



Attitudes toward science : A social psychological analysis

VINCENT YZERBYT

UNIVERSITÉ CATHOLIQUE DE LOUVAIN

UNIVERSITY FOUNDATION, DECEMBER 7, 2017

Plan

The determinants of attitudes towards science

- (Rutjens et al., 2017)

The underpinnings of conspiracy beliefs

- (Douglas et al., 2017; Klein et al, 2010)

The constraints in opinion formation in the Internet age

- (Bronner, 2013)

Some facts showing cynicism

There seems to be more than reasonable skepticism about science...

What are the factors about cynicism about science that have people think

- Science and its method is fundamentally corrupt*
- Well-established and rigorous findings cannot be trusted*
- Scientific evidence and opinions have the same epistemic value*

The determinants of attitudes towards science

Cognitive limitations (not of the uneducated but of humans)

- Understanding science requires cognitive skills
- Interestingly, what are the tendencies of normal cognitive functioning
 - **Essentialism** : discrete categories when things are complex and fuzzy
 - **Teleology** : a sense of purpose when there is none
 - **Agency** : the ascription of intentionality when science posits no such thing
- Most scientific theories are at odds with these features

The determinants of attitudes towards science

Moral considerations (what is right and wrong)

- People oppose scientific endeavors because these oppose their values
 - Purity and naturalness: GMO
 - Moral offensiveness of findings decreases credibility: Cherry-picking of results
- The morality of science itself
 - Paradox: scientists are among the most respected occupations yet a portion of the public distrusts science
 - Scientists are seen to be less concerned with **binding** (ingroup loyalty, authority, and purity) than **individualizing** (fairness and care) moral foundations

The determinants of attitudes towards science

Motivational factors

- Epistemic motives: order and control
 - People want learn about the world and be able to predict future outcomes
- Existential motives: meaning
 - People need to see the world and one's place in it as having purpose and significance
- These needs are not necessarily exclusive and they may lead people to turn away from science but also to believe in science
- **Epistemic motives:** Experimental manipulation of control
 - To recall and describe in detail a situation in which the person had no control
 - Intelligent design, **Darwinian theory**, a predictable evolution process

