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Authors

Lacina, Radim
Chromý, Jan

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

Radim Lacina (radim.lacina@uni-potsdam.de)

Department of Linguistics, Cognitive Sciences, University of Potsdam
Karl-Liebknecht-Straße 24-25, Potsdam, D-14476, Germany

Jan Chromý (jan.chromy@ff.cuni.cz)

Institute of Czech Language and Theory of Communication, Faculty of Arts, Charles University
náměstí J. Palacha 1/2, Prague, 116 38, Czech Republic

Abstract

Agreement attraction (i.e. facilitatory interference manifested by sped-up reading times) observed in establishing subject-verb number agreement by comprehenders when reading ungrammatical sentences with number-matching attractor nouns, has been long-established and cross-linguistically validated. For languages with rich inflectional morphology, case syncretism has been suggested to play a role in the phenomenon. In the present self-paced reading study on Czech, we show that unlike in other languages, facilitatory interference is not observed and that not even case syncretism is sufficient for its appearance. We put forward several possible explanations for this anomaly exhibited by Czech compared to other languages. We propose that the lack of semantic agreement in the language could be one of these. Finally, we discuss the implications of these results for the models of long-distance dependency resolution in comprehension.

Keywords: facilitatory interference; agreement attraction; self-paced reading; case syncretism; sentence processing

Introduction

Hearers and speakers alike have long been observed to be susceptible to the phenomenon of *agreement attraction*. In production, it has been found that speakers often use the wrong plural marking on a subject-agreeing verb following NPs with plural attractor nouns that are linearly closer to the verb than the subject and end up producing sentences such as the following (e.g. Bock & Miller, 1991):

- 1) **The key to the cabinets were rusty.*

Comprehenders on the other hand have been found to process such sentences faster compared to those in which the attractor noun does not share the plural feature of the ungrammatical verb (Wagers, Lau, & Phillips, 2009). This effect has been termed *facilitatory interference*.

In a pioneering study, Wagers et al. (2009) exposed native English comprehenders to sentences such as the one above in a self-paced reading task. Firstly, they found that when asked to give binary acceptability judgments of such sentences, comprehenders often rated them as acceptable despite their ungrammaticality. Crucially, this *illusion of grammaticality* in sentences with number-mismatching verbs was only present when the attractor noun preceding the number-mismatching auxiliary was plural marked (*cabinets*) as

opposed to in the singular (*cabinet*). Their reading time data also revealed the importance of the presence of the attractor noun. In addition to longer reading times for ungrammatical sentences, they found a relative speed-up of processing in the post-verbal region just in those ungrammatical sentences where the attractor number-matched the auxiliary (1). In grammatical sentences, on the other hand no such difference was observed.

This pattern of processing facilitation caused by the interference of the attractor noun in subject-verb agreement has since been replicated many times in the literature both in English and cross-linguistically (Dillon, Mishler, Sloggett, & Phillips, 2013; Lago, Shalom, Sigman, & Lau, 2015; Tucker, Idrissi, & Almeida, 2015; Slioussar, 2018; Avetisyan, Lago, & Vasishth, 2020; Jäger, Mertzen, Van Dyke, & Vasishth, 2020).

For instance, Lago et al. (2015) conducted a series of self-paced reading experiments testing facilitatory interference in Spanish. Expanding the research to cases of main verbs requiring number agreement with the subject in the language, they found evidence of facilitation both there and in sentences with Spanish auxiliaries.

Facilitatory interference is not limited to cases of number agreement. It has also been detected in cases of gender agreement in Russian (Slioussar & Malko, 2016), Greek (Paspali & Marinis, 2020), and Arabic (Tucker, Idrissi, & Almeida, 2021). It has also been claimed in the literature that facilitatory interference is present in other instances of number agreement besides subject-verb pairs, for instance in antecedent-reflexive relations in English (Parker & Phillips, 2017; Jäger, Mertzen, Van Dyke, & Vasishth, 2020).

Overall, a recent Bayesian meta-analysis of the literature on facilitatory interference in dependency completion has shown that the effect is robust and present cross-linguistically (Jäger, Engelmann, & Vasishth, 2017).

