**Supplementary File I – Supplementary Figures**

For the figures below the y-axes do not always start at zero. This aims to focus on the interesting differences and starting all axes at zero would mean interesting trends could be squashed. The y-axes also differ between the left and right panels. The shaded grey areas in the left-hand plots are the 95% confidence intervals for the mean.

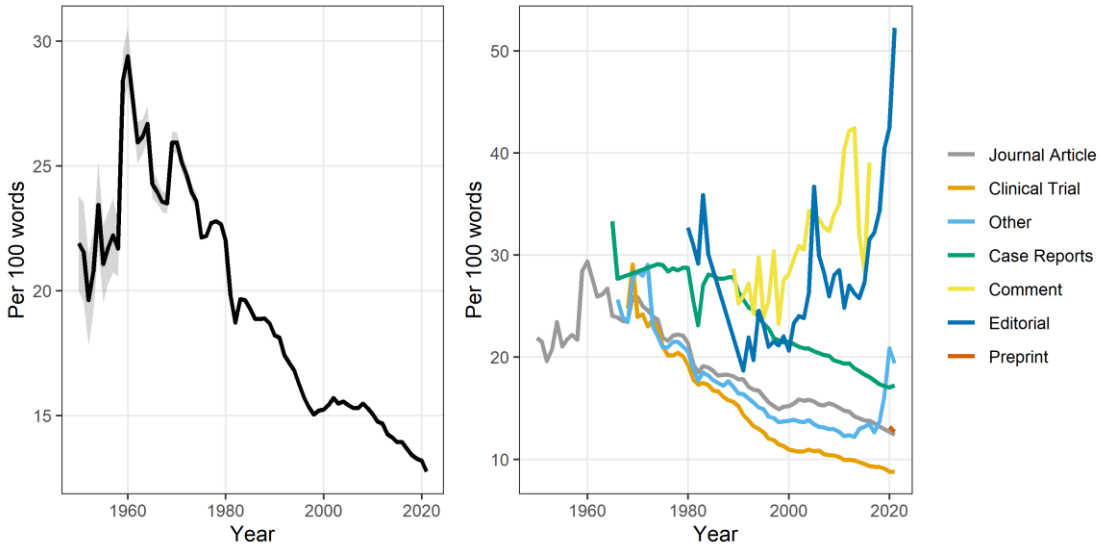


**Fig. 5** The average number of words per sentence over time. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of words per sentence per 100 words. The number of words per sentence has been decreasing since the 1960s, from 30 to less than 15.

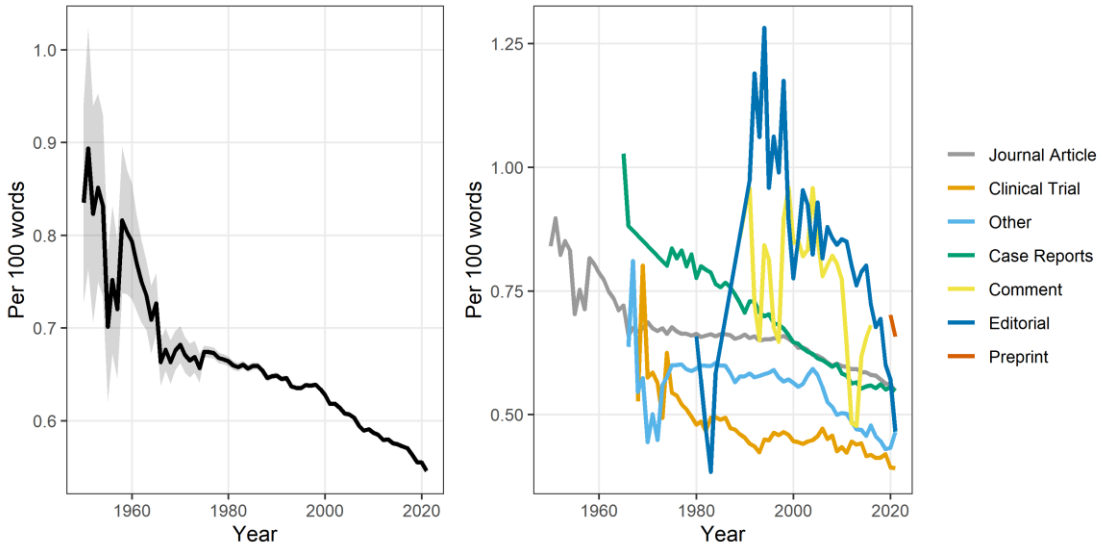


**Fig. 6** The average number of hedging words used per 100 words over time. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. Hedging refers to words that suggest uncertainty on the part of the writer, such as “likely” and “possibility”

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of hedging words per 100 words. The number of hedging words has been decreasing since the 1960s, from 0.8 to less than 0.6 per 100 words.