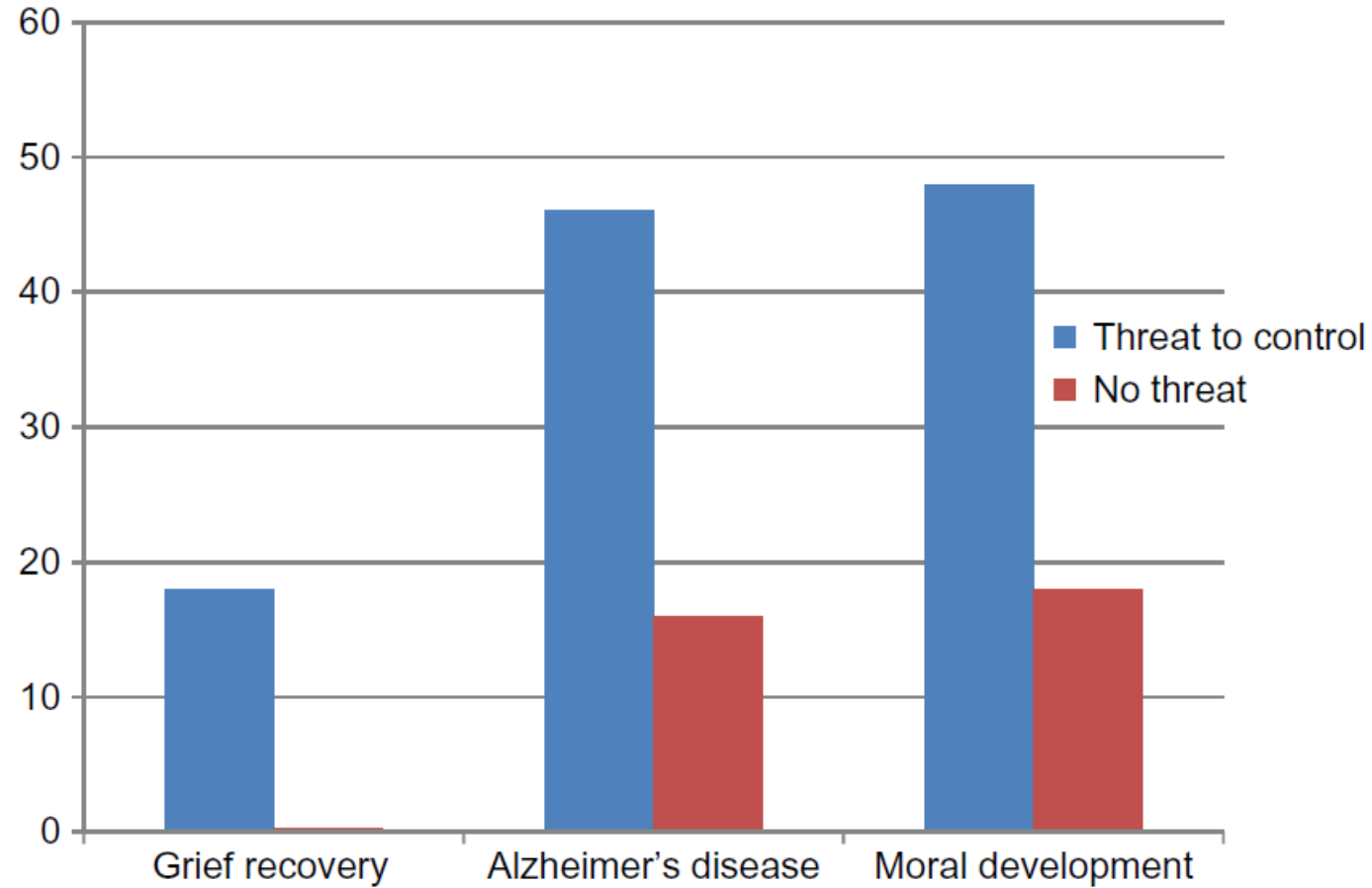


Fig. 1 Percentage of participants preferring stage theories of grief recovery, dementia, and moral development over continuum theories of the same processes (Rutjens, van Harreveld, van der Pligt, Kreemers, et al., 2013).

The determinants of attitudes towards science

Ideological factors

- Religious beliefs and political ideology (conservatism)
- Research show that political or religious beliefs are not enough to predict science rejection (Hornsey et al, 2016; Lewandowsky et al, 2013, 2016)
- It all depends on the topic (Rutjens et al. 2017)
 - More skepticism about climate change among conservatives
 - More skepticism about vaccination among religious
 - No impact of ideology or religion for GMO attitudes
- In general, religious orthodoxy is a negative predictor of faith in science

