Effects of prosody on the resolution of word-order ambiguities

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In German, noun phrases (NPs) can be ambiguously case-marked as nominative (Subject, typically Agent) or accusative (Object, typically Patient). Furthermore, both Agent and Patient can appear sentence-initially, but Agent-first is canonical. A recent visual-world study showed that, in the absence of clear case marking, German listeners preferably interpret sentence-initial NPs as Agents (Knöferle, Crocker, Scheepers, & Pickering, 2001): Following case-ambiguous first NPs, anticipatory eye movements to the picture of a Patient were observed, well before a disambiguating second NP. It has already been shown hat prosody can influence syntactic attachment ambiguities (see e.g., Kjelgaard & Speer, 1999). The present study investigated whether prosody can also manipulate the interpretation of word-order ambiguities, using sentences with case-ambiguous first NPs and post-verbal second NPs with unambiguous accusative (1) or nominative (2) case marking.

(1) Die Katze$^{(L*+H)}$ jagt gleich den Vogel.
The cat (NOM, ambiguous) chases in-a-moment the bird (ACC).

(2) Die Katze$^{(L+H*)}$ jagt gleich der Hund.
The cat (ACC, ambiguous) chases in-a-moment the dog (NOM).

For the Agent-first reading (1) our speaker placed a low pitch accent (L*+H) on the first NP. These NPs were considered unmarked and expected to indicate canonical Agent-first sentences. For the Patient-first reading (2) she instead used a rising pitch accent (L+H*). Those NPs were considered marked and expected to indicate non-canonical Patient-first sentences. Recorded sentences were presented along with scenes portraying the ambiguous character (cat), the Patient (bird), the Agent (dog), and a distractor object. Actions were not displayed, and the ambiguous character was equally likely as Agent or Patient. Fewer anticipatory looks to the Patient were predicted for (2) than for (1). Indeed, before the onset of the second NP, the Patient was fixated more often than the Agent when the first NP was L*+H (1), but not when it was L+H* (2). Thus, the interpretation of word-order ambiguities was modulated by prosody. However, in (2), prosody was not sufficient to reverse the preference for the canonical Agent-first structure. Interestingly, the effect of prosody shifted in time during the experiment. In the first half, sentence type (Agent-first, Patient-first) interacted with character (Patient, Agent) during the adverb. During the verb more looks to the Patient were found for both sentence types. In the second half, sentence type already interacted with character during the verb. More looks to the Patient were observed for Agent-first sentences only. This suggests that listeners adapted to prosodic cues. Importantly, however, in both halves prosodic effects were found prior to the second NP. In sum, we show that prosody can manipulate word-order ambiguities: In the absence of clear case marking, prosodic cues were integrated rapidly enough to affect listeners interpretation before disambiguating acoustic information was available.

References

Knöferle, P., Crocker, M., Scheepers, C., & Pickering, M. (2002). Anticipatory eye movements in initially ambiguous sentences: Theres more to it than meets the eye. AMLaP conference, Tenerife, Spain.

Kjelgaard, M., & Speer, S. (1999). Prosodic facilitation and interference in the resolution of temporary syntactic closure ambiguity. Journal of Memory and Language, 40, 153-194.