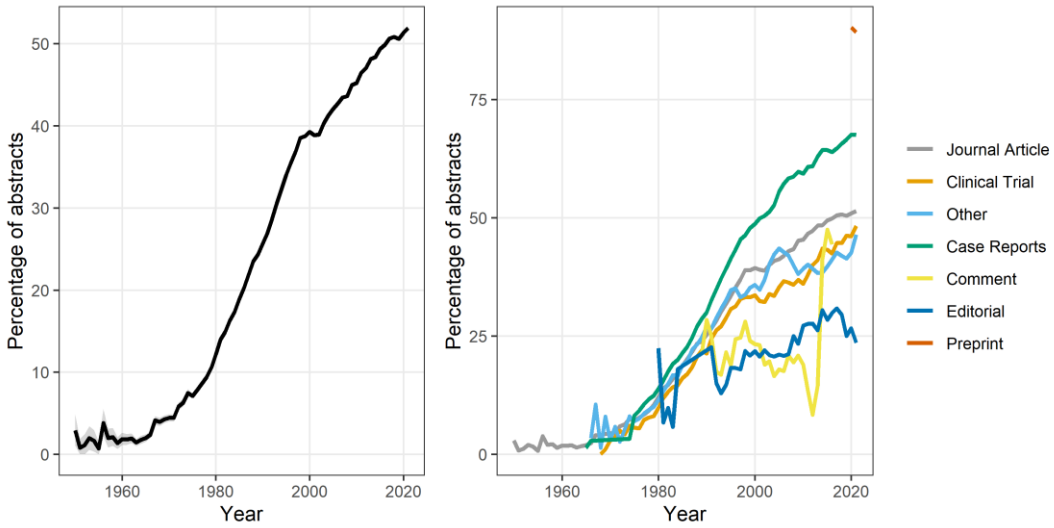


**Fig. 7** The percentage of abstracts that use active narration over time. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. Active narration refers to personal language such as "I" or "we". This is a binary yes or no outcome, whereas the other outcomes are counts

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the percentage of abstracts that use active narration. The use of active narration has been increasing since the 1960s, from 0% to 50%.

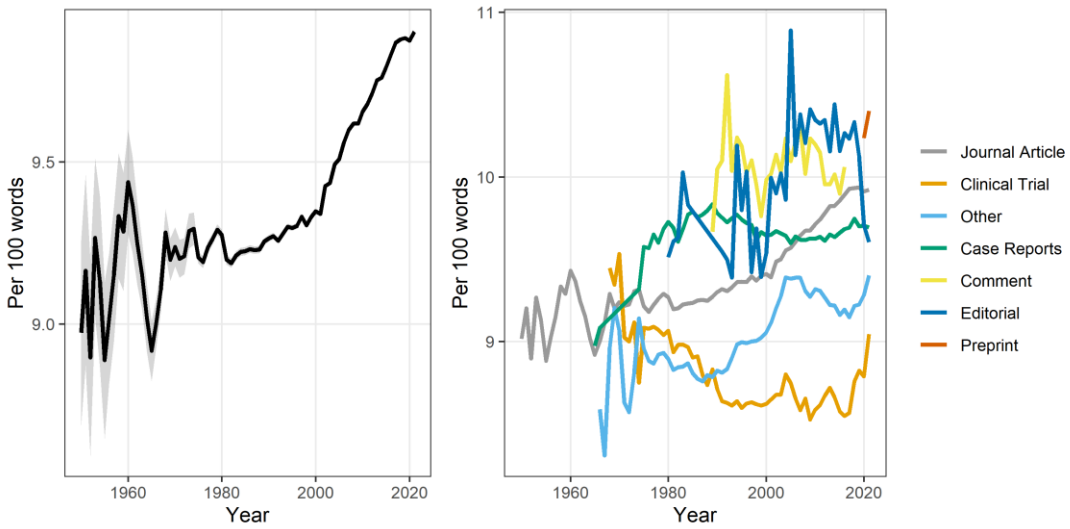


**Fig. 8** The average number of verbs used per 100 words over time. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of verbs per 100 words. The number of verbs has been increasing since the 1980s, from 9.25 to around 10 per 100 words.

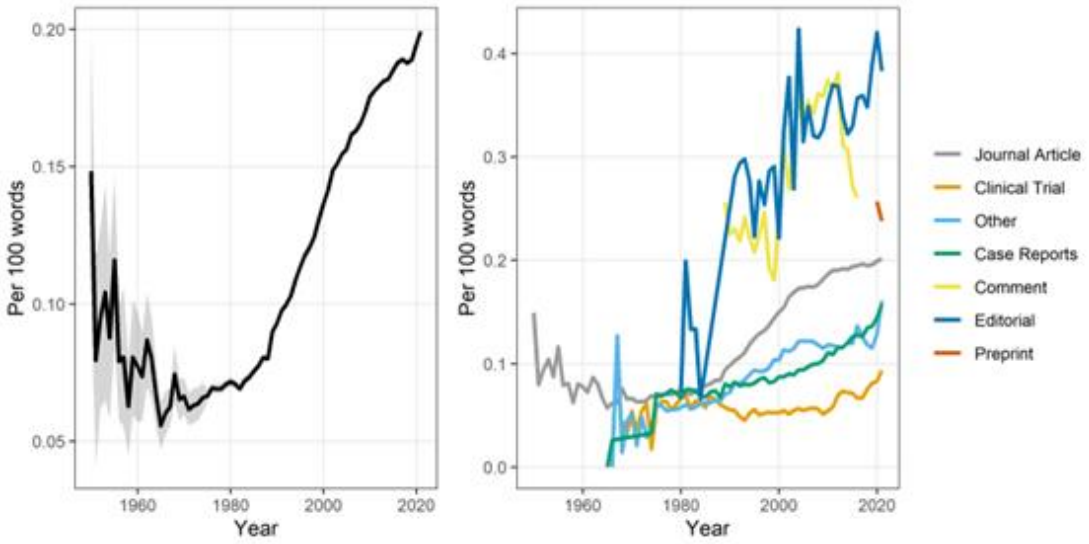


**Fig. 9** The average number of "importance" sensational words used per 100 words over time. The left-hand graph shows the overall use of importance words, while the right-hand graph breaks the data down by the type of writing. This category of language includes words that stress the importance of the work being done (e.g. compelling, essential, paramount)

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of importance sensational words per 100 words. The number of importance words has been increasing since the 1980s, from 0.07 to 0.20 per 100 words.

