How Can I know if Research is 'Right'?
A ten-step users-guide to finding out the value of a study

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We can't open a newspaper or magazine, or turn on the television or radio these days without the results of a new 'survey' being announced. But how do you know if such research is reputable or accurate? Fortunately there are a number of ways of finding out what makes research more reliable, which are outlined here to help you understand any studies you hear about. It isn't difficult to find out about the quality of research, you do not have to have a degree, or be a scientist, you just have to have an inquiring mind and be prepared to do a little detective work using the following ten questions as a guide.

1a. How did you hear about the research?
Chances are you heard about it in the media, but are they reporting their own study – or someone else's? If it was mentioned in a magazine or paper, or on TV or radio, was it described as a 'national or international study', or did the research seem to have been conducted for that magazine or TV station alone? You might hear a newsreader say 'a poll conducted for our show 'Politics Today' revealed' – in which case the study was based on viewers of that station/TV show. Figuring out where you heard about the research, and who completed it allows you to chose whether the media are reporting on a story completed for them or based on their readers; or a story sent to them by someone else. It's okay for magazines or media companies to do in-house research, but remember their results will only be applicable to their readers/viewers, not society as a whole.

1b. How did they hear about it?
If the TV or radio station or magazine didn't complete the research themselves, where did they get the findings from? Does it seem like they've been sent a press release, are they following up on a story in a paper or a magazine, or have they got the scientist or academic who has completed the research to come and talk to them direct? Obviously the more research gets passed down, the more chance there is for error, and so it's always worth trying to go back to the source of the story to find out what it was really about.

1c. Who did the study?
Often reports will use an expert's title, name, and affiliation (e.g. their university or professional body) to give a study more status – and credit the person who did the work. With this information you can find out more about them via the Internet (or perhaps the person's university web page). Sometimes this makes research seem more 'official' – after all this is Dr So-and-So from the University of Wherever, so what they are telling us must be true, right? Well, maybe – what you need to find out next is…

2. Are they qualified to be speaking on this topic?
Ask yourself 'why are they talking about this?' Everyone has to begin research somewhere, so don't worry if someone seems young or hasn't got many publications. Look for papers or reports they have written, and where they have been published. Publishing in journals suggests that a person has expertise in this area (more on this in point 9). What you may notice is the person has published in one area (say dermatitis), but suddenly seems to be talking about research in a completely unrelated area. In this case you should start asking questions. It could be they're widely skilled or have had a change in research interests, or it might be linked to…

3. Who paid for the research?
This is a tricky one, as research has to be paid for, and just because a company or organisation pays for it doesn't automatically make it 'bad'. But often people who are funded by research are either doing PR for a company. For example Dr Jones is a researcher working on communication. A food company is launching a new brand of ready-made meals. They want to show that eating their products gives you more time to spend with your partner. They approach Dr Jones and ask if she'll carry out a study on relationship communication. Dr Jones' study reveals couples are happier if they share one meal a day together. Bingo! The PR company steps in and shows that the research (funded by the food company) proves couples need to share meals (and I'll bet you can guess whose meals they should be sharing). This doesn't make Dr Jones a 'bad scientist'; her study could have been very well run.

However, it is important to note that many studies carried out in this way are done very quickly and the aim is not really to answer a question on communication in relationships, it's to grab a headline and promote a brand name. In order to work out whether the study has further use, you could (politely) contact Dr Jones direct and check out her other papers on communication/relationships. If she had no other work in this area, you may have cause for concern about the reliability of her work. Alternatively, companies (particularly pharmaceuticals) who pay for research often restrict what outcomes from a study can be published. In this case, Dr Jones would have carried out a study to investigate whether a new drug was better at preventing migraines. Her results may show that whilst the drug was better than it's nearest rival, it also led to people feeling nauseous. The funders of the research may prevent Dr Jones including this information in her research. Reports and papers should declare where the funding came from, which can enable you to decide whether any biases in reporting of results might have occurred. In many journals, researchers are made to state any 'conflict of interest' they might have. This includes who funded the research or whether they had any stake in the study apart from being a researcher (for example shares in the company that funded the work).

