



Karolina Rudnicka

Can Grammarly and ChatGPT accelerate language change? AI-powered technologies and their impact on the English language: wordiness vs. conciseness

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Can Grammarly and ChatGPT accelerate language change? AI-powered technologies and their impact on the English language: wordiness vs. conciseness

Structure of the presentation:

1. Inspiration for the present study
2. Language change
3. Grammarly and ChatGPT
4. Study variable: wordiness vs. conciseness
5. Aims, methodology, results
6. Discussion & conclusions



1. Inspiration for the present study

❖ My doctoral dissertation defended in 2018 focusing on obsolescence of purpose subordinators such as *in order to*, *in order that*, *so as to*, *so that*

(1) I did it in order to help you.

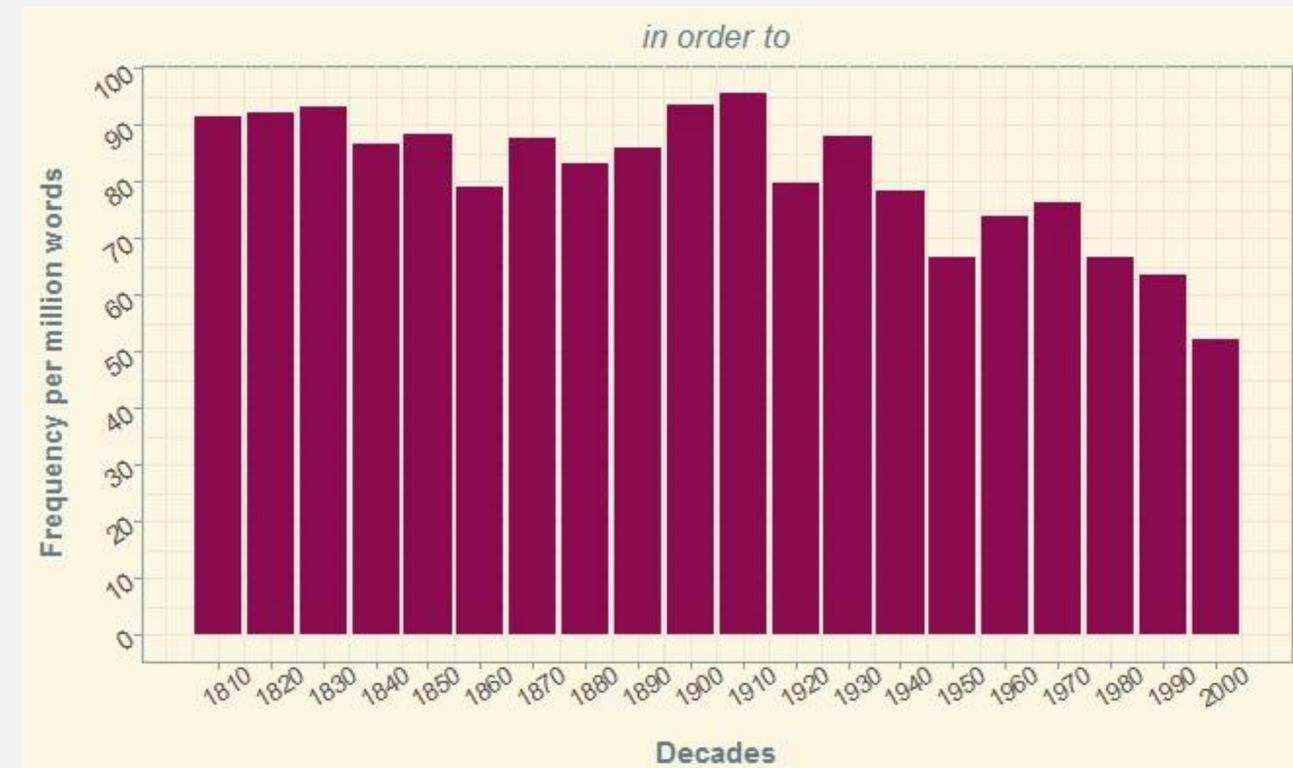


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(2) I did it to help you.





