

COULD  
“SOMETHING”  
POINT TO  
DEMENTIA?

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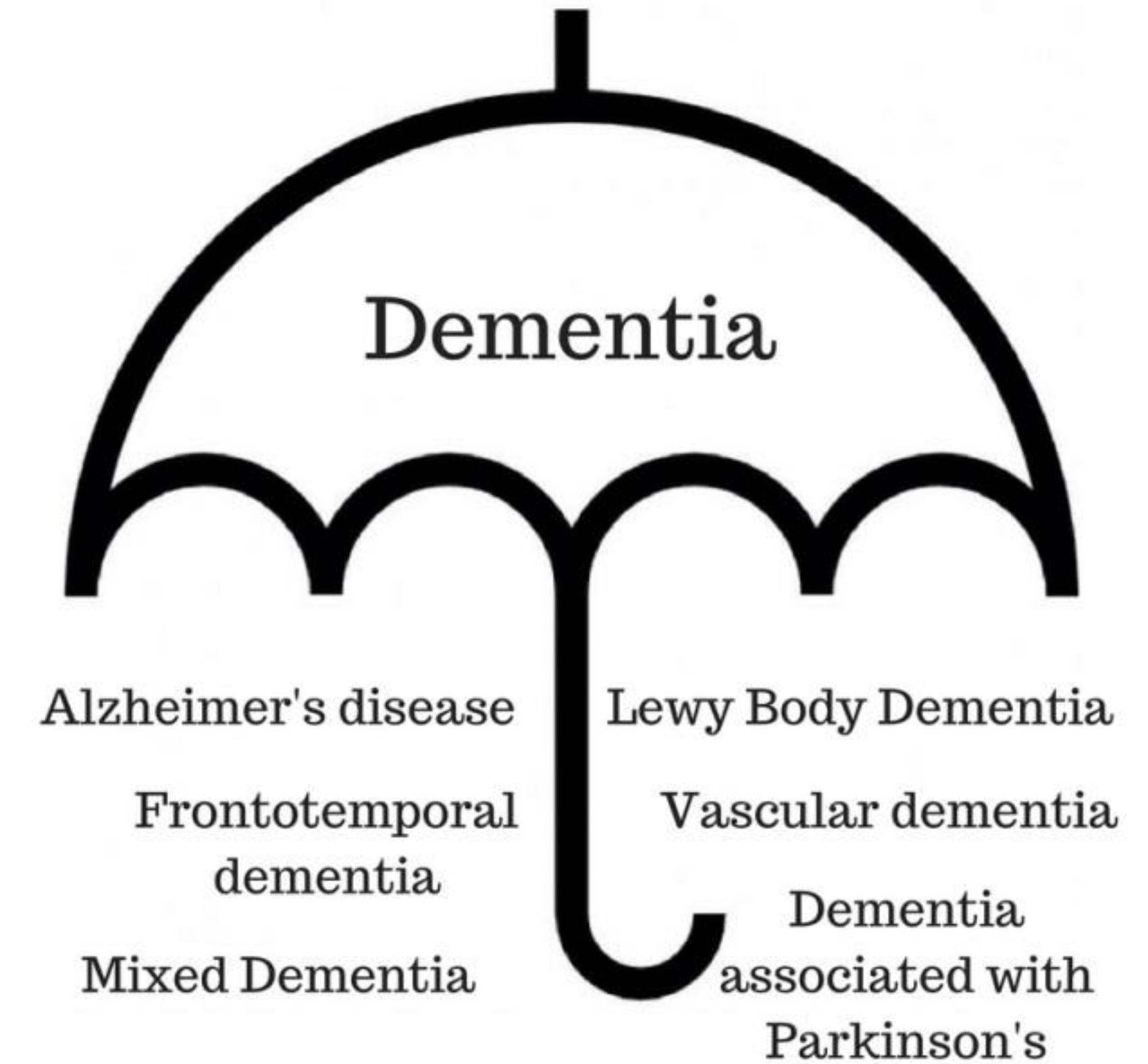
*Mailei Vargas*



# DEMENTIA RESEARCH

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- Dementia is an umbrella term
- Alzheimer's is most common type
- Diagnosis is not 100%
- Tests are done to aide diagnosis
- Language provides insight