The underpinnings of conspiracy beliefs

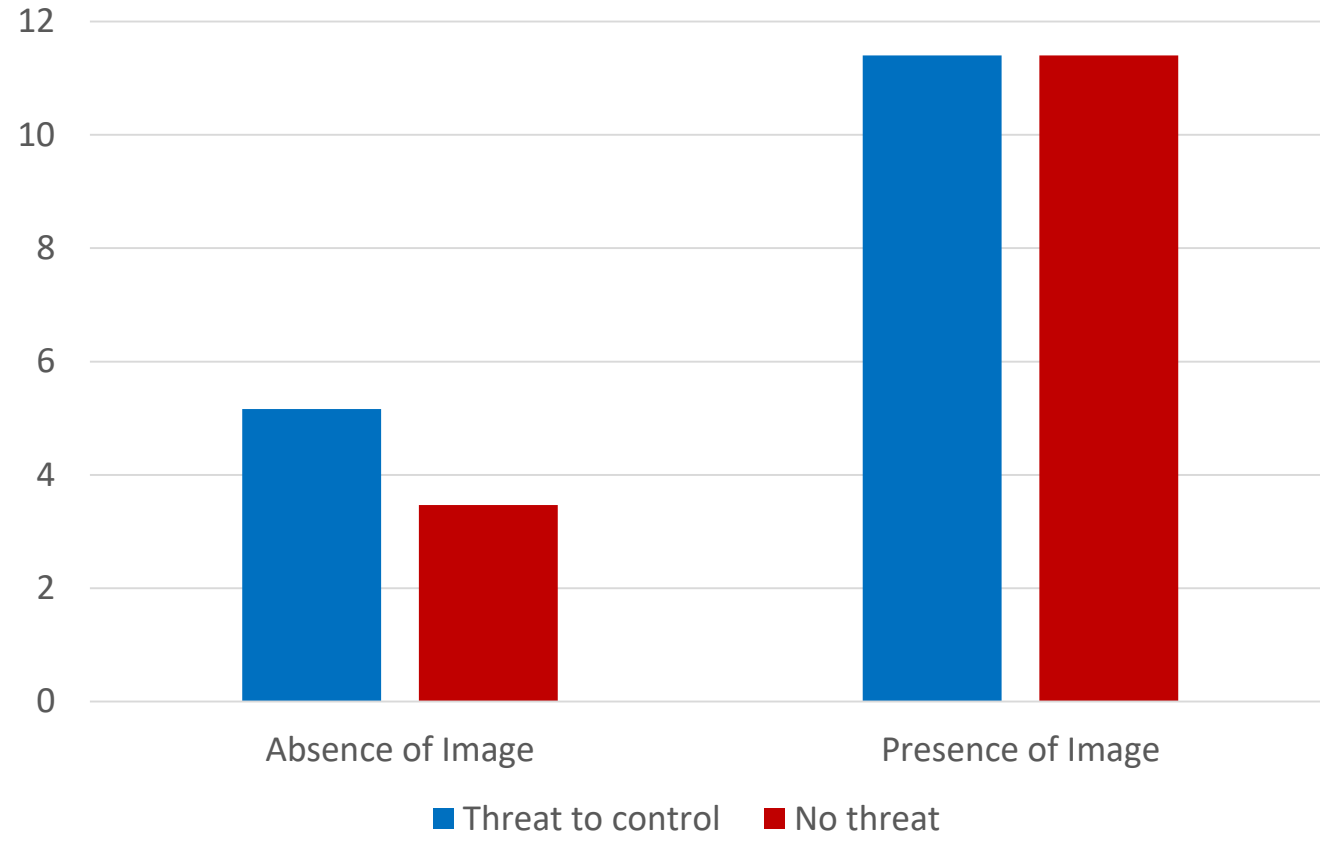
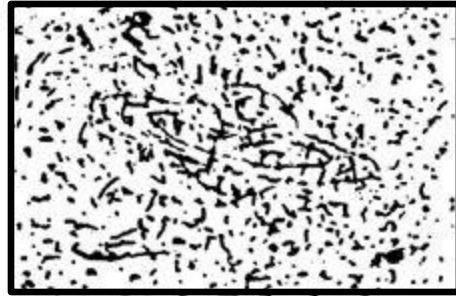
Science is a social enterprise (Merton, 1973)

- Disinterestedness, communalism, organized skepticism, universalism
- When norms appear violated (universalism with male & liberal bias), then public lowers acceptance of science
- Scientists are also perceived to be at the center of conspiracy theories colluding with each other in order to distort, conceal and falsify their results
- Conspiracy theories also serve social needs (underdogs and left-out)

The underpinnings of conspiracy beliefs

Bounded rationality

- Not a pathological but a **normal** mode of thinking
 - Conjunction fallacy, intentionality, typicality of causes: all make them better explanations
- People are not cartesians but they are spinozians
 - Withholding judgment is not what people do. Rather, they take sides.
 - Once an option is being adopted, then **confirmation biases** enter the picture
 - Even the **clear absence** of relation is neglected when a theory exists (Rhedelmeier & Tversky, 1996)
 - Even the **clear negation** of evidence fails to influence once a theory has been created (risk versus caution and success in firefighters) (Anderson et al., 1980)



