

Critically appraising research

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T: 01455 883300 E: bacp@bacp.co.uk www.bacp.co.uk

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About the authors

Written by

Chris Evans and Jo-anne Carlyle

Chris Evans

I was science focused as a teenager in a family of teachers and humanities experts and trained in medicine moving into Psychiatry after 18 months of hospital medicine. I went on to trainings in group and individual analytic therapies and systemic psychotherapies. From 1986 to 2016 I worked 50/50 in clinical and research in the NHS, from community to high secure care. Earlier publications with Jo-anne looked at forensic psychotherapy research and also described "containing containers": working in high secure settings.

I long ago renounced my teenage "quant" rebellion and have very diverse interests resulting in 157 peer-reviewed publications to date. My biggest research programme has been CORE Clinical Outcomes in Routine Evaluation system: a set of instruments and philosophy for measuring change in therapies. I co-led translations of CORE measures into over 30 languages since CORE launched in 1998. Most of my research has been quantitative but and I am passionate about the importance of qualitative data and methods.

The book Outcome measures and evaluation in counselling and psychotherapy (2021) was another collaboration with Jo-anne, extending CORE. We argue for routine change measurement but challenge the overselling of questionnaire change data hoping to give practitioners and managers tools to use measures wisely. Since 1998 my main research collaboration has been with Professor Clara Paz from Ecuador. Clara and I work to create useful evidence about therapy change outside the global north "factory model", as well as rethinking measure translation and adaptation. I also work on novel psychometric methods for repeated measures and individual change and on "rigorous idiography": exploring validity in purely idiographic data. I have created free tools around our book and therapy measurement: a glossary of over 260 terms (and increasing), a collection of more detailed explanatory articles: Rblog, and a growing collection of online apps.

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Why is it important to read research with a critical eye?

The art of good research is to be open to the unexpected, what is not immediately obvious, what cannot immediately be seen. As we go through the process of “reading” a paper, we will try and weave in some of these more lateral or “associative” frameworks that are necessary for knowledge development; these are vital to enable us to be critical: to notice and challenge the author’s assumptions but also, our own.

So, a critical eye should be open to surprise, and it must try to weigh the evidential claims of the work. Just because some work has been published, it does not mean SGD ¥MCHMFR @ QD CD¥M HSHUD NQ FDM DQ @ KHR @ AKD never simply be either of these things. The art of critical appraisal is all about what to look for in the paper, how to interpret the results, how to shape your own view of the claims the authors are making.

Read the paper in context

No work is unbiased, and all authors transmit some of their own beliefs, whether consciously or tacitly. We might expect the conscious ones to be stated in the epistemological position and choice of methodology, but it is the job of the QD @ CDQQDUHDVDQ SN AD BTQHNT @ ANTS DKDLDM SR explored. Good critical appraisal extends the authors' own examination of their work. It is not about setting out to attack or destroy what the authors say, but about constructive criticism of what was said in a manner that aims to add value, whether just for yourself or also for others.

The biases we all bring are not just personal, they also always come from our societal, historical location as our opening quote underlines. The context of any work VHKK G @ UD G @ C @ M HLONQS @ MS HM!TDMBD NM SGD GNV HS V @ R QDRNTQBDC GNV SGD QDRD @ QBG PTDRS communicated. We explore this further in the “anatomy of a paper” below. Any reader is also encountering the report within a context and should consider that.

Locate yourself and the paper

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overt structure, the style and the content; then reading it again, skimming to get
distance, or digging deeper, and perhaps turning to other resources to enrich your

