



The Peer Review Process

This Factsheet aims to explain and evaluate the use of peer review in psychological research. Peer review is the method used to establish the quality and validity of research prior to publication. It is used in all sciences, psychology included. Words in bold are defined in the glossary, and the worksheet provides the opportunity to practice what you have learned.

The examiner expects you to be able to:

- Describe the process of peer review.
- Explain why peer review is essential to the scientific process.
- Evaluate the strengths of the peer review process.
- Identify some key criticisms of the peer review process.

Exam Hint: Peer review is a compulsory component of the AQA, OCR, and Eduqas syllabuses, both at AS and A Level, and is therefore something that you could be directly asked about. While it is not a compulsory component of the WJEC or Edexcel syllabuses, peer review could be included as part of a general discussion of psychology as a science.

Introduction

Research is the process by which psychologists investigate behaviour. This is done through a variety of research methods, some **experimental (laboratory studies** for example) or **non-experimental** methods (**observations** or **questionnaires** for example). You will probably be familiar with how these studies are written about in your textbooks, usually the researcher's name or names (or a name and *et al*) and the year, for example Smith *et al* (2016). However, the studies you learn about in psychology are just the tip of a vast iceberg of research that is being carried out all of the time.



Psychologists who conduct research submit their findings to academic **journals** in the hope that they will be published. There are hundreds of journals for psychological research. These journals are like magazines that psychologists subscribe to in order to keep up to date with research. Some are broad in scope, such as "Psychological Methods" or "Psychological Science", while others specialise in different areas of psychology such as "The Journal of Positive Psychology" or "Personality and Social Psychology Bulletin". Without being published in a journal, it is unlikely that a study would be read by anyone.

However, these journals have limited space, and are unable to publish every study that is submitted to them. In order to decide on which studies to publish, journal editors use a process of **peer** review. This means that the study is scrutinised by the researcher's peers in order to ascertain the value of the study, so that only the highest quality research is published. The peer review process acts as a sort of quality control. It aims to weed out flawed science, studies with methodological issues, bias, or simply fraudulent findings. However, as you will see, the peer review process is not without its issues, or its critics.



Exam Hint: A great way to understand what a journal is and the way in which they are written is to read the original journal article for a study you have learned about in lessons. You can find the original journal articles for many famous studies online for free.

How the peer review process works

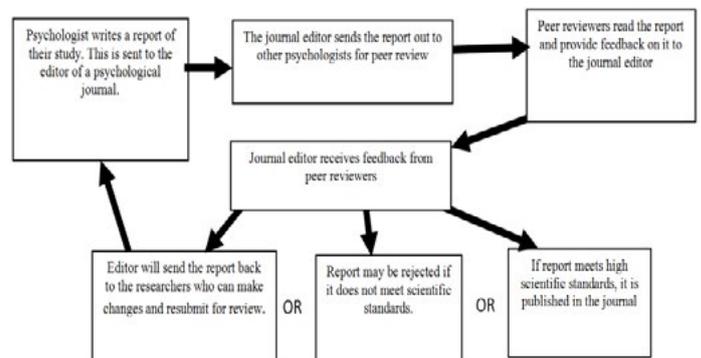
The peer review process has evolved over many years. It is the last step in the **scientific method**. When a study is submitted to a journal, other scientists who are experts in the same area give their opinion on the quality of the study. Each study submitted to a journal will be peer reviewed by many scientists, most of whom are unpaid volunteers, and the results of this review will be considered by a peer review panel who make the final judgement. The editor of the journal will then decide whether the study will be included in the journal.



The peer reviewers are looking at a number of factors. Firstly, they analyse the methodology used in the study. They are looking for factors that may reduce the validity of the results, such as potential **confounding variables** that have not been controlled for, evidence of **researcher bias**, a small or **biased sample**, or simply a poorly designed study that has produced results that may not be reliable or valid.

Secondly, the peer reviewers assess the study for any evidence of fraud, or manipulated data. Finally, they assess the potential interest that the study may generate. If the study is unoriginal, or adds nothing new to the body of psychological knowledge, it may not be considered for publishing. If the reviewers find any problems with a study, it may be sent back to the researcher with notes and suggestions. The researcher can then act on these suggestions, amend their paper and resubmit it for review.

The diagram here shows the peer review process.



In **single blind reviews** authors do not know who the reviewers are. In **double blind reviews** authors do not know who the reviewers are, nor do reviewers know the identity of the authors. This is done so that peers are able to give their true unbiased opinion, and to ensure objectivity. Traditionally the peer review process would be done on paper, and would be a time consuming process. However, the internet has allowed the peer review process to be sped up, as well as opening up the process to a wider variety of reviewers from all over the world.

