Case and Misinterpretation in Number Attraction in Eastern Armenian

Serine Avetisyan, Sol Lago & Shravan Vasishth
Department of Linguistics, Potsdam University, Germany
serine.avetisyan@uni-potsdam.de

Background

- In production, people sometimes continue sentence fragments like "The key to the **cabinets**" with an ungrammatical verb (e.g., *are*). In comprehension, people read the ungrammatical verb faster than in "*The key to the **cabinet** are…".

- Under memory retrieval accounts, such ***attraction errors*** occur when the attractor shares some features with the subject head, such that it is occasionally misretrieved as the subject and, hence, number licensor of the verb (Badecker & Kuminiak, 2007; Wagers et al., 2009).

- If case information is used as a retrieval cue, overt non-nominative marking on attractors should make them less subject-like and reduce attraction rates. But findings are mixed, with overtly non-nominative marked attractors causing lower (Hartsuiker et al., 2001; 2003), higher (Franck et al., 2010) or no effect on attraction rates (Kwon & Sturt, 2017).

- After establishing the existence of attraction, we re-examine the role of case in Eastern Armenian where nominative and non-nominative case markers make animate subjects and non-subjects distinguishable.

- With free-response questions, we also examine the interpretation of the subject-verb thematic dependency. Participants can be expected to (i) recover from attraction and arrive at an interpretation consistent with sentence input (i.e., singular subject), (ii) misremember the number feature on the subject (Patson & Husband, 2016), or (iii) take the attractor as the subject of the verb (Staub, 2009).

Research questions

1. Does attraction occur in Eastern Armenian? If so, what is the final interpretation of the subject-verb thematic dependency? (Experiments 1 & 2)

2. Does differential case marking modulate attraction rates? If so, overt non-nominative case marking on attractors should render them less likely to be misretrieved and reduce attraction rates (Experiment 3; Lewis & Vasishth, 2005).

Experiments 1 & 2: Self-paced reading

(1a) The painter$_{NOM}$ who the sculptor$_{NOM}$ ignored$_{SG}$ <u>during</u>…

(1b) The painters$_{NOM}$ who the sculptor$_{NOM}$ ignored$_{SG}$ <u>during</u>…

(1c) The painter$_{NOM}$ who the sculptor$_{NOM}$ ignored$_{PL}$ <u>during</u>…

(1d) The painters$_{NOM}$ who the sculptor$_{NOM}$ ignored$_{PL}$ <u>during</u>…

- 48 items; RC head number (SG/PL attractor) ✕ RC S-V number (dis)agreement (gram/ungram)

- YES/NO questions in Experiment 1 (48 participants)

