Open letter to The Independent - Pilots 'very likely' to misjudge flying conditions due to irrational decisions, revisited

By Jose Perezgonzalez, 2016, Dec. 22
(Massey University, New Zealand)

doi: 10.6084/m9.figshare.4490789

Jess Staufenberg's news article (2016, http://www.independent.co.uk/news/science/pilots-very-likely-to-misjudge-flying-conditions-due-to-irrational-decisions-psychology-study-a7033481.html) comments on research reported by Walmsley and Gilbey (2016, doi: 10.1002/acp.3225)—also commented upon by Fradera on a blog for the British Psychological Society, 2016, https://digest.bps.org.uk/2016/05/16/sorry-to-say-but-your-pilots-decisions-are-likely-just-as-irrational-as-yours-and-mine/). An interview with the corresponding author also yielded extra information, especially the verbalization that practically all pilots fell prey to cognitive biases and the hint that pilots were making irrational decisions.

In reality, Walmsley and Gilbey's own results do not support much of the conclusions posed. I have commented upon this on Fradera's blog (see https://digest.bps.org.uk/2016/05/16/sorry-to-say-but-your-pilots-decisions-are-likely-just-as-irrational-as-yours-and-mine/comment-page-1/#comment-10868). Below, however, I have further expanded on information which is specific to Staufenberg's news article, especially information about minima meteorological conditions for visual flight rules (VFR) flying in the UK and New Zealand, as well as a breakdown of the percentage of pilots in Walmsley and Gilbey's study which contradicts the information provided.

Table 1: Minima meteorological conditions for VFR flights, fixed wing aircraft (Cessna 172, cruise speed = 122 knots), flying below 3000 feet (https://www.bfgc.co.uk/VFR_Guide.pdf)

UK minima MET	**Within controlled zone**	**Outside controlled zone**
Visibility	5 km	1.5 km (if <140 knots)
Cloud distance (vertical)	Clear of cloud / in sight of surface	Clear of cloud / in sight of surface
NZ minima MET		
Visibility	5 km	5 km
Cloud distance (vertical)	500 ft	Clear of cloud / in sight of surface

Study 1's relevant findings (assuming equal number of pilots per group):

- Pilots who, on average, perceived cloud height and visibility correctly: 50% (good-forecast group)
- Pilots who, on average, perceived cloud height and visibility incorrectly: 50% (bad-forecast group)

Thus, it is not reasonable to conclude that *"Pretty much all the pilots we tested fell prey to these biases"* nor that *"Only a small minority are an exception to these rules"*. Indeed, the opposite assertion is more warranted: that 50% of pilots showed no discernible effect of cognitive anchoring on perception, but only those given a bad forecast beforehand.

- Pilots who, on average, decided it was somewhat safe to continue the flight according to either UK or NZ minima MET = 100% = showed rational decision making

Thus, it is not reasonable to conclude that *"Pilots are prone to making poor decisions while flying in bad weather because of irrational thinking habits"*. Indeed, the opposite assertion is more warranted: that all pilots, including those whose perception was affected by a low anchoring, made decisions which were rational according to current minima MET.

Study 3's relevant findings (assuming equal number of pilots per group):

