

No agreement attraction facilitation observed in Czech: Not even syncretism helps

Radim Lacina¹ and Jan Chromý²

¹Department of Linguistics, University of Potsdam

²Institute of Czech Language and Theory of Communication, Charles University



Does case syncretism play a role in facilitatory interference in Czech?

- Agreement attraction effects in comprehension have long been observed in English and other languages (e.g. Wagers et al., 2009)
- Facilitatory interference effects, i.e. speed-up in ungrammatical sentences after a matching attractor, have been consistently replicated in the literature (Jäger et al., 2017)
- Slioussar (2018) found that in Russian, case syncretism (sameness of form shared between cases) plays a role in agreement attraction effects in both production and comprehension
- Do Czech comprehenders exhibit facilitatory interference in ungrammatical sentences with number-matching attractors?

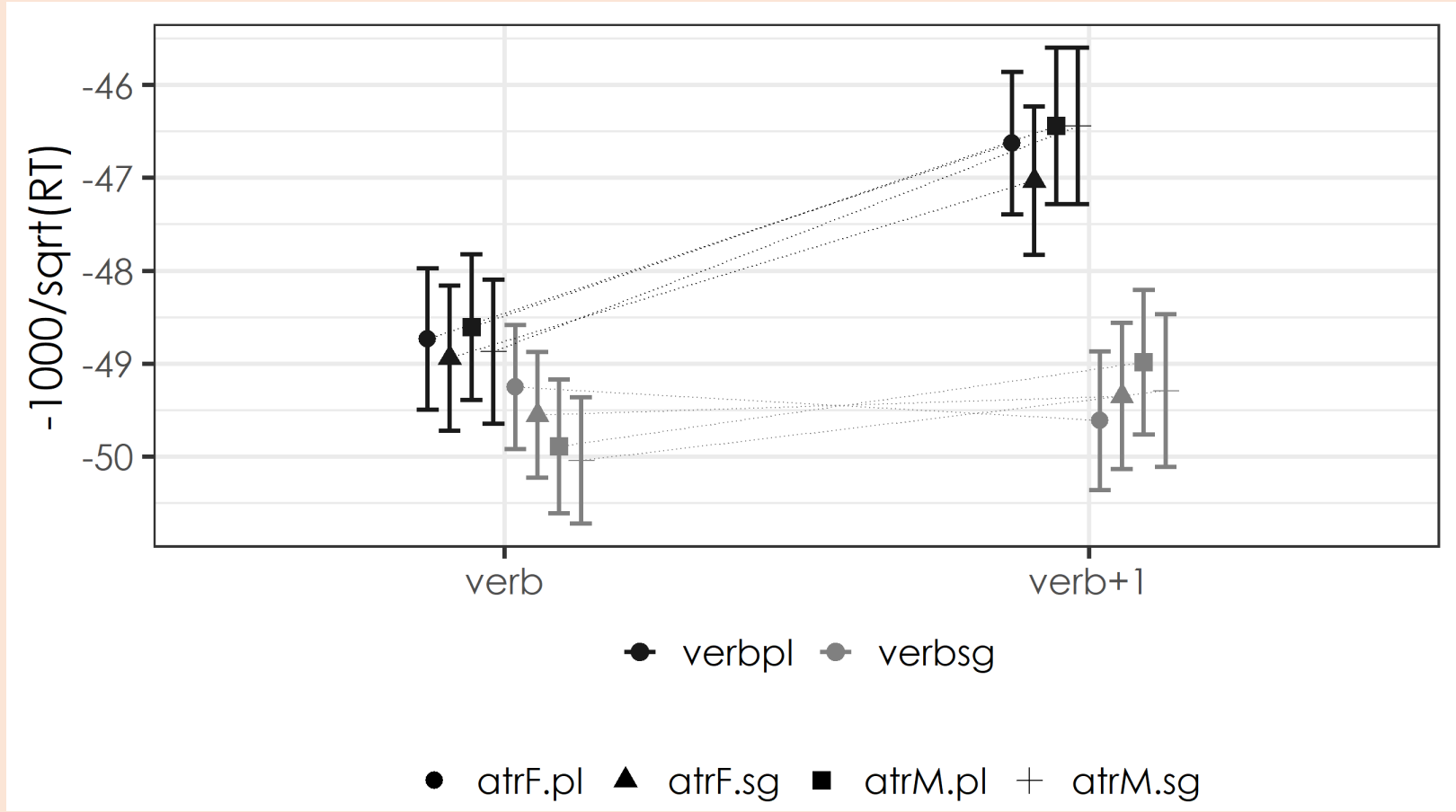
The current study

- We attempt to replicate facilitatory interference effects with Czech comprehenders and test the role of syncretism in the language.
- Two web-based self-paced reading experiments – Experiment 1: Feminine subjects, Experiment 2: Masculine subjects
- We manipulated **verb number, attractor number, and attractor gender**
 - Attractor gender was manipulated to introduce **case syncretism** with the nominative plural
 - In Czech, adding the *-ka* suffix to nouns makes them feminine
 - As opposed to masculine nouns, these feminine nouns exhibit syncretism between the **genitive singular** and **nominative plural**
- Predictions:
 - **Slow-down** in sentences with **plural verbs (ungrammaticality)** in the **verbal and post-verbal regions**
 - **Speed-up** in sentences with **plural verbs** and **plural attractors** in the **post-verbal region**
 - **Speed-up** in sentences with **plural verbs** and **singular feminine attractors (syncretism)** in the **post-verbal region**