2. Language change

❖ The role of English today



2. Language change

- ❖ The role of English today
- ❖ Language change in English
(i.a. Akimoto et al., 2010; Durkin, 2014; Hickey, 2012; Mair, 2006)
- ❖ Where can we observe language change?



2. Language change

❖ constructional level

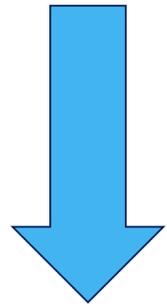


2. Language change

- ❖ constructional level
(changes in the frequency of use of words, grammatical items,
loan words entering the language)



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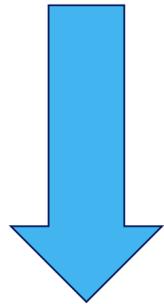


- ❖ **constructional level**
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2. Language change

❖ higher-order processes



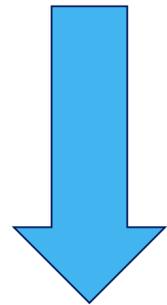
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2. Language change

❖ higher-order processes -> also referred to as system-dependency



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2. Language change

- ❖ higher-order processes -> also referred to as system-dependency

Operate in the background and influence whole constructional networks and larger organisational units of the language (Hiltunen, 1983; Petré, 2010; Hilpert, 2013: 14; Rudnicka, 2019, 2021a,b,c; Kempf, 2021). Can be externally- and internally-motivated.



2. Language change

Examples of higher-order processes

1) In English, the socio-cultural changes of the late nineteenth and early twentieth centuries (new printing technologies, the development of mass literacy, the advent of the mass-circulation press, and the invention of the telegraph), described by Hames & Rae (1996)



2. Language change

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The shortening of sentence length in terms of words (Fries, 2010; Gross et al., 2002; Rudnicka, 2018, 2019)

The adoption of new punctuation conventions (Fahnestock, 2011; Rudnicka, 2018)

The gradual decline of purpose subordinators, such as *in order to*, *in order that* or *so as to* (Rudnicka, 2019, 2021)



2. Language change

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The gradual decline of purpose subordinators, such as *in order to*, *in order that* or *so as to* (Rudnicka, 2019, 2021)



2. Language change

Examples of higher-order processes

2) In German, the socio-cultural and socio-linguistic developments, such as democratization, the Enlightenment and literalization (Kempf, 2021)



the loss of German so-relatives



2. Language change

Today

Even though it may sound like a cliché



2. Language change

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Even though it may sound like a cliché, the world and the reality around us also constantly change.



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Today

Even though it may sound like a cliché, the world and the reality around us also constantly change.

- The impact of short forms of communication, on language, language learning, and communication (i.a. Geertsema et al., 2011; Filipan-ŽigniĆ et al., 2016; Mehrabi & Bataghva, 2016; Tagg, 2015).



2. Language change

Today

And even though it may sound like a cliché, the world and the reality around us also constantly change.

- In contrast, not much attention has been paid to the overall impact on the English language of AI-powered language technologies using natural language processing (NLP) such as Grammarly or ChatGPT.
- Until now, most research on AI-based language technologies has focused on English language teaching and how learners process what they are taught (e.g. O'Neill & Russel, 2019; Barrot, 2020; Koltovskaia, 2020; Guo et al., 2023).



2. Language change

The popularity of AI-powered technologies is increasing dramatically



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- Grammarly was recognized by TIME as one of the 100 most influential companies in 2022. (Time Magazine)



2. Language change

The popularity of AI-powered technologies is increasing dramatically

- “1 million daily active users in 2015 to 30 million in 2020”
(Grammarly’s official website)
- Grammarly was recognized by TIME as one of the 100 most influential companies in 2022 (Time Magazine)
- ChatGPT is estimated “to have reached 100 million monthly active users just two months after launch, making it the fastest-growing consumer application in history (...).”
(Reuters)



2. Language change

How this study relates to the topic of language change:



2. Language change

How this study relates to the topic of language change:

- The possible role of AI-based technologies in the processes of language change.
- It considers the possibility that these tools not only mirror but can also accelerate language change.
- Higher-order processes?

