Grammaticality illusions in Czech: A speeded acceptability study of agreement attraction

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Abstract

Agreement attraction has been extensively studied in both the production and comprehension of language. In comprehension, it has been found that ungrammatical sentences such as **The key to the cabinets were rusty* are often judged as acceptable due to the word *cabinets* that matches the verb in number, but not when the attractor is singular (*cabinet*). This illusion of grammaticality has been documented in many of the world's languages. We report a speeded acceptability judgement experiment that tested the presence of this illusion in Czech. We find that Czech comprehenders notice the ungrammatical agreement pattern reliably, and that their acceptability judgements are affected by the number-match of the attractor. This number agreement attraction effect is however minuscule when compared to what has been reported in the literature on English. We show this in a comparative analysis of our data with those from Wagers et al. (2009).

Keywords: agreement attraction; number agreement; Czech; illusions of grammaticality; acceptability judgements

Introduction

Speakers have been found to make production errors such as those exemplified below (Bock & Miller, 1991):

(1) *The blanket on the babies were small.

This is a case of *agreement attraction*, a phenomenon whereby an erroneous agreement is established between, in this case, the subject head, which is singular, and the verbal auxiliary, which carries the plural feature. That speakers make these errors is said to be the work of the noun that is a part of the PP modifying the subject head, here *babies*, which is plural and said to "attract" agreement. Sentence (1) is ungrammatical, yet can readily be observed in both textual and verbal productions of English (Francis, 1986).

However, agreement attraction is not a phenomenon confined to language production only, as it has long been observed that sentences such as (1) have specific processing signatures in comprehension (Jäger et al., 2020). Firstly, it has been found that when we compare sentences such as (1) with those that do not have a number-matching attractor (2), yet are still ungrammatical, reading times are substantially different (Jäger et al., 2017).

(2) *The blanket on the baby were small.

When comprehenders are exposed to sentences of the same structure as (1) and (2) in a self-paced reading task (Aaronson & Scarborough, 1976; Mitchell & Green, 1978), they exhibit faster reading times in the verbal and post-verbal regions when the attractor matches the incorrectly plural verbal auxiliary in its number compared to when the attractor is singular (e.g. Wagers et al., 2009). This is often a relative speed-up, since when the reading times of (1) and (2) are compared to their grammatical counterparts that have the matching singular verbal auxiliary *was*, both can exhibit substantial slowdowns, reflecting the comprehender having to deal with processing an evident ungrammaticality. This is also known in the literature as the *facilitatory interference* effect.

These agreement attraction effects, be they in production or comprehension, has so far been replicated not only in different languages, but also with different structures and types of agreement. We review some of these findings here. Firstly, number agreement attraction in comprehension as evidenced by reading times speed-ups has been documented in English (Wagers et al., 2009; Tanner et al., 2014; Parker & An, 2018), Spanish (Lago et al., 2015), German (Lago & Felser, 2018), Turkish (Lago et al., 2019; Türk & Logačev, 2024), French (Franck et al., 2015), Armenian (Avetisyan et al., 2020), Arabic (Tucker et al., 2015, 2021), and Russian (Slioussar, 2018). This presents a robust body of cross-linguistic evidence in favour of the existence of the effect (even though not all studies have shown the effect to be statistically significant, see Vasishth & Gelman, 2021), which has been confirmed in a meta-analysis by Jäger et al. (2017). The literature regarding number agreement in production is equally clear on the existence of the effect (Bock & Cutting, 1992; Bock & Eberhard, 1993; Haskell & MacDonald, 2005).

As far as gender agreement attraction is concerned, Badecker & Kuminiak (2007) found that Slovak speakers produced attraction errors in subject-verb agreement when a gender-matching attractor noun was present in a prompt. In a related Slavic language of Russian, Slioussar & Malko (2016) also found the same pattern. They furthermore found facilitatory interference in comprehending these sentences. In an eye-tracking study, Gonzalez Alonso et al. (2021) found evidence of attraction effects in Spanish gender agreement between adjectives and nouns.

