The impact of memory load on the processing of ellipsis: three experiments on gapping and right node raising in spoken and written German

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We present 3 experiments that investigate whether memory limitations negatively impact the acceptability of ellipsis in coordination. We contrast right node raising (RNR) with gapping (1) in spoken vs. written modality, building on Harbusch's (2011) corpus results which indicate that RNR is less frequent in spoken language.

(1) Ich habe vergessen, dass ich Eric vom Bahnhof (abholen
I have forgotten that I Eric from.the station pick.up
muss)$_{RNR}$ und Mia von der Kita (abholen muss)$_{gapping}$.
must and Mia from the daycare pick.up must

We propose a memory-based explanation: The addressee can reread an utterance (backtracking) in written, but not in oral modality. Thus, we expect that ellipsis is more difficult to process (and less acceptable) in oral modality, in particular RNR (interaction), since RNR requires keeping the incomplete first conjunct in memory in order to complete its structure after having parsed the second conjunct.

Experiment 1a crosses FORM (full form/gapping/RNR) and MODALITY (oral/written). MODALITY will be varied between subjects, i.e., half of the participants *hear* the stimuli exactly once (without the possibility to rehear), the other half can *read* them for an unlimited time. Our prediction is that ellipsis and specifically RNR is preferred more strongly in written modality. In experiment 1b, we aim to show that it is the possibility of backtracking, rather than the written modality per se, that relieves working memory and improves ellipsis. Therefore, we approximate the auditory presentation by presenting the items written, but word-by-word with fixed presentation times. We predict that ellipsis will be degraded to a similar extent as when presented auditorily. To confirm that the expected acceptability differences are indeed caused by differences in memory load, we explicitly manipulate this load in experiment 2, by letting half of the participants solve arithmetic problems between trials (see Repp and Drenhaus, 2015). We expect that participants whose working memory is partially used for the additional task have greater difficulties in processing ellipsis and perceive it as more severely degraded than the full forms.

References: • Harbusch, K. (2011). Incremental sentence production inhibits clausal coordinate ellipsis: A treebank study into Dutch and German. In: *Dialogue & Discourse* 2.1 (1), pp. 313–332. • Repp, S. and H. Drenhaus (2015). Intonation influences processing and recall of left-dislocation sentences by indicating topic vs. focus status of dislocated referent. In: *Language, Cognition and Neuroscience* 30.3, pp. 324–346.