

Confirmation Bias

'Confirmation Bias' describes the tendency we have to notice or seek out information that confirms our existing opinions and to avoid or reject information that might suggest our opinions are wrong.

In essence we like to be right and dislike being wrongⁱ and this significantly influences the way we evaluate the evidence. It can be distinguished from the deliberate manipulation of evidence. Confirmation bias operates more at the subconscious level although, in practice, it might not be possible to tell whether someone is cynically manipulating the evidence or whether they have made what they consider to be an honest appraisal of the evidence but their conclusions are just a reflection of their prior convictions.

The term 'Confirmation Bias' was introduced by the psychologist Peter Wason in 1960 but the tendency it describes has been recognized for a long time.

What a man believes upon grossly insufficient evidence is an index into his desires...desires of which he himself is often unconscious. If a man is offered a fact which goes against his instincts, he will scrutinize it closely, and unless the evidence is overwhelming, he will refuse to believe it. If, on the other hand, he is offered something which affords a reason for acting in accordance to his instincts, he will accept it even on the slightest evidence.

Proposed Roads To Freedom, Bertrand Russell (1919)

The human understanding when it has once adopted an opinion (either as being the received opinion or as being agreeable to itself) draws all things else to support and agree with it. And though there be a greater number and weight of instances to be found on the other side, yet these it either neglects and despises, or else by some distinction sets aside and rejects, in order that by this great and pernicious predetermination the authority of its former conclusions may remain inviolate...

And such is the way of all superstition... wherein men, having a delight in such vanities, mark the events where they are fulfilled, but where they fail, though this happen much oftener, neglect and pass them by. But with far more subtlety does this mischief insinuate itself into philosophy and the sciences; in which the first conclusion colours and brings into conformity with itself all that come after, though far sounder and better.

Besides... it is the peculiar and perpetual error of the human intellect to be more moved and excited by affirmatives than by negatives; whereas it ought properly to hold itself indifferently disposed toward both alike.

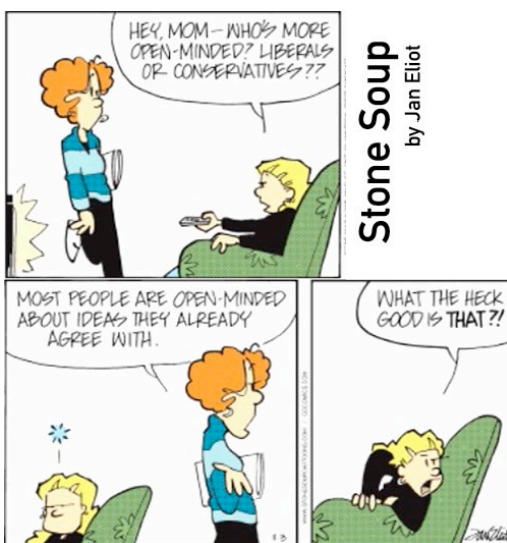
*The New Organon or: True Directions Concerning the Interpretation of Nature
Francis Bacon (1620)*



Experimental evidence

Various psychological experiments have confirmed the reality of confirmation bias. Wason's classic 2–4–6 task had an experimenter saying that they had formulated a rule that governed a sequence of numbers and told the participants that [2, 4, 6] conformed to the rule. The participants then had to guess the rule and suggest other sequences to test their guess. If their sequence conformed to the rule they were told 'yes' and if it didn't they were told 'no'. Typically participants would guess that the rule was numbers ascending in twos and test that guess with sequences such as [8,10,12] or [10, 12, 14]. In fact the rule was any three numbers in ascending order. About 80% of participants failed to identify the rule because they persisted in suggesting sequences that confirmed their guess rather than suggesting sequences that would show their guess to be incorrect. Although it is generally agreed that confirmation bias does exist more recent writers have argued that the 2–4–6 task doesn't properly distinguish between confirmation bias and useful hypothesis testing strategies that look similar but do not involve confirmation bias.

In 1979 Snyder and Cantor conducted an experiment that showed we are biased even when selecting from our own memories. Participants were given information about a woman who exhibited both introverted and extroverted behaviour. A week later the participants were divided into groups. One group was asked to rate her suitability for a job as a librarian, the other as an estate agent. Both groups were then asked to cite examples of both her introverted behaviour and her extroverted behaviour. The group who had been asked to rate her suitability as a librarian were able to recall more examples of introversion; the group rating her suitability as an estate agent were able to recall more examples of extroversion.ⁱⁱ



"During the 2008 U.S. presidential election, Valdis Krebs at orgnet.com analyzed purchasing trends on Amazon. People who already supported Obama were the same people buying books which painted him in a positive light. People who already disliked Obama were the ones buying books painting him in a negative light."ⁱⁱⁱ

Confirmation bias explains why people tend to buy newspapers, subscribe to twitter feeds or select other news media that reflect their own viewpoint. In 2009 a study at Ohio State University^{iv} assessed participants' attitudes to various issues. Then their reading of some specially created online magazines was monitored. The results showed that participants spent about a third more time reading articles that were consistent with views they already held.

