



*How To* **READ &**  
**UNDERSTAND**  
**EDUCATIONAL**  
**RESEARCH**

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# PART 1

## ASSESSING RESEARCH

- 1 The Hierarchy of Research Publications
- 2 Where To Find Good Research and How To Reference It Properly
- 3 Organising Your Research Reading and Avoiding Bias



# 1

# The Hierarchy of Research Publications

## Chapter aims

- Understand how research is reported
- Look at the variety of publications research may appear within
- Assess the rigour of publications in presenting research/information
- Comprehend what is meant by impact with respect to journals and articles
- Understand the basics of the peer-review system

## Introduction

We are bombarded by information to an unprecedented degree. The internet and social media have fundamentally changed how we view information. Research is, at its most basic, information. How research is communicated, which information channels are used and how the message about research evolves or alters each time it is reported will affect how we view research.

Research does not have the privilege of being seen by everyone in its original form. It would be unrealistic to say that all research should be read in its original form. Summaries of research, or the reporting of findings, can be substantially altered according to the mode of communication and who is communicating it. Where original research is published can also impact the level of confidence we should place on the work and its findings. In this chapter, we will examine different levels of publications which form a hierarchy from academic publishing down to popular media such as newspapers and individual blogs online.

## Where is research published?

The key question to ask ourselves here is how reliable is the report of the research? This is the point at which we enter the murky, confusing and complex world of academic articles, peer review, impact, professional and everyday writing and publishing.

Before the invention of the internet and the birth of the blog, getting your ideas into print required either an ability to satisfy a publisher that your writing was worth publishing or the ability to self-publish (a process sometimes called 'vanity' publishing). Blogs and websites can be created by anyone and allow almost any opinion to be widely available, with little to no checks, balances or review. The internet provides a platform for a cheap and easy form of vanity publishing.

Broadly, distinguishing between professionally produced online material that is, for want of a better term, 'quality assured' and the writings of a lone 'expert' who may not even have any training in the field that he or she writes about is not difficult. The quality of the writing, spelling, grammar (or lack thereof) and poorly constructed arguments are signs that something has not undergone any form of professional editing process. That said, well-written material could be superficially persuasive, but may not be rigorous or stand up to scrutiny.

Tables 1.1–1.3 list a variety of forms of published output that may contain research or the outcomes of research. Each form has its advantages and disadvantages. For busy professional teachers, directly accessing first-hand research can be time-consuming and potentially difficult as many education research journals are not open access, i.e. the articles are not freely available. The Chartered College of Teaching (CCoT) has made access to first-hand research easier for its members by negotiating their access to a

wide variety of education research journals, which should improve the situation for teachers interested in looking at research.

One important yet contentious measure of the value of different forms of publishing is the ‘impact factor’ that a journal can have. Impact factors are nearly always applied to academic and professional journals (see Box 1.1). We must also differentiate between the ‘impact factor’ a journal may have and the ‘impact’ a piece of research may have. The impact that research may have could affect government policy, the practice of teachers or how educational institutions are run. This happens independently from the journal within which research is published.

**Table 1.1** Characteristics of academic publications

Academic				
Publication Type	Main Purpose	Content Types	Characteristics	Review Process
Journal	<ul style="list-style-type: none"> <li>• Advancement of knowledge in a field</li> <li>• Report research outcomes</li> </ul>	<ul style="list-style-type: none"> <li>• Reports of research</li> <li>• Case studies</li> <li>• Review articles</li> <li>• Book reviews</li> <li>• Position papers</li> <li>• Theory (new or revised) papers</li> <li>• Methods/ methodology papers</li> <li>• Systematic review</li> <li>• Metastudies</li> </ul>	<p>Narrow focus usually restricted to one field or discipline, will contain many citations and a comprehensive bibliography</p> <p>Should contain information on source of funded research or disclosures that may lead to conflicts of interest</p>	Peer reviewed by experts in the field
Handbook/ edited book	<ul style="list-style-type: none"> <li>• A collection of specific articles to illustrate and guide professionals/ researchers in a field</li> </ul>	<ul style="list-style-type: none"> <li>• Reviews</li> <li>• Research summaries</li> </ul>	<p>Very narrow focus on a specialism or specialist area of research</p> <p>Often contains many citations and a bibliography (usually chapter by chapter)</p>	Usually reviewed by the book's editor or specialists in the field
Book chapter(s)	<ul style="list-style-type: none"> <li>• Easily accessible summary of one topic and there may be one or more chapters on a theme</li> </ul>	<ul style="list-style-type: none"> <li>• Formally written summary on a topic or approach</li> </ul>	<p>More general focus either on a subject or discipline, may cover a range of professional aspects, may have some citations or notes</p>	Reviewed by book editor/ publisher