4a. Who took part in the study?

If the research included human volunteers, you can find out more about it by looking at participants (the people who were in the study). A trick here is not to be fooled by numbers. Many studies will use the 'magic number 1000'. This means it's a number seen as 'big' and therefore 'believable'. However, you need to look back to who paid for the work and compare it with numbers. A researcher paid for by a charity, and working with a large-scale study may be lucky to interview 500 people. A PR company can pay a market research firm to run 1,000 interviews in a weekend. The former study is probably more detailed and accurate, but looks less. Alternatively, if only 14 people were tested as taking the wonder headache pill described above, then that may not be enough people to base a decision on about that pill's effectiveness.

Remember, percentages can be deceptive – you can make percentages for a 'study' based on two or three people if you want to! Neither are percentages a sign that work has been truly statistically tested – you should ask what analysis was performed on the data – just generating percentages is considered as summarising the findings, not interpreting them. Certain methods generate their findings through numbers, but qualitative studies provide results through words, and traditionally numerical data is easier and quicker to collect than in-depth interviews, so fewer participants are used in qualitative studies – but this does not make them less reliable. However, always be sceptical of research that is vague about how many participants were used in the research, or what was required of them.

4b. How were participants selected?

It's far better to focus on participant details, than how many people were in a study. You could have a huge survey, but if it's not based on representative participants it's worthless. Check the participants details in the following way – who are they? (for example, are they students or are they a more representative group of people?), how were they chosen? (did they phone in after a television show, or were they carefully selected to fit the criteria a study was measuring?), do they represent the people the study claims they represent? (very often we see studies based on small groups of white, middle-class, students, and the results are claimed their behaviour is true of everyone). Did they understand what the study was about? And did they knowingly consent to being in research?

5. How was the study conducted?

Ask yourself the following questions – is this the best method anyone could use? Maybe a questionnaire would have been better than a focus group? Do you think the people in that study would have been able to understand and work with that method? (for example, someone with visual problems may struggle with completing a questionnaire). Asking yourself these questions can help you understand further what standards were applied to the research. Any report, whether it's published in a journal, or summarised in the press, should give you some idea about how the research was conducted. This means they'll tell you what methods they used. You might hear terms like 'interview', 'questionnaire', or 'experiment' here. What is useful is to think about whether the method they described matches the results they found. For example, if the study on the headache pills had relied solely on the researcher observing the people who took the pills and deciding they were feeling better, this wouldn't tell you how the participants really felt. If you want to learn more about research methods in a particular area, ask your local bookstore to recommend one or two introductory methods texts – you can use these to compare with published studies and consider if the most appropriate method was used. You may also find this following resources helpful, if you want to understand how to evaluate research: Trish Greenhalgh's *How to read a paper: the basics of evidence based medicine. (2nd Edition).* BMJ Books (2001); and the National Electronic Library for Health (Hitting the Headlines section) http://www.nelh.nhs.uk/hth/help.asp

6. What about ethics?

A reputable study will go through a series of stages before any work can be done. This means it has to be approved by an ethics committee. An ethics committee is a group of professionals who discuss with the researcher and each other whether a study is designed well enough to avoid causing adverse effects to participants or wasting their time. If you want to check whether a study has this approval, read the original press release, or even better, the paper on which the research was based. If no mention of ethical approval is made, then ask why. It could be that it was obtained and not mentioned, or more often it was not obtained, or was granted by an 'in-house' committee (many pharmaceutical companies have these). Charities are concerned that people in the developing world are being recruited into drug trials because ethical guidelines are not so stringently applied. Ethical standards mean participants should know what the research is about without being misled, should not have been pressured or coerced into participation through payment or other manipulative inducements, and should understand exactly what was required of them during and after the research. In checking whether a study has ethical approval, you are not just finding out whether people have been fairly treated in the study itself, you are also establishing whether they are being treated fairly in terms of global human rights. You can find out more about this here: http://www.wma.net/e/policy/17-c_e.html and http://www.corec.org.uk.