4.	Books or book sections/chapters. These vary greatly in quality. Some include ground-breaking conceptual and theoretical developments and others are, well, rubbish! With the move to E-books and publishing, the costs of producing books have dropped and increasingly there may be no quality control over what gets published.
5.	Student theses: research doctorates ("PhD" or "DPhil"), professional doctorates (e.g. clinical or counselling psychology and psychotherapy and counselling trainings) and Masters. These vary enormously in quality ranging from those that are as good as peer-reviewed papers to much weaker ones. Sadly, few of the good theses are converted to indexed, accessible papers.
6.	Other documents ("grey literature"). This might include reports by governmental or non-governmental bodies, as well as resources available on the internet, often freely available. These encompass the hugely historically important archives such as census data and repositories of personal documents and include vital histories of groups disenfranchised from more formal and common sharing. Increasingly important are blogs and other text and now video presentations, vlogs, dialogues, tutorials and commentaries. Whilst the historical archives are generally of clear quality, the ever-expanding volume of other material ranges from really excellent pieces of work to fake news. It is probably safest to regard the best of these, such as Wikipedia or TED talks, as useful adjuncts (rather than core sources) to the main literature of peer-reviewed papers.
7.	<p>Y!NSSNL CQ@VDQ ¥KHMFB@AHMDSZ QDONQSR SGDRD SDQLR</p> <p>just inventions of ours). Much research, perhaps the majority, sits in bottom drawers (or now in electronic storage somewhere never accessed) and never makes it into the public domain. Some remains there due to poor quality, however, publication biases mean that valuable and</p> <p>DUDM HLONQS@MS VNQJ NESDM RS@XR HM ANSSNL CQ@VDQR</p> <p>¥MCHMFR G@R ADDM KDRR KHJDKX SN FDS @BBDOSDC HMSN I</p> <p>literature and means that key information is lost to the research database. Student theses and dissertations that do not make it into the indexing of university outputs (partly determined by a hierarchy of universities and countries) is hidden to us. Data collected by clinicians and other practitioners and clinical services data collection, including audits rarely get to be</p> <p>RG@QDC @MC @BBDRRHAKD \$UDM OQNEDRRHNM@K QDRD@Q</p> <p>QDRNTQBDR BNM¥CDMBD NQ JMNVKDCFD SN SQ@MRENQL BNL</p>

Varieties of papers

The archetypal paper reports empirical data, usually this is new data but sometimes a paper is a re-analysis. However, as well as these kinds of traditional research reports, there are probably four further categories to know about as they can help "response literature".

Pre-registrations. These involve the researchers registering a plan of what they are going to do before they start collecting data (hence "pre-"). This started as a about controlled trials without prior registration in a publicly accessible register such as [clinicaltrials.gov](#). Registration may involve no quality checks at all or some minimal subject to some quality checking, that any study with pre-registration will be critical appraisal making it easy to see if the paper stuck to the original plan. The principle that pre-registration is a useful indication of evidential value is stronger, and currently more common, in quantitative work than for qualitative but, with suitable adaptation, could be useful in the qualitative world too.

3 UR WR FR These are like pre-registrations but are more detailed with the formal anatomy of a paper and published in journals rather than online registers. **Protocol papers** give the whole protocol for a piece of work and are peer-reviewed. A protocol paper can be useful where a single research programme may lead to a programme and can save a lot of duplication in introductions and methods sections of the eventual papers. That a paper was preceded by a protocol paper is some indicator of evidential value though again it is more common for quantitative than qualitative work.

Review papers. Traditional literature review papers could be extremely selective and subjective. That led to the development of "systematic reviews" which have formalised ways aiming to identify and summarise all the existing literature about a topic. This has gone hand in hand with the development of meta-analysis: statistical quantitative literature there are also developments of new methods of reviewing qualitative work.

Authors

Details about authors remind us that papers are human, personal products and that the people who did the work and created the paper do so in organisational, sociopolitical contexts that may be very important in helping us understand the backstory behind the paper.

R VDKK @ R @ TSGNQR M@LDR @ O@ODQ VHKK TRT @ K institutional locations. Some journals encourage authors to give a paragraph about themselves and their history. Any good paper will have contact details for at least NMD @ TSGNQ SGD —BNQQDRONMCHMF @ TSGNQ— MN DWODBS @ TSGNQR SN FHU DSGDHQ .1" (# (# @ ODQRH publicly accessible information about the person (ours are <https://orcid.org/0000-0003-4981-4438> and <https://orcid.org/0000-0002-4197-4202>). Those are useful @ R \$L @ HK @ CCQDRRDR @ MC NQF @ MHR @ SHNM @ K KNB out about an author and, though some of the information is chosen by the author, much, e.g. the publications listed, is curated by ORCID and will be correct (if not necessarily complete).