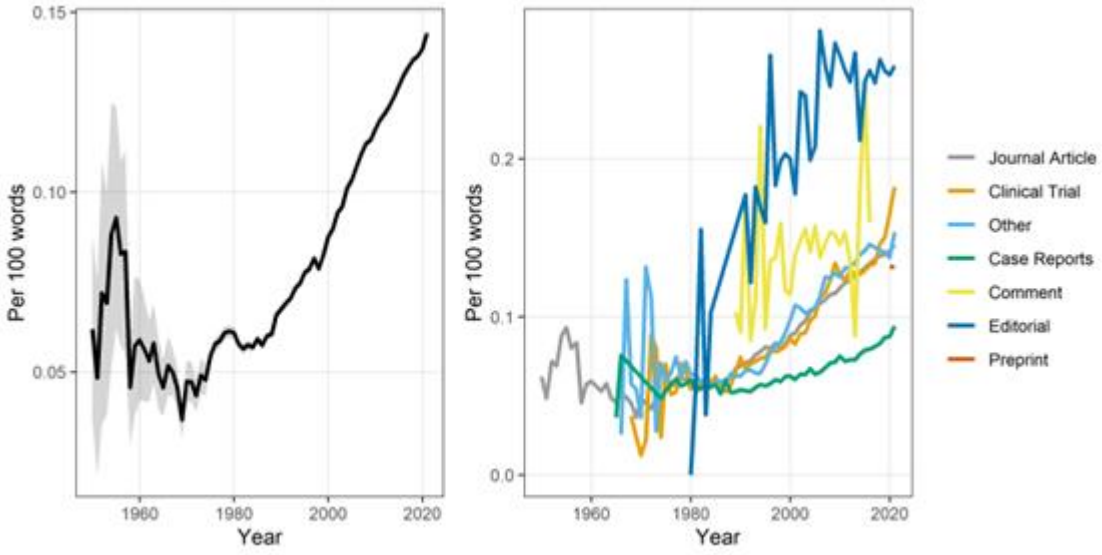


**Fig. 10** The average number of "rigour" sensational words used per 100 words over time. The left-hand graph shows the overall use of rigour words, while the right-hand graph breaks the data down by the type of writing. This category of language includes words that stress the reliable nature of the work being done (e.g. cohesive, robust, systematic)

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of rigour sensational words per 100 words. The number of rigour words has been increasing since the 1980s, from 0.06 to 0.14 per 100 words.

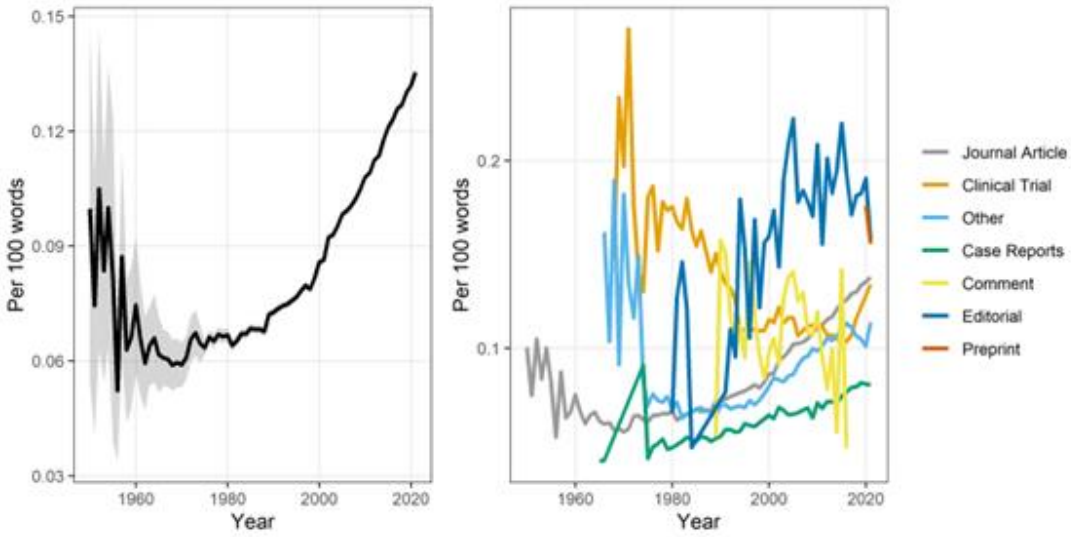


**Fig. 11** The average number of "utility" sensational words used per 100 words over time. The left-hand graph shows the overall use of utility words, while the right-hand graph breaks the data down by the type of writing. This category of language includes words that stress the practical uses for the findings and/or proposed research (e.g. actionable, productive, sustainable)

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of utility sensational words per 100 words. The number of utility words has been increasing since the 1980s, from 0.07 to 0.13 per 100 words.