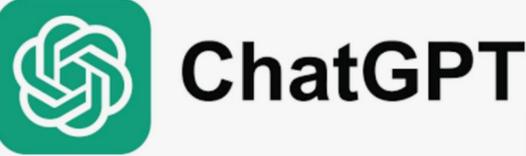


3. Grammarly and ChatGPT

<u>Grammarly</u> – a writing assistant	<u>ChatGPT</u> – generates content
Wordtune, ProWritingAid	Sudowrite
Copysmith, Trinka	Bing AI
Sudowrite	ChatSonic



3. Grammarly and ChatGPT

<u>Grammarly</u> – a writing assistant	<u>ChatGPT</u> – generates content
	





4. Study variable: wordiness vs. conciseness

- ❖ The trend toward shorter sentences and more concise content
→ wordiness vs. conciseness



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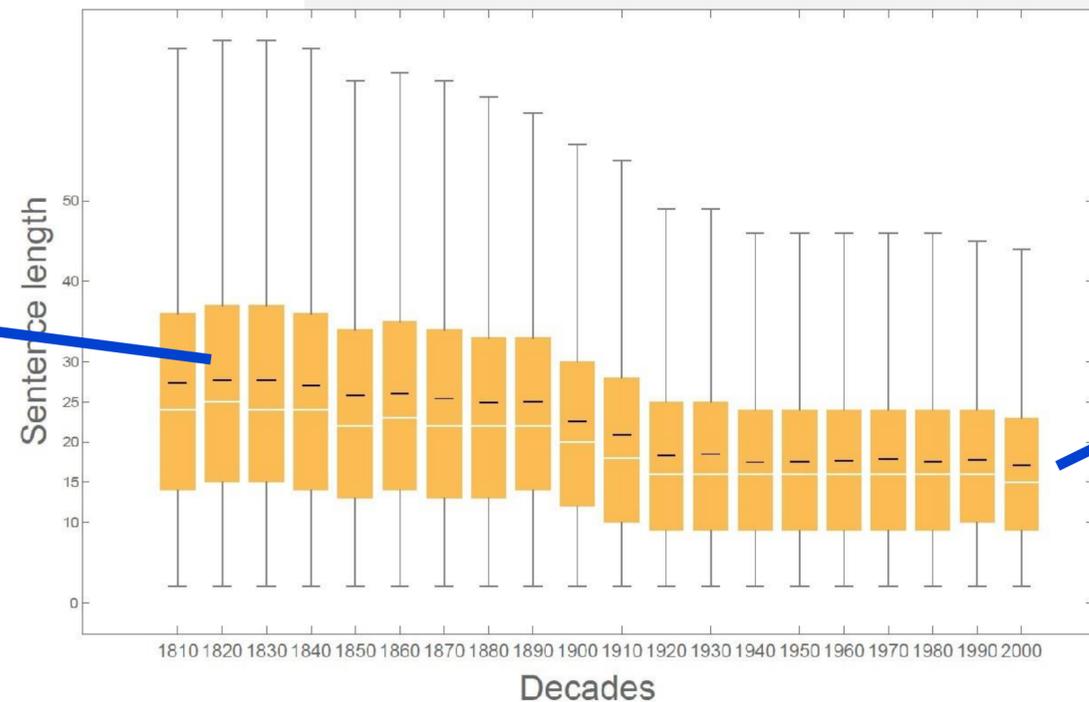
- ❖ The trend toward shorter sentences and more concise content
→ wordiness vs. conciseness
- ❖ Fries (2010), Gross et al. (2002), Lewis (1894), Westin (2002), Biber & Conrad (2009), Rudnicka (2018, 2019)



4. Study variable: wordiness vs. conciseness

- ❖ The trend toward shorter sentences and more concise content
→ wordiness vs. conciseness
- ❖ Fries (2010), Gross et al. (2002), Lewis (1894), Westin (2002), Biber & Conrad (2009), Rudnicka (2018, 2019)

27,29
words



17,14
words

(Rudnicka, 2018)



5. Aims, methodology, results

Aims & methodological assumptions:

- ❖ to apply Grammarly and ChatGPT to show how AI-powered technologies reflect the trend toward more concise content and are potentially able to further boost it.