Some journals ask authors for photos. Although this can give a human face to the QDRD @ QBG OGNSNR T @ R VHSG HMRSHSTSHNM @ K KN to notice our assumptions and biases and be curious as to how this information may change our reading of the paper. Does this reinforce or help us to challenge some of our stereotypes and prejudices? Should we have photos at all?

The institutional locations are useful and should be where the authors were when they did the work. As you read, notice whether all the authors are from one institution or widely spread? Are the authors from one country or many? There may be a statement of who did what in the paper and sometimes, particularly in quantitative papers a formal statement of which authors take responsibility, "are guarantors for", what parts of the research. This can be helpful to understand more about the gestation of the paper and it is a small corrective to the tendency for senior people to be authors on many papers despite having contributed very little to them.

Linked to authors, sometimes, often at the end of the paper, there are often —CDBK @ Q @ SHNMR NE HMSDQDRSR— @ OGQ @ RD HMB put the stress of transparency about interests. There may be acknowledgements to ODNOKD NQ NQF @ MHR @ SHNMR VGN GDKODC HM SGD C not authors, and there may be a formal statement of how the work was funded. Somewhere in the paper, often in the methods section but sometimes at the end, there should be a clear statement of the ethical position and of having obtained approval from an ethics committee, identifying the committee and often the actual application number and date of approval.

Abstract

Abstracts (sometimes "summary") should capture the essence of all aspects of the paper and often determine whether or not readers will read the rest of the paper. A misleading abstract is an indicator of poor quality.

With internet access a paper's title, keywords, authors' names and the abstract are usually freely available. Paradoxically this wider availability of abstracts has both positive and negative outcomes: a huge gain that more people can access research literature but the need to sell the paper to readers probably increases the risk that abstracts may oversell the work. Increasingly journals also freely provide

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We will come back to references below.

Abstracts may be unstructured or structured, i.e. broken down by headings that are required by the journal (usually the same headings of the paper itself). It is increasingly common for papers to have short bullet points either with the abstract or at the end of the paper. Typical bullet points, usually set by the journal are:

- "What was already known"; "what this paper adds/changes"; "implications" (a useful and challenging way to think about any paper).
- — * D X ¥ M C H M F R — — K H L H S @ S H N M R —
- "Implications for practitioners"; "implications for further research".

2 N L D I N T Q M @ K R O @ Q S H B T K @ Q K X H M S G D L N Q D — L D C

require a lay readable abstract or summary and some journals encourage short video abstracts.

Structured or unstructured, textual or video, an abstract has to summarise the rest of the paper in a fraction of the words: typically 5%. A good abstract summarises fairly but many will overstate what was found. If the topic of the paper is important to you

SGD Q D H R M N R T A R S H S T S D E N Q Q D @ C H M F S G D V G N K D

V G D S G D Q X N T S G H M J S G D @ A R S Q @ B S N U D Q R N K C S G D

evidential quality of the paper.

Keywords

These help the indexing of papers into the literature databases. Like abstracts, they can underline what the authors think is important in the paper.

Citations and references

Citations to papers can come up in any of the main sections of a paper. They should

@KV@XR L@O BNQQDBSKX SN DMSQHDR HM SGD QDED
 CHRBHOKHMDR BHSD VHSG CH α DQDMS RSXKDR MTLAD
 authors' names and the year of the paper in the text so people who read across
 CHRBHOKHMDR VHKK MDDC SN FDS TRDC SN CH α DQDM

What authors choose to cite can be useful indicators of quality and bias, though

@OOQ@HRHMF SGHR S@JD OQ@BSHBD @MC DWODQHD

Introduction

This is the opening narrative about the paper. It should locate the paper in relation to the existing literature, and discuss whether these are tight or broad.

Papers vary in how extensively they summarise the existing literature, but an introduction should not become a systematic review. It should provide the background to the work being presented, and what the authors considered the main contributory theory and practice in the area. Too extensive a review can distract from what is potentially new or innovative in the paper at hand, or can be used to cover up when the substance of the paper is weak.