The repeated replication of these effects has prompted attempts at their theoretical explanation. One of the most prominent family of theories addressing this topic are cue-based parsing models (Parker, Shvartsman, & Van Dyke, 2017). These models see facilitatory interference effects as being caused by the nature of the processes of retrieval that occurs when long-distance dependencies such as number agreement between the subject and a finite verb need to be established at the point where comprehenders reach the word

requiring agreement. This contrasts with accounts that view agreement attraction as being related to faulty representations of subjects such as Marking and Morphing (Eberhard, Cutting, & Bock, 2005).

According to the cue-based models, comprehenders store incoming material as *bundles of features*. When it comes time to establish a long-distance dependency, such as when a finite verb that agrees in number with the subject appears, the mechanism produces a probe that then directly accesses the stored elements. Dependency is then formed based on the match or mismatch of the probe with the stored features. Here, we adopt the model published in Engelmann, Jäger, & Vasishth (2019), which is an extension of the model put forward in Lewis and Vasishth (2005). Both of these models predict that in cases of mismatch in the features required by the probe and the target, comprehension ought to be hampered. However, should a *partially matching* attractor be present, this slowdown is predicted to be attenuated – in other words, facilitation is predicted. This is explained as a case of misretrieval. According to the model, the mechanism is a race process that chooses the element with the most activation as the correct one to establish the dependency with. In the case of ungrammatical sentences with partially matching attractors, both the attractor and the target subject head match the probe to some degree. Therefore, the degrees of their activation are similar. It has been shown that when this is the case, retrieval is faster compared to cases where there is a clear winner (Logačev & Vasishth, 2016).

Crucial for the purposes of the current research, there have been several studies examining agreement attraction effects in languages with rich inflectional morphology, such as that of Avetisyan et al. (2020) which focused on Armenian, and of Slioussar (2018) examining Russian which is a language typologically very similar to the language examined in the current study, namely Czech.

Slioussar (2018) focused on the role of *case syncretism* in the modulation of agreement attraction effects. In inflectional languages, a word form is case syncretic if and only if it corresponds to at least two different configurations of case and number (Baerman, 2008). For example, in Czech, the word form *ženy* of the lemma *žena* (*woman*) is case syncretic, since the ending *-y* marks the genitive singular on the one hand as well as the nominative, accusative and vocative plural on the other.

In her research, Slioussar (2018) conducted three experiments, namely a production sentence elicitation, a speeded acceptability judgment, and a self-paced reading study. The first experiment, which was a production task based on Vigliocco, Butterworth, and Semenza (1995), showed that native Russian speakers made the most agreement attraction errors in elicited sentences when the attractor word was in the accusative plural which is syncretic with the nominative plural. Interestingly, attractors in the genitive singular, which is also syncretic in the same way, showed the second largest proportion of agreement errors. The genitive plural, a non-syncretic form yet one sharing the

plural feature with the verb, attracted the smallest number of errors.

In the two comprehension experiments, participants were exposed to Russian sentences similar to the target sentences in the production study. They differed in four additional words that were modifying the predicate. Again, what was manipulated was the number feature of the subject head, the attractor and the predicate, and the case of the attractor. Half the sentences that Slioussar's (2018) participants saw were ungrammatical due to a subject-predicate number agreement error.

The speeded acceptability judgment experiment showed that the interaction between the number of the attractor and its case was significant. This means that case syncretism played a role in how many incorrect responses were given by participants. In ungrammatical sentences, the most errors occurred when the subject head was singular, the attractor plural and in the accusative case, a set-up in which there is case syncretism with the nominative plural. Ungrammatical sentences with singular heads and singular attractors in the genitive case, which is syncretic with the nominative plural, also attracted a number of errors reflecting illusions of grammaticality.

The third experiment, a self-paced reading study, used the same stimuli as the second. The main finding was that facilitatory interference effects were present in the accusative plural group as well as in the genitive singular group. Both of these are syncretic with the nominative plural in Russian, however only the former carries the plural feature.

What Slioussar (2018) takes the results of her two comprehension experiments to suggest is that syncretism is an independent factor – i.e. that the sameness of morphological form can result in agreement attraction errors and speed-ups in comprehension even without the attractor possessing the number feature that concordant with the predicate as evidenced by the condition involving singular attractors in the genitive.

