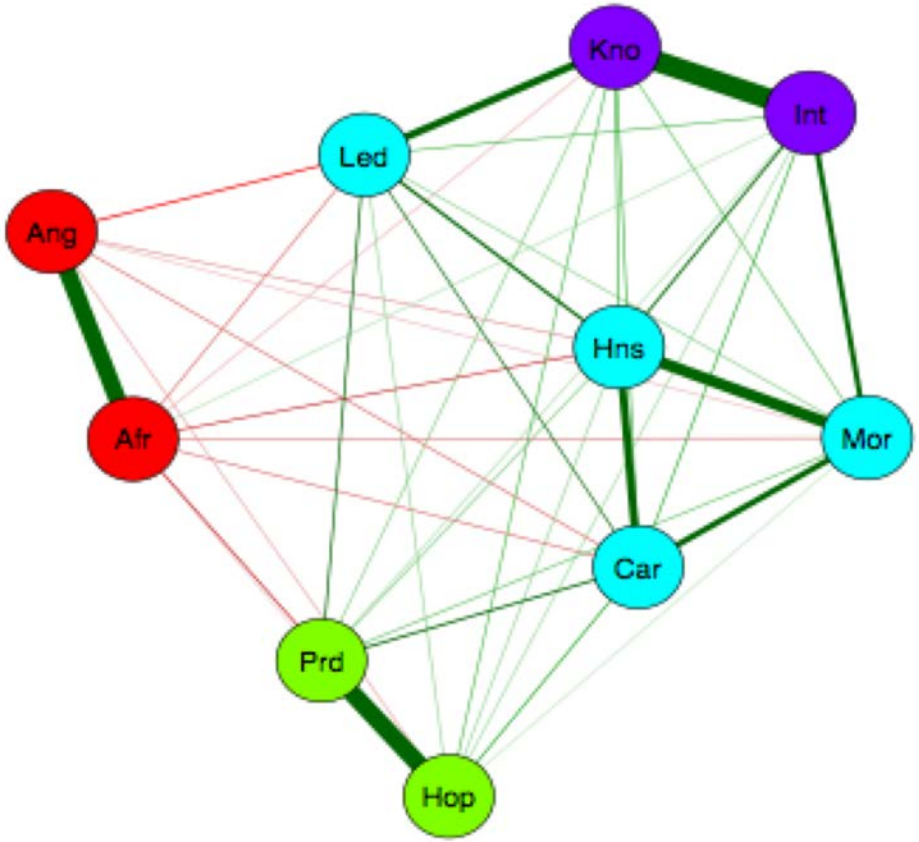


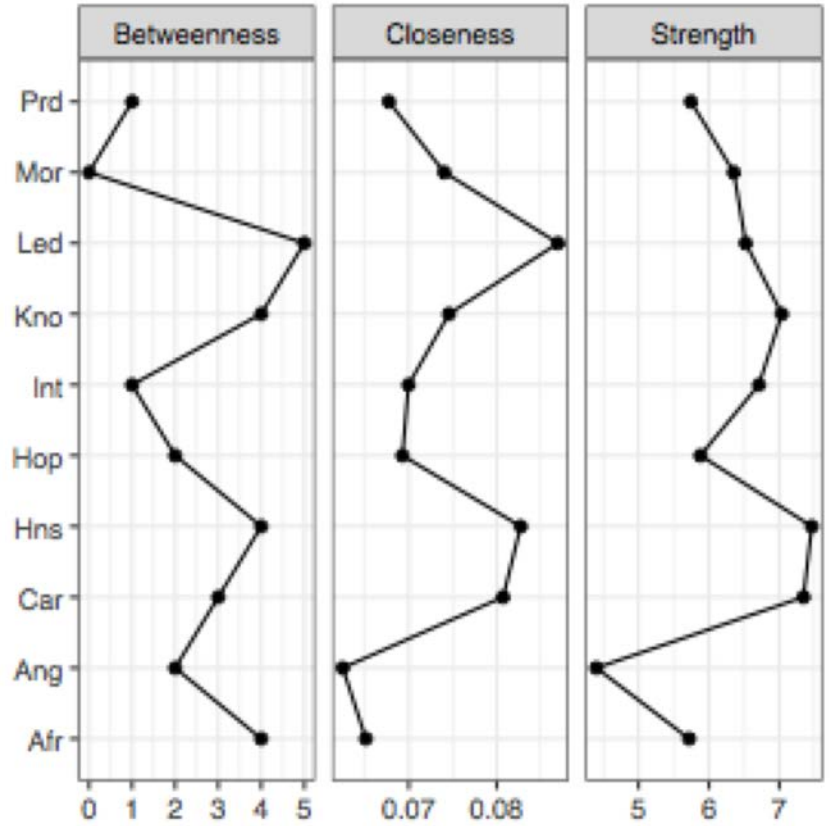


Mor: Moral
Led: Leadership
Car: Caring
Kno: Knowledgeable
Int: Intelligent
Hns: Honest
Ang: Angry
Hop: Hopeful
Afr: Afraid
Prd: Proud

Dalege, J., Borsboom, D., van Harreveld, F., van den Berg, H., Conner, M., & van der Maas, H. L. J. (2016). Toward a formalized account of attitudes: The Causal Attitude Network (CAN) Model. *Psychological Review*, *123*, 2-22.