# MOTIVATION

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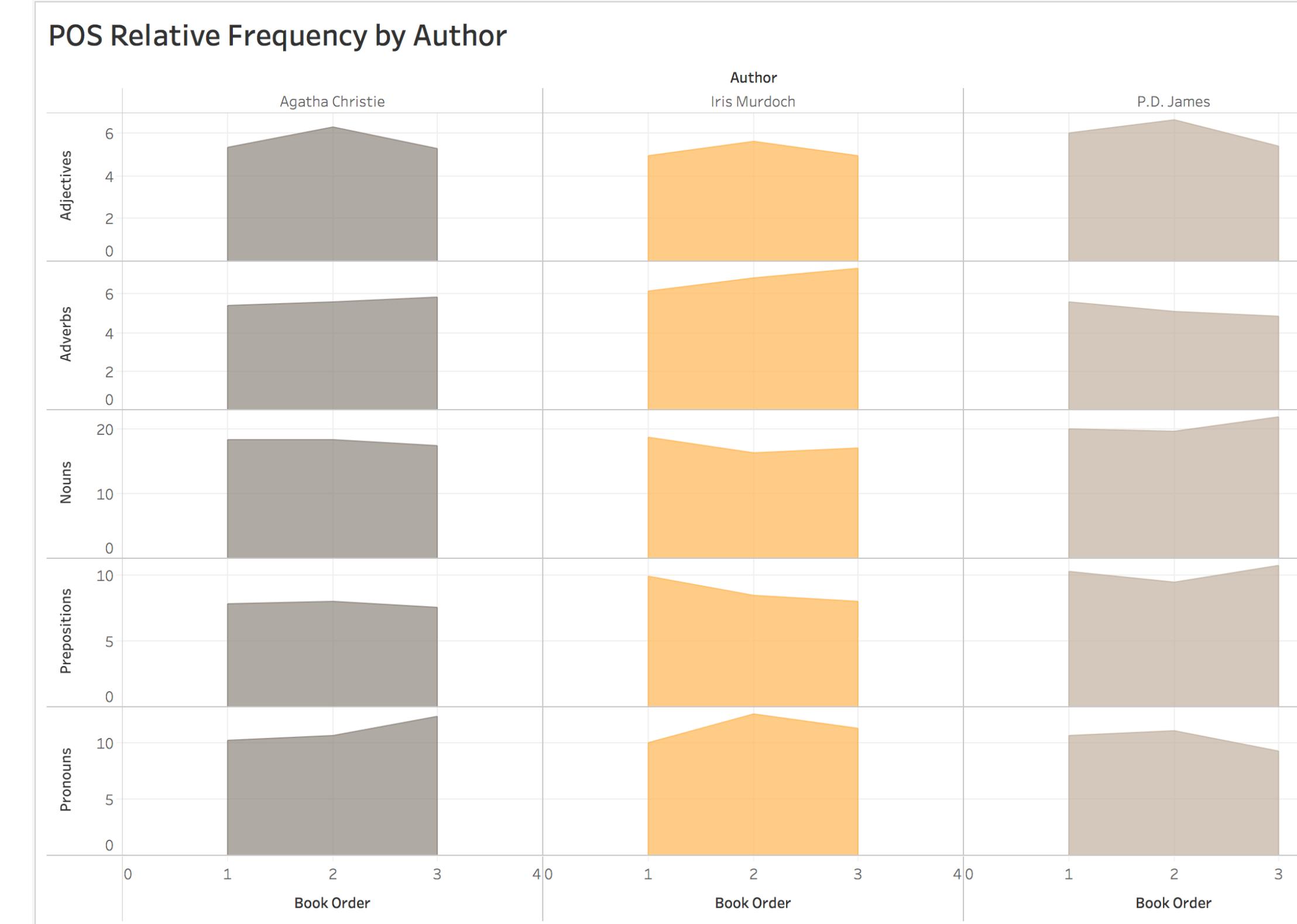
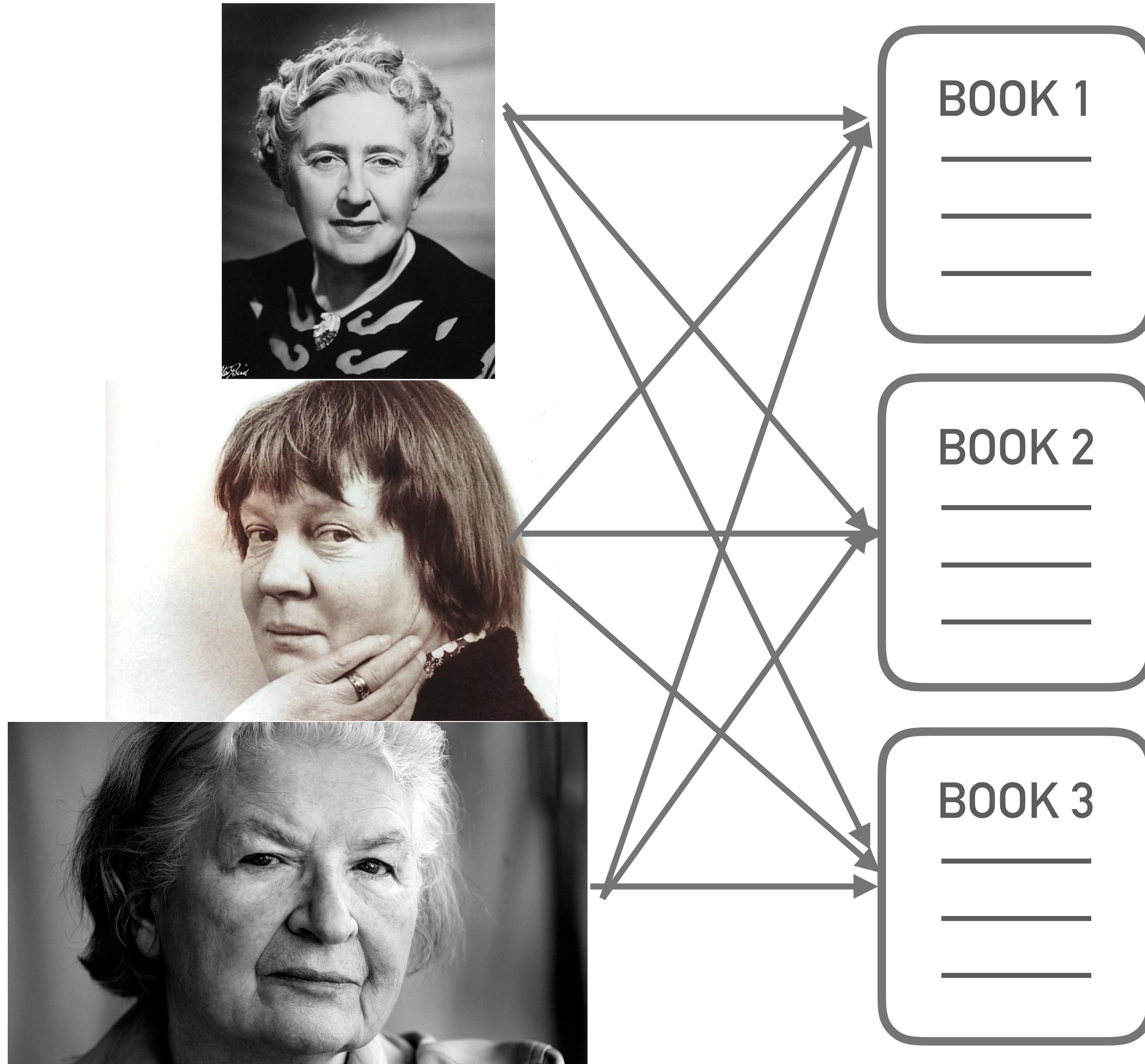
- Grandmother had dementia
- “Nun Study”
- Based on grammatical complexity and idea density

