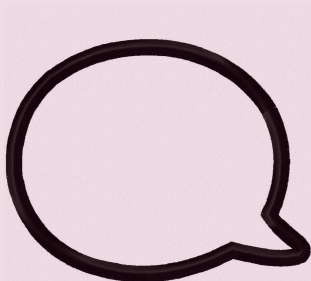




1. SEE SOMETHING
2. THINK OF A REASON WHY
3. FIGURE OUT A WAY TO CHECK YOUR REASON
4. AND?
5. NOW, EVERYONE GETS TO DUMP ON YOU
6. REPEAT, UNTIL A CONSENSUS IS FORMED



**YOU DON'T HAVE TO BE A  
SCIENTIST TO SEE THE MERIT  
IN BEING ABLE TO THINK  
LIKE A SCIENTIST.**



$$DU = DQ - DW$$

(internal energy)                      (heat)                      (work)  
(water states)                      (temperature)                      (wind, waves)



*“science culture”*

**or**

*whereby one recognizes that science does not  
operate in isolation*



US NSF 2012 statistics show that citizens generally can answer about 60% science knowledge questions, and about 30% of the science process questions (largely unchanged for the last 12 years).

According to data from a June 2014 Gallup Poll, 42% of Americans believe themselves to be fully literate on matters of avian phylogeny and development (i.e. birds developed on Day Five, because, you know... creationism).

The most recent national *Climate Change in the American Mind* survey (October 2015) found that about 1 in 6 Americans think that global warming is not happening.

TRUE OR FALSE?

Recently a paper was peer reviewed and accepted at the *International Journal of Advanced Computer Technology*. The paper contained used word “f\*\*king” over 500 times.

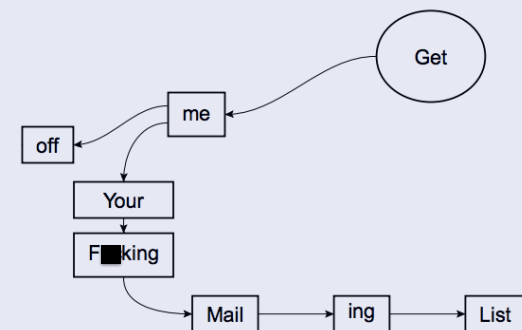
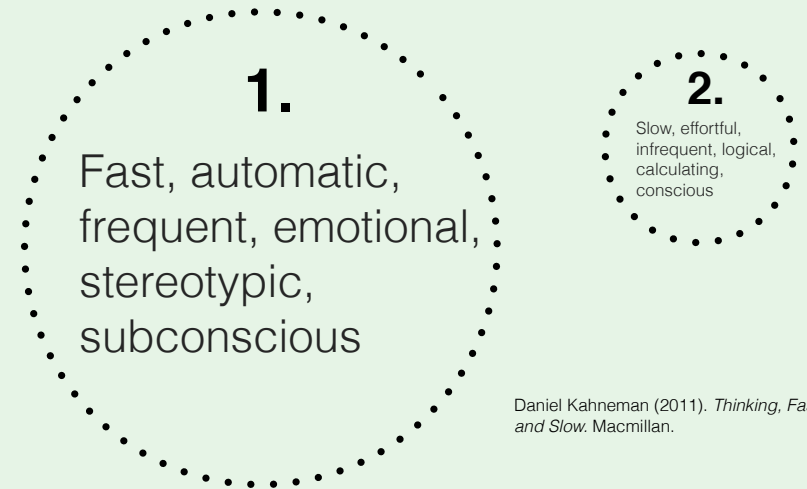


Figure 1: Get me off your f\*\*king mailing list.

## TRUE OR FALSE?

“Jedi Mind Trick” is a term that has been academically recognized in psychological research on *coercion persuasion*.

COGNITIVE BIASES ALWAYS FAVOUR SYSTEM 1.