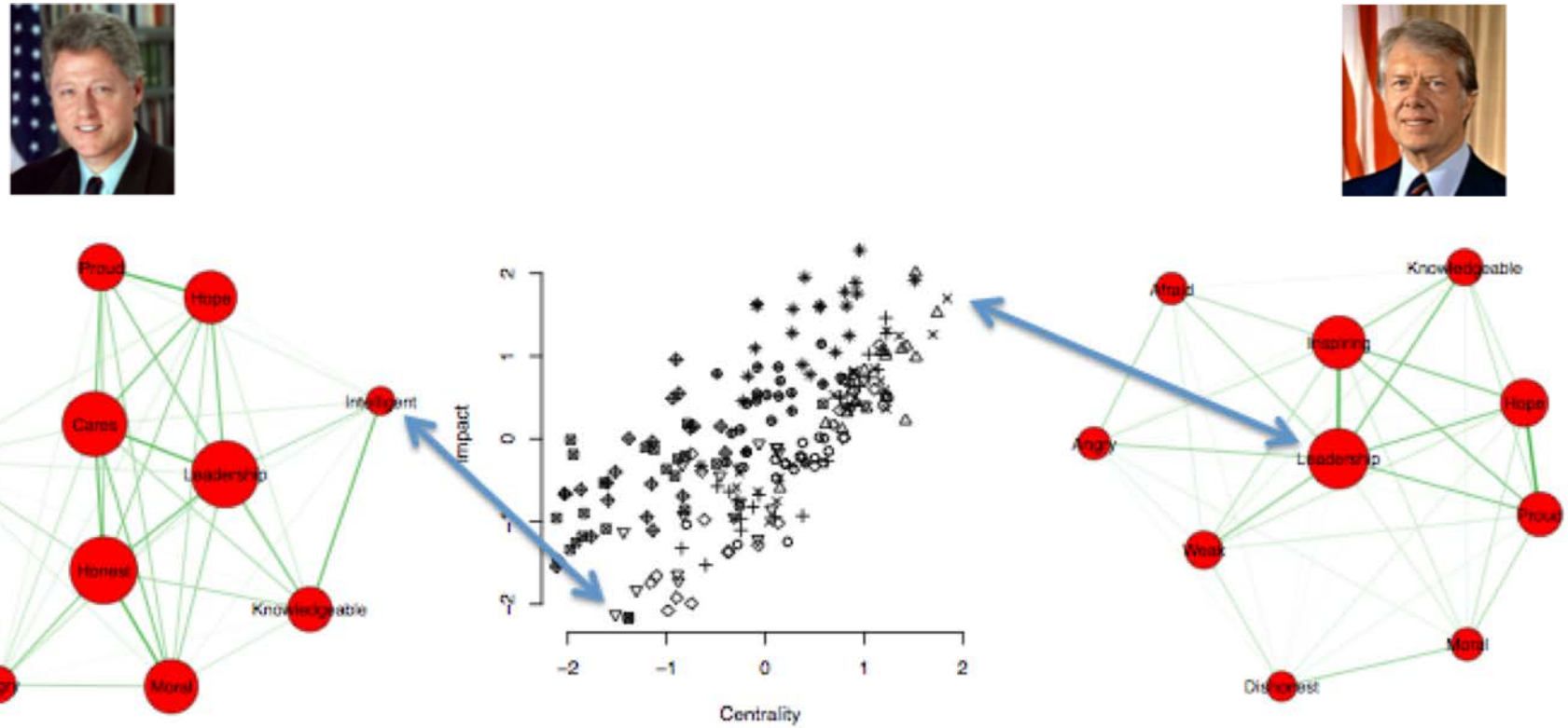
Network inference II: Centrality





Epskamp, S., Costantini, G., Cramer, A. O. J., Waldorp, L. J., Schmittmann, V. D., & Borsboom. D. (2016). qgraph: Graph plotting methods, psychometric data visualization and graphical model estimation (R package Version 1.3.4)

Network inference II: Centrality