Methods

One task of the methods section is to restate the aims from the introduction more
 OQDBHRDKX RODBH¥B@KKX SN RDS NTS SGD L@O SN
 SQ@CHSHNM SGD NMKX S@RJR NE SGD LD SGNCR RDB
 of the study and to spell out the method/s used, in order to allow replication of the
 VNQJ 3GDQ@OX QDRD@QBG QDL@HMR HM!TDMBDC AX
 “scientist-practitioner” prevalent in clinical psychology and associated professions,
 such that the “enough for replication” model of the methods section is still
 dominant. That model has utility for much quantitative work where the ideas of
 replicability and generalisability make sense. However, that model can become
 reductive in therapy research where replicability across clients may be meaningless
 for things that matter. Rather than just enabling replication, a good methods section
 should build, in a methodologically appropriate way, on the “why” in the
 introduction so the reader can understand what was done and how, and what
 information to expect in the results section.

Facts never simply speak for themselves in any empirical therapy research and the
 methods section is about how the authors draw inferences from their data. However,
 SGD VNQC —HMEDQDMBD— HR TRDC CH¤DQDMSKX @BC
 quantitative and qualitative. A good qualitative methods section will explain in some
 detail who did what and how, what level of inference was used and will generally
 G@UD @ —QD!DWHUHSX— —ODQRNM@K QD!DBSHNM—
 SGDHQ HM!TDMBD NM SGD OQNBDRR NE BQD@SHMF @M

Discussion [& Conclusion]

When we reach this section we have been taken through the background, aims and aspirations, epistemological position and methodology in the introduction; then the

OQNB DCTQDR TRDC HM SGD LD SGNCR @MC SGD ¥MCHM
RGNTKC MNV AD DW@BSKX SG@S @ CHRBTRRHNM NE

separate discussion and conclusions sections, otherwise the last paragraph or two of the discussion is often concluding.

3GHR RDBSHNM RGNTKC G@UD @S KD@RS @ QDIDWHU

A worthwhile discussion of limitations does not just list them but attempts to estimate how much impact they might have had on implications to be drawn from SGD ¥MCHMFR (S VHKK FN NM SN RTFFDRS VG@S MDV might address the issues. Papers that end with an assertion simply that more research is needed without saying what are just wasting words!

As well as exploration of limitations, a good discussion returns to the introduction @MC KNNJR HM @A@K@MBDC V@X @S GNV E@Q SGD Where the work was a very direct replication and/or extension of a previous study SGD BNLO@QHRNM NE SGD MDV VHSG SGD NKCDQ ¥MC RDBSHNM @MC SGD CHRBTRRHNM VHKK AD L@HMKX @ similarities with that original research. Where work was not replication/extension VNQJ SGD CHRBTRRHNM RGNTKC QDUHDV GNV SGD ¥M Unless everything went completely to plan the discussion should look at what analyses were preplanned and what may have been emergent or reactive.

4MKDRR SGD OQNBDC TQDR VDQD CDQ@HKDC AX TMDW quite unexpected, it is generally expected that citations in the discussion will not introduce new theory or aims nor introduce new references to existing work.

Other resources:

BACP research resources

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 counselling and psychotherapy (1st ed.). SAGE Publishing) is about change/outcome measurement, only one small part of therapy research, however pointers about critical appraisal were central to our book so it and the online glossary, <https://ombook.psyctc.org/glossary> and supporting pages generally, <https://ombook.psyctc.org/book> should be useful. Similarly, Chris's pages about the CORE system <https://www.coresystemtrust.org.uk/> are about the CORE measures so may be useful if a paper uses a CORE measure, though the principles will apply for any change/outcome measure. Chris's PSYCTC.org pages <https://www.psyctc.org/psyctc/> have more general research support.

SCOPUS

<https://www.scopus.com/home.uri>

PubMed

<https://pubmed.ncbi.nlm.nih.gov>

EBMLive site – that looks at the biases that are inherent in research.