- Free-response questions with typed answers (e.g., *'Who ignored?'*) in Experiment 2 (46 participants)
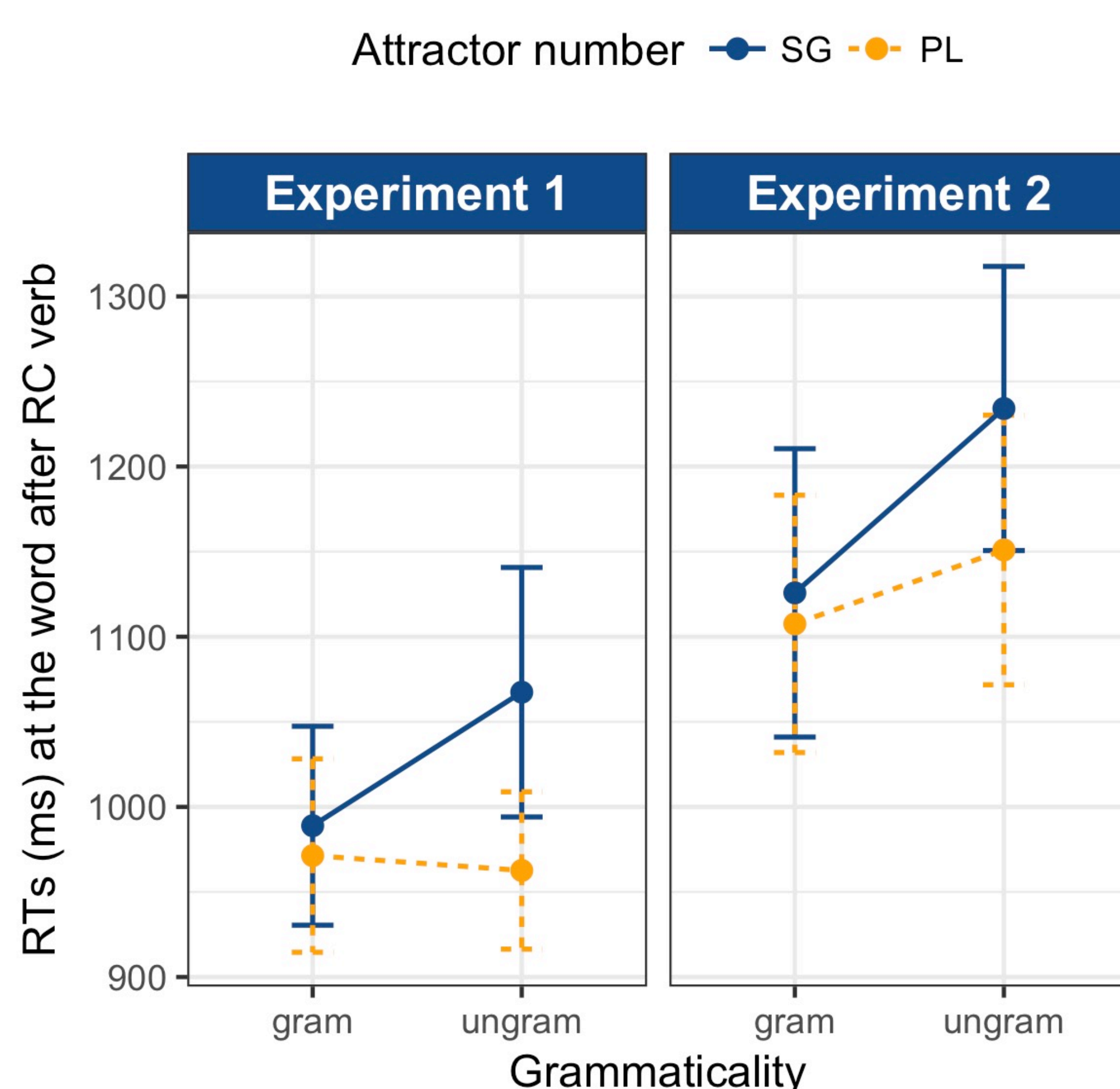

Reading times in Experiments 1 & 2:
- No effects in grammatical conditions
- Facilitation after ungrammatical verbs in PL vs. SG attractor conditions

Question responses in Experiment 2:
- The attractor was often misinterpreted as the thematic subject of the RC verb (30% across conditions). Importantly, in ungrammatical sentences participants were more likely to choose the attractor when it matched the RC verb in number (24%) than when it did not (15%).
- The RC subject number was often misinterpreted as being plural (21% across conditions), but this effect was most pronounced in ungrammatical attraction conditions (28%).