Dalege, J., Borsboom, D., van Harreveld, F., Waldorp, L. J., & van der Maas, H. L. J. (2017). Network structure explains the impact of attitudes on voting decisions. *Scientific Reports, 7*, 4909.

Plastic attitude networks

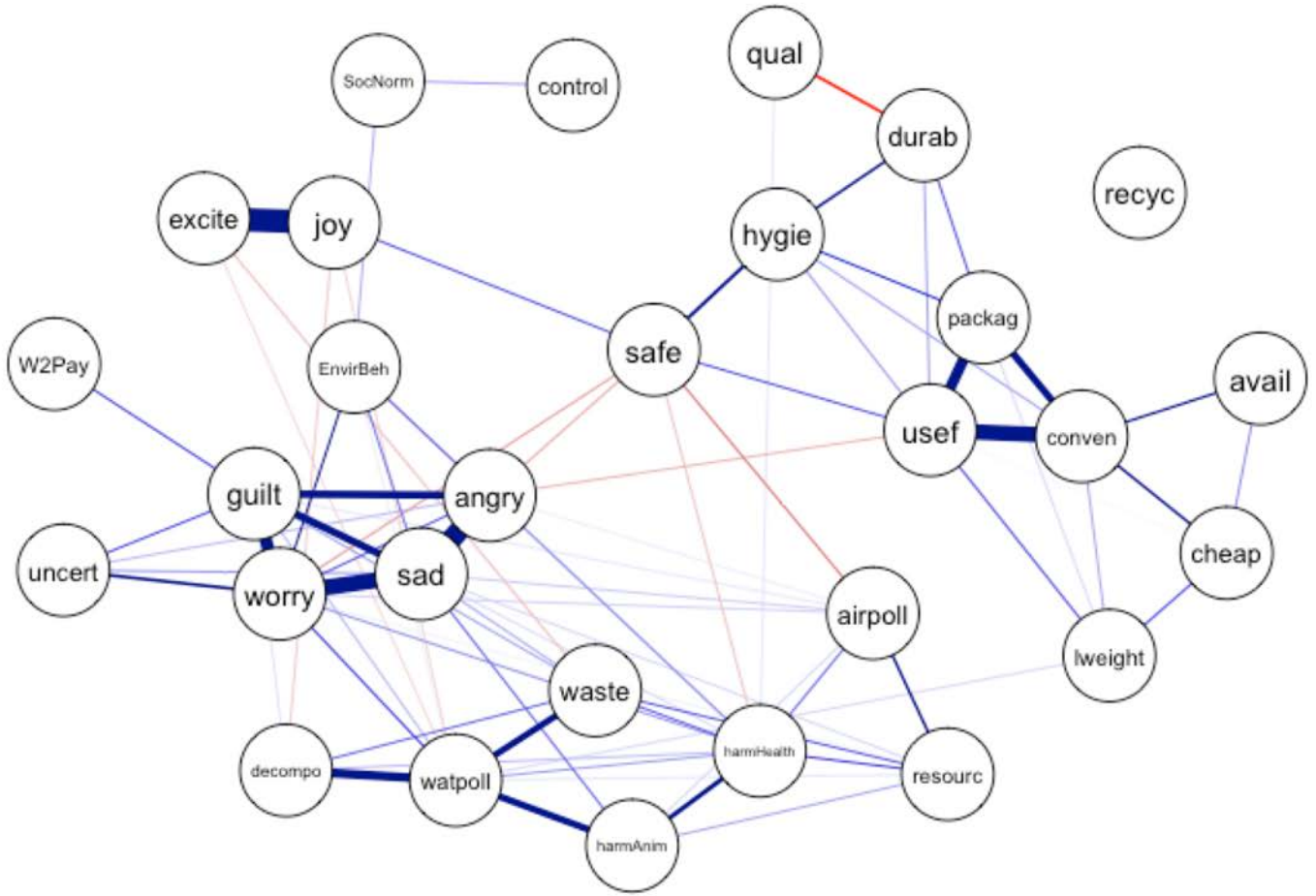
Qualitative thought-listing study (N = 95)