One issue with Slioussar's (2018) design is that the contrast between syncretic and non-syncretic attractors is achieved by using different lemmas. This could be seen as introducing a confound, since the use of different lexical items, in addition to manipulating the status of syncretism, also changes the semantics of the sentence.

In study on gender agreement attraction in Slovak by Badecker and Kuminiak (2007), a language closely related to Czech and mutually intelligible with it (Golubović & Gooskens, 2015), it has been proposed that when it comes to production, case syncretism not only on the attractor but also on the subject head is necessary for gender agreement attraction errors to occur. In this case, the subject head must be syncretic between the nominative and accusative singular. Although focused on production and gender agreement, the findings may be informative for the role of syncretism in agreement attraction effects in the comprehension of number agreement. A similar finding for gender agreement attraction in comprehension has been documented by Slioussar and Makarova (2021).

Czech is a West Slavic language that extensively uses inflectional morphology to express grammatical functions (Sussex & Cubberley, 2006). There is both number and gender agreement expressed. This is present not only between subjects and verbs, but also within modified NPs between the head noun and the adjective in both gender and number. In the case of masculine nouns, there is additionally a different pattern of agreement based on the noun's animacy. Given its use of inflectional morphology, Czech also exhibits "free word order". While SVO is typically considered the canonical order, other configurations are possible and common (Šimík & Wierzba, 2017). In all of these respects, Czech differs significantly from languages that have received most of the attention in the literature as far as the study of agreement attraction is concerned. It is therefore of interest to researchers to attempt to replicate agreement attraction effects in this language.

The Current Study

In the present study, we tested whether facilitatory interference could be observed in Czech and whether simply the sameness of the phonological form between a particular singular case and the nominative plural would be sufficient for the interference to be present.

Given the results in the literature and the predictions of cue-based models of parsing, we derive the prediction that facilitatory interference would be replicated in Czech and that, following the work of Slioussar (2018), non-plural attractors with forms syncretic with the nominative plural would also give rise to sped-up processing in the post-verbal region. However, previous experiments on Czech conducted by the authors (yet unpublished) where case syncretism was not manipulated have shown no evidence of agreement attraction effects (facilitatory interference) in the language. It therefore remains plausible that effect is present in Czech comprehenders, yet that it requires case syncretism as a necessary condition to arise.

In order to test these predictions, we conducted two web-based self-paced reading experiments with native Czech speakers in which we presented them with both grammatical and ungrammatical sentences with complex NPs for subjects that included an attractor word. The two experiments were conducted in one experimental session with the same participants. To test the role of syncretism whilst avoiding the issue of Slioussar's (2018) design, we manipulated the gender of the attractor. We used animate attractors which were either masculine nouns where the genitive singular is not syncretic with the nominative plural (e.g. *pekař* – *baker_M*) or the corresponding feminine forms of the same lemmas created by the derivational affix *-ka* (*pekařka* – *baker_F*). These feminine forms on the other hand do exhibit case syncretism between the genitive singular and nominative plural. Further, we manipulated attractor and auxiliary number. The two experiments used the same syntactic structure but differed in the subject gender (Experiment 1 employed feminine subjects whereas Experiment 2 used masculine subjects). There were two reasons for this

difference. First, we wanted to control the possible interference between subject and attractor gender. Second, masculine subjects were in fact morphologically homonymous (their nominative form was the same as their accusative form), whereas feminine subjects did not exhibit this type of syncretism. This is important given the results of Badacker and Kuminiak (2007) and Slioussar & Makarova (2021) who show that subject syncretism is important factor influencing the very presence of agreement attraction effects.

Experiment 1: Feminine Subjects

Method

Participants

The sample consisted of 202 native Czech speakers, who were students of Charles University and received course credit for their participation. Their mean age was 22.86 years ($sd = 5.22$) and there were 172 women, 27 men. Two participants preferred not to answer the gender question. Nine additional participants were excluded due to their response accuracy on comprehension questions being lower than 75% throughout the experiment.

