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Architectures and Mechanisms for Language Processing

The processing costs of generic and specific singular they: A self-paced reading study

Background

Motivation

- In recent years, pronouns have become a highly visible and politicised topic, not only in academia, but in public discourse, education, and legislation [1]
- Studying pronouns from a psycholinguistic perspective allows us to see how socially significant linguistic items are represented and handled in language use
- However, such research is sparse and often rather outdated from a social and also from a methodological and statistical perspective [2]

Research question

How is singular *they* processed in comparison to *he* and *she*?

Foertsch & Gernsbacher (1997)

- A self-paced reading study on generic and specific singular *they*

> ***A***$_{generic}$***/The***$_{specific}$ ***truck driver*** *should never drive when sleepy,* |
> *even if* ***he/she/they*** *may be struggling to make a delivery on time,* |
> *because many accidents are caused by drivers who fall asleep at the wheel.*

- Effects depend on stereotypicality and generic vs. specific referents

	generic referent	**specific** referent
stereotypically **male**	*he* < *they* = *she*	*he* < *they* < *she*
stereotypically **female**	*she* < *they* < *he*	*she* < *they* < *he*

Method

Stimuli

- 10 stereotypically female, 10 stereotypically male items [3]

stereotypically male

drummer	*electrician*	*farmer*	*firefighter*	*groundskeeper*
guard	*hunter*	*magician*	*mechanic*	*pilot*

stereotypically female

babysitter	*caregiver*	*cheerleader*	*florist*	*housekeeper*
manicurist	*nanny*	*nurse*	*receptionist*	*secretary*

- Each item was embedded in 6 sentences:
  Generic referent with *he*/*she*/*they* and specific referent with *he*/*she*/*they*

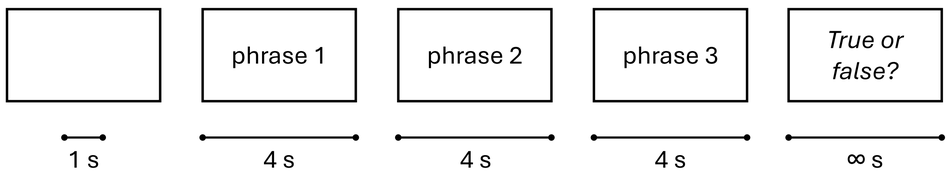
> ***A***$_{generic}$***/The***$_{specific}$ ***drummer*** *has to keep a steady rhythm,* |
> *even if* ***he/she/they*** *may be nervous,* |
> *because timing is crucial in music.*

Groups

- Materials were split into 4 groups of 20 participants (L1 BrE) each to
  - → Keep the number of trials per participant reasonable
  - → Ensure that participants did not encounter the same target with multiple pronouns
- The order of trials was randomised within participant

Procedure

- Blank screen followed by individual screen per phrase
- Self-paced continuation, automatic timeout after 4 seconds



Analysis & Results

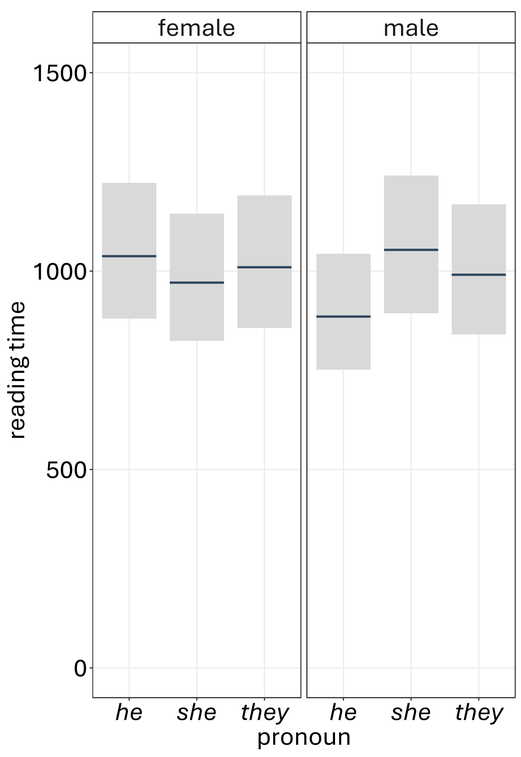
Analysis

- Linear mixed-effects regression models [4], one per type of referent
- Fixed effects: pronoun (*he*/*she*/*they*), participant pronoun, age, stereotypicality, trial number, number of characters of referent item
- Random intercepts: participant ID, item, group
- Trimmed final models based on $n_{generic}$ = 1459 and $n_{specific}$ = 1556 data points
  - → RTs ≤ 400 ms were excluded [5] & outliers with a standardised residual at a distance greater than 2.5 standard deviations

Results

- Effect of pronoun with generic referents, no effect with specific referents

	generic referent	**specific** referent
stereotypically **male**	*he* < *they* = *she*	*he* = *they* = *she*
stereotypically **female**	*he* = *they* = *she*	*he* = *they* = *she*



Discussion

- Singular *they* is processed differently than *he* and *she* with stereotypically male generic referents
- Singular *they* is processed similarly to *he* and *she* with stereotypically female generic referents and with specific referents irrespective of stereotypicality
- Future research should follow two routes
  - → Include the other types of singular *they* [6]
  - → Make use of other variants of self-paced reading and other methods

References

[1] Baron, D. E. (2021). *What's your pronoun? Beyond he & she*. Liveright Publishing Corporation, a division of W.W. Norton & Company. **[2]** Foertsch, J., & Gernsbacher, M. A. (1997). In search of gender neutrality: Is singular they a cognitively efficient substitute for generic he? *Psychological Science, 8*(2), 106–111. https://doi.org/10.1111/j.1467-9280.1997.tb00691.x **[3]** Misersky, J., Gygax, P. M., Canal, P., Gabriel, U., Garnham, A., Braun, F., Chiarini, T., Englund, K., Hanulikova, A., Öttl, A., Valdrova, J., Von Stockhausen, L., & Sczesny, S. (2014). Norms on the gender perception of role nouns in Czech, English, French, German, Italian, Norwegian, and Slovak. *Behavior Research Methods, 46*(3), 841–871. https://doi.org/10.3758/S13428-013-0409-Z **[4]** Baayen, R. H., & Milin, P. (2010). Analyzing reaction times. *International Journal of Psychological Research, 3*(2), 12–28. https://doi.org/10.21500/20112084.807 **[5]** Evans, J. St. B. T., & Curtis-Holmes, J. (2005). Rapid responding increases belief bias: Evidence for the dual-process theory of reasoning. *Thinking & Reasoning, 11*(4), 382–389. https://doi.org/10.1080/13546780542000005 **[6]** Conrod, K. (2020). Pronouns and gender in language. In *The Oxford Handbook of Language and Sexuality*. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190212926.013.63