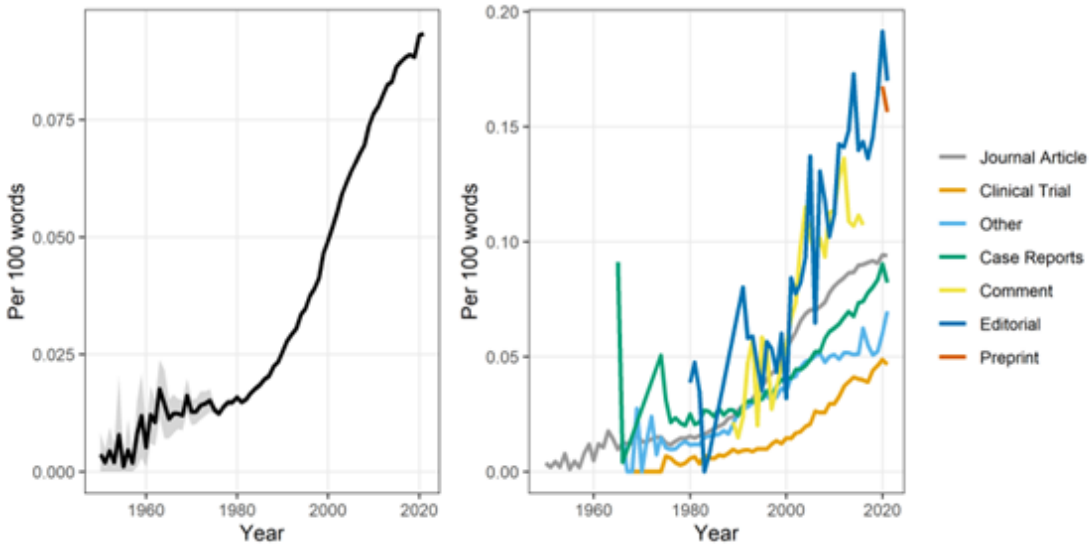


**Fig. 12** The average number of "novelty" sensational words used per 100 words over time. The left-hand graph shows the overall use of novelty words, while the right-hand graph breaks the data down by the type of writing. This category of language includes words that stress the unique and/or ground-breaking nature of the work being done (e.g. emerging, revolutionary, unprecedented)

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of novelty sensational words per 100 words. The number of novelty words has been increasing since the 1950s, from 0 to over 0.75 per 100 words.

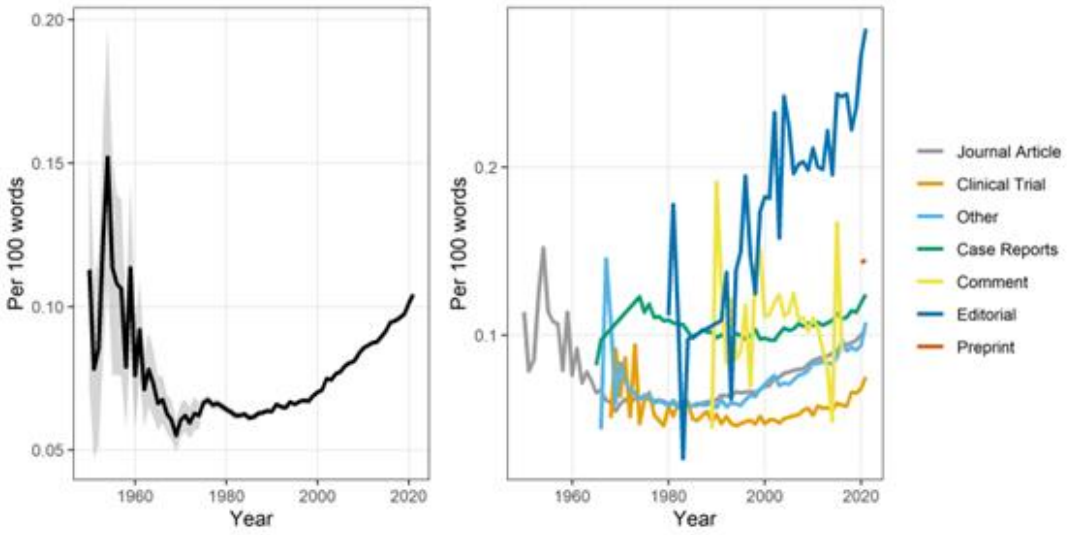


**Fig. 13** The average number of "scale" sensational words used per 100 words over time. The left-hand graph shows the overall use of scale words, while the right-hand graph breaks the data down by the type of writing. This category of language includes words that stress the time-consuming and/or comprehensive nature of the work being done (e.g. comprehensive, immense, overwhelming)

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of scale sensational words per 100 words. The number of scale words has been increasing since the mid-1980s, from 0.07 to 0.10 per 100 words.