Materials

We created a set of 24 items. Each item consisted of eight conditions (2x2x2 within-subject design). All sentences had SVO word order with a subject modified by a PP, which included an attractor noun. This was followed by an adverb and the future tense auxiliary, which is inflected for number and person in Czech. The sentences continued with an infinitive and finally, either a direct object or another PP. Take the following example item (vertical bars indicate regions and subscript is used for glosses):

- 2a. Zpráva | od | archivářky_{GEN.F.SG=NOM.F.PL} | nejspíš | bude_{SG} | zahrnovat | veškeré | nálezy.
 2b. Zpráva | od | archivářek_{GEN.F.PL} | nejspíš | bude_{SG} | zahrnovat | veškeré | nálezy.
 2c. Zpráva | od | archiváře_{GEN.M.SG} | nejspíš | bude_{SG} | zahrnovat | veškeré | nálezy.
 2d. Zpráva | od | archivářů_{GEN.M.PL} | nejspíš | bude_{SG} | zahrnovat | veškeré | nálezy.
 2e. Zpráva | od | archivářky_{GEN.F.SG=NOM.F.PL} | nejspíš | budou_{PL} | zahrnovat | veškeré | nálezy.
 2f. Zpráva | od | archivářek_{GEN.F.PL} | nejspíš | budou_{PL} | zahrnovat | veškeré | nálezy.
 2g. Zpráva | od | archiváře_{GEN.M.SG} | nejspíš | budou_{PL} | zahrnovat | veškeré | nálezy.
 2h. 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.'

Let us go through what is being manipulated in our items in detail. Firstly, there is the auxiliary number manipulation.

The sentences either contain *bude*, a singular-marked future auxiliary, or *budou*, a plural-marked one. Since in all sentences, the head of the subject, the sentences in the plural-marked auxiliary condition were ungrammatical. Next, we manipulated the attractor noun contained in the PP modifying the subject head noun.

Here, two manipulations were at play, namely attractor gender and attractor number. Starting with the latter manipulation, we either had singular-marked attractors (2a, 2c, 2e, 2g) or plural-marked attractors (2b, 2d, 2f, 2h). Our attractor gender manipulation served as a way to induce case syncretism. Conditions with feminine attractors in the singular (2a, 2e) were case-syncretic between the genitive singular and nominative plural.

Apart from these experimental items, we used another 24 items for Experiment 2 (see below) and another 144 fillers (all grammatical). In sum, participants read 192 sentences out of which 24 were ungrammatical (12.5%).

Procedure

The experiment was conducted on the IbexFarm and PCIbex online platforms (Drummond, 2013; Zehr & Schwartz, 2018). Participants were given a link to the experimental site. After filling out demographic information and their native language, they were instructed to read sentences presented in a moving display which they could move forward by pressing the spacebar. Their task was to then answer binary comprehension questions.

Analysis

For the analysis (pre-registered at <https://bit.ly/3rdVPV6>), we transformed the collected RT data in order to obtain a normal distribution. Based on the results of the Box-Cox Test (Box & Cox, 1964), we chose the inversely transformed square root of RTs ($1/\sqrt{RTs}$). We then multiplied the scores by -1000 to ensure that the coefficients had the same sign and to avoid very small values or overly restricted ranges for the dependent variable (see Baayen & Milin, 2010).

Differences in transformed RTs were analysed in the R programming language (R Core Team, 2022) using linear-mixed effects models with the lme4 package (Bates et al., 2014). The degrees of freedom and p-values were estimated using Satterthwaite's approximations from the lmerTest package (Kuznetsova et al., 2017). Three fixed effects (verb number, attractor number, and attractor gender) were included together with their interactions. As random effects, we included individual intercepts for participants and items. The inclusion of random slopes was determined following Bates et al. (2015). The beta estimates, standard errors (SEs), t-values, and p-values are reported (only for statistically significant results).

We used sum contrast coding for the analysed variables (for attractor number and verb number: plural = 1, singular = -1; for attractor gender: feminine = 1, masculine = -1).

Results

In Figure 1, transformed average reading times with 95% confidence intervals of the items with feminine subjects may be viewed. The verb region corresponds to the finite future tense auxiliary *bude/budou*, while the verb + 1 region covers the infinitive, which is *zahrnovat* (to contain) in our example item in (2a-h).