<https://ebmlive.org/reasons/>

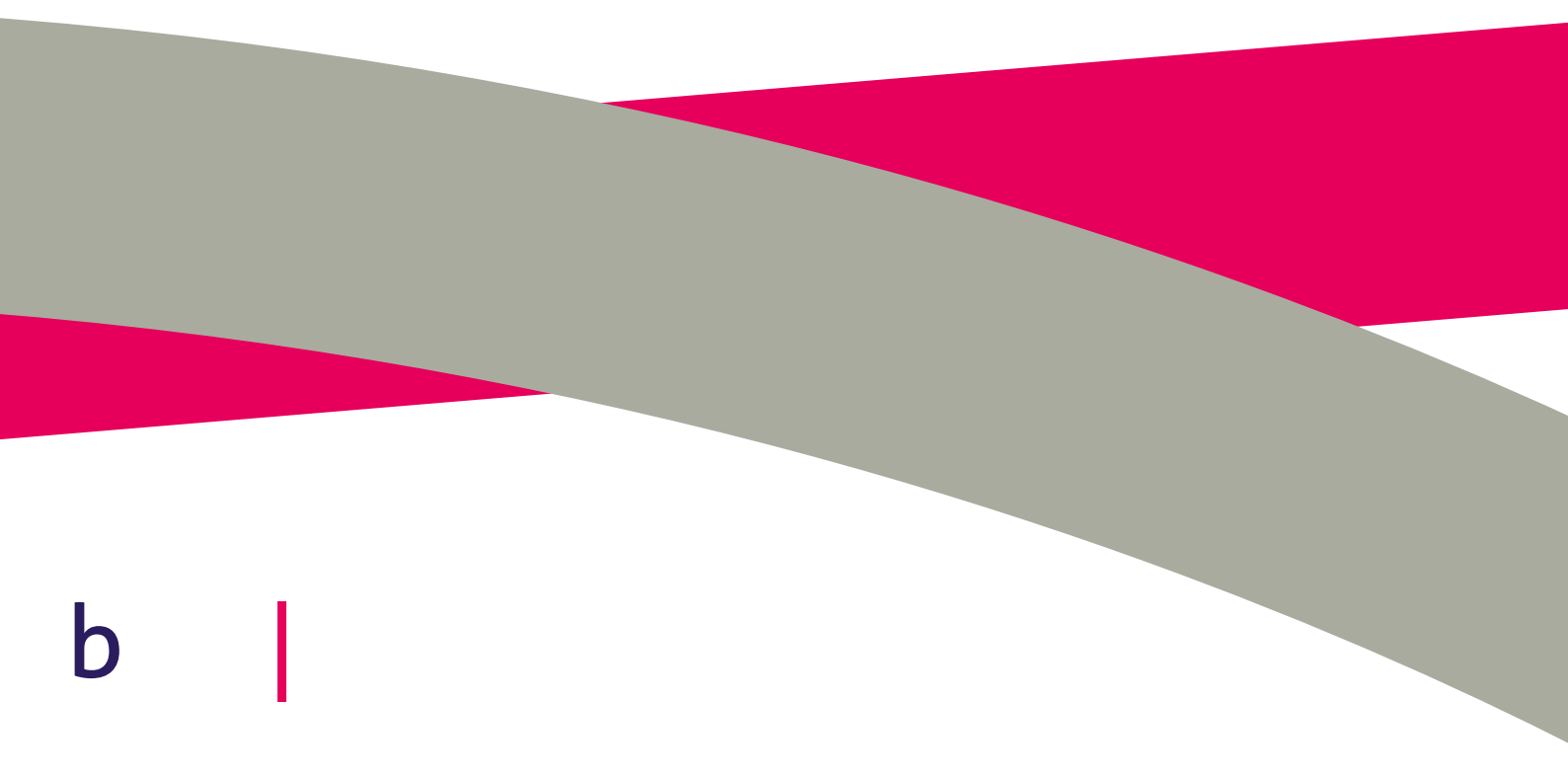
ResearchGate

<https://www.researchgate.net/>

ORCID

<https://orcid.org/>

Possibly useful further reading:



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