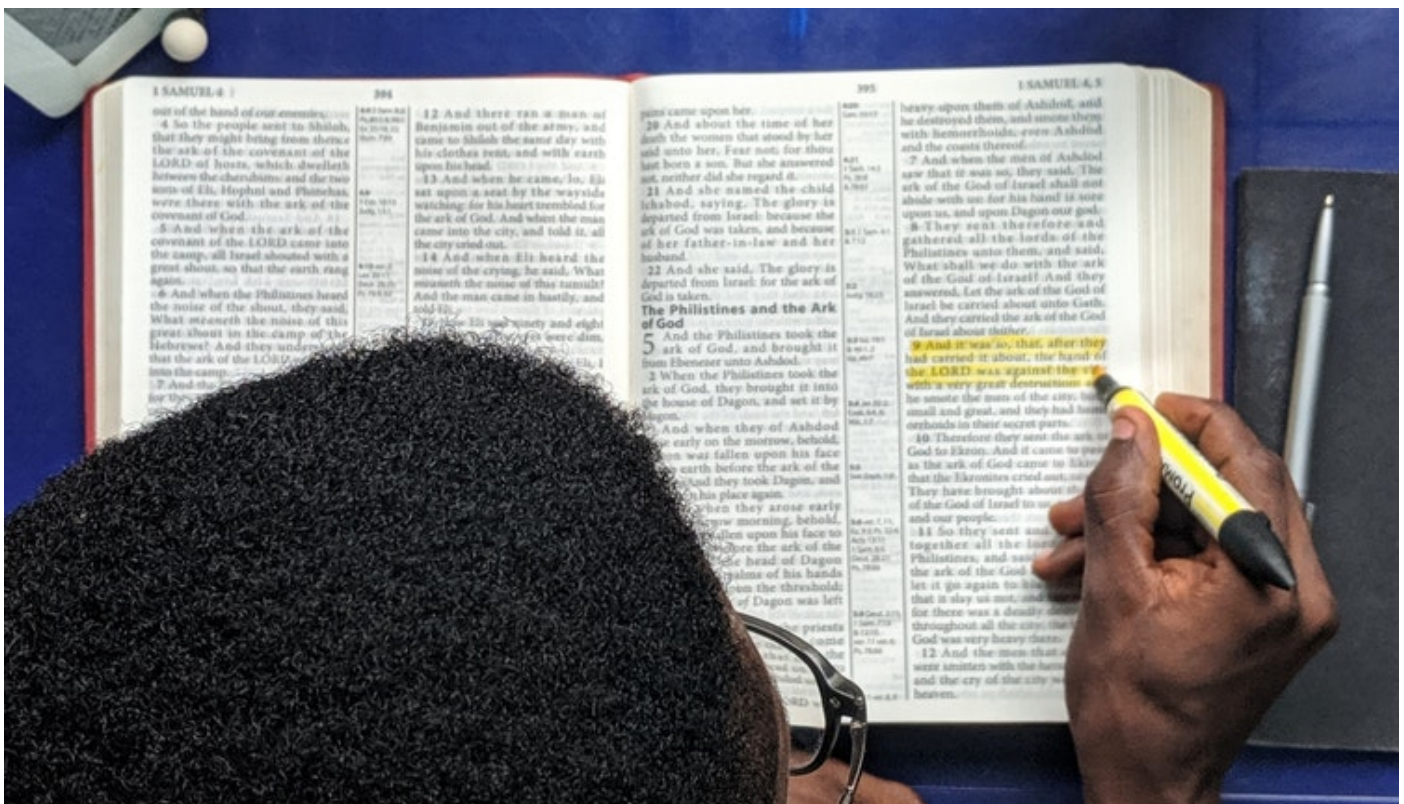


# What If Your Manuscript Has Wrong Citations?

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Something that every true [research paper](#) has in common is a large number of citations. When writing a paper, researchers may mention other work that inspired their study, supports (or refutes) their ideas, or that gives extra background information. Proper citations are also essential if plagiarism is to be avoided. Simply, citations are vital to scientific publishing.

Sometimes, however, [citations are mis-used](#). Have you ever cited an article without reading it all the way through, or without truly understanding the content? If so, you are not alone. A recent study suggests that this is actually a very common practice.