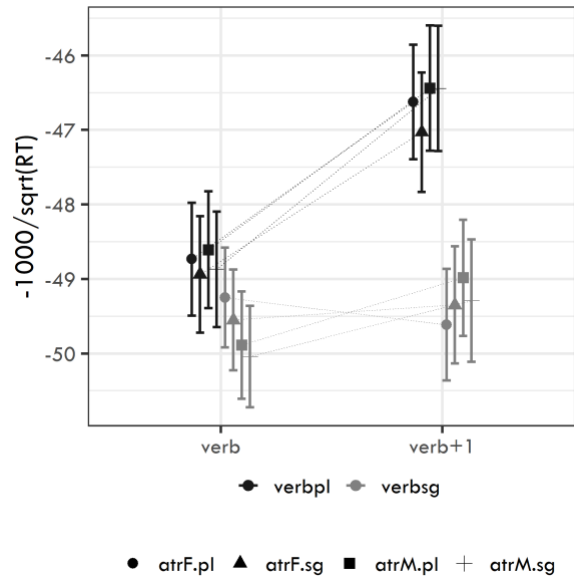


Figure 1: Transformed average RTs together with 95% confidence intervals for the two regions of interest (verb, verb+1) in Experiment 1.

The linear-mixed model for the verb region included verb number as a random slope for items and no random slope for participants. The model yielded only one significant effect: verb number ($\beta = 0.442$, $SE = 0.115$, $t = 3.84$, $p < .001$). No other effects or their interactions reached significance.

The linear-mixed model for the verb+1 region included verb number as a random slope for participants and no random slope for items. Verb number was a significant effect in the model ($\beta = 1.335$, $SE = 0.133$, $t = 10.051$, $p < .001$), but again, no other effects or their interactions reached significance.

Thus, no agreement attraction effects were documented in this experiment.

Experiment 2: Masculine Subjects

Method

Participants

Since the two experiments were run in the same session, the same sample was used as in Experiment 1.

Materials

We used 24 items and each item consisted of eight conditions. The structure was identical to the stimuli used Experiment 1, the only difference was the subject gender which was

masculine inanimate. Consider examples 3a–3h (vertical bars indicate regions and subscript is used for glosses):

- 3a. Podklad | od | organizátorky_{GEN.F.SG=NOM.F.PL} | zjevně | bude_{SG} | vzbuzovat | velkou | důvěru.
 3b. Podklad | od | organizátorek_{GEN.F.PL} | zjevně | bude_{SG} | vzbuzovat | velkou | důvěru.
 3c. Podklad | od | organizátora_{GEN.M.SG} | zjevně | bude_{SG} | vzbuzovat | velkou | důvěru.
 3d. Podklad | od | organizátorů_{GEN.M.PL} | zjevně | bude_{SG} | vzbuzovat | velkou | důvěru.
 3e. Podklad | od | organizátorky_{GEN.F.SG=NOM.F.PL} | zjevně | budou_{PL} | vzbuzovat | velkou | důvěru.
 3f. Podklad | od | organizátorek_{GEN.F.PL} | zjevně | budou_{PL} | vzbuzovat | velkou | důvěru.
 3g. Podklad | od | organizátora_{GEN.M.SG} | zjevně | budou_{PL} | vzbuzovat | velkou | důvěru.
 3h. 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.’

Procedure and analysis

Both the procedure and the analysis were identical to Experiment 1.

Results

Figure 2 shows the transformed RTs with 95% confidence intervals for the items used in Experiment 2.