(Continued)



Table 1.1 (Continued)

Academic				
Publication Type	Main Purpose	Content Types	Characteristics	Review Process
Conference proceedings	Announcement of new research, disseminating research findings  Sharing ideas and research with other practitioners and researchers	<ul style="list-style-type: none"> <li>• Keynote speeches</li> <li>• Presentations of early/draft papers</li> <li>• Poster display</li> <li>• Round-table discussions</li> <li>• Seminars</li> <li>• Colloquium</li> <li>• Workshops</li> </ul>	<p>Usually hosted by an organisation or association with a specific remit</p> <p>Range from small very specialist conferences to large international conferences with specialist groups</p>	Input usually reviewed by a panel of experts after a 'call for papers', and some speakers will be invited to deliver 'keynotes' with no peer review, due to their national/international standing
Government reports/ research/ publications	Dissemination of findings from reports commissioned by government departments	<ul style="list-style-type: none"> <li>• Research reports</li> </ul>	<p>Research and reports are usually commissioned by a government department with a view to understanding aspects of the subject/discipline and to enable 'evidence-based policy' to be produced</p> <p>Some reports are commissioned to review implemented policy</p>	<p>Internal review may consult with experts</p> <p>Often no formal independent peer-review process</p>

Table 1.2 Characteristics of professional publications

Professional				
Publication Type	Main Purpose	Content Types	Characteristics	Review Process
Professional journals	Produced by professional bodies and associations to inform members of new developments and latest news and to disseminate research	<ul style="list-style-type: none"> <li>• Notes</li> <li>• Review articles</li> <li>• Classroom-based research</li> <li>• Reviews of textbooks or professional books</li> <li>• Some opinion and editorial articles</li> </ul>	The journal is often populated by member articles and views and caters directly to the needs of members	<p>Professionals recruited for review to the journal</p> <p>May be academics, researchers or serving professionals</p>

Professional				
Publication Type	Main Purpose	Content Types	Characteristics	Review Process
Professional magazines	Produced by professional bodies and associations to inform members of the latest developments, news and policy	<ul style="list-style-type: none"> <li>• Feature articles</li> <li>• News</li> <li>• Opinion articles</li> <li>• 'Research round-up' of latest ideas</li> <li>• Q&amp;A type articles</li> <li>• Summaries of new policy or legislation</li> </ul>	These are more frequently produced items that serve to disseminate important ideas, changes to practice or law within education, and as an outlet for practitioners and others to share opinions on the direction of movement in the field	Minimal review by magazine editor who may or may not call on professional help/reviews
Professional blogs	Fast online items that can be reactive almost instantly to new positions, directions, policy or research	<ul style="list-style-type: none"> <li>• Short online items (often 800-1000 words)</li> </ul>	Usually written by individuals employed or engaged by the professional body/associations as a mechanism to air their views on and responses to a very wide variety of subjects  They usually adhere to the association/body view on policy that is agreed by the members or governing members of the association/body	Minimal review, usually for style, punctuation, grammar
Professional body reports	Longer published items that are specifically commissioned reports to gather, review and disseminate information in order to advance the knowledge and practices within a profession	<ul style="list-style-type: none"> <li>• Reports will vary in length but generally follow the format for published research</li> </ul>	Reports are normally evidenced with a set of citations and a bibliography  Reports usually contain information about the methods used and the key research question(s)	Internal review mostly by professional body members

(Continued)