Whitson & Galinsky, 2008

The social psychological determinants of opinion

People who 'oppose' are more motivated and more active to disseminate

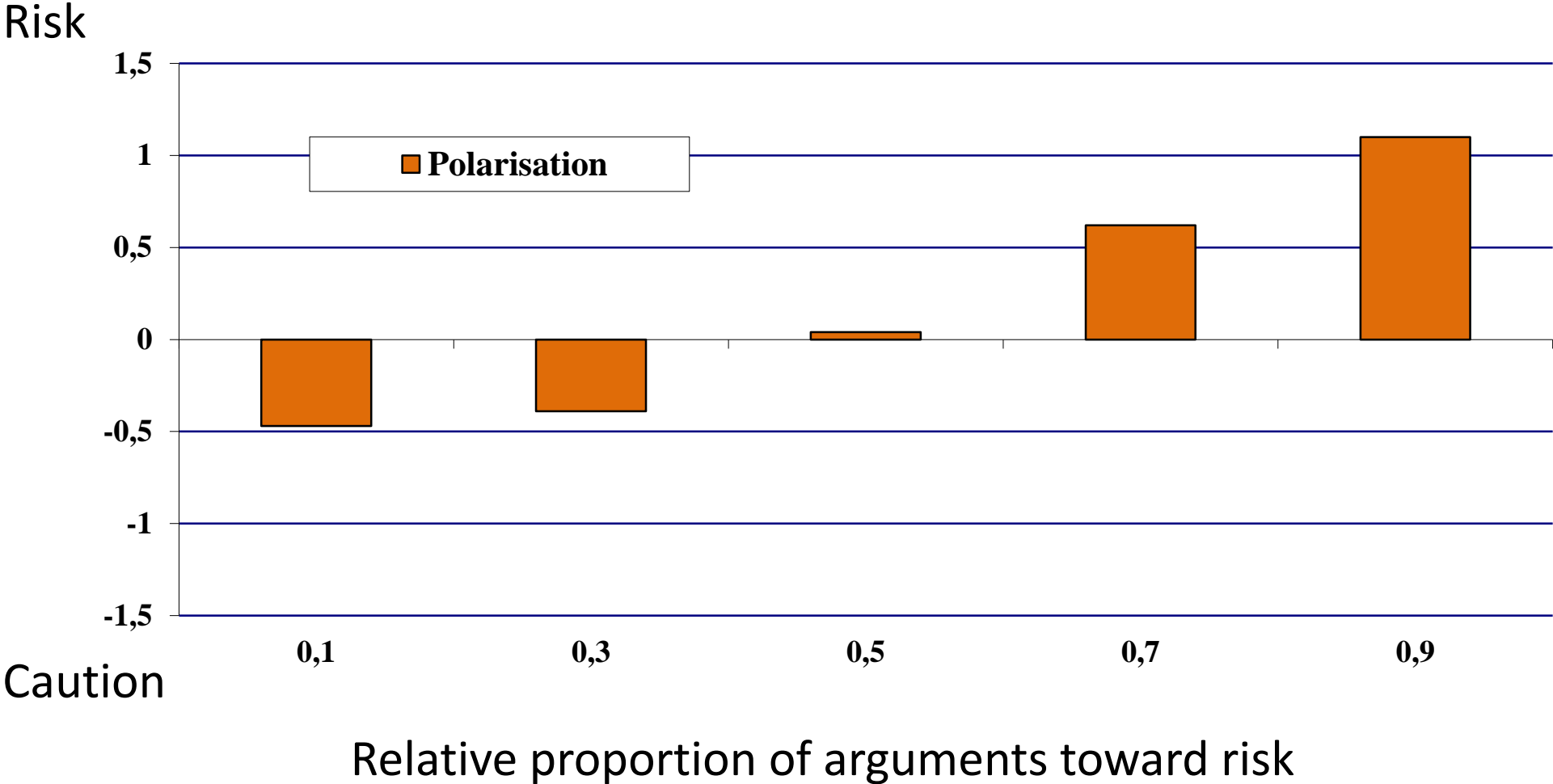
- In a site called Digg.com, 900 000 followers, 30 people generate a third of the articles on the home page
- The browsers do not correct for the imbalance in the supply of arguments in the Pagerank algorithm
 - For a selection of 5 largely non-scientific topics (astrology, crop circles, Monster of the Loch Ness, psychokinesis, aspartam)
 - Content of the 30 first sites proposed by Google
 - 82.5 % are in favor of the non-scientific position

Social media community are largely immune to alternative views: the gap is growing

- Self-selection of exposure

Research on **group polarization** shows a strong impact of both the pool of arguments and the self-selection of discussion participants

Polarisation as a function of proportion of arguments (Ebbesen & Bower, 1974)



Conclusions

Rejection of science is fueled by a mixture of concerns

- If the evidence goes against people's views of right and wrong
- If the evidence threatens a psychological need
- If the evidence contradicts people's ideological and religious views

The psychological mechanisms at work are not those of pathological people

- Much is the consequence of our bounded rationality
- Our fundamentally 'spinozian' mind
- confirmation bias

The combination of our minds and the nature of the cognitive market: social media and distrust

- People who 'oppose' some truth are more motivated and more active
- The browsers do not correct for the imbalance in the supply of arguments
- The social media community are immune to alternative views: the gap is growing

The logo of the University of Louvain (UCL) is located in the top right corner. It consists of the letters 'UCL' in a bold, white, sans-serif font, centered within an orange square. Below 'UCL', the words 'Université catholique de Louvain' are written in a smaller, white, sans-serif font, also centered. The entire logo is set against a white background.

UCL

Université
catholique
de Louvain

Thank you

VINCENT YZERBYT

UNIVERSITÉ CATHOLIQUE DE LOUVAIN

UNIVERSITY FOUNDATION, DECEMBER 7, 2017