Experiment 3: Forced-choice task

(2a) The painter$_{NOM}$ who the sculptor$_{NOM}$…

(2b) The painters$_{NOM}$ who the sculptor$_{NOM}$…

(2c) The painter$_{ACC}$ who the sculptor$_{NOM}$…

(2d) The painters$_{ACC}$ who the sculptor$_{NOM}$…

- 36 items & 176 participants; RC head number (SG/PL attractor) ✕ RC head case (NOM/ACC attractor)
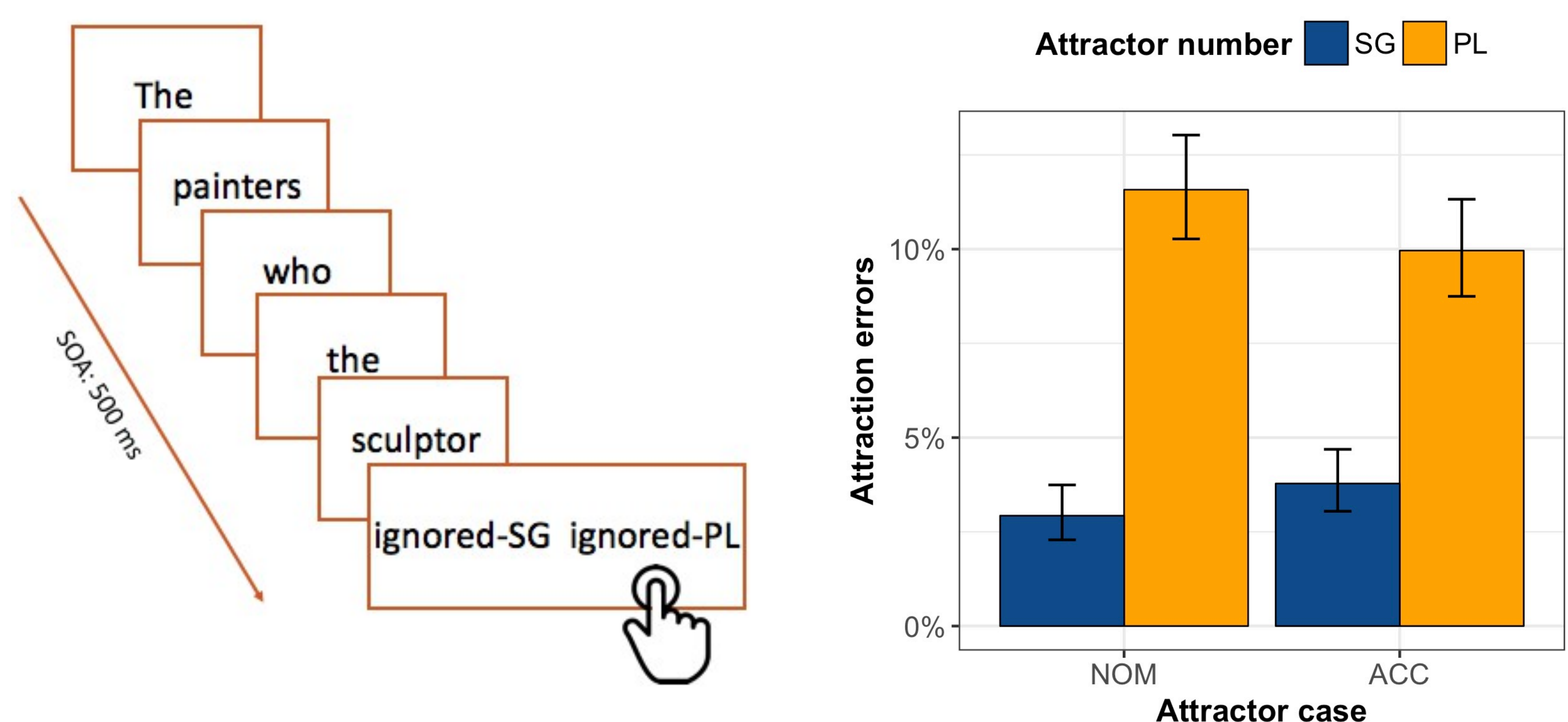
Error rates:
- More agreement errors in PL than SG attractor conditions
- Weak interaction effect: 3% lower attraction in ACC than NOM case conditions

Conclusion

- Armenian shows attraction effects.

- The target subject is often misinterpreted, and this effect is particularly strong in attraction conditions: comprehenders either mistake the attractor for the subject or misthink that the subject is a plural noun.

- Though availability of case information serves as a retrieval cue, differential case marking on nouns denoting their grammatical roles only slightly attenuates attraction effects.

References. Badecker, W. & Kuminiak, F. (2007). *Journal of Memory and Language*; Franck, J., Soare, G., Frauenfelder, U. H., & Rizzi, L. (2010). *Journal of Memory and Language*; Hartsuiker, R. J., Antón-Méndez, I., & van Zee, M. (2001). *Journal of Memory and Language*; Hartsuiker, R. J., Schriefers, H. J., Bock, K., & Kikstra, G. M. (2003). *Memory & Cognition*; Kwon, N., & Sturt, P. (2017). *30th Annual CUNY Conference on Human Sentence Processing*; Lewis, R. L., & Vasishth, S. (2005). *Cognitive Science*; Patson, N. D. & Husband, E. M. (2016). *The Quarterly Journal of Experimental Psychology*; Staub, A. (2009). *Journal of Memory and Language*; Wagers, M. W., Lau, E. F., & Phillips, C. (2009). *Journal of Memory and Language*.