Table 1.2 (Continued)

Professional				
Publication Type	Main Purpose	Content Types	Characteristics	Review Process
Theses/ dissertations	Single examinable pieces of work—generally a PhD will be up to 80,000 words and a Master's thesis will vary but is commonly around 15–20,000 words. Master's degrees may be taught Master's or research only. PhDs are commonly research only, but professional doctorates which include a taught element are becoming more common.	<ul style="list-style-type: none"> <li>Structured research that includes setting out the research questions, a review of the relevant literature, the methodology and methods used, the data gathered, and analysis of data, discussion and conclusions.</li> </ul>	<p>A thesis or dissertation is a product of an examination and is written to satisfy the objectives of the exam.</p> <p>At Master's-level the expectation is that the student is able to gain an understanding of the research process and identify a research question, and using appropriate methods come to a reasoned and evidenced conclusion.</p> <p>There is no expectation that the student will add to the corpus of knowledge about what they are researching at Master's level.</p> <p>A PhD is written particularly for three or four people (the supervisor) and two examiners.</p> <p>The purpose of the PhD is to add new knowledge or reconceive knowledge, and to satisfy experts in the field of the student's own expertise and ability to carry out research.</p>	<p>Supervisor-led reviews during writing then examination.</p> <p>A PhD normally requires a viva with an internal examiner and an external expert in the field of study.</p> <p>Not peer reviewed for publication.</p>

**Table 1.3** Characteristics of popular publications

Popular				
Publication Type	Main Purpose	Content Types	Characteristics	Review Process
Specialist magazines	To inform a particular sector of society that has a specific interest	<ul style="list-style-type: none"> <li>• General interest articles</li> <li>• News</li> <li>• Opinion</li> </ul>		Editor/sub-editor may or may not have specialist qualifications
General magazines	To inform and entertain targeted sectors in society, sometimes related to age or even gender	<ul style="list-style-type: none"> <li>• Occasional articles on education - the main intent is usually 'human interest' where the focus is on an individual or group of individuals and their experiences</li> </ul>	Usually commissioned pieces written by freelance journalists who may specialise in education but who will also write on a wide variety of other topics	Editor/sub-editor, usually a professional journalist
Newspapers	To inform, entertain and provide up-to-date news and information about what's happening in the world	<ul style="list-style-type: none"> <li>• Opinion pieces</li> <li>• Reports of policy</li> <li>• News on local/ regional/ national interest in schools and education generally</li> </ul>	Written by a journalist - many have 'education' correspondents who have an interest in education but may not have education qualifications	Editor or section editor, a journalist
Individual blogs	To allow an individual to express an opinion or share knowledge and understanding with a wide audience	<ul style="list-style-type: none"> <li>• Varying lengths from very short items about a single issue to long rambling pieces that often lack structure or focus</li> <li>• Some individual blogs from practitioners can be very well written and may be useful contributions, but most are not</li> </ul>	Often focus on one issue at a time Some are very biased while others strive to be impartial May have citations and a bibliography, but often not The quality of references varies, from self-referencing other blogs or websites that contain unsubstantiated 'evidence' to a good academic standard of referencing	No formal review process Anyone can post a blog about 'anything'

**BOX 1.1 IMPACT FACTOR**

Many journals advertise their impact factor and use this to attract researchers wishing to publish their research. Impact factors can be calculated in a variety of ways but generally it is a measure of the number of citations articles receive, related to the actual number of articles a journal prints.

The formula for calculating an impact factor is relatively simple:

$$IF_y = \frac{\text{Citations}_{y-1} + \text{Citations}_{y-2}}{\text{Publications}_{y-1} + \text{Publications}_{y-2}}$$

*IF* = Impact Factor; *y* = year

This formula will work out the average number of citations a published paper receives in a given period - in this case, two years. The higher the number of citations per paper, the higher the impact factor. Journals will also use a five-year period for calculating impact factors, which due to the increased time is more accurate, but impact factors can be distorted by new journals where there is less than two years of data/publishing or where the frequency of publishing is very low, e.g. one journal per year.