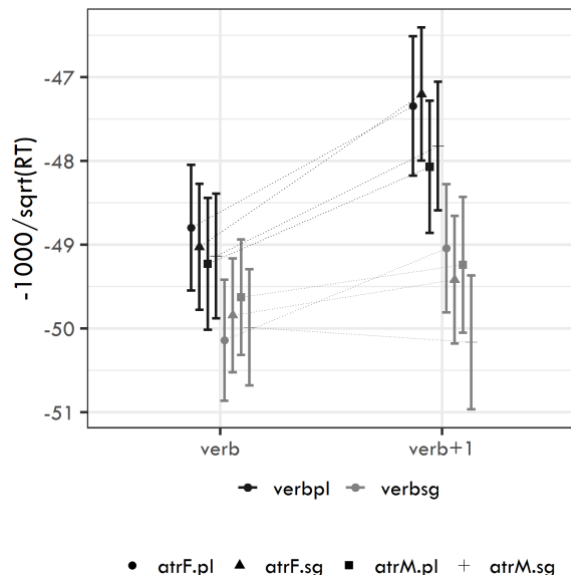


Figure 2: Transformed average RTs together with 95% confidence intervals for the two regions of interest (verb, verb+1) in Experiment 2.

The linear-mixed model for the verb region did not include random slopes due to singularity problems (see Bates et al., 2015). The model yielded only one significant effect: verb

number ($\beta = 0.431$, $SE = 0.096$, $t = 4.474$, $p < .001$). No other effects or their interactions reached significance.

The linear-mixed model for the verb+1 region included verb number as a random slope for both participants and items. Verb number was a significant effect in the model ($\beta = 0.919$, $SE = 0.135$, $t = 6.804$, $p < .001$). The model also yielded two more significant effects: attractor gender ($\beta = 0.275$, $SE = 0.1$, $t = 2.749$, $p < .01$) and the three-way interaction between attractor gender, attractor number and verb number ($\beta = -0.204$, $SE = 0.1$, $t = -2.04$, $p < .05$). Interaction between these effects would be indicative of agreement attraction – however, in this case, it appears to have been caused by the conditions with masculine attractors. These were in fact associated with faster RTs for masculine attractor conditions in the ungrammatical condition and the condition with masculine singular attractor in the grammatical condition (see Figure 2). In other words, this interaction points to a speed-up for the grammatical items rather than to facilitatory interference in ungrammatical ones (agreement attraction).

General Discussion

In the current study, we aimed at testing whether agreement attraction facilitatory interference effects are present in Czech when comprehenders need to establish long-distance number agreement dependencies and are faced with ungrammatical sentences with linearly close attractors. We also examined the possible role of case syncretism in modulating this effect. To do so, we conducted two web-based self-paced reading experiments in a single session.

Given the results reported in previous literature on a variety of languages, there was an expectation that the facilitatory interference effect would be replicated in Czech. Following Slioussar’s (2018) study, we predicted that attractors sharing the same form with the nominative plural, yet not possessing the plural feature, would also facilitate comprehension. Simple facilitatory interference would have been evidenced by a two-way interaction of attractor and verb number, while the role of syncretism was predicted to be seen in a three-way interaction between attractor number, verb number, and attractor gender. If the subject case syncretism were also a necessary condition for the effect, facilitatory interference was predicted to be present only in Experiment 2 with masculine subjects (which were homonymous between nominative and accusative singular forms).

Our data suggest that none of these predictions have been borne out. We observed no significant two-way interactions between attractor number and verb number in either experiment. There was also no three-way interaction observed in Experiment 1. While Experiment 2 revealed a significant interaction between the three manipulations, it seems to be driven not by the syncretic conditions with feminine attractors, but instead by masculine attractors in grammatical sentences with singular-marked auxiliaries.

Comparing our study’s results to those of Slioussar (2018), we observe a marked difference between Russian and Czech in the effect of case syncretism in enabling facilitatory

interference in the former and having no effect in the latter. Before considering an explanation that is rooted in substantive structural differences between the two languages, we review several points of departure between our study and that of Slioussar (2018) that are of interest when interpreting the nonconverging results.

Firstly, Slioussar (2018) used the past tense of the verb *to be*, which is, both in Russian and Czech, inflected for both number and gender. In our study, on the other hand, we used the future tense of the verb, which is used as an auxiliary in Czech and only agrees with the subject in number, specifically to avoid this issue. While the gender of neither the attractors nor of the subject heads was manipulated in Slioussar's (2018) study, the necessity of gender agreement in addition to number agreement in her stimuli could have had an effect on the course of the process of long-distance dependency completion given the additional feature and cue of gender.