*"After I left school, I worked in the post-office."*

VS

*"After I finished the eighth grade in 1921 I desired to become an aspirant at Mankato but I myself did not have the courage to ask the permission of my parents so Sister Agreda did it in my stead and they readily gave their consent."*

# LANGUAGE OF AUTHORS WITH ALZHEIMER'S



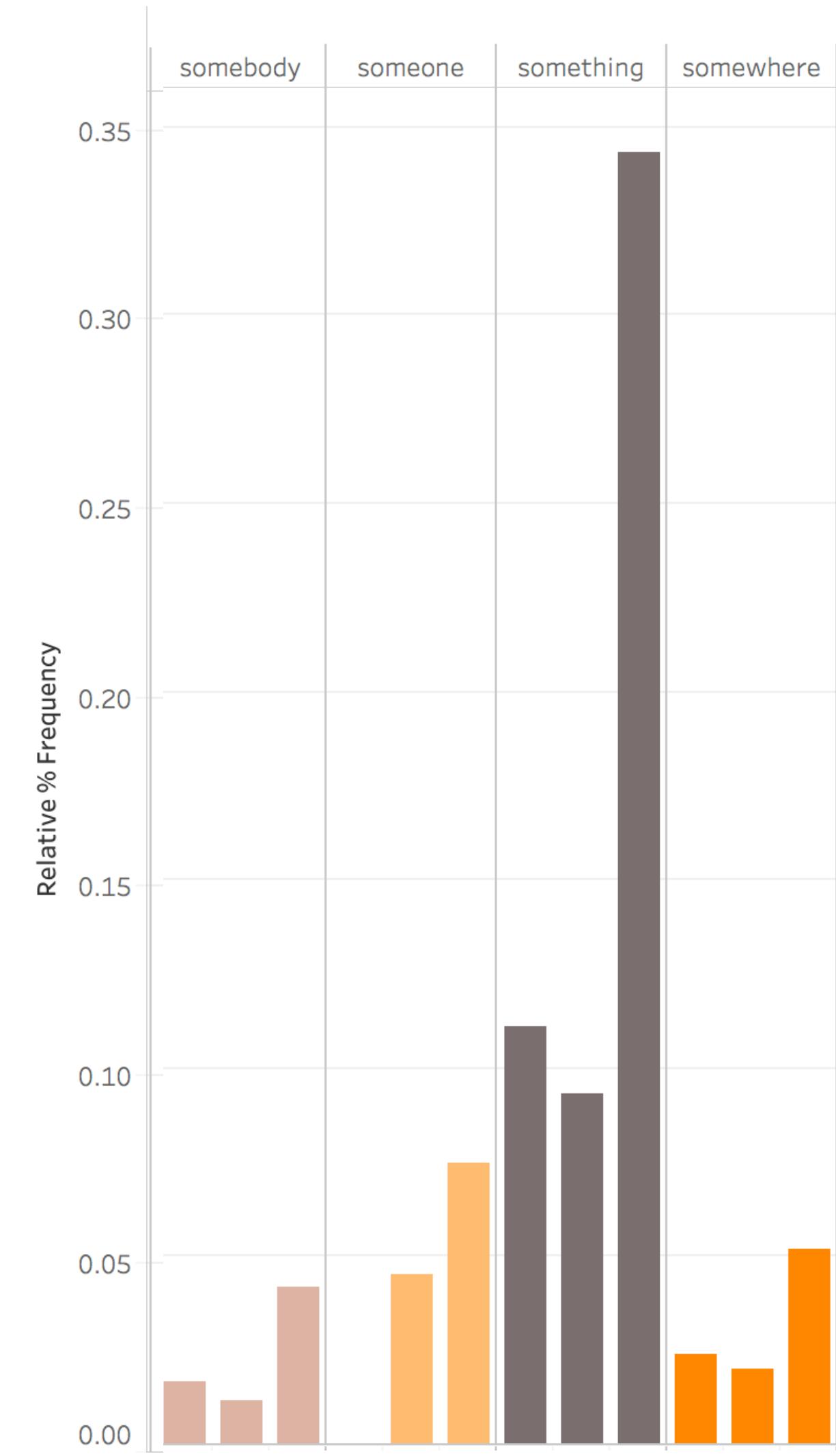
# USE OF INDEFINITE PRONOUN INCREASE

“somebody”

“someone”

“something”

“somewhere”

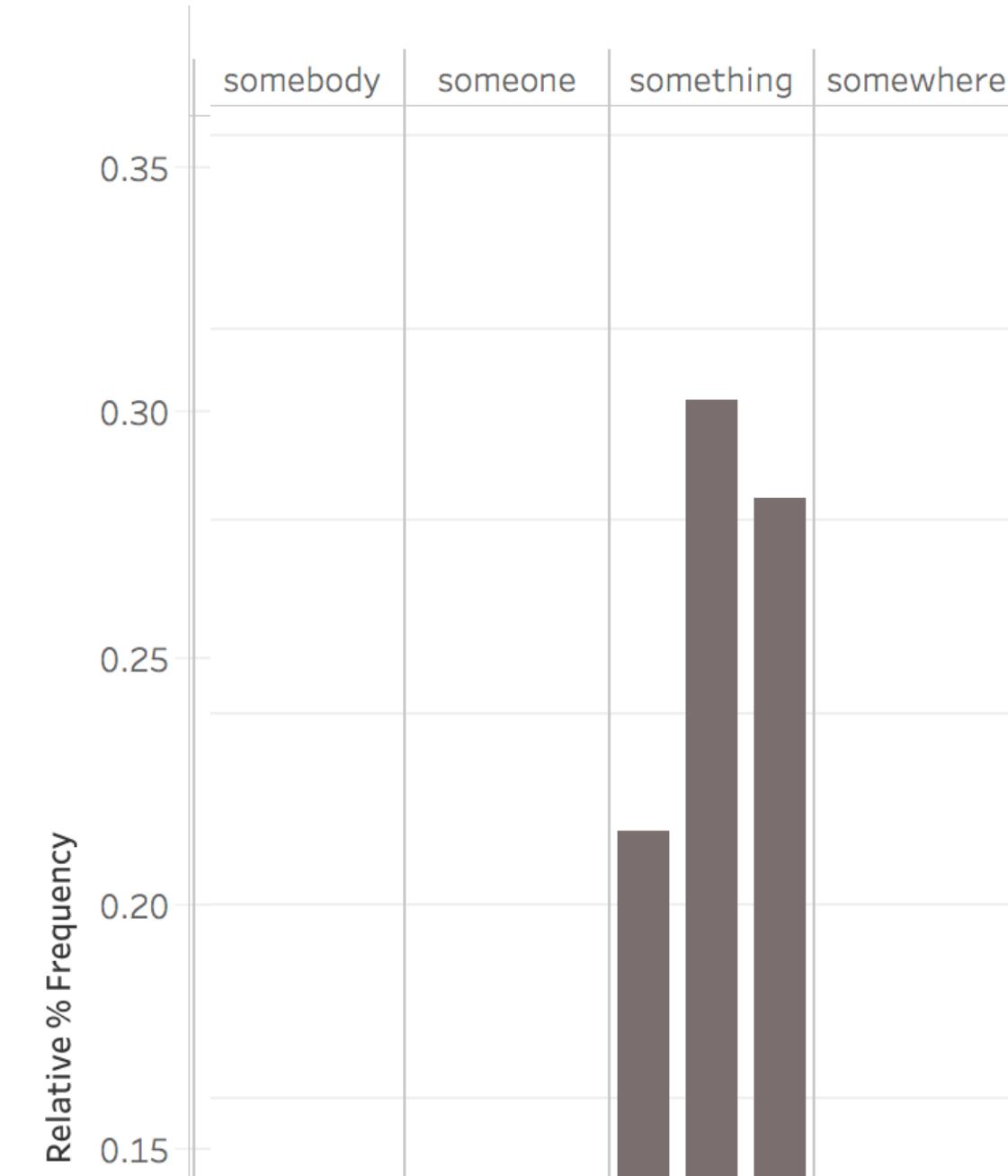


“somebody”