In addition to reading time effects, there has been another effect associated with the phenomenon of agreement attraction, namely the *illusion of grammaticality*, where compre-

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henders mistakenly judge an ungrammatical sentence as acceptable (S. Lewis & Phillips, 2015). This has also been studied in other phenomena such as negative polarity items or local coherence (Paape et al., 2021; Orth et al., 2021). In agreement, the illusion manifests itself in the following way. When exposed to attraction sentences such as (1) described above, comprehenders may report that they are acceptable according to their intuitions, even though they exhibit the erroneous agreement pattern that is easily noticeable when the attractor does not share the desired feature of the agreeing element.

Wagers et al. (2009) reported that when their participants had to make binary speeded acceptability judgements on sentences such as (1) and (2), they often noticed the agreement error and rejected them. However, the data showed that for sentences with number-matching attractors such as (1), there was a higher likelihood of them being judged as acceptable. In other words, their comprehenders fell prey to a linguistic illusion.

These illusion effects have also been found in other studies (e.g., Hammerly et al., 2019; Royer, 2021) and in gender agreement too. Paspali & Marinis (2020) report a series of acceptability judgement experiments aiming to test gender agreement attraction in Greek. They found evidence of the illusion effect when the judgement had to be made under time pressure (i.e. the speeded acceptability judgement task), but also when the task was untimed. Likewise, Gonzalez Alonso et al. (2021) found these effects in Spanish gender agreement attraction.

What the literature so far shows is that agreement attraction manifests itself in several phenomena, including different types of agreement, across many languages and in production, acceptability judgements and reading tasks. Some researchers have even gone as far as claiming that the phenomenon is universally present in human language (Lago et al., 2015). However, there is recent evidence that sheds doubt on this universality thesis coming from tests conducted on the speakers of Czech. Chromý et al. (2023b) conducted two translation-equivalent experiments in Czech and English and found that while the standard effect was present in English, there was evidence against number attraction in Czech.

Chromý et al. (2023a) conducted four web-based self-paced reading experiments in Czech. They tested both retroactive interference (syntactic structures similar to (1)) with both animate and inanimate subject heads, and proactive interference (where the attractor precedes both the subject and the verb). In Experiment 4, they focused on case-syncretic attractors. Case syncretism is a phenomenon whereby certain forms of words in inflectional languages are the same for several different configurations of cases, numbers and genders (Caha, 2019). Both Slioussar (2018) and Badecker & Kuminiak (2007) found that it was important for the appearance of agreement attraction whether case syncretism was present, in particular, whether the attractor shared its form with the nominative.

What Chromý et al. (2023a) found was that in the first three experiments, Bayes factor analysis supported the null hypothesis—that no agreement attraction effect was present at all. It was only in the last experiment, which used syncretic attractors, that some amount of evidence in favour of the presence of attraction speed-ups was found. However, the amount of evidence was extremely small and the effect size was negligible when compared to results from other studies (Jäger et al., 2017). Furthermore, syncretism of the attractor alone (i.e., of one not in fact plural) was not found to give rise to attraction, as opposed to what was found in Russian (Slioussar, 2018). Finally, Lacina (2023) ran a pilot acceptability study on number attraction in Czech and found no evidence of the effect in untimed Likert scale judgements. However, since the illusion of grammaticality arises mostly in speeded tasks, these data are inconclusive regarding the presence of the effect in the language.

What this therefore suggests is that Czech might be an anomalous language with regards to the phenomenon of (number) agreement attraction. This is theoretically interesting in the domain of psycholinguistics, as several theories, such as cue-based parsing (R. L. Lewis & Vasishth, 2005; Engelmann et al., 2019) of dependency formation in comprehension predict these effects universally (Jäger et al., 2020). To find out whether Czech speakers exhibit the illusion of grammaticality effect for sentences with erroneous number agreement and number-matching attractors is thus of considerable interest, as it would complement the hitherto obtained reading-time data.

The current study

In the current study, we aimed at testing for the cross-lingustically well-established illusion of grammaticality effect in number agreement in Czech comprehension using the speeded acceptability judgement method.