The lack of agreement attraction effects (facilitatory interference) found cannot be easily attributed to any issue connected to the experimental setup or the lack of attention given by our participants, since we observed a main effect of of grammaticality. This showed that comprehenders' reading times slow down when they encounter ungrammatical auxiliaries that do not match the subject head in number. These effects are large and appear immediately on the auxiliary, continuing in the verb + 1 region. This is indicative of comprehenders being influenced by the incorrect agreement pattern. Thus, it is unlikely that the lack of facilitation was caused by comprehenders not being sensitive to agreement violations. As for our participants possibly not paying close enough attention to our stimuli, this objection can also be countered by the observed ungrammaticality slowdowns. Additionally, an analysis of comprehension accuracy measured as the proportion of correct responses to questions following the stimuli sentences showed that overall, our participants were highly accurate (mean accuracy = 93.46%, SD = 4.19%) and therefore, we can assume sufficient attention was given to the presented sentences.

The observed difference in the pattern exhibited by sentences with masculine subject heads compared to those with feminine ones requires discussion. While the results of Experiment 1 with feminine subjects show a pattern that, while not in line with our predictions, is nevertheless clear, masculine subjects present a challenge for interpretation.

We speculate that the unexpected behaviour of masculine items could have been caused by an underspecification of the representation of the subject head. Since Czech is a "free" word order language, OVS orders, albeit not canonical, are possible and sometimes preferable depending on factors such as information structure (Šimik & Wierzba, 2017). Since we used subjects that were inanimate and thus syncretic between the nominative and accusative singular, comprehenders could have treated them either fully as direct objects or underspecify their representation as plausibly either objects or subjects. At the point of the verb (and possibly also the verb + 1) region, the sentences in Experiment 2 could have in

fact continued grammatically if followed by a noun in the nominative case.

While the current study focused on testing for facilitatory interference, *inhibitory* (i.e. observed slow-downs) interference in grammatical sentences has also been reported in the literature (e.g. Van Dyke & McElree, 2011). Our experiment did not reveal any inhibitory interference in grammatical sentences with feminine subjects. In the case of masculine subject heads (Experiment 2), not only did we not see inhibition, we have some evidence for *facilitation* in the post-verbal region in the case of grammatical sentences with singular attractors. This is the opposite of what cue-based models predict (Engelmann et al., 2019).

Overall, the current study goes against the predictions of the theories attempting to explain cases of *facilitatory* interference in ungrammatical sentences with plural attractors. However, within the Engelmann et al. (2019) cue-based model, these results might be accommodated by hypothesising that in Czech, the weight of the structural cue is overall larger, given the reliance on formal syntactic agreement. This point is, we believe, supported by the relative lack of semantic agreement in the language (Hahm, 2010), i.e. agreement with the subject's semantic rather than grammatical number (e.g. *The government were concerned*). This is a point of difference when comparing Czech to either English or Russian. These are both languages that exhibit semantic agreement, for example Russian allows for masculine marked nouns to refer to female individuals with relative pronouns or predicative adjectives agreeing with the natural gender of the referent rather than the grammatical gender of the expression (Sturt & Kazanina, 2021). British English allows for collective nouns to exhibit plural subject-verb agreement while being marked as singular (Smith, 2017). Such agreement patterns are ungrammatical in Czech (Corbett, 1979; 1983).

As per the limitations of the current study, one issue is that we were only testing attractors that are syncretic with the nominative plural yet also unambiguously singular given the preceding preposition used. It remains plausible that *both* syncretism and having the plural feature are necessary and jointly sufficient conditions for facilitation to appear in Czech comprehenders. Further research is therefore in order to test whether even in such cases Czech remains a language without facilitatory interference effects.

Conclusion

We studied whether the widely cross-linguistically validated phenomenon of number subject-verb agreement attraction facilitatory interference in comprehension replicates in Czech. We also examined whether case syncretism on its own would be sufficient for the effect to appear. Our study suggests that neither of these hypotheses can find evidential support in our data. We saw no evidence of facilitatory interference. This was neither in the case of attractors matching the auxiliary in the number feature nor in singular attractors syncretic with the nominative plural.

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