New Measure: 25 evaluative reactions (i.e. beliefs, emotions, and behaviours) that contribute to people's attitude towards (bio-based) plastic and its use. (Pilot study N = 52)

Online study (N = 508)
Causal Attitude Network model (Dalege et al., 2016)



Plastic network



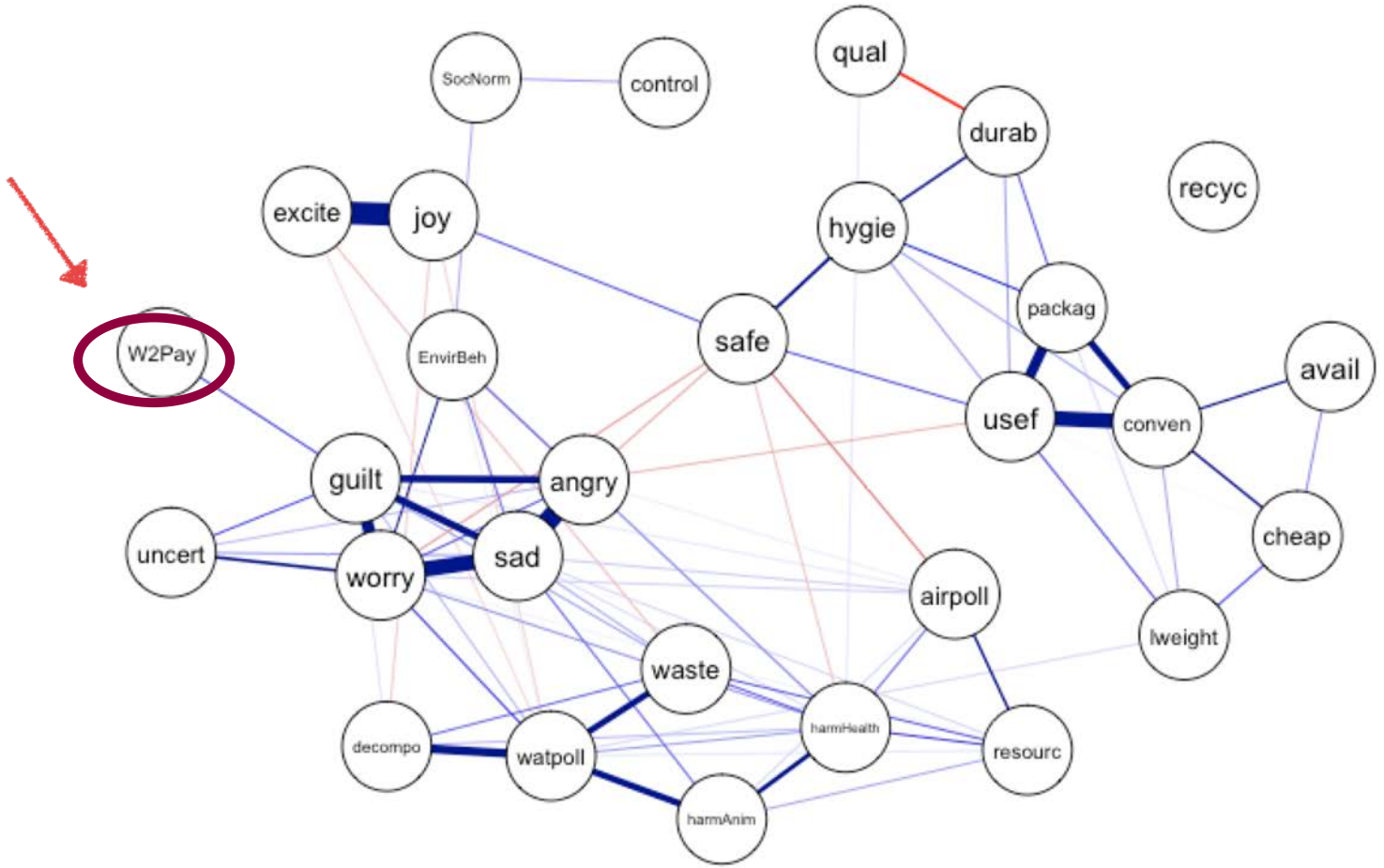


This 1.5L **regular** plastic bottle of water costs £1.

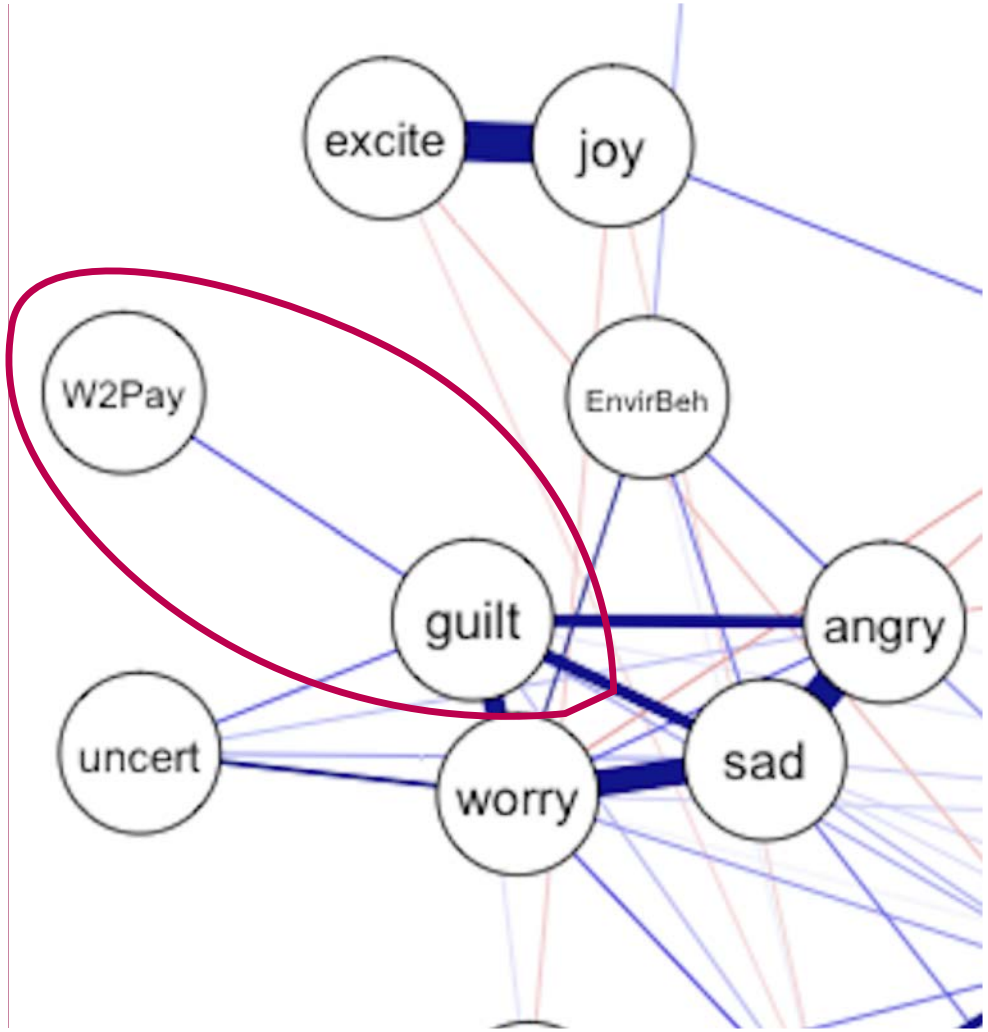
How much would you be willing to pay for the same bottle of water if it were made from **bio-based plastic**?