“someone”

“something”

“somewhere”

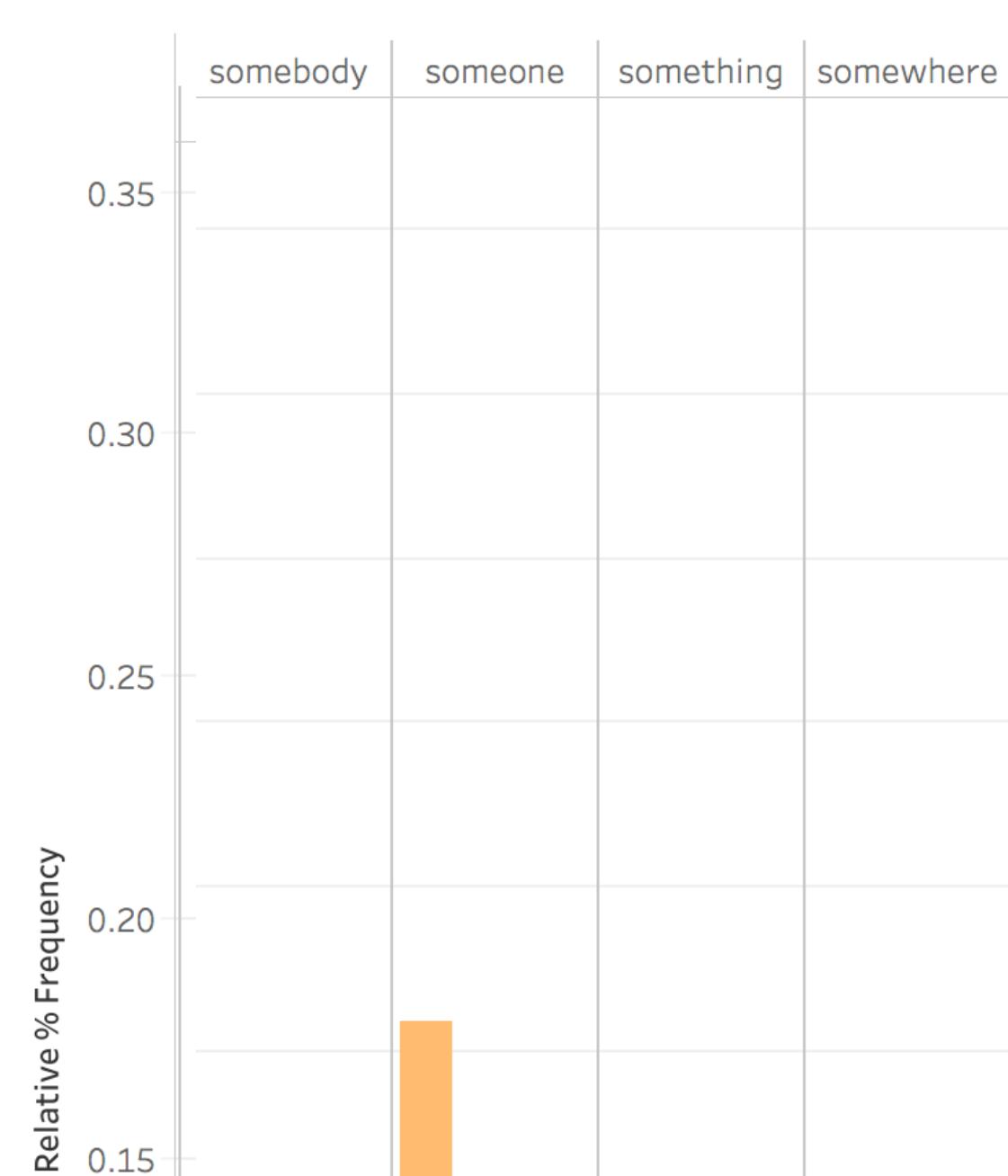


“somebody”

“someone”

“something”

“somewhere”