Should Czech exhibit illusions of grammaticality, we ought to see a difference in binary acceptability judgements between ungrammatical sentences with plural and singular attractors with the former being judged acceptable more often. This difference should not appear in grammatical sentences. We also expect ungrammatical sentences to be rated as acceptable less often compared to grammatical ones.

Experiment: Speeded acceptability

In our experiment, we aimed to test for the presence of grammaticality illusions with native Czech speakers using the speeded acceptability judgement paradigm with rapid-serial visual presentation as the way to expose participants to stimuli (Potter, 2018). The study was conducted online using the PCIbex platform (Zehr & Schwarz, 2018). The data, materials and code associated with this study can be found on OSF (https://osf.io/dxm7a/).

Method

Our design was of the 2x2 factorial within-items and within-subjects type with two crossed manipulations. These were

VERB number and ATTRACTOR number. The former manipulated whether the verb was singular or plural the latter whether the attractor was singular or plural. Those conditions with plural verbs were ungrammatical.

Participants 108 native Czech speakers were recruited from the student participant pool at Charles University. The mean age of the participants was 23.9 years (the youngest participant was 20 years old, the oldest participant was 49 years old).

Materials For our materials, we chose to test the same items as the ones used in the study of Chromý et al. (2023a) and minimally different from the ones used in Chromý et al. (2023b), which used the past tense auxiliary with the same subject heads and attractors. The sentences were created to elicit the retroactive type of interference. Given the findings regarding case syncretism (Slioussar, 2018), we aimed to make our attractors case-syncretic with the nominative in the plural.

The set of experimental items contained 32 sentences, each of which had four variants according to the 2x2 design described above. Each item consisted of (1) an inanimate subject noun of feminine gender in the singular, (2) a preposition associated with the accusative case, (3) an animate attractor noun of feminine gender, (4) an adverb, (5) a future tense auxiliary, (6) an infinitive verb, and (7) further linguistic material:

(3) Složka pro archivářku/y nejspíš bude/budou
File.SG for archiver.SG/PL most.likely AUX.SG/PL
zahrnovat veškeré nálezy.
contain.INF all findings
'The file for the archiver/s will (SG/PL) most likely contain all findings.'

The experimental items varied in the number of the attractor noun, either *archivářku* (*archiver.SG*) or *archivářky* (*archiver.PL*), and the number of the auxiliary, either *bude* (*will.SG*) or *budou* (*will.PL*). The sentences with plural auxiliaries were ungrammatical.

We also created a set of 96 filler items, which were designed to elicit judgements of either 'natural' or 'unnatural'. The ratio of grammatical and ungrammatical (or otherwise semantically odd) sentences was 1:1 in the set of experimental and filler items combined. The fillers were of a varied structure, included verbs in different tenses and subjects that were both singular and plural (this was not balanced across the items). The sentences were both mono- and multi-clausal.

Procedure Participants were invited to take part by means of clicking on a link which led them to the page with the experiment. After reading an information and a consent form, they were given instructions. Their task was to judge sentences presented on the screen as ordinary text answering the question of whether the given sentence sounded natural to them or not. They were asked to imagine that the presented sentences were uttered during and ordinary conversation, to use their intuition and to not judge the sentences based on any prescriptive rules. At the beginning of the experiment, they were asked to provide their email address to obtain course credit for participating. They first went through six practice items, which were designed for them to get used to the RSVP way of reading and to the experimental task. Then they rated 32 experimental and 96 filler items organised based on the Latin Square design and randomized in each experiment run. During each trial, a cross appeared in the center of the screen for 500 ms, followed by individual words, which were each flashed for 350 ms. After a sentence was presented, they had to judge whether the sentence is acceptable by pressing "f" (for the "no" answer) or "j" (for the "yes" answer). If they did not respond within 3 seconds, they got a message that they waited too long and were moved to the next item without any response being recorded.