Items (N = 24): Experiment 1 (Feminine Subjects)

- 1) Zpráva | od | archivářky_{GEN.F.SG=NOM.F.PL} | nejspíš | bude_{SG} | zahrnovat | veškeré | nálezy.
 - 2) Zpráva | od | archivářek_{GEN.F.PL} | nejspíš | bude_{SG} | zahrnovat | veškeré | nálezy.
 - 3) Zpráva | od | archiváře_{GEN.M.SG} | nejspíš | bude_{SG} | zahrnovat | veškeré | nálezy.
 - 4) Zpráva | od | archivářů_{GEN.M.PL} | nejspíš | bude_{SG} | zahrnovat | veškeré | nálezy.
 - 5) Zpráva | od | archivářky_{GEN.F.SG=NOM.F.PL} | nejspíš | budou_{PL} | zahrnovat | veškeré | nálezy.
 - 6) Zpráva | od | archivářek_{GEN.F.PL} | nejspíš | budou_{PL} | zahrnovat | veškeré | nálezy.
 - 7) Zpráva | od | archiváře_{GEN.M.SG} | nejspíš | budou_{PL} | zahrnovat | veškeré | nálezy.
 - 8) Zpráva | od | archivářů_{GEN.M.PL} | nejspíš | budou_{PL} | zahrnovat | veškeré | nálezy.
- Report_{F.SG} | from | archiver_{F.SG/F.PL/M.SG/M.PL} | probably | will_{SG/PL} | contain | all | findings.
'A report from the archiver/s (F/M) surely will (SG/PL) contain all findings.'

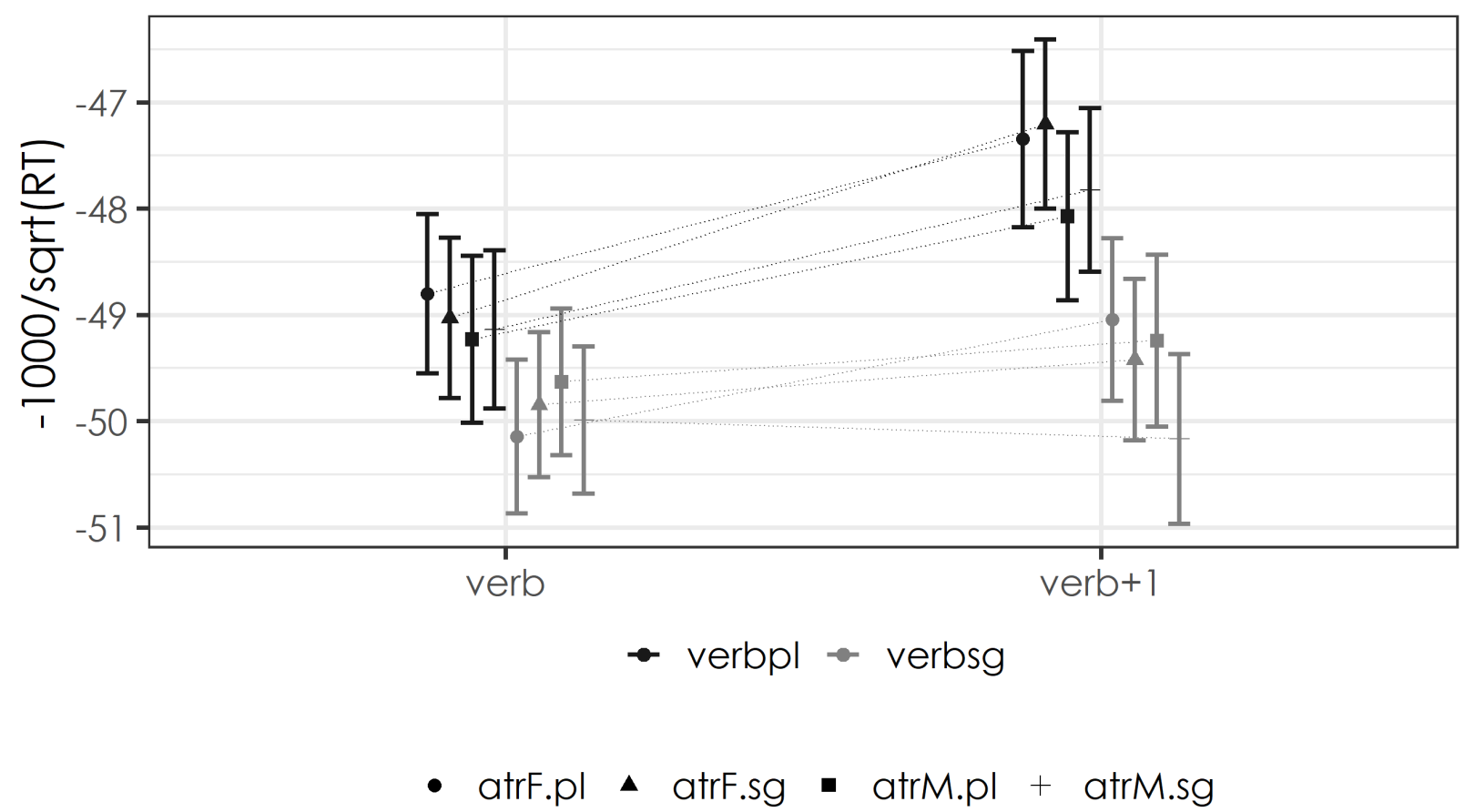
Experiment 1 (Feminine Subjects)