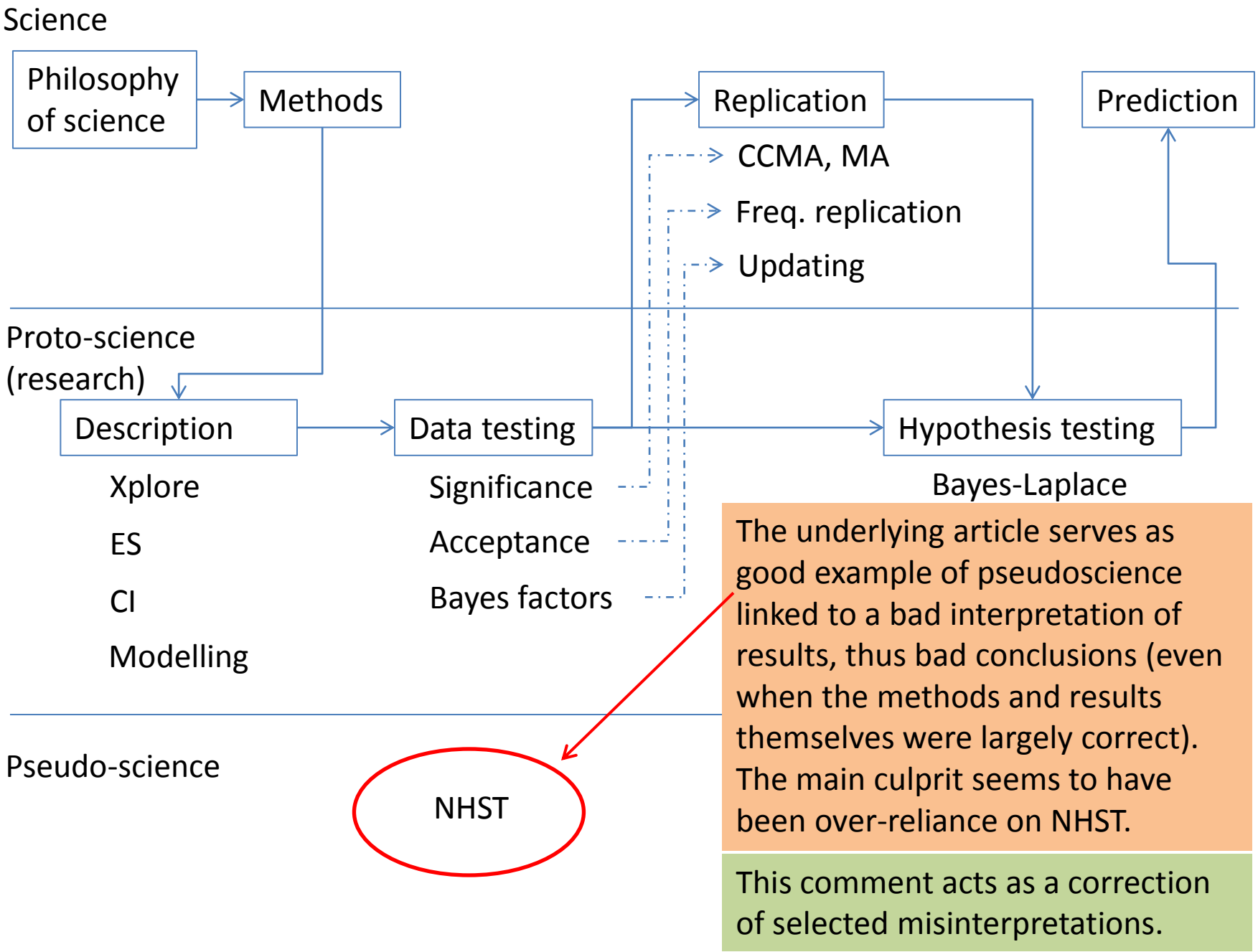
- Pilots who, on average, gave no opinion regarding the quality of decision making or risk behaviour by third-party pilots: 66% (positive outcome and control groups)

Thus, it is not reasonable to conclude that *"Pretty much all the pilots we tested fell prey to these biases"* nor that *"Only a small minority are an exception to these rules"*. Indeed, the opposite assertion is more warranted: that a majority of pilots showed no discernible effect of outcome bias on perception or judgement, but only those subjected to negative outcomes (i.e., those who were told a pilot ahead of them had crashed).

- Pilots who, on average, assessed their capability to flight under similar MET conditions as better than third-party pilots, independently of condition = 100% = their self-assessment seemed dependent on risk perception, not on outcome bias

Thus, it is not reasonable to conclude that "*Pilots are prone to making poor decisions while flying in bad weather because of irrational thinking habits*". Indeed, the assertion most warranted seems to be that pilots showed a self-serving bias throughout conditions (i.e., they claimed to be slightly safer pilots than others in all conditions, even after adjusting their decisions to fly depending on perceived risk).

In summary, Staufenberg's news article makes no justice to the population of pilots which was the target of the original study. The widespread influence of *The Independent*'s article on other news and social outlets is such that pilots may be demonized in an unwarranted manner. A correction (or retraction) of the article is needed so that any conclusion reported fits the results obtained rather than a misinterpretation of the same.


Science
Philosophy of science
Methods
Replication
Prediction
CCMA, MA
Freq. replication
Updating
Proto-science (research)
Description
Data testing
Hypothesis testing
Xplore
ES
CI
Modelling
Significance
Acceptance
Bayes factors
Bayes-Laplace
Pseudo-science
NHST
The underlying article serves as good example of pseudoscience linked to a bad interpretation of results, thus bad conclusions (even when the methods and results themselves were largely correct). The main culprit seems to have been over-reliance on NHST.
This comment acts as a correction of selected misinterpretations.

Open letter to The Independent - Pilots 'very likely' to misjudge flying conditions due to irrational decisions, revisited

Perezgonzalez, JD

2016-12-22