# VOCABULARY DECREASE

- Every author had a decrease in unique vocabulary usage over time

AUTHOR	DECREASE
Christie	0.2739
Murdoch	0.2729
James	0.1919



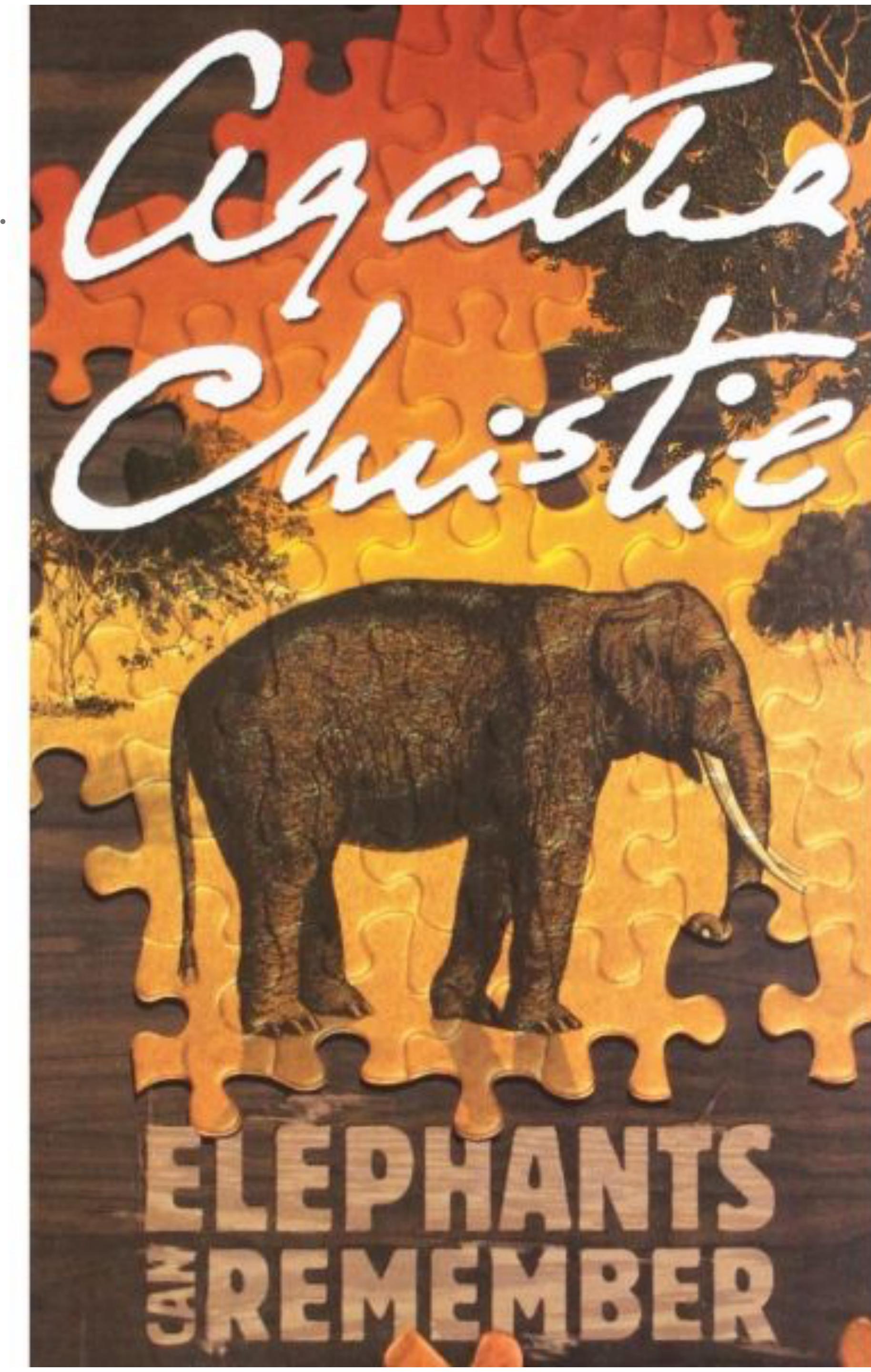
# FINAL REMARKS

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- **Disclaimer!**
  - I am NOT a professional linguist
  - You do NOT necessarily have AD if you use low level vocabulary
- **Further work**
  - Analyze more books of each author and other authors prior to modern tech
  - Gain access to “Dementia Database” to train a model

THANK YOU!!!