The reliability of impact factors is an issue, especially when comparing journals across different disciplines. Some journals have very high citation rates; e.g. in the sciences, the journal *Nature* is very highly regarded and commands many high-quality and ground-breaking articles whose importance leads to high citation rates. In other circumstances, the type of publication can distort the impact factor. For example, review articles are often very highly cited and a journal that publishes many review articles may have a higher impact factor rating as a result. As Amin and Mabe (2000 p.6) state, 'they [impact factors] are not a direct measure of quality and must be used with considerable care'. More recently, Thelwall and Fairclough (2015 p.263) have warned that journal impact factors (JIFs) are 'widely used and promoted but have important limitations. In particular, JIFs can be unduly influenced by individual highly cited articles and hence are inherently unstable'.

A further issue with impact factors concerns journals that are known within the academic world as 'predatory' journals. These try to give the impression that they are *bona fide* academic journals, but exist only to extract money from unwary and inexperienced researchers who are charged high fees for publishing in them. They do not have any credibility, often use fake names and university attributions for their 'editorial boards', and will publish just about anything that is sent to them. They then work hard to extract high fees from the authors. Academics are routinely spammed with emails inviting them

to submit an article, even though the journal mentioned has nothing to do with the discipline in which the researcher works. Such 'journals' also routinely promote a fake impact factor to make it seem as if they are a legitimate publishing operation.

## Publication types

### Academic publications

Academic journals are at the top of any hierarchy for research output. For researchers working in education departments in universities (or any academic discipline) it is often a contractual obligation to produce material for publication in academic journals. Universities in the UK are judged on their academic output via a system called the Research Excellence Framework (REF). This is a huge exercise that judges the output of all lecturers on research contracts and grades this output on a scale from 1\* (lowest) to 4\* (highest). Not only do journals have a hierarchy, what's published within journals can be rated as well, and articles produced by academics are also rated on the 1\*–4\* scale. A criticism of this exercise is that it is too cumbersome and that the judgements made may not be reliable. University research funding in the UK is dependent on a good REF outcome, so there is pressure on researchers to publish high-quality research that has wide impact. While this is not the place to debate the pros and cons of the REF, there is no doubt that publication in the academic journals is still seen as the highest quality form of research output.

The structure of a journal article will vary from journal to journal, but generally it will have many if not all of the sections outlined in Box 1.2. Chapter 6 goes into more detail about the writing process for research.

#### **BOX 1.2 A TYPICAL RESEARCH ARTICLE'S STRUCTURE**

##### **Abstract**

This is a brief summary of the paper and its main findings - usually no more than 200–300 words long.

##### **Introduction**

This should set out the problem being addressed and why it is important. There is usually a short statement about what is lacking in our current knowledge and it should state the objectives of the study or the research question(s).

*(Continued)*

**Literature review**

Key literature and previous research that is relevant to the study are discussed, critiqued and analysed so that what is currently known about the topic or concept is clearly stated. The literature review will also form the basis for the research questions through the identification of gaps in knowledge or areas where there is disagreement.

**Methodology and methods**

This section will set out the research paradigm (see Chapter 4) and describe the context and setting of the research. It should then describe the design of the study and the 'population', i.e. who is being studied if it involves people (teachers, children, parents etc.) or what is being studied, e.g. materials such as textbooks or resources etc.

The research should specify what methods were used (see Chapter 5), how any sampling was done, or how the researchers identified the participants within the study.

The next step would be to identify the main study variables and then describe any data collection instruments and procedures. This should be followed by a description of the analysis methods used. In this section the researcher will report on their data collection, how it was done, how much data they have, e.g. whether they used questionnaires, how they recruited people and the response rates they had. There will also be descriptions of the participants (demographic etc.).

**Results**

This section will present the key findings with respect to the central research question. It may take the form of tables, graphs or a narrative description of the results.

**Discussion**

This section will restate the main findings of the study and then discuss these with reference to any previous research as outlined in the literature review. The discussion may make reference to the policy and practice implications of the results. There should also be an analysis of the strengths and limitations of the study.