7. How long did the study take?

An absence of any dates or times could suggest that the work was done in a very short space of time, and may be more of a PR exercise than an established research project (see point 3 above). Most studies will report how long they lasted for (for example 'this three year evaluation showed….'). Although longer doesn't necessarily mean better, most in-depth scientific, social or health research does take more than a few days to complete, so ask about how much time was set aside for the work.

8. Has the study been published?

Research is judged on being published in academic journals. Often journalists and the wider public believe that someone writing a book makes them an expert, but within academia publishing papers in peer-reviewed journals currently holds more value. This isn't without its problems since research is a political arena where some genuine experts are marginalized because of their views or the methods they use. Interesting and useful findings may also be found in books, small reports, or even statements from community groups. A paper that ends up in a journal is not always the 'best', and it may well be that the people who wrote it are biased (see point 3 above). You can check the author's affiliations and statements about conflict of interest, and whether they have published similar papers. Even better, you can read correspondence about the work – many online journals (for example the British Medical Journal, www.bmj.com) now print electronic replies to all articles. From this you can get an idea of how well a paper is being received. Don't forget, many studies that hit the headlines have not yet been published, as they are reports from conferences. Not being published doesn't mean the research is 'bad', but where it is published can make a difference. What you are checking for is not whether the research has been published, but the likelihood that it is of a standard that means it could be published.

9. What else has been said about this topic?

Good-quality research should add to or build upon existing debates in an area, and it should be clear where the addition is being made. If you are in doubt, you can do your own checking. If you are able to obtain a copy of the research, use it as a guide to search the literature and find out what other papers have said. If you are unable to do this, use keywords from the report that you've heard or read to inform a search (for example, if you heard about Dr Jones' study on "relationship success" and "food", but couldn't get hold of the report, then you may try putting those key words in an internet search). You can try most major search engines to and find out about research, but how about trying these (they're free, and many are in languages other than English):

- National Library of Medicine (PubMed) http://www4.ncbi.nlm.nih.gov/PubMed/clinical.html
- SUMSearch http://sumsearch.uthscsa.edu (allows you to search for evidence based information).
- Educational Resources Information Centre (ERIC) http://www.askeric.org/About/
- Internet Detective (gives a tutorial on how to question information given on the net) http://www.sosig.ac.uk/desire/internet-detective.html

10. How did the study get to be in the public eye?

When you see a study reported, look at the reasons why you think it hit the headlines. Was it a good story, or a topical issue? Is it something that could save lives or make a difference to how we see the world? Or do you think it had money behind it, and a good PR team that brought it to the attention of journalists? Try and figure that out and then decide for yourself how reliable you think the study is. Many studies that should be brought to our attention do not get to us because of the following reasons: academic institutions do not have the resources corporations have to get a story in the press, and within academia there is a tradition of not talking to the media or 'selling' your research.

These ten pointers aren't meant to be a definitive guide for checking out research. Some studies are privately funded but ethically and methodologically sound, some papers end up in top ranking journals but are intrinsically flawed. Hopefully these tips should get you thinking about the process of research, who does it, and how it gets reported in the media. If you are uncertain about any paper you read, share it with friends or colleagues, write to the person who carried out the study, or perhaps contact a key person at your local college or university who can explain things to you. You may also wish to take advice from a professional body (such as the British or American Medical Association, or the British or American Psychological Society/Association) for further guidance.

A quick checklist based on this paper is included below to help you question research you hear about in the press. You should be able to find out the following (depending on the sort of research reported):

- Where the research came from
- Who conducted the study
- Their qualifications to speak on the topic
- Who participated in the study – how many people and how were they chosen
- What happened in the study
- Was ethical approval sought and gained
- How long did the study take
- Has the study been published, or is it likely to be
- Does this research add anything to the topic area
- How did the study reach the public