Analysis First, we explored participants' responses to filler items. On average, participants answered 83% of the fillers correctly (rejecting ungrammatical fillers and accepting grammatical ones). Only 5 participants answered less than 60 percent of the fillers correctly. These we excluded. Furthermore, we excluded those participants who self-identified as non-native speakers of Czech (4 participants) or as dyslexics (3 participants). The final number of participants was 96. We used Bayesian hierarchical models with the Bernoulli likelihood with logit link function to analyse our response data. The dependent variable was Response ("no" and "yes" coded as 0 and 1, respectively). We considered two models. In the first model, the fixed effects were: VERB (coded using sum-contrast coding as +1 for plural verbs, -1 for singular verbs), ATTRACTOR (coded using sum-contrast coding as +1 for plural attractors, -1 for singular attractors) and their interaction. The model included the maximal random effect structure for participants and items, as per (Barr et al., 2013). The second model was the so-called nested model, in which ATTRACTOR was nested within the VERB condition. That is, next to VERB, there was a fixed effect of ATTRACTOR number for grammatical sentences (coded as +1 for plural attractors when the verb is singular, -1 for singular attractors when the verb is singular, and otherwise as 0) and a fixed effect of ATTRACTOR number for ungrammatical sentences (coded as +1 for plural attractors when the verb is plural, -1 for singular attractors when the verb is plural, and otherwise as 0). The advantage of the nested model is the increased ease of interpretation – the model shows quite clearly how the attractor affects ungrammatical sentences (sentences with plural verbs) and how it affects grammatical sentences (sentences with singular verbs). The nested model also used the maximal random effect structure for participants and items.

Our priors were specified in the following way. The intercept was a normal distribution ($\mu = 0, \sigma = 5$), the slopes for the fixed effects were set to be a normal distribution with the parameters $\mu = 0, \sigma = 3$, the standard deviation of the random effects was a truncated normal distribution ($\mu = 0, \sigma = 3$) (see also Gelman et al. 2013, ch. 16 for justification of priors of

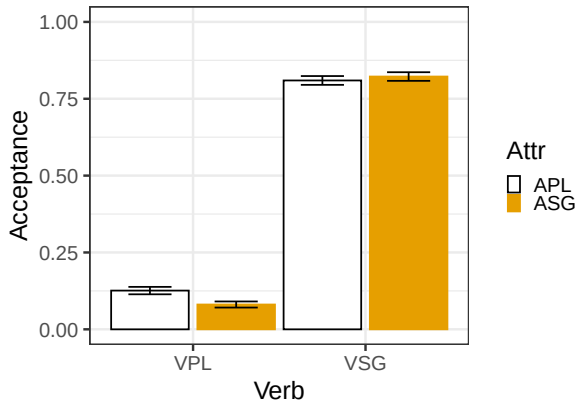

Figure 1: Mean sentence acceptance and standard errors per condition.

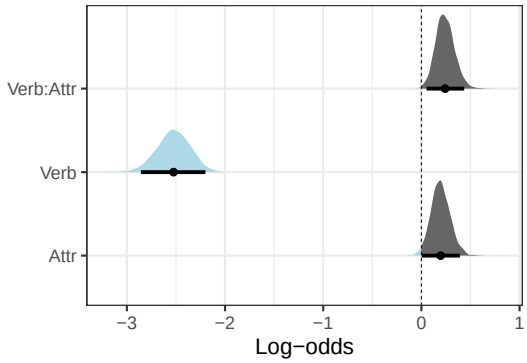

Figure 2: Posterior distributions of fixed factors, showing the effect of VERB, ATTRACTOR and their interaction. The solid lines under each distribution represent the 95% credible interval.

a comparable range as the ones here for logistic regression models). We used the LKJ distribution ($\eta = 2$, Lewandowski et al., 2009) for the correlation between random effects. We also ran a Bayes factor analysis on the ungrammatical subset of our data. Details about the prior structure for the Bayes factor analyses are provided below.

The models were implemented in R (R Core Team, 2023) and Stan using the *brms* package (Bürkner, 2017). They were run with 4 chains and 2,000 iterations per chain, 1,000 for warm-up (10,000 for the Bayes factor analysis, with 2,000 for warm-up). All $\hat{R}$ values were below 1.02. Bayes factors were estimated using bridge sampling. For each studied case (see below), 9 estimates were collected and we report BF means. Standard deviations of the BF estimates were below 1/25th of each mean.