## Bad Citations: An Example

The study, by Kåre Letrud and Sigbjørn Hernes of the University of Applied Sciences in Lillehammer, Norway, was [published in PLOS One](#). The researchers looked at three articles critiquing something called the Hawthorne effect. Put simply, the Hawthorne effect is when people's behavior changes when they know that they are being observed or studied. This makes the results of the study unreliable.

In 2000, two other researchers published an article critiquing the Hawthorne effect. Gustav Wickström and Tom Bendix argued that there are many other possible reasons for results that might appear to be down to the effect. They said that the Hawthorne effect is “ambiguous and disputable.”

Letrud and Hernes searched for articles that cited the 2000 paper. They found 196 in total. A large majority (155) mis-cited the paper. They cited the paper as confirming, rather than refuting, the Hawthorne effect. It seems clear that the researchers who mis-cited the paper either did not read it in full or did not understand it.

Letrud and Hernes decided to look for other papers that critique the Hawthorne effect. They found two earlier articles, one published in 1992 and one in 1978. For both, there were many cases of mis-citation. The 1978 paper was mis-cited in 189 out of 277 citations.

Interestingly, the two earlier articles were mostly cited correctly, to begin with. Over time, however, they became [more and more mis-cited](#).

## Why Research Gets Mis-cited?

In total, over the three articles, Letrud and Hernes found that 468 out of 613 citations supported the Hawthorne effect. This means that a large number mis-cited the original studies. How could so many authors make this same mistake?

Letrud and Hernes claim that a major reason for this is researchers “not reading, or not understanding the cited paper.” Once one person has mis-cited the original article, it becomes more likely that someone else will, too. Over time these incorrect ideas spread, until it [becomes difficult to correct them](#). This might also explain why it is possible for articles that mis-cite other research to pass a peer review process. Such widely-accepted but false ideas are sometimes called “scientific myths.”

However, other factors may lead to the present scenario. In this case, researchers who accept the critique of the Hawthorne effect might be less likely to mention it in their future work. There is no way to measure the number of researchers who agreed with the original article.

So, is the Hawthorne effect really a scientific myth? The original study, in which the effect was named, has been widely doubted. Recent research suggests that, in fact, there is “no single Hawthorne effect.”

## How do Scientific Myths Spread?

Letrud and Hernes suggest that there are three ways to cite an article like the Wickström and Bendix paper. First, a reader might accept the author's ideas, so their citation will not support the theory. Second, a reader could disagree with the author, so their citation will support the theory. And third, a reader might wrongly cite the paper as supporting the theory.

In this case, two of the three groups will support the idea that the Hawthorne effect is valid. In this way, an incorrect idea can actually spread more widely as a result of a paper that aims to refute that idea. This might have happened in the case of the Wickström and Bendix article.

## The Predatory Journal Problem

Clearly, researchers who mis-cite articles that they have failed to either read or understand can be a problem. Another potential problem with citations is the rise of predatory journals.

Predatory journals normally charge authors a fee for publishing. They do not provide peer review or any other quality control. Articles published by these journals are highly variable in quality and are not reliable. However, citations for some of these journals can be found using reputable online services such as Web of Science or PLOS One.

One researcher, Rick Anderson of the University of Utah, [decided to find out more](#). First, he identified seven predatory journals. These journals had all previously published “nonsense” research in exchange for a fee. For example, four of the seven had fallen for the “Star Wars” sting. The investigator submitted an article based on the Star Wars movies, which was “an absurd mess of factual errors, plagiarism, and movie quotes.”

Anderson then searched for citations to articles from these journals in the Web of Science, ScienceDirect and *PLOS One* databases. He found that two of the journals had never been cited in articles in these databases. Overall, given the huge number of articles available through the three databases, the number of predatory journal citations was low.

However, Anderson also looked at the results from another angle. One of the predatory journals had 36% of its article cited in mainstream journals. For another, the figure was 25%. It is important to remember that Anderson only looked at seven predatory journals. According to the statistics available, as many as 12,000 predatory journals in total exist in academia.

## What Do You Think?

Clearly, there is a problem with citations. So, what can you do? As a researcher, I suggest that something every researcher can do is to make sure that they only cite articles that they have read and understood themselves. Also, you should check that you do not cite articles from predatory journals. These actions will help to stop the spread of mis-cited ideas.

Have you come across mis-cited articles? Please share your thoughts with us in the comments section below.

### Cite this article

Enago Academy, What If Your Manuscript Has Wrong Citations?. Enago Academy. 2019/11/11. <https://www.enago.com/academy/when-citations-go-wrong/>