Exam Hint: If asked to describe the peer review process, a flowchart, or diagram, such as the one above, could be included to add clarity to your description.

Evaluation of the peer review process

The main strength of the peer review process is that it ensures that only the best research is published. This means that psychologists who read the journal can be reasonably sure that the study has adhered to high scientific standards, and is free from bias or fraudulent data. The peer review process is the best safeguard psychology has against “junk science”. However, the process is not without its flaws. One big problem with the peer review process is that it can be very time consuming. Even with the advent of the internet and instant global communication, it may still take many months or even years for a study to make it to print.



Another issue is that the peer reviewers may not be completely objective when reviewing the work of another researcher. Each reviewer will have worked in a particular area of psychology for many years, and will approach any new study with their own biases and preconceptions. This may bias the way in which they assess any new study. If the study agrees with the reviewer’s ideas and theories, they may be less critical when assessing its worth. Similarly, they may be highly critical of studies that contradict their own views and opinions.



Some critics have highlighted instances where poor science or fraudulent data has gone through the peer review process and been published, suggesting that peer review is not always successful in maintaining the high scientific standards required by psychology. This may be because it is sometimes difficult to find experts in particular fields (particularly in very new branches of psychology) and so non-experts are recruited to review. These experts may miss issues that an expert in that field may notice. This is a big problem because once a study has been published, it is very difficult for it to be retracted. The original article cannot be removed from circulation, and while a correction may be printed, it is unlikely that this will be read by many people. This has huge implications for the real world, as the results of these unreliable studies may be used as the basis for government policy and laws.

Another issue, and one that is a problem for scientific publishing in general, is that some academic journals are run as for-profit business, and will publish any study for a fee. There have been cases where researchers have been able to publish papers which are essentially nonsense words laid out in a professional format. These journals may have professional sounding names, but it is clear that they do not follow a rigorous peer review process. This is an issue as non-psychologists may be duped into thinking that the study they are reading is reliable and valid.

The biggest issue with peer review, and academic publishing in general is that there can be a **publication bias**. Journals depend upon their subscribers to buy their journals in order to make money. Therefore, they will be more likely to publish studies that are attention-grabbing, or that show interesting findings. Studies that are less interesting, although just as worthwhile are less likely to be published. This leads to a bias in the studies that are published.



One specific issue is that **positive findings** are much more likely to be published than **negative findings**. In other words, studies where findings support the **alternative hypothesis** are more likely to be published than where the data supports the **null hypothesis**. This can lead to a very unbalanced view of human behaviour, and may exaggerate differences between groups of people. For example, imagine that ten studies are conducted to investigate if there is a gender difference in maths ability. Of these ten studies, nine find that there is no difference between men and women and their maths ability, and one study does find a difference, it is the latter that will be published rather than the former. Someone reading the journal would not even know that these studies had taken place, and would be left with the conclusion that men and women differ in their maths ability. This issue was named “**The File Drawer**” effect by Robert Rosenthal in 1979. Uninteresting findings are stored in the publisher’s “file drawer” and remain unpublished. Franco et al (2014) found that many null results (i.e. where the null hypothesis was supported) don’t even get written up. Of those that do and are submitted for publication, very few will be published. However, he found that over half of all studies that found strong results (supporting the alternative hypothesis) will be published.

A recent example of this is with research into bilingualism. It has been suggested by many studies that bilinguals have an advantage over monolinguals with regards to executive functioning (skills such as attention and working memory). A report by de Bruin et al (2014) however suggests that this advantage is due to publication bias. De Bruin looked at all the studies into bilingualism that were presented at academic conferences, and then determined which ones were subsequently published. She found that there was a bias, so that studies that fully supported the bilingual-advantage theory were most likely to be published, followed by those with mixed results. Studies that challenged the bilingual-advantage theory were published least.



Exam Hint: If asked to evaluate the peer review process, it is easy to fall into the trap of discussing all the drawbacks and faults without addressing the strengths. You need to acknowledge that although peer reviewing isn’t perfect and has its flaws, it is still the best method we have to ensure the quality of published research.

Summary

You might be forgiven for thinking that the peer review process is flawed and you may possibly question its use. However, while it is not perfect, there are no real alternatives that can ensure the academic rigour required by the scientific process. The peer review process ensures that only the best, most valid and most reliable research reaches publication. This has huge social, ethical, and economic implications.

Psychological research (much like research in all sciences) is used as the basis for our knowledge and understanding of the world. Published research is the basis for a vast amount of governmental decisions that affect us all. Healthcare funding allocation, educational policy, and the criminal justice system are just three examples of areas where psychological research can have an impact. It is therefore vital that these decisions are based on the best information available. This is what the peer review process can ensure.