**Conclusion**

This section should briefly and succinctly set out the main findings, their importance to the field and implications for policy change, along with suggestions for further research or studies.

While many research articles will follow the general research structure as set out in Box 1.2, the structure described is more applicable to a quantitative study rather than a qualitative one. In qualitative studies the results section, rather than being tables of data, and the analysis section, rather than being statistical analysis, may well include a wide range of approaches from discourse analysis to content analysis. While it is tempting to think that quantitative studies will be more rigorous or have outcomes that can be more generally applied, this is not always the case (see Chapter 5). To better understand research published in academic journals, you will need to familiarise yourself with the journal, how it is set out, and how they require articles to be set out. Just as different newspapers have different audiences, preferences and styles, so do academic journals. A good way to understand what a journal requires, and to get a feel for the way it publishes, is to read the 'author guidelines', which each journal will have available on its website. All articles submitted for consideration for publication in academic journals will be peer reviewed.

## Peer review

The peer-review process for academic research is considered the best way of ensuring high quality, rigour and expert validation (though this is hotly debated and will be explored briefly later). Articles submitted for publication will be sent for peer review to experts within the field. In most cases a peer review is 'double blind', i.e. the reviewers do not know the name of the author, and the author will not know who is reviewing their submission.

The first stage of peer review is carried out by the journal editor or someone on the editorial board who will initially assess whether the article meets the minimum standards for review, i.e. that it is well written, conforms to the journal requirements for how it has been presented, its word length etc., and that it meets the remit of the journal subjectwise. Having passed this stage, it will be sent out to two (or more) independent reviewers who are experts within the field for consideration. There are normally four responses a reviewer can make:

- Accept for publication with no changes (very rarely happens).
- Accept with minor changes (sometimes used).
- Accept with major changes (often used).
- Reject.

The reviewers are expected to provide a report that would help the author revise the article, improve it, and address any concerns the reviewers may have. The author will then make these adjustments and resubmit the revised article, along with a report on what changes they have made, or if they disagree with a reviewer, a justification for keeping the original point in the article. The process can be a long one, and it is



not unusual to have a period of up to a year or more between initial submission and acceptance, and only at that point does the article get scheduled for publication, which can impose further delays. It is possible for research to be at least two years old before it appears in its final published form.

The 'hot debate' over peer review concerns the way the system operates and charges that it can be open to abuse. As noted above, the peer-review system is slow and can be inefficient. Also, reviewers work for the journals unpaid, which means that setting tight deadlines for the return of reviews can be impossible when you are relying on goodwill. My personal experience has seen one article in 'review' for six months before finally being rejected; it then took another year after revisions for it to be finally published in another journal. There are also charges that the reviews produced can be of highly variable quality. As a reviewer, I get asked to read a wide variety of articles and I cannot claim to be an expert in all areas. Where I feel I cannot comment expertly I reject the offer to review, but even where I feel I have some expertise, that does not mean I am expert in all aspects of the field. While reviewers will do their best to be honest and helpful, genuine experts within a field tend to be few in number. In highly specialised fields, this can mean a very small pool of people, which in turn can lead to other issues, e.g. favouritism and jealousy. A reviewer who works out who the author of a paper is may deliberately over-praise or damn a paper. Having more than one reviewer does mitigate this somewhat, but that can also lead to conflicts between reviewers who end up providing contradictory advice.

One move to try and overcome the issues peer review gives rise to is the post-publication review, where an article is initially reviewed for its suitability for publication (well written, grammatical etc.) and there are then calls for an open peer review of the work, with the names of the reviewers known and their comments published with an opportunity for the author to respond. Thus in some cases the review process is not 'blind' in the hope that such transparency will enhance the quality of the reviews.

## Other forms of academic publications

There is a range of articles (see Table 1.1) that can be subject to peer review aside from the quantitative and qualitative research articles discussed above. Systematic review articles, for example Linder and Simpson's (2017), summarise research or a concept, comparing and contrasting the positions of researchers. Position papers, such as Hasking et al.'s (2016), are written in order to generate support for an idea – they set out a researcher's basic view of an issue alongside a rationale for that position. A position paper will build a foundation for a researcher's argument. Theoretical papers will set out a new theory (an evidenced explanation) to explain an aspect of children's learning, development or perhaps a pedagogical approach, for example (Sztajn et al., 2012).