£0 £1 £2

Network approach



Network approach



Manipulating guilt - 3 conditions (N = 285)

General	Personal	Control
No personal involvement: The contribution of plastic production to global warming	**Your** contribution to global warming	The effect of plastic production on global warming is very small
(low) guilt	High guilt	No guilt

Manipulating guilt - 3 conditions (N = 285)

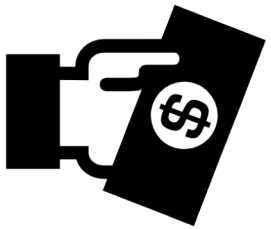
Guilt condition

General	Personal	Control
No personal involvement: The contribution of plastic production to global warming	**Your** contribution to global warming	The effect of plastic production on global warming is very small
(low) guilt	High guilt	No guilt

Willingness to pay

Bottle measure

Donation (behavioural measure)





Willingness to pay: bottle

Guilt



This 1.5L **regular** plastic bottle of water costs £1.

How much would you be willing to pay for the same bottle of water if it were made from **bio-based plastic**?

£0 £1 £2

Willingness to pay: donation

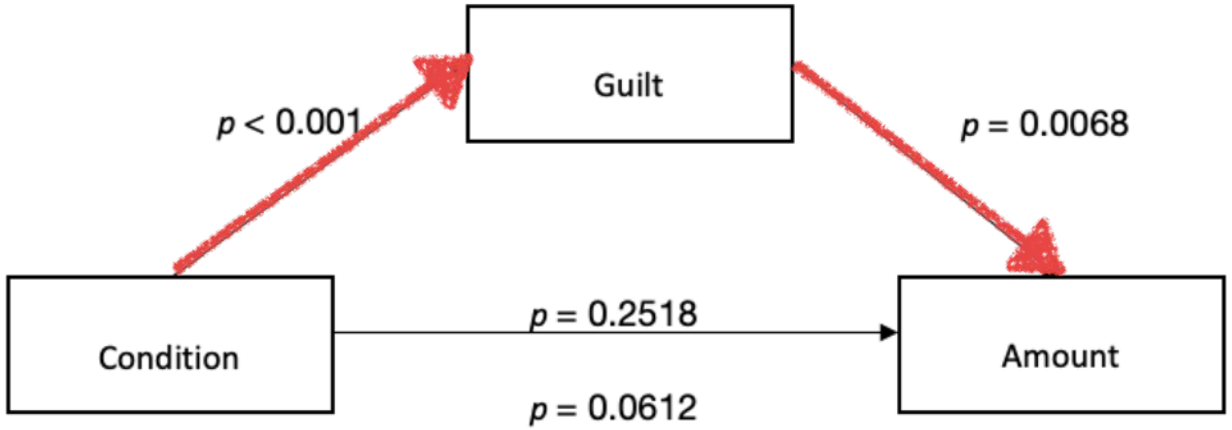
Guilt →