Results

Graphical summaries per condition are in Figure 1. In Figure 2, we show the posterior distributions of the VERB and ATTRACTOR factors and their interaction.

The posterior distributions reveal a clear negative effect of VERB, showing that verbs in plural strongly decrease sentence acceptability. Since the subject always appeared in singular, this simply provides evidence that participants rejected the sentences with the wrong subject-verb agreement. Let us move to the effect of ATTRACTOR. First, in the graph in Figure 2, we see that the main effect of ATTRACTOR was positive, signalling that sentences with plural attractors increased acceptability. More importantly, there was also a positive ATTRACTOR:VERB interaction. The positive interaction, whose posterior 95% credible interval excludes zero, reveals that the acceptability due to subject-verb disagreement was modulated by plural attraction. The interaction can be more easily interpreted in the nested model. Its posterior distributions are shown in the bottom two rows in Figure 3. We see that the plural number on the attractor increased sentence acceptability only in ungrammatical sentences. There is no clear effect of attractor number on grammatical sentences.

The evidence of the facilitatory effect of the attractor was further studied in the Bayes factor (BF_{10}) analysis on the ungrammatical data subset, which provided the ratio of marginal likelihoods of the model with the attractor as the fixed effect (Model 1) and the model without the attractor as the fixed effect (Model 0). BF_{10} higher than 1 shows evidence for Model 1, BF_{10} higher than 10 is taken as strong evidence for Model 1 (Lee & Wagenmakers, 2014). Since the BF analysis is sensitive to priors (Stefan et al., 2019; Schad et al., 2022), we compare BFs with three (informative) priors for the fixed factor of ATTRACTOR: Normal, truncated at zero, with mean zero and sd=2.38, 1.26 or 0.63. The truncation at zero was specified since we are only interested in a facilitatory, positive, effect of ATTRACTOR. The values of standard deviation were informed by the analysis of prior research on speeded acceptability and agreement attraction. They correspond to the upper bound of the 95% credible interval, mean and mean/2 of the ATTRACTOR effect as found in the study of Wagers et al. (2009) (see below). BF_{10} was found to be 35.8 for the first prior, 57.5 for the second prior, and 77.2 for the third prior. In sum, we see strong evidence in favour of the model that includes, as a fixed effect, the facilitatory role of the attractor for all three priors.

Discussion

The posterior distributions of our parameters obtained from the two Bayesian hierarchical models indicate that the number agreement attraction effect was present. The Bayes factor analysis shows evidence in favour of the model that includes the attractor as a fixed factor for the ungrammatical data subset. In sum, the analyses show that Czech comprehenders came under the *illusion of grammaticality* and judged the ungrammatical sentences (with plural verbal auxiliaries) with a matching attractor (plural) as acceptable more often than when the attractor was mismatching (singular). However, the magnitude of the observed effect was small. When we translate the log-odds of the model back to probabilities,

we observe that the mean estimate in the posterior distribution shows that the plural attractor number increases the chance of accepting an ungrammatical sentence by 4%, compared to the same sentence with the singular attractor number. This small effect can be seen also in the descriptive summary, Figure 1, which shows a very small difference between the height of the two bars on the left.

Let us now turn to discussing the other results our model revealed. Starting with the main effect of VERB number, we can clearly say that our native Czech speakers noticed the ungrammaticality caused by the mismatching future tense auxiliary *budou* 'aux.pl' and judged the sentences accordingly as unacceptable. There is also a positive main effect of ATTRACTOR, which was driven by attraction in ungrammatical conditions, as can be seen in the nested model.

Comparative analysis

Given the anomalous results that Czech comprehenders have shown when faced with attraction sentences presented using the self-paced reading method (Lacina & Chromý, 2022; Chromý et al., 2023a; Chromý et al., 2023b), where either no or only negligible effects were found and the current experiment's results where the grammaticality illusion was found in the speeded acceptability task, we believe that it is important to go beyond the binary conclusion of presence vs. absence of the attraction effect in Czech and investigate our finding in terms of magnitude of the effect compared to another language.