Theory papers can also revise established ideas by introducing new evidence. Methodology and methods papers will describe new approaches to research or new ways of gathering and analysing evidence.

A systematic review is a synthesis and appraisal of primary research, for example (Sullivan and Simpson, 2016). The key characteristic of a systematic review is that it uses a clear and specific methodology to both search for and select the articles to be reviewed. The methodology will be designed to minimise bias (see Chapter 3 for a discussion on different forms of bias). Finally, meta-studies or meta-analyses will combine the results of a number of previously published research studies in order to provide a more statistically significant result that could be applied more generally. This is one clear advantage, but a disadvantage is that the methods and methodologies used by the articles in the meta-analysis will vary. A meta-analysis must have a clear set of criteria, a methodology and methods that set out which articles to include and how to handle the data.

Included in the range of academic articles are scholarly handbooks that collect together specific articles as chapters meant to guide researchers and professionals, such as *The SAGE Handbook of Learning* (Scott and Hargreaves, 2015). These are written by academics who are experts in the field and will undergo rigorous peer review. The same is true for book chapters that focus on one theme or issue.

Conference papers, via which new research is often first shared, will undergo some peer review, especially if the papers are collected together and published as conference proceedings. Finally, there are government reports and research findings. These will be specifically commissioned by a government department and address an area of policy that the government is interested in. While these reports are often good research summaries, it is wise to read them with a potential political bias in mind.

## Professional publications

There are many professional organisations that teachers can join or serve. These organisations will often publish their own journals and magazines to cover specific issues in which their members are interested. In science education, for example, there is the Association for Science Education (ASE) that produces journals for secondary science teachers (e.g. *School Science Review*) as well as a journal for primary teachers who teach science (*Primary Science Review*). They also produce a specialist magazine, *Education in Science*, with news, views and opinions. Similarly, the Historical Association publishes three professional journals, *Primary History*, *Teaching History* and *The Historian*. They also produce an academic journal, the *International Journal of Historical Learning*. Religious education is served by the professional journal *RE Today*. Nearly all secondary subjects will have associated professional bodies that provide journals and magazines. Contributors to these publications will vary from

teachers to university academics as well as freelance consultants and writers. The articles will normally be peer reviewed or at the very least reviewed by the editor of the magazine/journal. The review process is not as rigorous as the academic process, but nevertheless such articles can be very useful. Alongside print journals and magazines, many of these organisations publish blogs. The Chartered College of Teaching publishes *Chartered College Blogs*, featuring articles written by members. This is in addition to its own in-house professional journal, *Impact*.

Professional bodies will occasionally produce reports on specific aspects of their subject. These will be commissioned reports written by members and experts to illuminate a specific idea, concept or issue. While these reports will be reviewed, they will not normally undergo any form of anonymous peer review.

A final category of professional publication is the thesis or dissertation. These are placed within this category as they are principally written to pass an examination at a particular level, either at Master's or doctoral level. They will be rigorous and academic, but it must be remembered that they are written in order to meet a set of examinable criteria. As such, they are not peer reviewed. In the case of a doctorate, there will be an oral examination, the *viva voce* or 'viva', where an expert will explore and challenge the thesis, and the candidate must defend their work.

## Popular publications

The most extensive and easiest type of article to find in any search will be a popular article from a magazine, newspaper or online blog. The key purpose of these types of articles is to inform and entertain. Generally, the review process is very simple – it is down to the editor whether or not an article is printed. In the majority of cases they are written by journalists who may or may not have specialist knowledge. Many articles are directly generated from press releases sent out by companies, 'think tanks' or universities, announcing new discoveries, ideas and analysis. By the time something gets into a newspaper, it can be far removed from an original piece of research.

