

Handout: Critically analysing a research paper

A key skill, in terms of being able to use research to inform practice, is to be able to critically analyse the meaning, significance and implications of research papers. (A 'research paper' can be defined as a journal article that directly presents the findings of a research study, and includes method, results and discussion sections).

When critically analysing a research paper, it is essential to retain a sense of appreciation. It's always possible to find flaws and limitations in any piece of research – the perfect research study has never been, and never will be, conducted. At the same time, any study that is published in a reputable journal, will have undergone a process of review, and should have achieved an acceptable level of methodological rigour. Even if a study has not been published in a journal, or has clear flaws, it is worth reading – if someone has made the effort to collect and analyse information, and has done this with integrity, what they report will have something useful to add to our stock of knowledge.

It is very unlikely that any specific research study will have much significance in itself. The significance of a study always lies in its relation to the broader picture. A research study can be viewed as a piece of a mosaic – the pattern only emerges when standing back and looking at the mosaic as a whole.

There are three key questions to keep in mind when critically analysing a research paper:

1. **What can I learn from this paper, about the substantive topic that it has investigated? What is the 'news value' of the paper – what does this study add to my/our stock of knowledge?** How can I summarise the addition to knowledge that it represents? (Often, this is a fairly easy question to answer, because the paper itself will make knowledge claims, in the abstract and elsewhere. However, as a discerning reader, it is necessary to come to a view on the extent to which you agree with the authors' conclusions, or have a more nuanced understanding of the value of the paper. Also, there are different levels of complexity of statements of 'what I have learned from this paper', depending on the context in which the statement is being made. For example, if you are writing a literature review and the paper is included in the coverage of background literature, you might want to make a brief statement of what it signifies. By contrast, if you are writing a literature review, or looking closely at the study as a guide to practice, you will want to make a much more detailed statement of what you have learned.
2. **What are the limitations of the paper?** How can I get the knowledge claims of the paper into some kind of perspective? What are the aspects of the paper that may be ambiguous and open to different interpretations, and point toward a need for further research? (Again, the authors themselves will provide the reader with a starting point for this, by providing their own critique of the weaknesses of the study. However, the authors obviously believe in the value of what they have found, and so their own critique is likely to be oriented toward presenting their work in a positive light). When considering the limitations of a study, there are many questions that can be asked. A list (incomplete) of critical questions is provided in Appendix B, below. However, there are four key areas that any critical reader **always** needs to consider:
 - 2.1 **The sample.** Any research study is based on a *sample* of the total population. What are the biases that are associated with the specific sample that has been achieved? To what extent, and in what ways, is the generalisability, meaning and significance of the study limited by the sample that was used? Examples: a survey questionnaire is sent out to members of the public, and achieves a 30 per cent response rate – are the people who responded typical of those who did not reply, or could there be some kind of meaningful difference between them? A therapy outcome study is based on results from clients who have been carefully screened in terms of specific symptoms – can the results be generalised to routine primary care clients? When commenting critically on sampling, it is important to try to get beyond simple statements such as 'the sample may not be representative...' and try to think through the possible ways in which the sampling procedure may have biased the results. For example: 'the survey questionnaire was quite complex, and so the people who completed it may have been from a higher educational level – the results may therefore fail adequately to reflect the views of less educated people', and 'in recruiting clients who only reported symptoms in one area of symptomatology, the outcome study may be over-estimating the effectiveness of this intervention, because many clients seen in routine practice are likely to report multiple problems/co-morbidity'.
 - 2.2 **The research procedures.** What actually happened to participants in the study? To what extent, and in what ways, were the results of the study shaped and influenced by the procedures that participants went through. This phenomenon has been observed many times in experimental psychology research, and has been labelled as the 'experimenter effect'. The classic example in therapy research is when clients are randomly assigned to a treatment condition or a waiting list condition – the clients in the latter group realise that they are missing out, and may possibly convey their irritation through their response to questionnaires they are asked to complete. It is always worth imaginatively reconstructing the experience of a participant in a study ('what would it have been like, to have taken part in this study?'), and reflect on how this experience might have led these people to answer the researcher's questions in a particular way.
 - 2.3 **Operationalisation.** Do the measures or instruments reflect the actual phenomenon being studied? A familiar example here is the old issue of the nature of intelligence – is it 'what intelligence tests measure', or is there more to it? In therapy research, the researcher cannot directly or comprehensively assess the participant's attitude to counselling, level of anxiety, or perception of the helpfulness of a therapist statement. Instead, the researcher must

construct a series of operations through which the phenomenon of interest can be described and/or measured. So, in therapy research, a person's attitude to counselling is 'what the attitude scale measures' or their anxiety is 'what the Spielberger Anxiety Inventory measures'. But – how adequately does the instrument measure the actual factor or phenomenon? Again, it is useful to imagine being a participant in the study – if you had been completing the attitude questionnaire yourself, do you think that it would fully capture what you thought? Some of the big debates in psychotherapy research hinge on matters of operationalisation. For example, the studies that report the best results for CBT in depression use a questionnaire that is highly sensitive to CBT outcomes (the Beck Depression Inventory), while the studies that report good results for anti-depressant medication tend to use other depression measures, such as the HAD scale (which has more questions on physical symptoms).

- 2.4 **Bias.** Do the researchers have an axe to grind/are they consciously or unconsciously biased? Very few researchers are consciously biased (ie fraudulent). However, almost all researchers are unconsciously biased, in so far as they have a particular stance in relation to the topic. The careful, detailed reporting of research procedures, operationalisation, analysis of results, etc, and then the process of peer review of articles, are all intended to address this issue. Nevertheless, some bias always remains. The big example of this in psychotherapy research is Luborsky's analysis of 'researcher allegiance' in therapy outcome studies – researchers trained in CBT tend to find that CBT is more effective than other therapies, researchers who are psychodynamic practitioners tend to find that psychodynamic is more effective....etc. In considering possible bias, it is important to think about what might be missing from a study, and why it is missing. It is also worth looking closely at the detail of the results, and thinking how you would yourself interpret what they mean, and then compare this with the conclusions drawn by the researchers – for example, in their discussion and conclusions, authors often gloss over 'findings' that do not fit the story they are trying to tell.
3. **What can I learn from this paper, about the method that has been used to investigate the topic?** Competent users of research, and researchers, are not only interested in what a study tells them about the topic/phenomenon that is being studied – they are also interested in the methods that have been used. In what ways does the approach taken by the researcher appear to have been effective in yielding a good understanding of the topic? Are there innovations in method that seem noteworthy? In what ways does the method have limitations, as a means of exploring this particular topic? When I reflect on the research-based knowledge I have accumulated on this topic, is there a tendency for certain methods (eg qualitative) to be associated with certain types of conclusions, while other methods (eg quantitative) produce contrasting or even contradictory findings? Each paper that you read adds to your appreciation of method, which in turn helps you to be more critically sensitive in relation to the next paper that you read. Sometimes the method is more interesting than the results. For example – a study of different therapy styles of making empathic responses to clients did not come up with any striking new insights – but, the way that the researchers defined and classified these styles, and the rating scale they developed, might help a reader to grasp the meaning of these styles, and might be a valuable tool to use in training and supervision.

Conclusion

Critically analysing a research paper is a skill, that can be learned. It is helpful to look at how other people perform this skill. If you are new to this skill, you will almost certainly find it hard at first – research papers will appear obscure and boring. But, as you become able to read papers quickly, and are able to 'fillet' them for the information you need, you will find that research papers will become an increasingly valuable point of reference for your practice.