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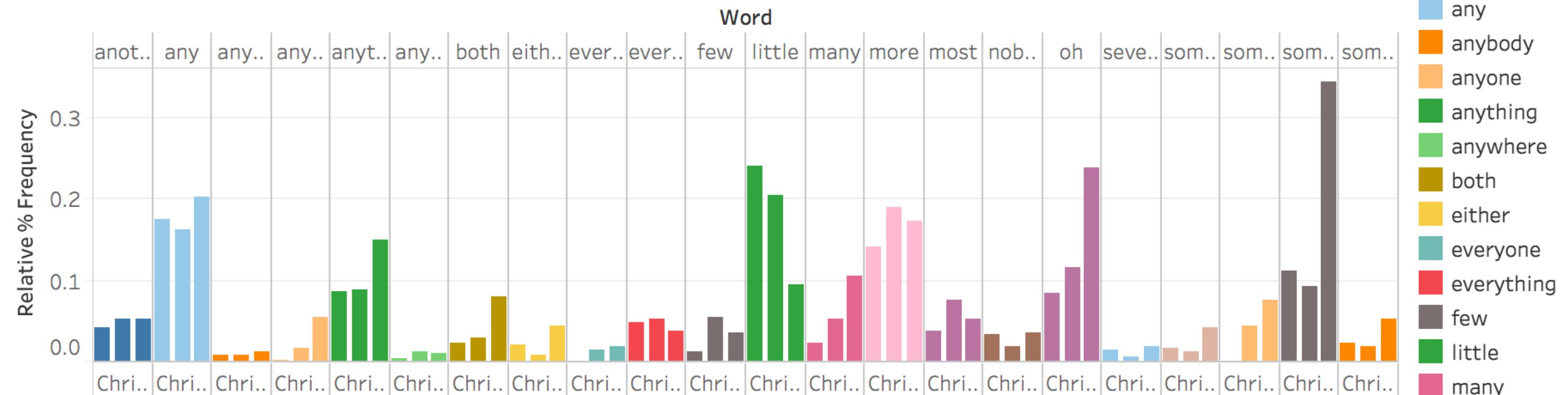


# APPENDIX

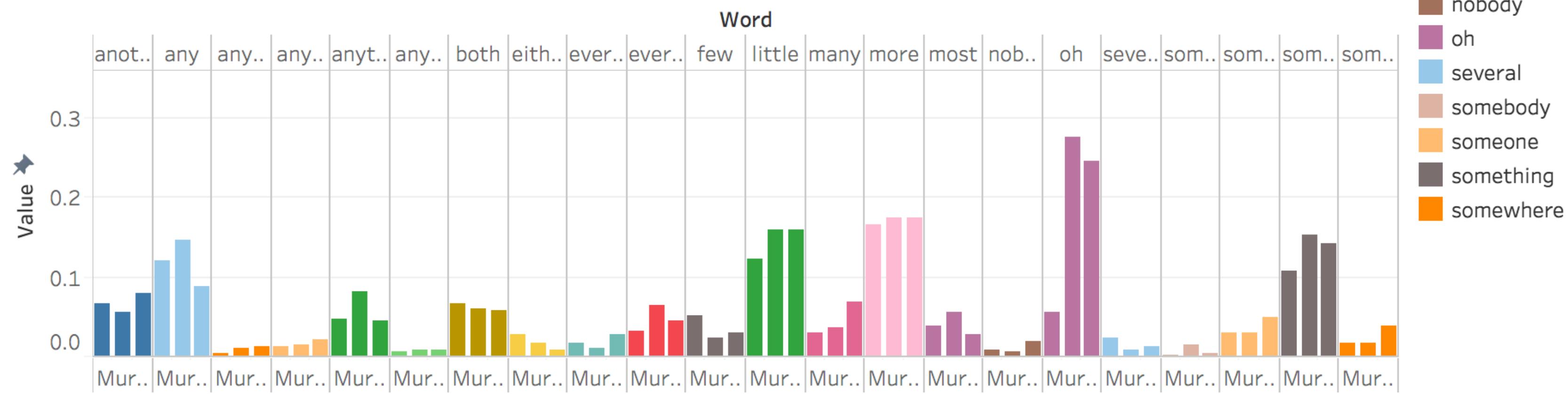
## INDEFINITE PRONOUNS

### USAGE BY AUTHOR

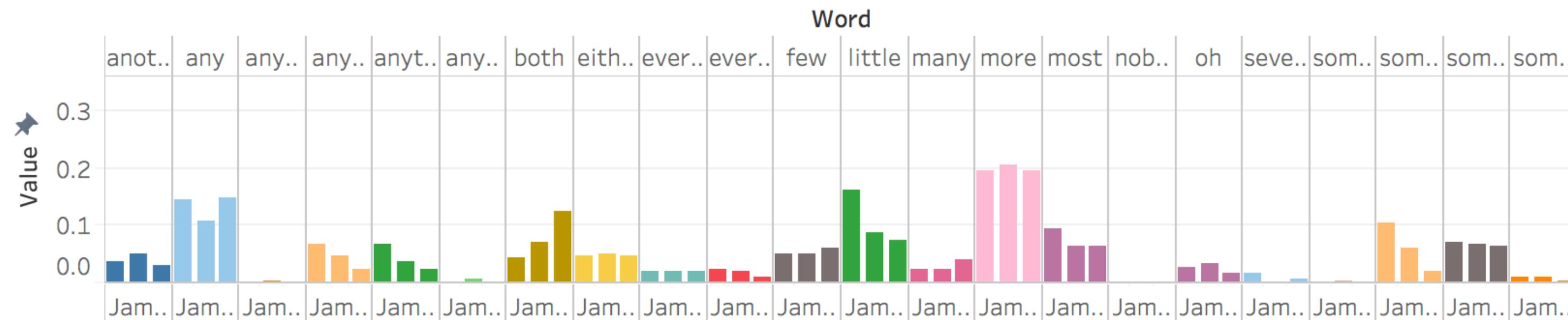
Agatha Christie Indefinite Pronouns Usage



