Reading Tiramisu in Czech and English:
Robust Processing Speed Differences in Translation Equivalent Stimuli

sentence processing; comprehension; crosslinguistic differences; reading; morphological complexity

Background: In contemporary sentence processing research, there is increasing interest in crosslinguistic differences [1]. However, studies that compare sentence comprehension across languages using matched translation-equivalent stimuli remain relatively rare. A recent investigation [2] uncovered notable differences in agreement attraction effects between Czech and English. Interestingly, a closer analysis revealed another pattern: native English speakers processed individual words in their language significantly faster than Czech speakers did in theirs. The present study seeks to explore this phenomenon in greater depth.

Method: We created 70 pairs of translation-equivalent sentences (Table 1), matched in length in words between Czech and English. These sentences included words that have identical graphical forms in both languages (e.g., *tiramisu* or *Robert*). While some of these words were declinable in Czech (e.g., *judo*, *router*, *Adam*), meaning they exhibited distinctive inflectional paradigms with varying endings for different cases (e.g., genitive forms *juda*, *routeru*, *Adama*), others were indeclinable (e.g., *fantasy*, *origami*, *blues*), retaining the same form regardless of case. Native speakers of Czech (N=176) and English (N=176) read these sentences, along with 48 fillers, in a self-paced reading task using a moving-window presentation. After each sentence, participants answered a yes-no comprehension question. Reaction times (RTs) for individual words served as the dependent variable, while the independent variables were language, word length (in characters), and declinability in Czech.

Results: A linear mixed-effects model with language and word length as fixed effects, and participant and item as random effects, revealed significant effects for both factors and their interaction (Figure 1). Specifically, (i) English words were processed faster than Czech words, (ii) longer words took more time to process, and (iii) the effect of word length was more pronounced for Czech. In a model focusing on identical words across the two languages, we found a main effect of language (English was faster) and an interaction between language and declinability (declinable words were processed more slowly in Czech than indeclinable ones; Figure 2).

Discussion: The results show robust differences in RTs between English and Czech. We argue that these differences are driven by the greater morphological complexity (i.e. efficiency) of Czech compared to English [2], which increases the cognitive load (i.e., prior) on Czech speakers even when processing identical words.

Table 1: Item example.

Moje	teta	obvykle	pije	Bordeaux	a	další	francouzská	vína.
My	aunt	usually	drinks	Bordeaux	and	other	French	wines.

Figure 1: Predicted RTs from the linear mixed-effects model targeting the effects of language and word length.

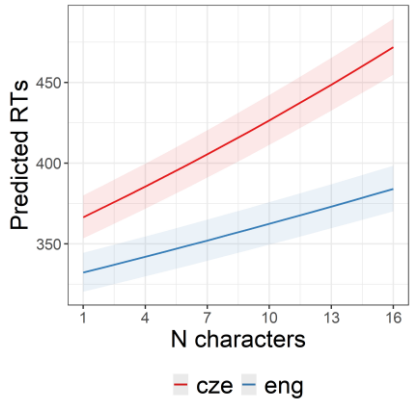
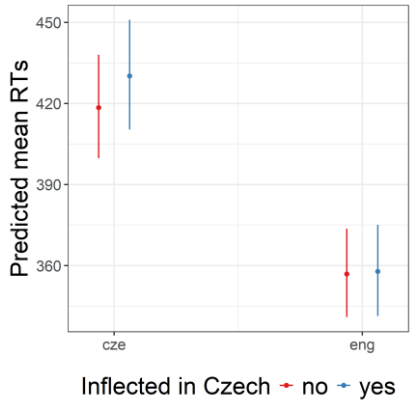


Figure 2: Predicted RTs from the linear mixed-effects model targeting the effects of language and declinability in Czech.



References

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