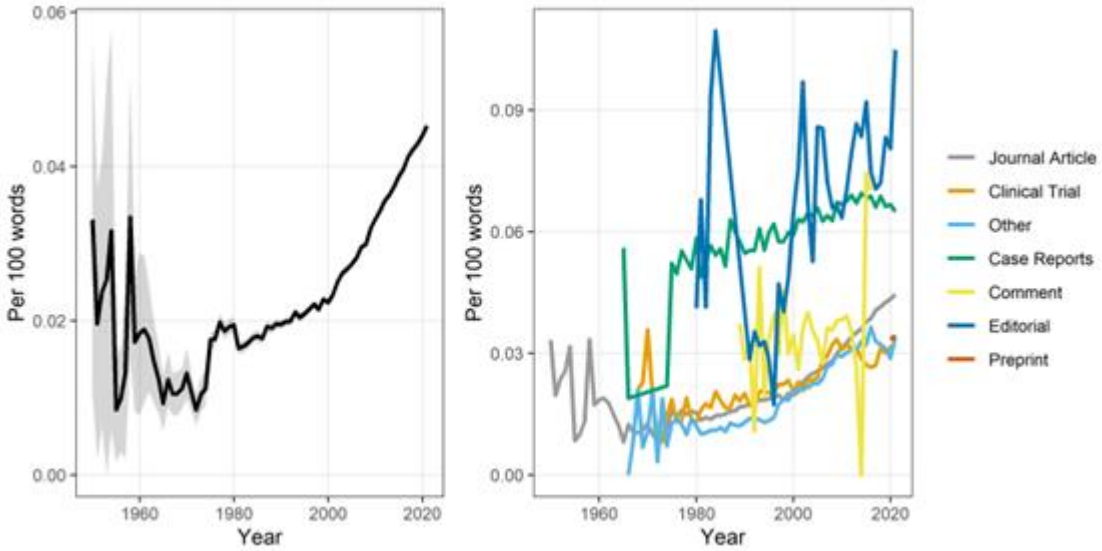


**Fig. 14** The average number of "quality" sensational words used per 100 words over time. The left-hand graph shows the overall use of quality words, while the right-hand graph breaks the data down by the type of writing. This category of language includes words that draw upon prior accomplishments and/or accolades of the researchers or institute (e.g. dedicated, prestigious, renowned)

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of quality sensational words per 100 words. The number of quality words has been increasing since the 1980s, from 0.02 to 0.04 per 100 words.

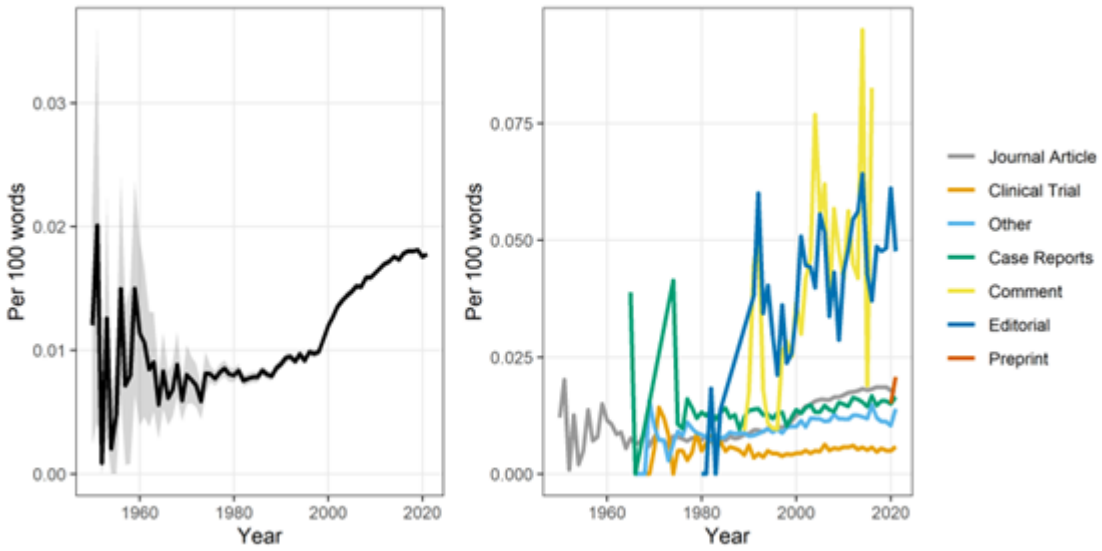


**Fig. 15** The average number of "attitude" sensational words used per 100 words over time. The left-hand graph shows the overall use of attitude words, while the right-hand graph breaks the data down by the type of writing. This category of language includes words that are emotive and speak to the desire of the researcher to engage with the research (e.g. exciting, incredible, remarkable)

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of attitude sensational words per 100 words. The number of attitude words has been increasing since the 1980s, from 0.01 to 0.02 per 100 words.