- ❖ the language change processes are here exemplified by
 - i) the decrease in the frequency of use of more elaborate phrases which have shorter equivalents, such as *in order to*; and, partly resulting from i),



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 - i) the decrease in the frequency of use of more elaborate phrases which have shorter equivalents, such as *in order to*; and, partly resulting from i),
 - ii) the decrease in overall sentence length.



5. Aims, methodology, results

Aims & methodological assumptions:

- ❖ Grammarly's and ChatGPT's output are analyzed to find out if and how the technology favours and encourages writing that is more concise and to the point, with shorter sentences and simpler grammatical constructions.
- ❖ Additionally, we want to see if using the technology to “correct,” “enhance,” or “modify” our writing would result in changes in readability.



5. Aims, methodology, results

Methodology:

- ❖ **Part 1:** *in order to*
- ❖ **Part 2:** sentence length and readability of the pre- and post-modified versions.



5. Aims, methodology, results

Methodology:

- ❖ **Part 1:** *in order to*
- ❖ **Part 2:** sentence length and readability of the pre- and post-modified versions

For both Part 1 and Part 2: 100 random sentences containing *in order to* extracted from COCA (Corpus of Contemporary American English) <https://www.english-corpora.org/coca/>





5. Aims, methodology, results

Methodology:

- ❖ **Part 1: *in order to***
- ❖ **Hypothesis:** at least some of the sentences will have *in order* flagged as too verbose
- ❖ **Steps taken:**
 - ✓ 100 random sentences with *in order to* are extracted from COCA;
 - ✓ They are provided to the online interfaces of **Grammarly** and **ChatGPT**
 - ✓ We accept the changes suggested by Grammarly
 - ✓ We ask ChatGPT to „Could you rewrite the sentences so that they are better?”



5. Aims, methodology, results

Methodology:

- ❖ **Part 1:** *in order to*
- ✓ We accept all the changes suggested by Grammarly
- ✓ And copy the output



You need to clean out the junk filling your brain in order
to learn more. (COCA, MAG: 1994)

• CONCISENESS

~~in order to~~ → **to**

The phrase ***in order to*** may be wordy.
Consider changing the wording.

 Learn more





5. Aims, methodology, results

Methodology:

❖ **Part 1:** *in order to*

- ✓ We asked ChatGPT “Could you rewrite the sentences so that they are better?”
- ✓ We copy the output





5. Aims, methodology, results

Methodology:

- ❖ **Part 1:** *in order to*
- ✓ We analyze the output and compare the raw frequencies of *in order to* from the three different samples (original texts, output from Grammarly, output from ChatGPT).



5. Aims, methodology, results

Results:

❖ **Part 1:** *in order to*

The dataset	Original set of one hundred sentences from COCA	Sentences processed with Grammarly 	Sentences processed with ChatGPT 
Raw frequency of <i>in order to</i>	100	0	5



5. Aims, methodology, results

Methodology:

- ❖ **Part 2: sentence length and readability** of the pre- and post-modified versions
- ❖ **Hypothesis:** some of the sentences will get shorter; which may influence readability



5. Aims, methodology, results

Methodology:

