Individual differences and models of pronoun interpretation

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Competing models have been proposed to capture pronoun interpretation. The Mirror model [cf. 1-3] assumes that people interpret pronouns the way they produce them (~ *P*(pronoun|referent)). The Expectancy model [cf. 4] posits that people interpret pronouns, if possible given for instance number and gender, as referring to whichever referent they estimate was most likely to be rementioned (~ *P*(referent)). The Bayesian model [5] combines both factors and models the relation between pronoun production and interpretation using Bayes' Rule, where the likelihood term *P*(pronoun|referent) represents production bias and the prior term *P*(referent) denotes next-mention bias. The Bayesian model has been found to make good predictions for English, but also for other languages, such as Mandarin Chinese, German, and Catalan. However, evidence is accumulating that not all language users process and interpret pronouns in the same way. [6] for instance show that a comprehender's level of print exposure influences the extent to which they use implicit causality cues to predict upcoming referents in English. In addition, [7] find a link between print exposure and the use of syntactic cues in pronoun interpretation in English.

We are planning a study on individual differences in pronoun interpretation in Dutch, aiming to extend findings from English (data collection to be finished by the time of the conference). In a 2x2 forced choice experiment, we manipulate next-mention bias using verbs-of-transfer (Source-Goal vs. Goal-Source) and the structural bias of the pronoun (Ze 'She$_{reduced}$' vs. Zij 'She$_{full}$'). Prior research shows a higher next-mention rate for Goals than Sources [e.g., 8]; the reduced personal pronoun has a strong bias toward the previous subject, while the full form, at least in written discourses, is just as likely to refer to the previous subject as to another referent [e.g., 9]. All target sentences are embedded in a larger context, where we hold as many other factors as possible constant, see (1). The target sentence is followed by an ambiguous pronoun in an incomplete sentence. Participants are asked to choose to which referent the pronoun most likely refers. We will analyze the proportion of subject interpretations and test whether variation between participants can be explained using our individual differences measures: print exposure (Author Recognition Test), working memory capacity (operation span task), and working memory updating (Keep Track task).

We discuss our results with respect to pronoun interpretation models, since any model should be able to account for individual differences as well. We argue that the way the Bayesian model has been operationalized in previous research to some extent implicitly captures individual differences, since each participant's production data is related to their own interpretation data. However, the degree to which language users rely on either meaning-related or structural cues may differ between individuals. This would in theory require adding a relative 'weight' to the importance of the prior and the likelihood terms, which would make people either more Mirror or Expectancy model-like. Similarly, the relative importance of the terms may differ between situations. The studies in Authors (2021) suggest that when there is not enough context, comprehenders fall back on the Mirror model: If you are not able to form a sufficient mental representation of the situation, predicting who will be mentioned next becomes difficult. Differences between situations and individuals may explain why some studies have found evidence in favor of one model, while others have found evidence for another.

(1) Example item:

De koningin en de barones zijn al jaren vriendinnen. De koningin vierde vorige week haar verjaardag. De barones had een bijzonder cadeau meegenomen.

'The queen and the baroness have been friends for years. The queen celebrated her birthday last week. The baroness had brought a special gift.'

SOURCE-GOAL De barones gaf een bronzen kandelaar aan de koningin.

'The baroness gave a bronze candelabra to the queen.'

GOAL-SOURCE De koningin kreeg een bronzen kandelaar van de barones.

'The queen received a bronze candelabra from the baroness.'

[Ze / Zij] heeft vervolgens... ['She$_{\text{REDUCED}}$ / She$_{\text{FULL}}$] then went and...'

Wie is Ze / Zij? 'Who is She$_{\text{REDUCED}}$ / She$_{\text{FULL}}$?'

De koningin / De barones 'The queen' / 'The baroness'

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