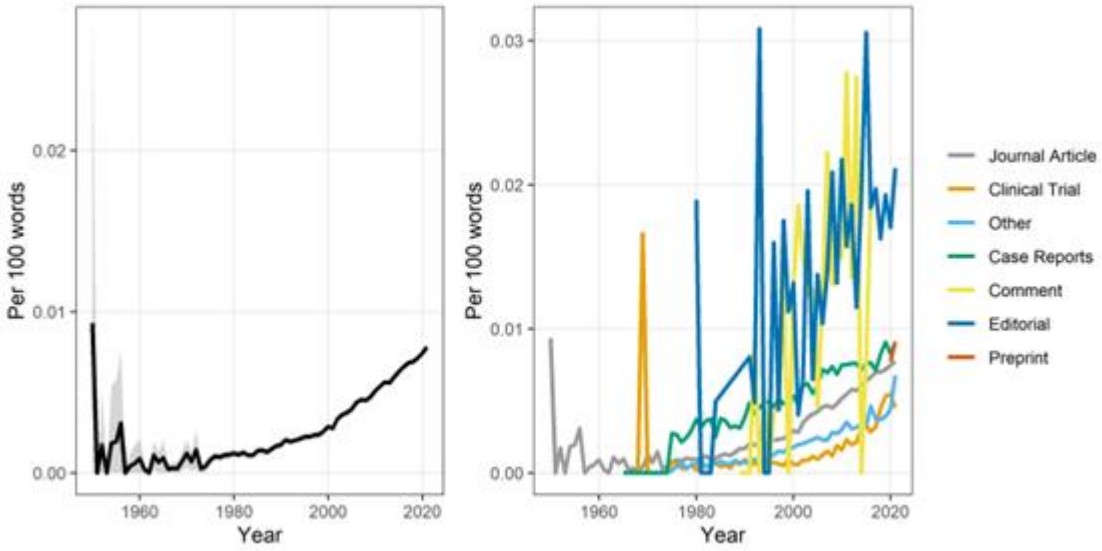


**Fig. 16** The average number of "problem" sensational words used per 100 words over time. The left-hand graph shows the overall use of problem words, while the right-hand graph breaks the data down by the type of writing. This category of language includes words that are emotive and broadly negative about the issue at hand (e.g. daunting, dire, elusive)

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of problem sensational words per 100 words. The number of problem words has been increasing since the 1970s, from 0 to 0.01 per 100 words.

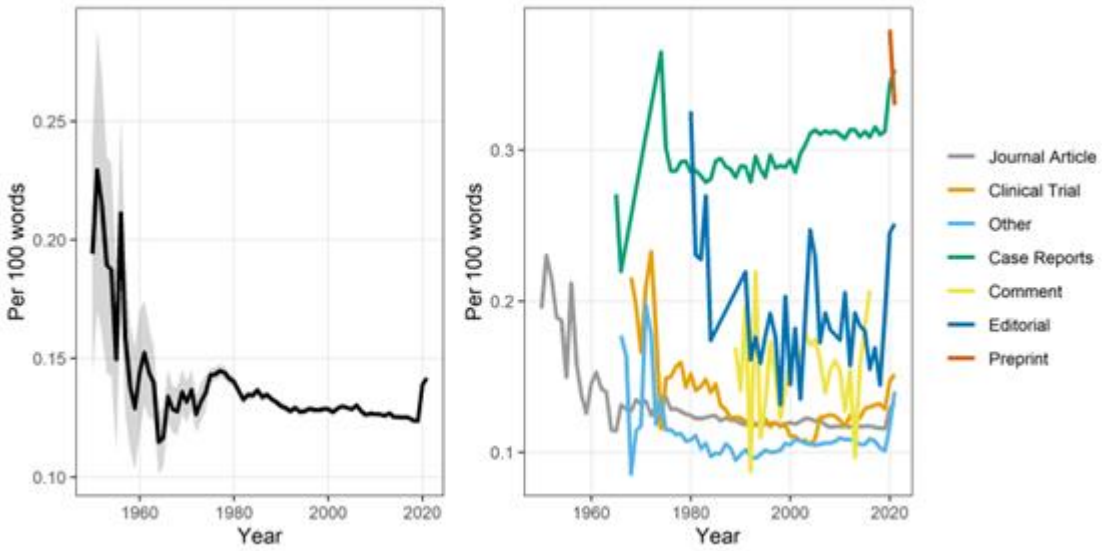


**Fig. 17** The average number of "additional" sensational words used per 100 words over time. The left-hand graph shows the overall use of these words, while the right-hand graph breaks the data down by the type of writing. We defined "additional" sensational language as sensational language which was not used by Millar, Batalo and Budgell in their 2022 study

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of additional sensational words per 100 words. The number of additional words has been decreasing since the 1980s, from 0.14 to 0.13 per 100 words.

