

# Expression of emotion in books declined during 20th century, study finds

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Credit: Wikipedia/CC

The use of words with emotional content in books has steadily decreased throughout the last century, according to new research from the Universities of Bristol, Sheffield, and Durham. The study, published today in *PLOS ONE*, also found a divergence between American and British English, with the former being more 'emotional' than the latter.

The researchers looked at how frequently 'mood' words were used

through time in a database of more than five million digitised books provided by Google. The list of words was divided into six categories (anger, [disgust](#), fear, joy, [sadness](#), surprise) previously used by one of the researchers, Dr Vasileios Lampos, to detect contemporary [mood changes](#) in [public opinion](#) as expressed in [tweets](#) collected in the UK over more than two years.

Dr Alberto Acerbi, a Newton Fellow in the Department of Archaeology and [Anthropology](#) at the University of Bristol and lead author of the paper, said: "We thought that it would be interesting to apply the same methodology to different media and, especially, on a larger [time scale](#). We were initially surprised to see how well periods of positive and negative moods correlated with [historical events](#). The Second World War, for example, is marked by a distinct increase in words related to sadness, and a correspondent decrease in words related to joy."

In applying this technique, the researchers made some remarkable discoveries about the evolution of word usage in English books over the past century. Firstly, the emotional content of published English has been steadily decreasing over the past century, with the exception of words associated with fear, an emotion which has resurged over the past decades.

They also found that American English and British English have undergone a distinct stylistic divergence since the 1960s. American English has become decidedly more 'emotional' than British English in the last half-century.

The same divergence was also found in the use of content-free words, that is words which carry little or no meaning on their own, such as conjunctions ('and', 'but') and articles ('the').

Dr Acerbi said: "This is particularly fascinating because it has recently

been shown that differences in usage of content-free [words](#) are a signature of different stylistic periods in the history of western literature."

This suggests that the divergence in [emotional content](#) between the two forms of English is paired by a more general stylistic divergence.

Co-author Professor Alex Bentley said: "We don't know exactly what happened in the Sixties but our results show that this is the precise moment in which literary American and British English started to diverge. We can only speculate whether this was connected, for example, to the baby-boom or to the rising of counterculture.

"In the USA, baby boomers grew up in the greatest period of economic prosperity of the century, whereas the British baby boomers grew up in a post-war recovery period so perhaps 'emotionalism' was a luxury of economic growth."

While the trends found in this study are very clear, their interpretation is still open. A remaining question, the authors say, is whether word usage represents real behaviour in a population, or possibly an absence of that behaviour which is increasingly played out via literary fiction. Books may not reflect the real population any more than catwalk models reflect the average body.

Dr Acerbi concluded: "Today we have tools that are revolutionising our understanding of human culture and of how it changes through time. Interdisciplinary studies such as this can detect clear patterns by looking at an unprecedented amount of data, such as tweets, Google trends, blogs, or, in our case, digitised books, that are freely available to everyone interested in them."

**More information:** 'The expression of emotion in 20th century books'

by Acerbi A, Lampos V, Garnett P, Bentley RA in *PLOS ONE*.  
[dx.plos.org/10.1371/journal.pone.0059030](https://doi.org/10.1371/journal.pone.0059030)

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