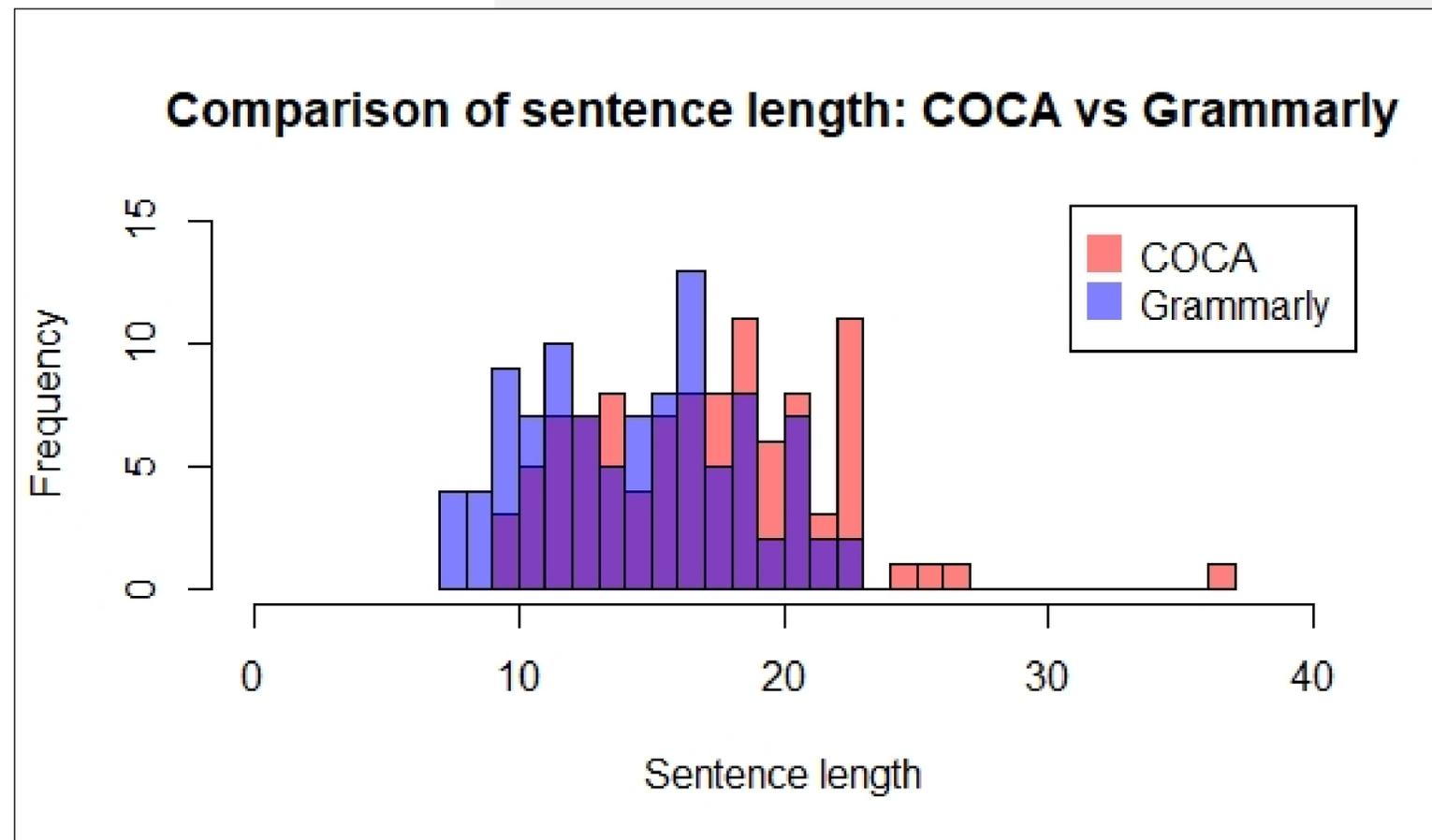
- ❖ **Part 2:** sentence length and readability of the pre- and post-modified versions
- ❖ **Hypothesis:** some of the sentences will get shorter; which may influence readability
- ❖ **Sentence length:** histograms comparing sentence lengths



5. Aims, methodology, results

Results:

- ❖ **Part 2:** sentence length and readability of the pre- and post-modified versions