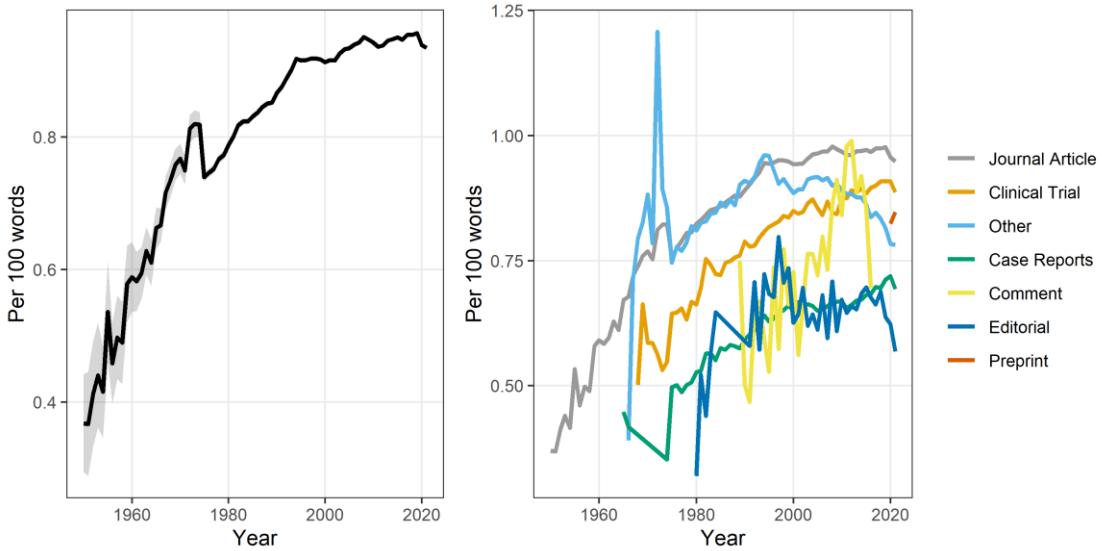


**Fig. 18** The average number of noun chunks used per 100 words over time. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. Noun chunks are a writing feature whereby three or more nouns are used in a row (e.g. computer systems software)

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of noun chunks per 100 words. The number of noun chunks has been increasing since the 1950s, from 0.4 to 0.9 per 100 words.

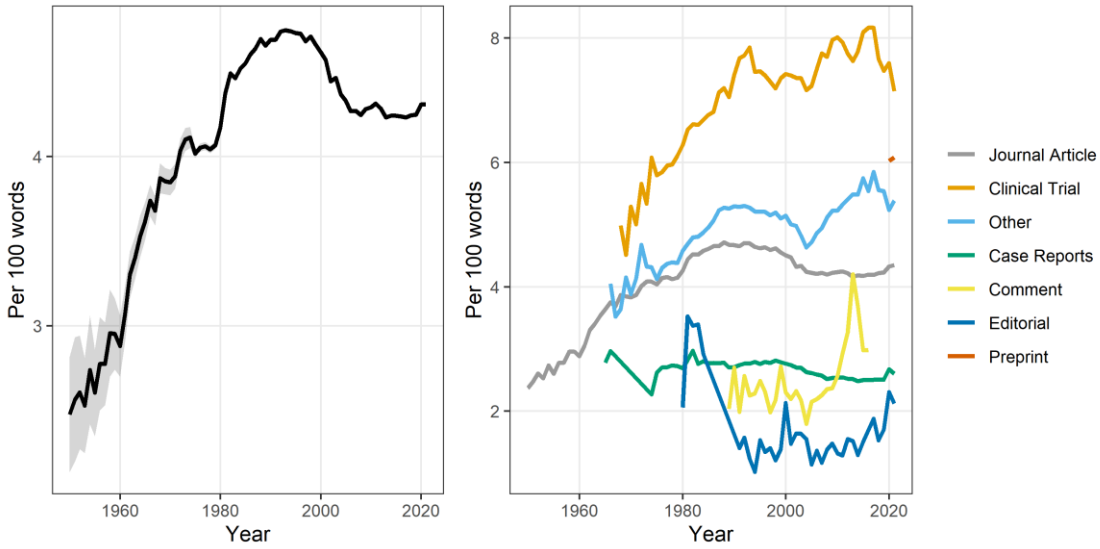


**Fig. 19** The average number of numbers used per 100 words over time. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. Includes numerals such as "11:00" and "one"

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of numbers per 100 words. The number of numbers has been increasing since the 1950s, from 1 to 4 per 100 words. The use of numbers peaked in the 1990s.

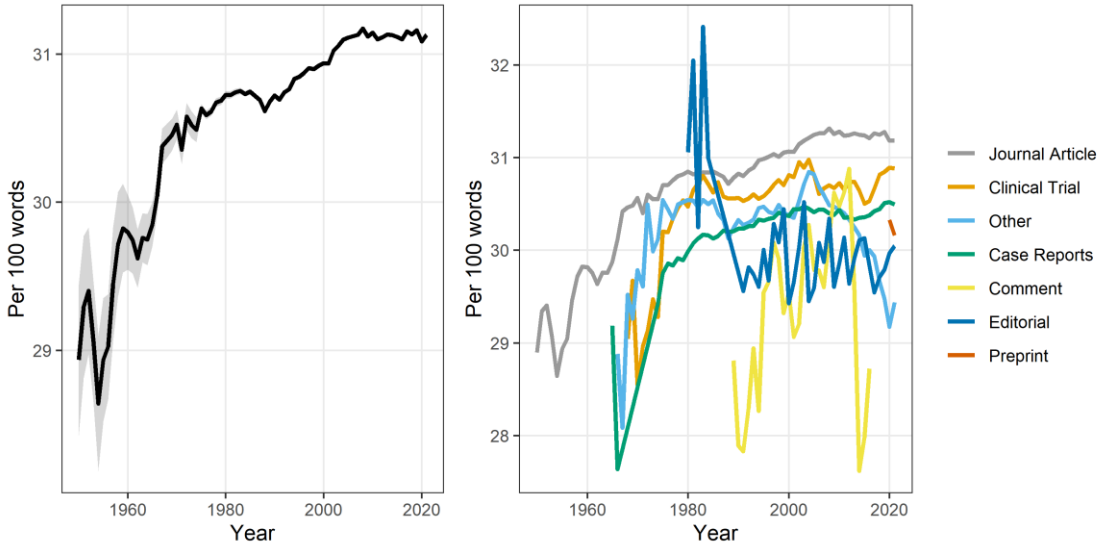


**Fig. 20** The average number of nouns used per 100 words over time. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of nouns per 100 words. The number of nouns has been increasing since the 1950s, from 29 to 31 per 100 words.

