

What's in a title? A two-step approach to optimisation for man and machine

Writing good titles is a crucial part of optimising articles' chances of being peer reviewed, and later found in the literature via Google: here are some tips...

The point about peer review should be clear, because the title and abstract are all that is usually sent to prospective peer reviewers in the invitation email. However, if you genuinely have something new to say, how to write a title that will catch other scientists' eye, against the high background of titles with similar keywords in them? Though an article title will rarely be remembered as book titles are, at the point of first reading, the two have at least a couple things in common: placement of the most important concept at or near the beginning (where it most readily catches the reader's eye), and a construction that stimulates curiosity and is informative.

Whether or not Darwin consciously thought about this, his title '*On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*' is arguably better than the following, possible, alternative: '*The role of natural selection in the preservation of favoured races in the struggle for life, and production of new species*'. The appearance of species was the riddle that he sought to explain – i.e. the object of his research and of public curiosity and controversy surrounding the origin of life on Earth – and he placed that concept first in the title. The terms 'favoured races' and 'struggle for life' added a bit of spice, as well as being informative of his thesis. With the benefit of over 100 years of research and the discovery of genes, Richard Dawkins wrote books with the both attractive and highly memorable titles '*The Selfish Gene*' and '*The Blind Watchmaker*', albeit for a broad public. 'Titleology' is quite a refined science, and publishers know all too well that the title of a book can seal its fate.

Good rules of thumb for scientific article titles are to place the key concept of your paper near the beginning of the title and make your finding explicit (via a statement, with or without a verb) – e.g. rather than '*Influence of acceleration voltage on scanning electron microscopy of human blood platelets*', try '*Improved detail in scanning EM of human blood platelets via acceleration voltages between 2 kV and 300 V*', or rather than '*The influence of dietary status on the cognitive performance of children*', how about '*Cognitive performance and diet in children: evidence that low glycaemic loads are beneficial*'. 'Influence of' (and other phrases such as 'effect of', 'role of', etc.) is sometimes used to subsume a range of experimental findings, but it blunts the message if not qualified. Perhaps Darwin could also have done better than '*On the...*'. To be noticed, a title should state the most important new finding of

the paper, if at all possible. 'Influence of' is not a phrase that conjures much curiosity, but amazingly, when searching for this phrase in article titles indexed in PubMed, one finds that in over half of the titles found, 'influence (of)' is the first or second word! Some room for optimisation there, though not in all cases, of course...

The point about Google is a bit more subtle, but still very important. Despite a wonderful new search interface, launched last Autumn, PubMed is having a tough time competing with Internet search engines, king among these being Google. Certain journals already receive half of their article accesses via a combination of such search engines (percentage rising), and less than one fifth via PubMed (percentage falling). Whether this is good or bad is not for me to say here; the fact is that Google is an increasingly popular way of finding scientific literature (and my bet is that a significant proportion of such searches goes through plain old Google, rather than Google Scholar).

In generating a ranking (position in the list) in their search results, Google, Excite and Lycos (but not Yahoo) ignore keywords that are designated as such (using the metadata tag 'keywords') in the html version of an article. That means that unless good keywords are placed in a title, these search engines will come to their own conclusion as to what the main topic of the article is. The 'title' tag receives a relatively high weighting in the Google algorithm, and it doesn't stop there: Google, unlike PubMed, indexes the full text of an article: titles of sections in an article – coded as h1, h2, h3, etc. (or similarly denoted) in the html version of the article – are also weighted relatively highly, decreasing in influence from h1 (heading), down to h3 (sub-sub-heading), for example. So, it pays to spend some time on keyword optimisation there too. Which keywords you use will depend on who you want to find your article, and why. Given the increasingly hard fight for citations, it is not a bad idea to consider the broadest audience that would cite your work, and not be narrowed to the peer group that attends the same conferences as you (this applies to the rest of the article too). Consider this process of optimisation for search engines as a second step of refining



your title (and sections headings) after getting the acceptance letter from the editor.

Ultimately, the knack is to combine the considerations of peer review with those of findability on the Internet, and create an interesting and informative title. Punctuation can help here, for example by separating the title into two parts. This is often done with a colon ':' or a so-called 'en-dash'. And as long as the title does not change its meaning, I believe that a two-step approach to optimising titles, as described above, is justified. After all, the context in which a reviewer is invited to review an article is significantly different from the context in which it is

found among a multitude of competing titles in the jungle of the Internet...

A handwritten signature in black ink, appearing to read 'Andrew Moore', written in a cursive style.

Andrew Moore
Editor-in-Chief