In pursuit of this, we conducted an analysis comparing our data to those from Experiment 7 in the study of Wagers et al. (2009), made available to us by the authors. This experiment also used the speeded acceptability judgement task with sentences presented in the RSVP mode. Crucially, the experiment was run on English, a language where attraction effects have been consistently observed. The design was very similar to our experiment (2×2 conditions factorial design with the crossed manipulation of VERB number and ATTRACTOR number). We were interested in the comparison of effect sizes of plural attraction in ungrammatical sentences. Should the magnitude of the effect differ substantially between Czech and English, this would support the claim that agreement attraction differs between the two languages.

Method

Analysis We analyzed the data from Wagers et al. 2009 using a nested model which assumed the same structure and the same priors as one used in our experiment on Czech.

Results

Our main point of interest was the comparison between the size of the attraction effect in speeded acceptability in English and in Czech. We plot the posterior distributions of attraction in grammatical and ungrammatical cases in Figure 3.

As we see, both languages only show attraction in the ungrammatical conditions. Second, the posterior distribution has a much larger amount of variance in English than in Czech. This is likely due to the fact that the experiment of Wagers et al. (2009) was only run on 16 native speakers, whereas our Czech data come from 96 participants. Finally, the posterior distribution of attraction in English ungrammatical cases is larger than in Czech, even though due to the large uncertainty in English estimates, this claim is merely suggestive at this point. To highlight the difference between English and Czech, we note that if we re-scale the mean value of attraction in ungrammatical cases back to probabilities, we see that the model shows that plural marking on the attractor increases the chances of accepting an ungrammatical sentence by 45% in English. This is a much stronger effect compared to the one observed in Czech. Recall that the Czech model showed an increase of only 4% in the acceptability of ungrammatical sentences due to plural attraction.

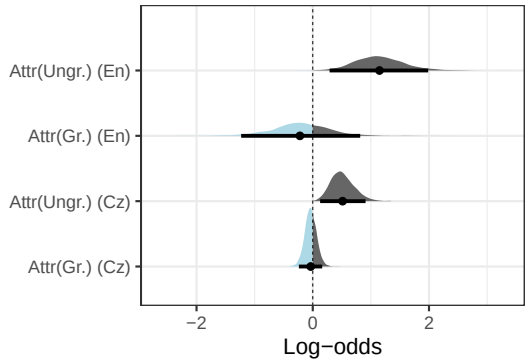

Figure 3: Comparison of posterior distributions of fixed factors in the nested model comparing Czech (the current experiment) and English (data from Wagers et al. 2009. The solid lines under each distribution represent 95% credible intervals.

In sum, we see that speeded acceptability provides evidence for agreement attraction in Czech, but our comparison with the English data from Wagers et al. (2009) strengthens the position that the effect of agreement attraction in number is of a considerably smaller magnitude in Czech than in English (and possibly other languages), which explains why it has been claimed to either not exist or to be of a negligible size in self-paced reading studies (Lacina & Chromý, 2022; Chromý et al., 2023a; Chromý et al., 2023b).

General discussion

In the current study, we ran a speeded acceptability judgement experiment with native Czech comprehenders to test whether they would exhibit signs of the illusion of grammaticality when judging sentences with number agreement errors and number-matching attractor nouns. We found the main effect of VERB, i.e., of the grammaticality manipulation. Ungrammatical sentences with plural verbs were judged as acceptable substantially less often than sentences with singular verbs. This was the strongest effect. Crucially, the model also showed a predominanly positive interaction effect of VERB and ATTRACTOR. The effect goes in the direction typical of

agreement attraction, namely that the presence of a plural attractor made participants more likely accept ungrammatical sentences with plural verbs. The agreement attraction was confirmed in the Bayes factor analysis of the ungrammatical data subset, which showed strong evidence for the model that included ATTRACTOR as a fixed factor, compared to the baseline model without ATTRACTOR.