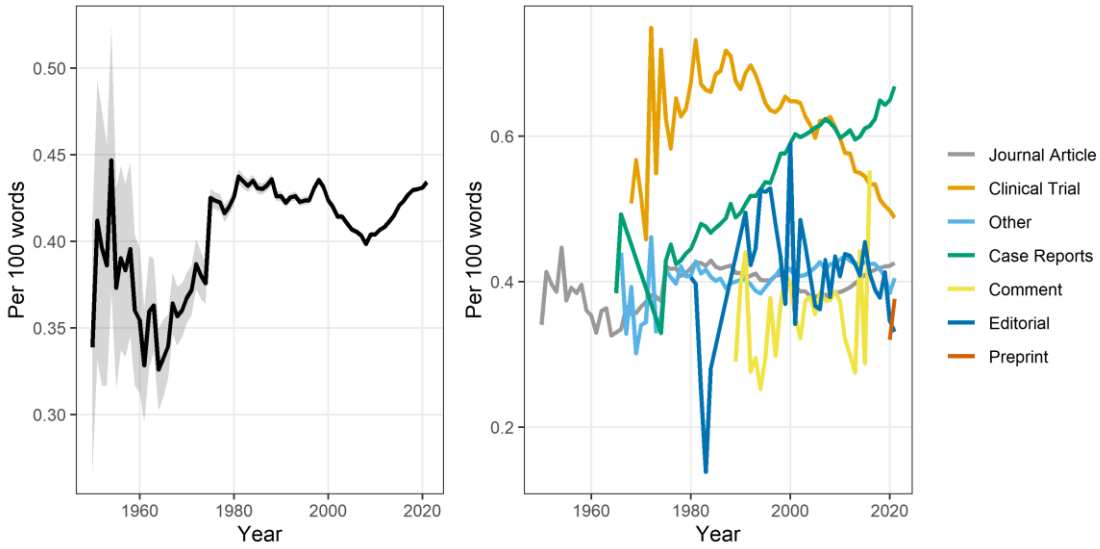


**Fig. 21** Signposting has been overall stable in its use in scientific writing since the 1950s. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. Signposting refers to words that impart chronological order into a text, such as "first" or "secondly". This helps to improve the structure of a text, reducing cognitive load for the reader

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the number of signposting words per 100 words. The amount of signposting has been increasing since the 1970s, from 0.25 to 0.43 per 100 words.

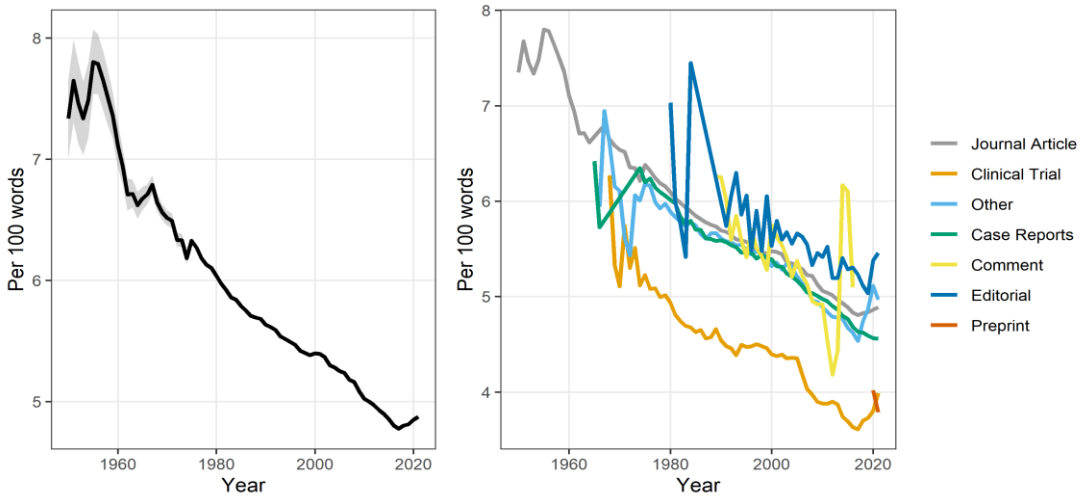


**Fig. 22** Our negative control was the use of the word "the". The use of this word has decreased greatly since the 1950s. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. While we cannot know what is driving this change, this demonstrates that there are clear shifts in the way in which scientific papers are being written over time

Image Description: Two line graphs, side-by-side. The left-hand graph shows the overall trend, while the right-hand graph breaks the data down by the type of writing. The x-axes show a range of years from 1950 to 2022, and the y-axes show the use of the word the per 100 words. The use of the word the has been decreasing since the 1950s, from 7.5 to 5 per 100 words.