Iris Murdoch Indefinite Pronouns Usage



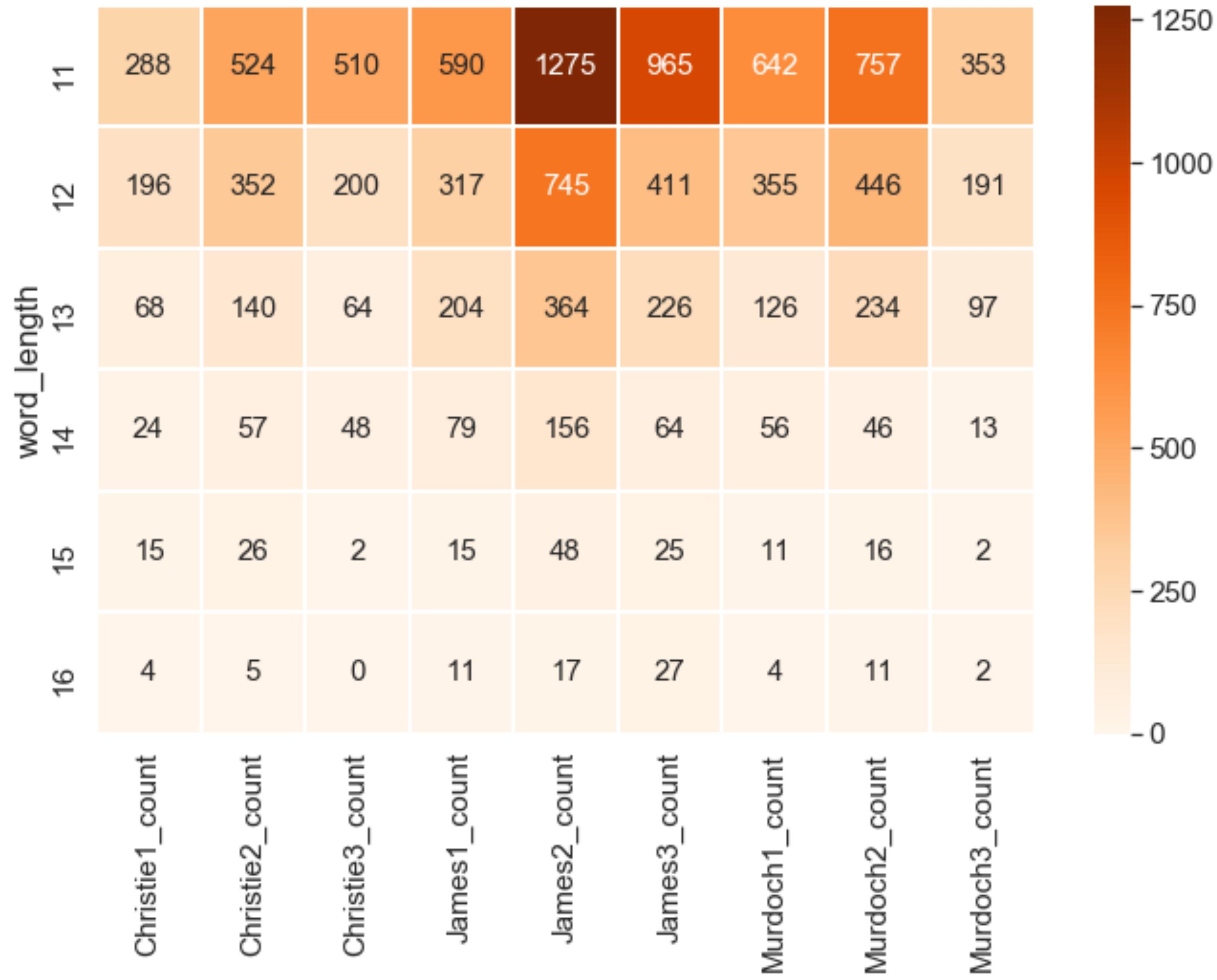
P.D. James Indefinite Pronouns Usage



- Word
- another
  - any
  - anybody
  - anyone
  - anything
  - anywhere
  - both
  - either
  - everyone
  - everything
  - few
  - little
  - many
  - most
  - nobody
  - oh
  - several
  - somebody
  - someone
  - something
  - somewhere

# APPENDIX - WORD LENGTH PER BOOK

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## REFERENCES

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- <https://www.utoronto.ca/news/natural-language-processing-dementia>
- <https://towardsdatascience.com/using-nlp-to-detect-linguistic-cues-in-alzheimers-diseases-patients-3364301b0299>
- <https://www.healthline.com/health/alzheimers-disease/difference-dementia-alzheimers>
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- <https://arxiv.org/pdf/1804.06440.pdf>