Items (N = 24): Experiment 2 (Masculine Subjects)

- 1) Podklad | od | organizátorky_{GEN.F.SG=NOM.F.PL} | zjevně | bude_{SG} | vzbuzovat | velkou | důvěru.
 - 2) Podklad | od | organizátorek_{GEN.F.PL} | zjevně | bude_{SG} | vzbuzovat | velkou | důvěru.
 - 3) Podklad | od | organizátora_{GEN.M.SG} | zjevně | bude_{SG} | vzbuzovat | velkou | důvěru.
 - 4) Podklad | od | organizátorů_{GEN.M.PL} | zjevně | bude_{SG} | vzbuzovat | velkou | důvěru.
 - 5) Podklad | od | organizátorky_{GEN.F.SG=NOM.F.PL} | zjevně | budou_{PL} | vzbuzovat | velkou | důvěru.
 - 6) Podklad | od | organizátorek_{GEN.F.PL} | zjevně | budou_{PL} | vzbuzovat | velkou | důvěru.
 - 7) Podklad | od | organizátora_{GEN.M.SG} | zjevně | budou_{PL} | vzbuzovat | velkou | důvěru.
 - 8) Podklad | od | organizátorů_{GEN.M.PL} | zjevně | budou_{PL} | vzbuzovat | velkou | důvěru.
- Document | from | organiser_{F.SG/F.PL/M.SG/M.PL} | apparently | will_{SG/PL} | inspire | great | confidence.
'A document from the organiser/s (F/M) apparently will (SG/PL) inspire great confidence.'

Experiment 2 (Masculine Subjects)



Results: Experiment 1 (N = 202)

- Verbal region
 - **Main effect of verb number** ($\beta = 0.442$, $SE = 0.115$, $t = 3.84$, $p < .001$)
- Post-verbal region
 - **Main effect of verb number** ($\beta = 1.335$, $SE = 0.133$, $t = 10.051$, $p < .001$)
- No other effects reached significance
- No evidence of any interactions

Results: Experiment 2 (N = 202)

- Verbal region
 - **Main effect of verb number** ($\beta = 0.431$, $SE = 0.096$, $t = 4.474$, $p < .001$)
- Post-verbal region
 - **Main effect of verb number** ($\beta = 0.919$, $SE = 0.135$, $t = 6.804$, $p < .001$)
 - **Main effect of attractor gender** ($\beta = 0.275$, $SE = 0.1$, $t = 2.749$, $p < .01$)
 - **Three-way interaction** ($\beta = -0.204$, $SE = 0.1$, $t = -2.04$, $p < .05$)
- No other effects reached significance
- No evidence of two-way interactions

Discussion

- Robust ungrammaticality effects suggest our participants were paying attention to the task
- Facilitatory interference effects **not replicated** in Czech—this contrasts with previous literature that has consistently found these effects
- Experiment 2 (Masculine Subjects) showed a significant three-way interaction
 - However, this was **driven by masculine attractors in grammatical sentences**—this suggests facilitation in grammatical sentences
 - This is the opposite of what has been predicted by cue-based models attempting to explain agreement attraction effects (Engelmann et al., 2019)
- Case syncretism didn't have the predicted effects
- We speculate that the lack of effects could be due to the strength of formal agreement in the language and the lack of semantic agreement

Selected references: Jäger, L. A., Engelmann, F., & Vasishth, S. (2017). Similarity-based interference in sentence comprehension: Literature review and Bayesian meta-analysis. *Journal of Memory and Language*, 94, 316-339.; Slioussar, N. (2018). Forms and features: The role of syncretism in number agreement attraction. *Journal of Memory and Language*, 101, 51-63.; Wagers, M. W., Lau, E. F., & Phillips, C. (2009). Agreement attraction in comprehension: Representations and processes. *Journal of memory and language*, 61(2), 206-237.

Take-home message

- No evidence of agreement attraction effects in Czech comprehension
- Not even case syncretism can induce facilitatory interference