Assessing research

Lukáš Hejtmánek

September 2, 2018

1 Who did it?

One of the best approaches to assessing research credibility is to get to know the people behind it. Their background, workplace, motivations etc. Maybe you know them personally, maybe you know the institution they work for. Maybe somebody else whom you trust vouched for them. Is pharmacological research done by pharmaceutic corporation as credible as research from university team? If their results did not match, who would You believe? What if the person leading the pharmaceutic team was a Nobel prize winner?

2 Where was it done?

It's always important to asses the participant bias, location bias and methodology bias. Experiments in laboratory on psychology students are not well generalized to the broad population. When You consider that major portion of psychology research comes from Europe or North America, how can that shape Your knowledge about people in general? Do you know anything about Chinese psychology? Psychology practices in South Africa o middle east?

3 When was it done?

Time schedule is also very important. Especially when learning about older (more than 10 years old) research. The paradigm in psychology is changing slower than in biology, but significantly faster than in physics or mathematics. It is important to consider the paradigm and general beliefs at the time of the publication. For example strong behaviorism is not well received these days, but it was a main stream on psychological science sixty years ago. What will happen to neurosciences or cognitive psychology in fifty years form now?

4 Is there a bias? If so, is it a problem in this case?

Many studies have biases. Gigantic portions or published papers in psychology use non-randomized studies, solely psychology students as subjects, but are still valid and important. It is crucial to understand the difference between a social study on gender equality done in Sweden (biased) vs. language acquisition study done in Japanese kindergarten (also biased, but not necessarily incorrect).

5 Was the method well chosen for the purpose?

Sometimes we need only one person to understand the underlying concepts, sometimes we need a thousand. Choice of valid experiment and statistics is crucial. Quasi experiments, correlation studies or even qualitative studies are sometimes perceived as unscientific (researchers cannot control the independent variables), but are often the only way to study certain phenomena. When you study effect of natural disasters on well-being and stress, You cannot randomly determine where it will happen. The same goes for prevalence of disorders, twin studies, gender studies and many others. The problem arises when the topic of interest could have been studied in a controlled environment, but wasn't.

6 Does the statistical test answer the hypothesis?

This question requires little more knowledge on Your part. But as You understand statistics better, You will be able to determine whether the question asked by the researcher can really be answered by the statistical test. Whereas t tests is able to locate quantitative difference, it cannot determine the shape or quality of the relation between variables. For example, t test shows that people who eat more chicken are taller than people who eat little of chicken. But the same test does not state what the relationship is. Maybe people who don't eat chicken at all are the tallest of all. Different tests are suitable for different questions.

7 Was the interpretation concordant with the method and statistical analysis?

This is a combination of the last two questions. Method is chosen to challenge certain view, but if the interpretation does not follow the constraints of it, the researcher cannot draw correct conclusions. If the method is a questionnaire of five personality traits, but the interpretation state that people are more neurotic (rather that stating that people score more on the neurotic scale or tend to manifest more neurotic symptoms in the questionnaire), it might not be accepted well by people who use different methods, such as clinicians. The choice of the statistical test applicable to the method is also paramount.

8 What was the purpose of the study? Was it necessary? Was it important? Ethically well done?

These questions are up to everyone's consciousness and knowledge. The ethical aspect does not necessarily undermine the research credibility, but unethical experiments can produce different results, possible better or worse. Problem with unethical research is also that they are rarely reproduced.

Then the purpose of the study as well as its necessity can shape its direction. When people are in desperate need to produce something, invent or discover new theories in a particular area, even smaller accomplishments seem larger. Always try to assess the importance of the results with regard to current state of knowledge and direction of research.