PHRASAL FREQUENCY AND LITERACY AS PREDICTORS OF IDS IN ON-LINE PROCESSING AND COMPREHENSION OF ENGLISH SUBJECT-VERB AGREEMENT

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BACKGROUND

- Existing knowledge on language processing primarily relies on data from participants with high levels of education and literacy.
- However, research testing participants with lower educational attainment and lower levels of literacy indicate these participants are slower to make use of grammatical cues (Mishra et al. 2012) and less likely to make use of grammatical cues, particularly when processing and comprehending less frequent, non-canonical linguistic constructions (Street 2017; Street & Dabrowska 2014).
- In this study we test English native speakers’ processing and comprehension of Complex Subject Noun Phrase constructions in which the head and local noun do not match in number: The key to the cabinets were lost. (Bock et al., 2001)
- Considerable interest in the processing of Complex Subject Noun Phrase constructions using variety of (mainly production) paradigms, (e.g., Bock and Eberhard 1993; Bock, Nicol and Cutting 1999), particularly since these types of Complex Subject NP constructions often violate posited subject-verb agreement ‘rules’
- Complex Subject NP constructions are considerably more frequent in writing than in speech (cf. Miller and Weinert 1998). Therefore, more experience with written language, should facilitate processing of these constructions – as predicted by usage-based, experience-based approaches.
- More recent studies have begun to investigate the relationship between group and individual differences in agreement skills with both cognitive variables (e.g., WM, EF) and educational variables (e.g., education, literacy, print exposure):
  - Veenstra et al. (2014) – WM skills and Executive Function predict the production of attraction errors in a Visual World Paradigm task.

METHODOLOGY

Participants: 48 adult English native speakers (Mean age = 31.96)
VWP Task: Agreement Judgement (adapted from Veenstra et al. 2014)
- within-participant and between groups
- audio-visual forced choice
- EyeLink 1000 in tower configuration
Sentence types (frequency and grammaticality)
- Type 1: e.g., the stars with the circles are blue, where the head noun, local noun and verb all match in number.
- Type 2, e.g., the star with the circles is blue, where the head noun and verb match in number but the local noun does not.
- Ungrammatical, e.g., the star with the circles are blue*, refers to where the local noun and verb number mismatch but the head noun does not.
Experience-related measures
- Literacy Rating Scale (Taron, Bigelow and Hansen 2013)
- Education
Behavioural measures
- Accuracy of match
- Response Time
- Dwell Time

RQ & HYPOTHESES

Do frequency and literacy predict IDs in processing and comprehension of Complex Subject Noun Phrase constructions?
Complex Subject Noun Phrase constructions that are more frequent in writing will take longer to process and produce more mismatches. Higher literacy participants will be more accurate and take less time to process all sentence types.

ANALYSIS & RESULTS

Data cleaning and analyses were completed in R studio version 4.1.1 “Kick Things” (R Core Team 2021). Reaction times were log transformed. Continuous variables were centred and scaled.

CONCLUSIONS

- We provide new evidence that experiential variables and frequency distributions affect the processing and comprehension of Complex Subject NP constructions using a Visual World Paradigm (Dabrowska & Becker 2020).
- Addresses gap identified by Veenstra et al. (2014) that IDs in processing of S-V-A in Complex Subject NP constructions are predicted by cognitive variables and also experiential, literacy-related variables.
- Results also support usage-based approaches to language processing and acquisition - amount and type of linguistic experience matters!
- The data also add to previous usage-based studies demonstrating how linguistic and attentional processes interact (Tomlin & Myachykov 2015).

FUTURE PLANS

- To analyse WM and EF data to determine whether educational or cognitive variables are stronger predictors of processing and comprehension of Complex Subject Noun Phrase constructions.
- To analyse data on Literacy and Frequency as predictors of IDs in processing and comprehension of more complex, non-canonical constructions (e.g., passives, object-relative clauses, see e.g., Farmer et al. 2012; Street 2017).
- To analyse data on other correlated measures (e.g., print exposure, reading habits, socio-economic status).

REFERENCES

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