THINKING SCIENTIFICALLY IS **HARD WORK**



THE ANCHORING EFFECT

THE SLEEPER EFFECT

FEAR (IS COMPLICATED), LOSS AVERSION

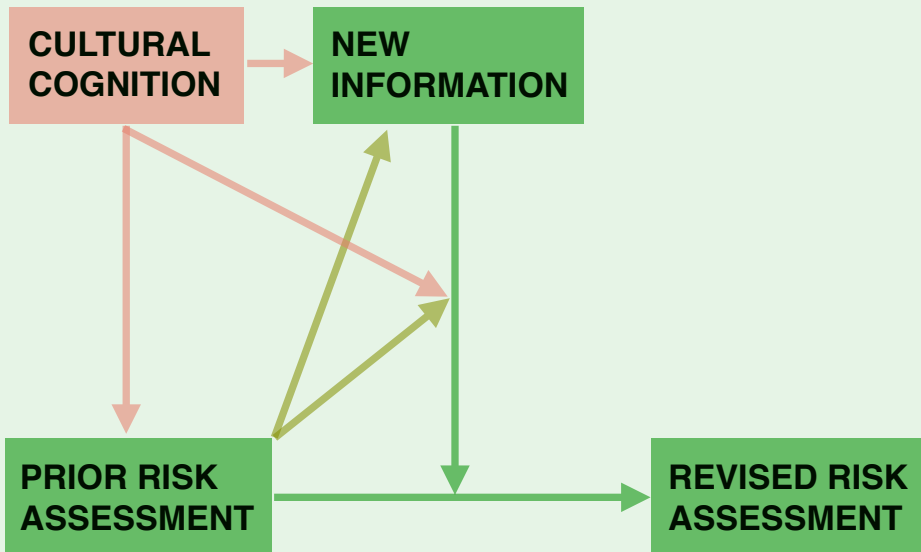
THE FOOT IN THE DOOR EFFECT

AVAILABILITY HEURISTIC, FRAMING

DESCRIPTIVE NORMS (SOCIAL NORMS)

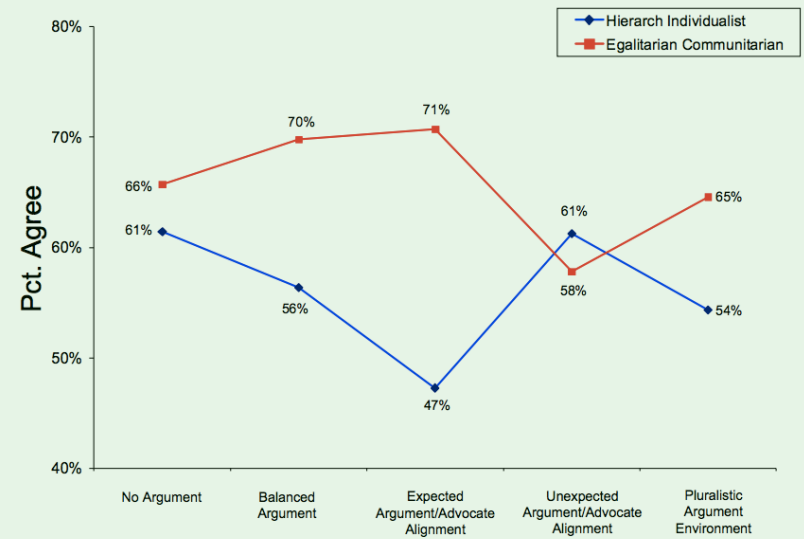
## TRUE OR FALSE?

US Research has shown that the more highly educated a Republican is, the more likely they will disagree with the scientific consensus on anthropogenic climate change.



Adapted from Dan Kahan, [Cultural Cognition as a Conception of the Cultural Theory of Risk](#), in Handbook of Risk Theory: Epistemology, Decision Theory, Ethics and Social Implications of Risk 725-760 (eds. Hillerbrand, R., Sandin, P., Roeser, S. & Peterson, M.) (Springer London, Limited, 2012)

### "The HPV vaccine is safe for use among young girls..."



[Cultural Cognition as a Conception of the Cultural Theory of Risk](#), in Handbook of Risk Theory: Epistemology, Decision Theory, Ethics and Social Implications of Risk 725-760 (eds. Hillerbrand, R., Sandin, P., Roeser, S. & Peterson, M.) (Springer London, Limited, 2012)



(equalized for "child size")