The weaknesses of the peer review process are, to an extent, being addressed. Within both psychology and other sciences, there is a movement towards publishing all findings in online databases accessible to everyone, including negative ones that would not normally be published in a journal. This may help to overcome the issue of publication bias. Also, online peer review sites such as Philica and arXiv open up the peer review process to anyone, not just professional academics. This may overcome some of the issues that arise from the personal biases held by traditional peer reviewers. So while the peer review process is not perfect, it is slowly being refined and improved.

Glossary

Alternative hypothesis: a testable statement predicting that the results of the study will show a statistically significant relationship between two variables that is unlikely to be due to chance. Opposite to the null hypothesis.

Biased sample: a sample of participants in a study that is not representative of the target population.

Confounding variables: a variable that is not under the control of the experimenter, but may have an effect on the dependent variable and therefore make the results invalid.

Double blind reviews: where neither the author of a study nor the peer reviewer know the identity of each other.

Et al: Latin for “and others”. Used in the name of studies to identify that the main researcher worked with other researchers. **Experimental**

methods: a type of study where there is an independent variable manipulated by the researcher, and a dependent variable that is measured.

File drawer effect: when studies that do not find a positive result are filed away and never published.

Journals: academic periodicals where researchers publish their studies for others to read.

Laboratory study: a study that takes place in a controlled environment where a researcher will manipulate an independent variable to see the effect on a dependent variable.

Negative findings: results that do not find a relationship between variable, where the null hypothesis is supported.

Non-experimental methods: any research method that does not have an independent or dependent variable.

Null hypothesis: an assumption that there is no statistically significant relationship between two variables. Opposite to the alternative hypothesis.

Observations: a non-experimental research method where participants are observed and their behaviour is recorded.

Peer: psychologist who works in the same field of research as the author of a study.

Positive findings: results that find a relationship between variable, where the alternative hypothesis is supported.

Publication bias: the phenomenon whereby studies that find interesting results are more likely to be published, leading to a biased view of human behaviour.

Questionnaires: a non-experimental research method where participants respond to questions, most often in writing.

Researcher bias: the effect that the researcher’s expectations have on the outcome of a study.

Scientific method: a method of systematic observation and measurement that aims to uncover the truth by using objective methods. **Single**

blind reviews: where the author of a study does not know the identity of their peer reviewer.

Worksheet: The Peer Review Process

Name _____

1. A psychologist sends his completed study to a psychology journal. The editor tells him that it will have to undergo peer review. Outline the process of peer review.

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2. Evaluate one key strength of the peer review process

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3. A psychologist has made a collection of all the published studies they could find on gender differences in driving behaviour. Nearly all the studies suggest that men are better drivers than women. The psychologist however argues that there may be no gender difference in driving ability, and that the apparent difference is simply due to a publication bias. Explain why this may be a valid criticism.

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4. Aside from publication bias, evaluate one more weakness of the peer review process.

Image ref	Image	Credit	Caption
<u>Image 1</u>		https://pixabay.com/en/microbiologist-scientist-pathologist-1332292/ Credit: FotoshopTofs Copyright free image	The peer review process is a vital element of all sciences, not just psychology
<u>Image 2</u>		https://pixabay.com/en/magazines-reading-journals-1108800/ Credit: jackmac34 Copyright free image	There are thousands of academic journals published each year, and many hundreds dedicated to psychology
<u>Image 3</u>		https://pixabay.com/en/document-agreement-documents-sign-428338/ Credit: jarmoluk Copyright free image	Before a study can be published, it needs to be thoroughly assessed by other psychologists.
<u>Image 4</u>		https://pixabay.com/en/trash-can-wastebasket-receptical-23640/ Credit: ClkerFreeVectorImages Copyright free image	If a study does not meet the high scientific standards demanded by the journal, it will be rejected
<u>Image 5</u>		https://pixabay.com/en/clock-time-stopwatch-wrist-watch-95330/ Credit: steinchen Copyright free image	The peer review process can take a long time!
<u>Image 6</u>		https://pixabay.com/en/money-finance-currency-business-1302828/ Credit: Prawny Copyright free image	Some journals just want to make a profit and so will publish anything!
<u>Image 7</u>		https://pixabay.com/en/cabinet-data-file-icon-information-1293245/ Credit: OpenClipartVectors Copyright free image	The file drawer effect means that studies that find a negative result never get published.
<u>Image 8</u>		https://pixabay.com/en/anna-chlopecki-lecturer-in-wikipedia-1176283/ Credit: janeb13 Copyright free image	The apparent benefits of being bilingual may be due to a publication bias.