Another issue is that it is usually a press officer's or journalist's take on the research that is the main message reported. This can sometimes come as a surprise to a researcher, with something that was only a minor, insignificant part of their work suddenly becoming a headline and the main message (according to the researcher) being lost. It's worth remembering here that 'boring doesn't sell'. As a researcher, no matter how interesting you think a finding is, if it isn't seen by others as interesting or exciting it will never gain traction in the media. Box 1.3 shows how one piece of research was transformed by the media into something quite different. Research published by think tanks may well have a particular bias depending on who funds the think tank. Not all think tanks will disclose their sources of funding, so determining how 'independent' their work is can be difficult.

**BOX 1.3 GENES AND IQ**

Publishing research on genes and any link to IQ can be fraught with difficulties when it gets reported in the press. The idea that IQ is linked to genes can be a contentious one. It raises the spectre of racism, and this angle is a popular one for journalists to focus on. Leaving aside the potential for racist attitudes towards IQ and genes, simply putting forward the view that IQ may have a genetic component at all is unacceptable to some people. Research, however, does show a link between IQ and genetics. How such research is reported is crucial to ensuring that the message is not twisted or turned into something that the original research does not claim. Below is one recent story of some research and how various media misreported it, to the extent that the message being given out was not supported by the evidence.

**The research**

The study (Davies et al., 2018) looked at 300,486 individuals and identified 148 independent genetic loci influencing general cognitive function. They also found 709 individual genes associated with general cognitive function. The team discovered that there was genetic overlap between general cognitive function, reaction time, and many health variables including eyesight, hypertension and longevity.

**How the press reported it**

The press fixated on one peripheral result: that some genes linked to a higher IQ are also linked to a higher likelihood of poor eyesight.

*The Telegraph* (Bodkin, 2018) reported a positive correlation of 0.29 (which is, at best, a moderate correlation) as a statement saying that those people who were intelligent were 30% more likely to have genes indicating they required reading glasses, which is not what the report stated. Poor eyesight is not defined as someone requiring reading glasses. The newspaper got the sample size for this study completely wrong, quoting 44,480 when the actual sample size of the study was 300,486. Even simple things went awry, such as the name of one of the lead authors, Gail Davies, being misspelled in two other news reports – becoming Gail Davis in one and Gaye Davies in another.

One online report of the study, by an over-60s health website, had the astonishing headline ‘Study Finds Wearing Glasses Actually Makes You Smarter’ (Anonymous, 2018). At no point is such a statement made or even implied in the actual research paper; it is an illogical and ridiculous assertion.

(Continued)

*The Guardian* (Mahdawi, 2018) started reasonably well in describing the research, but suddenly began linking the wearing of glasses to getting off a criminal charge in court. Glasses were used by one barrister who said they ‘soften’ a person’s looks. The article then went on to state there is a lot of empirical evidence that wearing glasses can make a person look more intelligent. There was plenty within the research to fill the required word count for an article, but the link to a barrister to comment on a genetic study may as well have been a link to a barista for all the insight that could be gained.

These may seem like minor errors or issues, but in major research studies, especially where the content can be sensitive, it is important that the correct findings are made clear. Scientists are often so concerned about how their work is interpreted that they decline to engage with the media or go to great lengths to avoid misinterpretation. For example, in another genetic study (Lee et al., 2018), which found 1,271 education-associated genetic variants, the authors produced a long FAQ list to accompany their research (longer than the actual research paper) so that journalists and others reporting on the research could accurately state what the research was saying and, more importantly, what it was not saying. Journalists love an eye-catching headline, so the temptation to say that scientists have found the genes that explain how clever we are is sometimes too tempting. This study did identify hundreds of genetic variants that are associated with math skills and performance on tests of mental abilities, but they are not ‘genes for education or intelligence’.

## Summary

Not everything that is published is worthwhile, and not everything that is worthwhile is published. Working your way through the maze of research publications can be daunting. Even if you are clear on where to look for the best quality, finding high-quality research in your chosen journal is not guaranteed. In education, there are many who believe that we should approach research in the same way that scientists approach their research. Some believe we should take a ‘clinical’ approach to research, stating that only randomised controlled trials are worthy of consideration. We will look at this thorny issue later, but needless to say there is no simple answer and no magic bullet in research terms that will deliver simple unambiguous answers to the question of how we should teach or even how children learn.