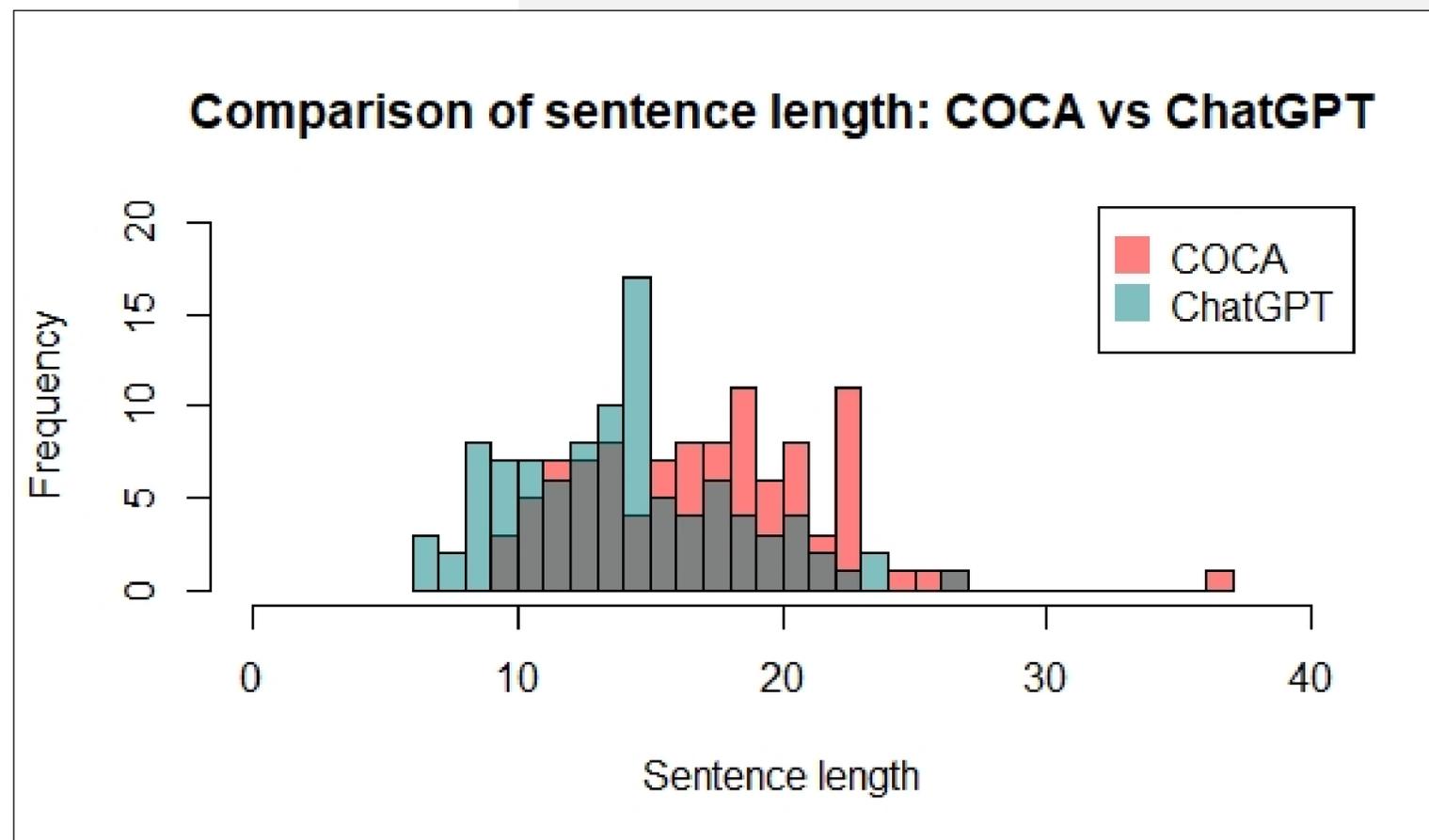
Sentence lengths in the original dataset (**COCA**) and in the dataset processed by **Grammarly**



5. Aims, methodology, results

Results:

- ❖ **Part 2:** sentence length and readability of the pre- and post-modified versions



Sentence lengths in the original dataset (**COCA**) and in the dataset processed by **ChatGPT**



5. Aims, methodology, results

Results:

- ❖ **Part 2:** sentence length and readability of the pre- and post-modified versions

In order to obtain the scores for each dataset, an online Text Readability Calculator is applied: <https://readabilityformulas.com/freetests/six-readability-formulas.php>. The three sets of sentences are pasted one after the other into the online interface. The interpretation of readability scores is conducted with the use of values from Klare (1975: 236).