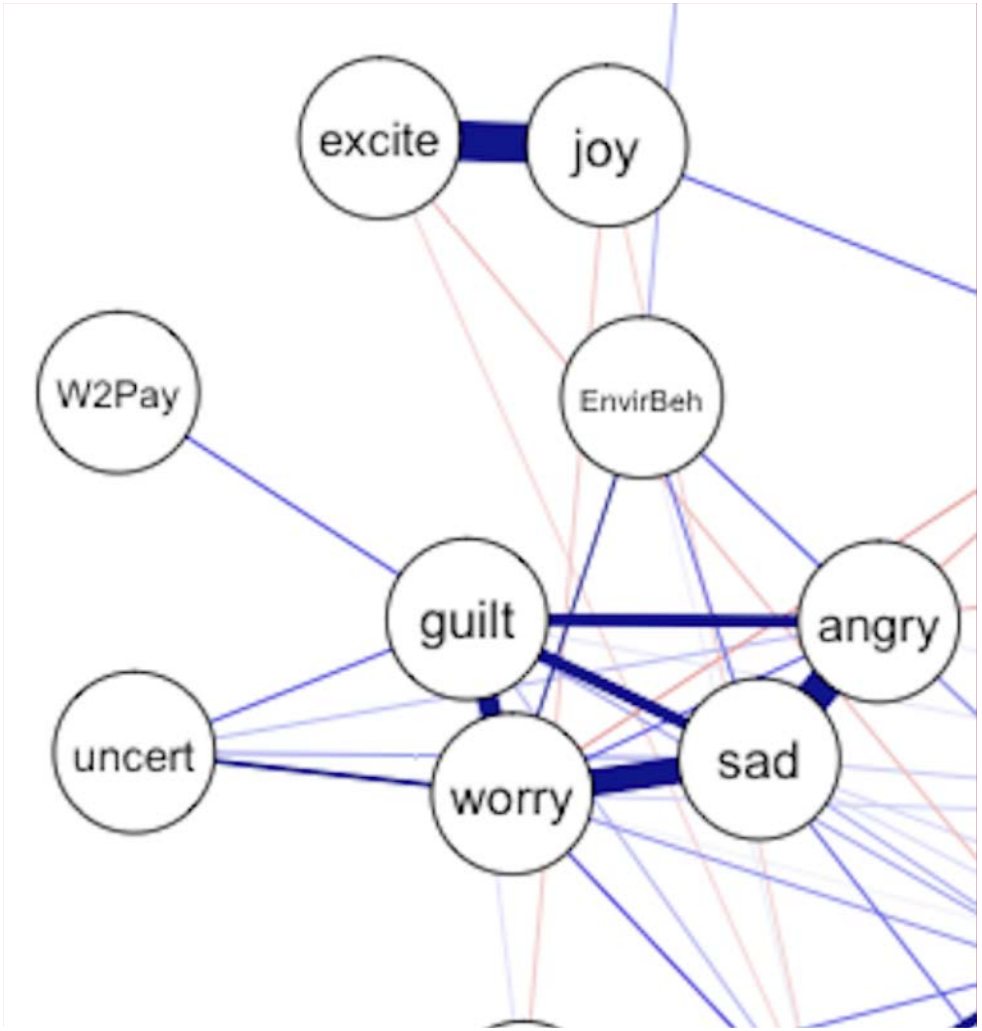
t(230.517) = - 1.966, p = 0.05*

*This is the corrected p-value suggested by the statistically significant Levene's Test for Equality of Variances. The uncorrected p-value was only marginally significant t(283) = - 1.800, p = 0.061.

Willingness to pay: donation



Emotions



Emotions

Stepwise regression to determine whether any of the other emotions that we measured predict donation amount.

- Anger
- Excitement
- **Guilt** ($t = 3.117$, $p = 0.002$, $\beta = 0.182$)
- Joy
- Uncertainty
- Sadness
- Worry



$R^2 = 0.033$, $F(1, 283) = 9.713$, $p = 0.002$

Attitude networks and energy-related behaviour

- Increasing adoption of renewables by consumers is key
- Empirical network models provide insight into primary drivers of behavior and inroads into targeted persuasion strategies.
- Bottom-up approach
- Future: Increasing the complexity of the system
  - Interplay between attitudes (e.g. trust in other consumers, industry, government)
  - Dynamics of attitude networks and social networks