Education is a complex discipline. People are complex and don’t always react and respond in the same way as inanimate objects. In science, it is often possible to make predictions about the outcome of experiments and compare actual outcomes to predictions. People rarely behave in the way you predict or want, making such approaches

very difficult. All is not lost however. While education research may not be as conclusive or as easy to generalise from as scientific research, it does not mean we cannot learn from good, well-designed research.

In this chapter we have looked primarily at how research is reported and some of the things you will need to think about with regard to where you will find your research information. Understanding the hierarchy of publications can narrow down the places you need to search and provide a guide for you to access the right material and ignore articles that have little rigour or validity. In the next chapter we will look at how to find appropriate material using well-designed searches and databases.

## Further reading

Burke Johnson, R., & Christensen, L. (2016) *Educational Research: Quantitative, Qualitative, and Mixed Approaches* (6th edn) London: Sage (Chapter 4)

This is a detailed textbook on research and how to do research. Chapter 4 looks at sources of research and how to construct literature reviews.

Creswell, J.W., & Creswell, J.D. (2018) *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* London: Sage (Chapter 2)

Chapter 2 of this book on research methods provides an easy-to-read chapter on choosing and reviewing appropriate literature for your literature review.

Kumar, R. (2014) *Research Methodology: A Step-by-Step Guide for Beginners* London: Sage (Chapter 3)

Chapter 3 in this text looks at the functions of the literature review in research, how to carry out a literature search and how to review the selected literature.

O'Leary, Z. (2014) *Doing Your Research Project* London: Sage (Chapters 3 and 6)

This is a fairly standard textbook on research methods used in undergraduate and postgraduate settings. These two chapters examine how to get started on research and then develop your research questions.

## Bibliography

Amin, M., & Mabe, M. (2000) Impact factors: use and abuse *International Journal of Environmental Science and Technology* Vol.1 No.1 pp.1–6

Anonymous (2018) *Study finds wearing glasses actually makes you smarter* [online]. @Startsat60. Available at: <https://startsat60.com/health/everyday-health/vision/wearing-glasses-make-you-smarter-university-of-edinburgh-study> (accessed 12th February 2020)

Bodkin, H. (2018) 'Glasses Wearers Really Are More Intelligent – It's in the Genes', *The Telegraph* May 30th

Davies, G., Lam, M., Harris, S.E., et al. (2018) Study of 300,486 individuals identifies 148 independent genetic loci influencing general cognitive function *Nature Communications* Vol.9 No.1 p. 2098

Hasking, P.A., Heath, N.L., Kaess, M., et al. (2016) Position paper for guiding response to non-suicidal self-injury in schools *School Psychology International* Vol.37 No.6 pp. 644–663

- Lee, J.J., Wedow, R., Okbay, A., Kong, E., Maghzian, O., Zacher, M., Nguyen-Viet, T.A., Bowers, P., Sidorenko, J., Linnér, R.K. and Fontana, M.A. (2018) Gene discovery and polygenic prediction from a genome-wide association study of educational attainment in 1.1 million individuals *Nature Genetics* Vol.50 No.8 pp.1112–1121
- Mahdawi, A. (2018) 'Wearing Glasses May Really Mean You're Smarter, Major Study Finds', *The Guardian* May 30th
- Scott, D. & Hargreaves, E. (2015) *The SAGE Handbook of Learning* Los Angeles, CA: Sage
- Sullivan, A.L., & Simonson, G.R. (2016) A systematic review of school-based social-emotional interventions for refugee and war-traumatized youth *Review of Educational Research* Vol.86 No.2 pp.503–530
- Sztajn, P., Confrey, J., Wilson, P.H., & Edgington, C. (2012) Learning trajectory based instruction: toward a theory of teaching *Educational Researcher* Vol.41 No.5 pp.147–156
- Thelwall, M., & Fairclough, R. (2015) Geometric journal impact factors correcting for individual highly cited articles *Journal of Informetrics* Vol.9 No.2 pp.263–272