Score	Meaning
100–90	Very easy to read
90–80	Easy to read
80–70	Fairly easy to read
70–60	Standard
60–50	Fairly difficult to read
50–30	Difficult to read
30–0	Very difficult to read



5. Aims, methodology, results

Results:

- ❖ **Part 2:** sentence length and readability of the pre- and post-modified versions

	Sentences from COCA	Sentences processed with Grammarly 	Sentences processed with ChatGPT 
Mean sentence length	17.6 words	14.9 words	14.4 words
Flesh reading-ease test	61.6 standard / average	62.4 standard / average	54.7 fairly difficult to read



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5. Aims, methodology, results

Summary of the results:

- Both Grammarly and ChatGPT reduced the sentence length quite substantially (-2.7 and -3.2 words respectively);
- Grammarly shortened all 100 sentences in the sample;
- ChatGPT shortened many sentences but also made a few sentences longer than they were at first;
- Grammarly and ChatGPT can have an impact on the readability of written text, but that the effects may vary depending on the specific tool or model being used (Grammarly and ChatGPT are tools of different kind);



5. Aims, methodology, results

Summary of the results:

- ✓ The changes applied were more intricate than just removing *in order* in front of the *to*-infinitive, because if that was the case, there would only be a two-word difference for Grammarly and a slightly lower, but very similar difference for ChatGPT
(-2.7 and -3.2 words respectively)



5. Aims, methodology, results

Summary of the results:

✓ Example

(A) So we realized in order to even buy materials, we would need a warehouse. (COCA original, 14 words)

(B) So we realized that even buying materials would need a warehouse. (Grammarly, 11 words)



(C) We realized we needed a warehouse to purchase materials. (ChatGPT, 9 words)





6. Discussion and conclusions

- ❖ The removal of *in order to* seems to appear across the board, regardless of the length of the original sentence;
- ❖ It looks like the goal of the algorithm is always to reduce wordiness;
- ❖ The particular case of *in order to* → it declines in the frequency of use, but it still belongs to the core grammar of the English language;





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- ❖ The particular case of *in order to* → it declines in the frequency of use, but it still belongs to the core grammar of the English language;
- ❖ AI-powered technologies prefer shorter phrases to longer and more elaborate ones goes in line with the changes happening in language;
- ❖ The output of the tech products is mirroring the ongoing language change;
- ❖ Still, if the AI-powered technologies become sufficiently popular, they might become a factor influencing the English language.





6. Discussion and conclusions

- ❖ The situation is similar with the overall trend towards shorter sentences → there is a strong tendency to favour shorter sentences and **avoid wordiness in favour of conciseness**, AI-powered language technologies may furtherly contribute to the shortening of sentence length in English;
- ❖ If enough people use Grammarly and ChatGPT in their daily life, the texts they produce will very likely become more concise, less wordy, and the longer phrases are deemed to decrease in their frequency of use at a much higher pace than before.





6. Discussion and conclusions

The change seems to already be on its way

- As of March 2023, Grammarly offers a browser extension for Chrome, Safari, Firefox, and Edge;
- According to Grammarly's website , “the extension works on popular websites and can help you check your text whenever you write online.”
- For developers, Grammarly Text Editor SDK is offered, which “can bring real-time writing support to your app by adding just a few lines of code.”
- So, with e.g. Grammarly embedded on the websites we use daily, be it on social media blogs or email, the AI-based technologies are influencing our language to a significant extent.





6. Discussion and conclusions



Draft saved

Recipients

Access to data and materials|

Dear Students,
In order to access our data and materials, please go to our

Clarity · Change the wording ⓘ

~~In order to~~ **To** access our...

Accept Dismiss ...



6. Discussion and conclusions



 Karolina Rudnicka
Publiczne

Please register in order to see my talk; <https://sadilar.org/index.php/en/news/events/dh-colloquiums>.

1 JULY 2023 @ 10:00 AM (SAST)

SADILAR DH COLLOQUIUM

Dodaj do posta     GIF ...

