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## Viewpoint

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### Multiple: do we know what we are talking about?

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Have you noticed a dramatic increase in the use of the word *multiple* in recent months? The BBC reported that the group New World Hacking, which brought down its website, said at the beginning of this year, “It was only a test, we didn’t exactly plan to take it down for multiple hours.” Another news report, this time from The Daily Beast in November last year, stated, “Late Friday night in Paris, multiple gunmen opened fire on diners and concert-goers.” It seems almost every news item must have the word *multiple*. This morning (14 January 2015) it was “Multiple bomb and gun attacks in Jakarta”. I suspect the word has become popular with journalists because it sounds more sensational than *many*, *several*, *numerous*, *various* etc. But it is replacing those words in everyday speech too. And, more to the point, its use in academic circles has also increased. The trend has been creeping up on us: Google Ngram Viewer shows that the frequency of *multiple* in its corpus of fiction books increased 2-fold from 1975 to 2008 and the increase in PubMed® articles was 2.3-fold from 1975 to 2010.<sup>1</sup> (For an explanation of how the author used Google Ngram Viewer and PubMed to obtain these statistics see<sup>2</sup>.) However, my impression is that the trend is becoming an explosion.

The word *multiple* can be a noun, with a meaning confined to mathematics, or an adjective. We are concerned here with the adjective *multiple*. It means, “consisting of, having, or involving several or many individuals, parts, elements, relations” (dictionary.com but other dictionaries give similar definitions). *Multiple* is therefore more complex than *many/several*. The Macmillan dictionary gives the following example of the usage of *multiple*:

“Words can have multiple meanings”. Fair enough, words can have different types of meanings but how is the sense of this sentence different from “Words can have many meanings”? The many meanings must be different.

I tried the web service at <http://the-difference-between.com>. It told me *multiple* means “having more than one element, part, component, or function” and *many* means “an indefinite large number of”. The Merriam Webster and Oxford dictionaries make a similar distinction. But *multiple* is not finite either. So, is *many* quantitatively more than *multiple*? Not according to the Cambridge dictionary, which defines *multiple* as “very many of the same type, or of different types”. This definition makes *multiple* bigger than *many*—very many: “Words can have multiple meanings” = “Words can have very many meanings”?

I suggest restricting the use of *multiple* to where we want to emphasize the element of “several/many in one”. I also think that the *several/many* can be of *the same or of different types* as the Cambridge dictionary indicates. Using

*the word for its precise meaning* is especially important in science, where the word has been coupled to some nouns for a meaning of this nature:

Multiple choice is a form of assessment in which respondents are asked to select the best possible answer (or answers) out of the choices from a list (Merriam Webster)

Multiple regression is a statistical tool used to derive the value of a dependent variable (criterion) from several other independent (predictor) variables. It is the simultaneous combination of multiple factors to assess how and to what extent they affect a certain outcome (<https://www.techopedia.com/definition/27369/multiple-regression>).

Multiple exposure is the superimposition of two or more exposures to create a single image ([https://en.wikipedia.org/wiki/Multiple\\_exposure](https://en.wikipedia.org/wiki/Multiple_exposure))

An element of complexity is explicitly added into *multiple* in medical writing. When qualifying a disease or injury *multiple* means the disease is complex in its nature or effects; affecting several parts of the body (Oxford Dictionary). Multiple sclerosis, a chronic disease that attacks different parts of the central nervous system, namely the brain, spinal cord and optic nerves, is an example.

*Multiple's* precise meaning is betrayed by its general increase in use as a substitute for *many*, *several*, *numerous*, *various* etc. We should be careful not to confuse readers by writing *multiple* when all that is meant is one of these words. Alistair Reeves gave an example of the title “Managing dyslipidaemia—multiple patients and multiple approaches”. While ‘multiple approaches’ indicates the approaches were different in his view, he asked if ‘multiple patients’ meant more than one patient or patients with dyslipidaemia of different origins.<sup>2</sup> If more than one patient presumably they were Siamese twins. *Multiple* is the indefinite version of *single*, *double*, *triple* and so forth, which might translate Alistair’s title to something like “Triple approaches (3 treatment arms) to sextuple patients ( $N = 6$ )”. Talking of approaches, how has the term *repeat-dose study*, meaning participants receive more than one of the same dose, become interchangeable with *multiple-dose study*, which Alistair suggested should mean participants receive different doses? If *multiple* can include elements that are the same or different, we are left with a *multiple-dose study* being one where very many more doses are given than in a *repeat-dose study* or the doses are of an infinite number.

I have encountered manuscripts reporting on “multiple animals”, which were just a bunch of ordinary laboratory mice—not genetically engineered animals created from a variety of species. Elsewhere I found multiple meetings, all with the same purpose and following the same format: The forms constituting the electronic health record were

developed based on individual professional experience during *multiple* dedicated working group meetings held by the ophthalmologists working at the diabetic retinopathy consult.

I changed this sentence to: The electronic health record forms were developed from input given by ophthalmologists from the diabetic retinopathy department during *several* working-group meetings held for the purpose.

I chose to replace *multiple* with *several* but if there had been a large number of meetings *many* would be appropriate and if the number had been even larger *numerous*, after which we get into the realms of an *enormous/vast/gargantuan* number of meetings—but not *multiple* meetings, unless maybe we are concerned with more than many meetings, an infinite number of meetings or meetings of different

types, but in such cases I would suggest keeping our hands off *multiple* and describing exactly what we mean. Overuse and misuse of *multiple* will only make it unusable and lead to its disuse.

## References

- 1 Goodman NW, Edwards MB, Langdon-Neuner E. Medical writing: A Prescription for Clarity 4th ed. Cambridge: Cambridge University Press; 2014
- 2 Goodman NW. The increasing pseudodignification of medical prose. ESE 2015;41(2):31-35. Available at: [http://www.ease.org.uk/sites/default/files/article\\_goodman\\_0.pdf#page=3&zoom=auto,-158,481](http://www.ease.org.uk/sites/default/files/article_goodman_0.pdf#page=3&zoom=auto,-158,481)
- 3 Reeves A. Multiple problem: Different or more of the same? TWS 2007;16(3):122-123

## New member of the editorial board

ESE would like to welcome Laurence Mabile as a new member of the editorial board. Laurence will be responsible for the book review section of the journal.



Laurence Mabile graduated as PhD in Medical Biochemistry in 1995 and has joined the team “Genomics, biotherapies and public health: multidisciplinary approach” directed by Dr Anne Cambon-Thomsen, initially as the BRIF ‘Bioresource Research Impact Factor’ project manager, in the department of

Epidemiology and Public Health at University of Toulouse III, France. She studied at the University “Pierre et Marie Curie” in Paris and at the University “Paul Sabatier” in Toulouse. She held fellowship positions in UMDS Guy’s Hospital in London, UK and in the Clinical Research Institute of Montreal, Canada, in the research context of Nutrition and Diseases. She also holds a master in “Museology: Sciences, Cultures and Societies” (National Museum of Natural History, Paris). She is interested in many societal aspects of research in life sciences, notably in the way science is disseminated.



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