The role of Expectancy in the Processing of Gender and Number-Mismatching Pronouns

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Language processing is expectancy-driven. The reported study explores the role of expectancies derived from the frequency of occurrence of a linguistic pattern and from real-world knowledge in online pronoun processing. In English, pronouns usually match the number of their antecedent. Exceptionally, singular-them (as in, I spoke to someone and asked them for the time) occurs frequently in English. In previous research employing generic antecedents such as someone, we have shown that participants are sensitive to the frequency of singular-them and that it does not elicit an online processing cost. In contrast, violations in gender-expectancies (mechanic-her) are both infrequent and violate real-world knowledge, and therefore elicit robust processing costs (e.g. Kreiner et al. 2008). Gender-mismatch (Stephanie-him) is less socially appropriate than number-mismatch (Stephanie-them). Thus the current research explores how number and gender expectancies are prioritised in relationship to each other.

It has been argued that number-mismatching-them is only acceptable under very specific circumstances, when gender is unknown or considered unimportant (Mackay, 1980). This study explores whether it is still acceptable when the gender of the antecedent is known or is highly predictable (mechanic-him vs. mechanic-them) and whether it incurs any processing cost. A further aim of the study is to compare number-mismatch violations with gender-expectancy violations (mechanic-her vs. mechanic-them), which, due to social constraints, might be more salient to participants. To explore these questions an eye-tracking study was conducted using sentences such as (1) and (2) below, which were also rated for naturalness. Sentences contained a gender-marked (1) or a gender-unmarked but highly predictable (2) antecedent and either a gender-matching, a gender-mismatching or a number-mismatching pronoun. First-pass-reading-times, Regression-path-reading-times and Total-reading-times were analysed for three analysis regions (demarcated on example). A proportion of filler sentences included a range of ungrammaticalities (e.g. violations of subject-verb agreement).

A small but significant cost of them was observed in both the gender-marked (RPRT- final region) and the gender-unmarked condition (FPRT/TRT- verb+pronoun region). Similarly the naturalness-ratings indicate that in both conditions participants find them less natural than the gender-matched pronoun. This suggests that participants do not consider them to be well matched with either antecedent type and that this affects their online processing. Consistent with previous findings, a robust gender-mismatch cost is observed (in RPRT/TRT, various regions) and is strongest in the gender-marked condition. Intriguingly although participants only rate gender-mismatching pronouns unnatural in the gender-marked condition (spokeswoman-him) indicating that they know that the gender-unmarked antecedent (mechanic) can be male or female, in both the gender-marked and unmarked conditions gender-mismatch (spokeswoman-him, mechanic-her) causes more disruption to reading than number-mismatch (spokeswoman-them, mechanic-them). This suggests that gender-expectancy violations have a greater processing cost than number-mismatch violations. There are two potential explanations for these data. First, reduced sensitivity to specific cases of number-mismatch may generalise to other cases of plural-mismatch (see Haskell et al. 2010 for similar findings). Second, violations in gender-expectations may be more difficult to recover from than number-mismatch costs because gender is a more salient cue.
Example Sentences:
1. He called a spokeswoman and instructed her/them/him to call a press conference.
2. He saw a mechanic there and asked him/them/her if there were any problems.

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