Opublikuj

 Karolina Rudnicka
Publiczne

Please register in order to see my talk; <https://sadilar.org/index.php/en/news/ev>

Less wordy:
to

 Dismiss

 See more in Grammarly

19 JULY

SADILAR

Dodaj do posta     GIF ...

Opublikuj



6. Discussion and conclusions

- ❖ Also, regarding the generation of new content, the present study shows that ChatGPT vastly removes *in order to* when asked to “write sentences in a better way.” We can then extrapolate this observation and assume that, while creating new content, it will avoid this construction for similar reasons.





6. Discussion and conclusions

- ❖ However, people also seem to use ChatGPT for language-related purposes. Exact statistics are not available.





6. Discussion and conclusions



I was wondering if you could provide me with some statistics about how people interact with you. Statistics-wise, percentage-wise, what do people want from you?



As an AI language model, I don't have direct access to statistics about how people interact with me, nor do I have visibility into the specific percentages of user requests. I don't have the capability to gather such data as I don't have access to user interactions or personal information.



However, I can share some general insights based on common use cases. People often interact with AI language models like me for various reasons, including:

1. **Information retrieval:** Users seek answers to specific questions or want to gather information on a particular topic.
2. **Writing assistance:** Users may ask for help with generating text, such as writing articles, stories, or essays.
3. **Language learning:** Some individuals use AI models to practice and improve their language skills by engaging in conversation or asking for language-related explanations.
4. **Creative exploration:** People enjoy exploring creative and imaginative possibilities by generating ideas, brainstorming, or engaging in storytelling.





6. Discussion and conclusions



Yes, do many people ask you to correct/modify/enhance the texts they are writing?



Yes, many people do ask for assistance with correcting, modifying, or enhancing the texts they are writing. It is a common use case for AI language models like me. Whether it's an essay, email, blog post, or any other form of written content, users often seek help with proofreading, grammar checking, rephrasing sentences, or getting suggestions for improving their writing style.



AI language models can provide suggestions and feedback to make the text more coherent, concise, and grammatically accurate. However, it's important to note that while AI models can be helpful in this regard, they should be used as a tool and not as a substitute for human editing and proofreading. It's always a good idea to review and revise the suggestions provided by AI models to ensure they align with the intended meaning and tone of the text.

If you have a specific text you'd like assistance with, feel free to share it, and I'll do my best to help you with any corrections or enhancements.





6. Discussion and conclusions

- ❖ It is clear that both tools influence the language produced by its users;
- ❖ As of 2023, we can detect certain patterns characterizing the language of Grammarly-enhanced texts, such as, for example an absolute avoidance of phrases such as *in order to*;
- ❖ Even though AI-powered technologies making use of natural language processing are not omnipresent yet we might be witnessing the rise of new higher-order process influencing the language.





6. Discussion and conclusions

Limitations and outlook

- ❖ Further research is needed to look at other phenomena happening in the language and the ways technologies such as Grammarly and ChatGPT are dealing with them;
- ❖ A similar investigation shall be repeated in the future with new releases of the tools;
- ❖ The interplay between e.g. the genre of the sentence and the influence of the target audience setting in Grammarly on the enhancements proposed;
- ❖ Further research is needed to explore output both on sentence- and on text-level.





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My plan for the nearest future 😊



The present study appears as:

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**Thank you
very much
for your
attention!**



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- According to Grammarly's official webpage, the number of users increased from "1 million daily active users in 2015 to 30 million in 2020" (<https://www.grammarly.com/blog/grammarly-12-year-history/>, accessed on March 6, 2023).
- Grammarly was recognized by TIME as one of the 100 most influential companies in 2022 (<https://time.com/collection/time100-companies-2022/6159466/grammarly/>, accessed on March 6, 2023).
- According to Reuters (2023), ChatGPT is estimated "to have reached 100 million monthly active users just two months after launch, making it the fastest-growing consumer application in history (...)." (<https://www.reuters.com/technology/chatgpts-popularity-explodes-us-lawmakers-take-an-interest-2023-02-13/>, accessed on March 10th, 2023).
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- ❑ ChatGPT. (2023, July 17). "Do many people ask you to correct/enhance/modify the texts they are writing?". [Response to user question].
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