What these results show is that we succeeded in obtaining evidence for agreement attraction in Czech using speeded acceptability judgements. Czech comprehenders did in fact come under the illusion of grammaticality in our experiment—they judged ungrammatical sentences as acceptable more often when a number-matching plural attractor noun was present as opposed to when this intervening noun was singular. The comparison with English, however, provided evidence that the effect in Czech is of a smaller magnitude. These data are in line with a similar comparison conducted between Russian and morphologically less rich languages such as English in the production of attraction errors by Lorimor et al. (2008). We also noted that a more precise comparison between Czech and other languages as far as grammaticality illusions go would require more data on English than those collected in Wagers et al. (2009).

The presence of agreement attraction goes against the strongest interpretation of the data in Chromý et al. (2023b) and Chromý et al. (2023a), but they are in fact in line with the fourth experiment in Chromý et al. (2023a). That experiment showed attraction-caused speed-ups in reading times in the post-verbal region, but, crucially, of a negligibly small magnitude when compared to the meta-analysis conducted by Jäger et al. (2017). Combining the finding of that experiment with the current experiment shows that Czech is anomalous compared to other languages. However, the anomaly does not lie in the plain absence of agreement attraction. Rather, the anomaly lies in the fact that agreement attraction seems to exist in Czech, but can be only induced with case syncretism and even then, it shows an effect of a very small magnitude, smaller than observed in many other languages. The current study thus shows that rather than dividing languages into just two groups, those that have agreement attraction and those that lack it, it is more fruitful to treat this phenomenon as potentially varying in strength across languages.

The reasons why Czech should show smaller propensity towards agreement attraction than other language are yet underexplored. Here, we note that Lacina & Chromý (2022) and Chromý et al. (2023a) speculate that the lack of semantic agreement could play a role. In Czech, formal agreement is almost always preferred and agreement with semantic number is ungrammatical in full NPs. For attraction in the production of English, Haskell et al. (2010) suggest that the frequent use of plural agreement in cases such as *A number of analysts are recommending* might shape speaker behaviour through past experience. In Czech on the other hand, singular agreement is present even with phrases with numerals such as *Pět psů štěkalo* (*Five.SG dog.PL.GEN barked.SG*, *'Five dogs were barking'*). A lack of constructions such as those in English might bias Czech comprehenders against treating the attraction pattern as grammatical. Both experimental and corpus research into the causes of this Czech anomaly is therefore warranted.

Aside from support for agreement attraction, the current study also provides solid evidence for the sensitivity of Czech speakers to faulty agreement. Czech comprehenders consistently judge the sentences with plural verbs as squarely ungrammatical and those with singular ones as acceptable. This is crucial for the proper interpretation of the studies of Lacina & Chromý (2022) and Chromý et al. (2023a), since we have now shown with reading-time-independent measures that Czech participants in fact notice the ungrammaticality of the type of sentences used in their experiments.

As for the caveats of our study, we note one issue. The limitation relates to the method of presentation of the stimuli. While other studies have mostly employed self-paced reading with either a comprehension question or an acceptability judgement, our study used the RSVP method, which does not allow participants to control the flow of reading. Firstly, recent evidence has suggested that even minor changes in the task may influence the strength and even the presence of attraction (see Laurinavichyute & von der Malsburg, 2024). Therefore, a further study on Czech using self-paced reading paired with acceptability judgements is in order. Secondly, there is a difference between the rate at which words were presented on participants' screens between our study and that of Wagers et al. (2009). While these researchers used 300 ms, we used 350 ms per word. While we do not believe this to detract from the validity of the comparison, the difference ought to be noted.

Conclusion

We conducted a web-based binary speeded acceptability judgement experiment that exposed native comprehenders of Czech to sentences presented using the RSVP method, which were designed to elicit the grammaticality illusion of number agreement attraction. Our results showed that participants consistently noticed the ungrammatical plural verbal auxiliary and rated those sentences as unacceptable. Crucially, we did find evidence of the illusion—the presence of a plural attractor noun caused an increase in acceptance rates for ungrammatical sentences. However, this effect was small, in particular, it was smaller for our Czech comprehenders compared to English. The results here thus argue for the position that rather than splitting languages into those that have and those that lack agreement attraction, we should nuance the position and order languages with respect to the strength of agreement attraction. Such finding shows how combining comparative linguistics with psycholinguistics is useful for progress in both fields.

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