Real life examples of Confirmation Bias

Nickerson describes confirmation bias as 'a ubiquitous phenomenon in many guises'^v and gives examples from

- Number mysticism—e.g. the discovery of supposedly significant numbers in the shape and proportions of the pyramids.
- Witch hunting—where once someone was suspected of being a witch the system made it very easy to accumulate confirming evidence.
- Policy Rationalization—"Once a policy has been adopted and implemented, all subsequent activity becomes an effort to justify it"
- Medicine—in the past much more than today the fact that somebody got better after a treatment confirmed the efficacy of that treatment whereas those who didn't tended to be ignored. This is still evident in the support people give to a range of pseudo-medical therapies.

- Judicial reasoning—jurors are meant to keep an open mind until they start their deliberations but there is strong evidence that jurors make up their mind early in a trial and then later evidence is selectively used to confirm that opinion.
- Science—although science may be less susceptible to confirmation bias than other disciplines the history of science "contains many examples of individual scientists tenaciously holding on to favoured theories long after the evidence against them had become sufficiently strong to persuade others without the same vested interests to discard them."



Confirmation bias is also implicated in the belief in miracles; answered prayer; astrology; the collection of forensic evidence; irrational economic behaviour; and many other areas.

Once the possibility of confirmation bias is recognised it is possible to ameliorate its effects, e.g. publishing research so that it can be scrutinized by others who may be less drawn to the conclusions can help ensure that all the evidence is considered fairly; in the legal system jurors can be prevented from knowing about any past convictions of the accused and warned not to do any additional research on the internet while the trial is in progress.



Find out about the MMR-Autism scandal and explain how confirmation bias may have played a role.

Confirmation Bias and Arguments

Confirmation bias can affect arguments in two main ways—the construction of the argument and the evaluation of the argument.

An argument consists of a conclusion, the point the argument is trying to establish, supported by reasons for accepting that conclusion. When a person is constructing an argument confirmation bias can affect the selection of evidence. An 'authority' who has said something that supports the conclusion may be cited whilst other authorities who, objectively, are of equal status or significance are ignored. Instances that support the conclusion are mentioned but those that don't are ignored. This is a particular problem with inductive arguments using anecdotal evidence. For example, someone may believe that it is possible to see the future in your dreams. To show that this is true they recount a number of stories, which may well be true, where people have dreamt about a disaster or a plane crash or some such event and then woken to hear of just such an event happening.

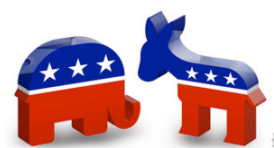


Explain what information this kind of argument is ignoring and why it is significant.
Explain how confirmation bias and the post hoc fallacy can be related.

Confirmation bias can also affect the evaluation of arguments. Just as when the argument was written, whether or not an 'authority' is regarded as appropriate can be influenced by whether the reader has already accepted or rejected the conclusion. 'Authorities' that are supporting a conclusion that is less acceptable to the reader are likely to be subject to much closer scrutiny than those who are supporting acceptable conclusions. Inductive arguments are likely to be thought of as stronger arguments if the conclusion is more palatable.



Investigate how in the USA Republican and Democrat supporters have different views on climate change. What role might confirmation bias play in this?



Additional resources

Geese that grow on trees?

<https://www.youtube.com/watch?v=zWSe2qezhm4>

What is Confirmation Bias?

https://www.youtube.com/watch?v=hcucGn_X8AA

Confirmation Bias: A Ubiquitous Phenomenon in Many Guises

Raymond S. Nickerson

<http://psy2.ucsd.edu/~mckenzie/nickersonConfirmationBias.pdf>

Notes

ⁱ The exact mechanism that leads to confirmation bias is debated. For some it is driven by the emotional need not to be wrong but for others it is to do with cognitive efficiency. It is easier to think of instances that conform to a rule rather than instances that do not. From an evolutionary perspective if the strategy works well enough most of the time then that will ensure its continued use if the alternative is to use a more demanding strategy.

ⁱⁱ Snyder, M.; N. Cantor (1979). "Testing hypotheses about other people: the use of historical knowledge". *Journal of Experimental Social Psychology* 15 summarized by Goldacre, Ben (2008). *Bad Science*. London: Fourth Estate. p. 231.

ⁱⁱⁱ Mcraney, D. (2012). *You Are Not So Smart: Why Your Memory Is Mostly Fiction, Why You Have Too Many Friends On Facebook And 46 Other Ways You're Deluding Yourself* pub. Oneworld. p.29

^{iv} Knobloch-Westerwick, Silvia. and Meng, Jingbo (2009) Looking the Other Way: Selective Exposure to Attitude-Consistent and Counterattitudinal Political Information. *Communication Research* June 2009 vol. 36 no. 3 pp 426-448

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http://citation.allacademic.com//meta/p_mla_apa_research_citation/2/3/1/3/5/pages231351/p231351-2.php

^v Nickerson, R (1998), Confirmation Bias: A Ubiquitous Phenomenon in Many Guises, in *Review of General Psychology* 1998, Vol. 2, No. 2, p.175-220