

The Dynamic of Structural Forgetting is Language-Dependent

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Introduction In theoretical linguistics, it is sometimes claimed that syntax allows for ignoring certain violations of selectional restrictions (see [3] for a brief overview). For example, *depend on* selects for an NP (e.g., *You can depend on* [_{NP} *my assistant*]), not for a CP (e.g., **You can depend on* [_{CP} *that my assistant will be on time*]), but this selectional restriction is lifted when the CP is a non-initial conjunct (e.g., *You can depend on* [[_{NP} *my assistant*] *and* [_{CP} *that he will be on time*]]). Kim and Lu [3] argue that this is not a syntactic phenomenon, but the processing result of structural forgetting increasing with distance [1]. In an acceptability judgement task (AJT), they asked respondents to judge sentences with ternary coordinations (e.g., (1)) such that the CP violating selectional restrictions is the first (CP1), second (CP2), or third (CP3) conjunct, and they discovered statistically significant ($p < .001$) acceptability differences between each two conditions, with CP1 least acceptable and CP3 most acceptable. This apparently supports a processing explanation, as syntactic analyses do not predict a difference between CP2 and CP3, only between CP1 and these two. However, we show that CP3s may be more acceptable than CP2s regardless of distance effects, as CP3s (but not CP2s) have a marginally grammatical structure discussed in [2]. Nevertheless, in a series of new AJT experiments we show that structural forgetting effects in coordination are real, but the dynamic of forgetting depends on language: it is quicker in English than in Polish.

English Experiments In order to remove the confound present in [3], we constructed items with two PP and one CP conjunct and varied the position of the CP. (In an earlier norming experiment we confirmed that relevant predicates, e.g. *depend*, are considerably and significantly less acceptable with CPs than with PPs.) In one experiment ($N = 72$), the lengths of conjuncts were 12 syllables, similarly to [3] (see (2) for an example of CP3). The general tendency was as in [3], with CP1 least and CP3 most acceptable, but the difference between CP2 and CP3 was not statistically significant, thus confirming the crucial role of the confound in [3] and apparently confirming syntactic theories rather than processing explanations. However, in another experiment ($N = 77$), we shortened conjuncts to 6 syllables (e.g., (3) for a CP3), and here all differences were statistically significant ($p < .001$). This suggests that structural forgetting happens quickly and plateaus at a certain distance.

Polish Experiments By contrast, in two analogous experiments on Polish native speakers ($N = 253$; $N = 234$), statistically significant differences were observed between all condition pairs, including CP2–CP3. When the conjuncts were short (as in the CP3 condition in (4)) all contrasts were significant ($p < .001$). Crucially, the same pattern held when the conjuncts were long (as in (5)), with a modest but significant difference between CP2–CP3 ($p = .012$). This suggests that structural forgetting has a different dynamic when native speakers are processing Polish sentences.

Discussion Our findings extend prior work showing that structural forgetting is modulated by language-specific properties [4]. The contrast between English and Polish can be attributed to differences in word-order flexibility: in English, fixed positional cues allow parsers to commit to structural

analyses early and discard earlier material, producing rapid forgetting that plateaus by the third conjunct. Polish parsers, typically lacking such cues, must maintain syntactic representations more robustly throughout the sentence.

Supplementary Materials

Examples of English Stimuli

- (1) a. The success of the project **depends on** [[**CP** that the contractors will do their part], [**NP** a good engineering design], and [**NP** the diligence of the workers]]. (CP1)
 - b. The success of the project **depends on** [[**NP** a good engineering design], [**CP** that the contractors will do their part], and [**NP** the diligence of the workers]]. (CP2)
 - c. The success of the project **depends on** [[**NP** a good engineering design], [**NP** the diligence of the workers], and [**CP** that the contractors will do their part]]. (CP3)
- (2) The project **depends** [[**PP** on an appropriate engineering design], [**PP** on the diligence of everybody involved], and [**CP** that the new outsourced contractors will do their part]].
- (3) The project **depends** [[**PP** on stakeholder input], [**PP** on timely decisions], and [**CP** that the morale stays high]].

Examples of Polish Stimuli

- (4) Zenek **zmaga się** [[**PP** z konfliktem w rodzinie], [**PP** z kłótniami o głupstwa] i [**CP** Zenek struggles with conflict in family, with fights about trifles and że brak mu spokoju]].
that lacks him peace
'Zenek is struggling with conflict in his family, with fights about trifles and that he lacks peace of mind.'
- (5) Zenek **zmaga się** [[**PP** z narastającym konfliktem w rodzinie], [**PP** z ciągłymi pretensjami Zenek struggles with growing conflict in family with constant complaints o drobiazgi] i [**CP** że każde spotkanie kończy się kłótnią]].
about trifles and that every meeting ends REFL quarrel
'Zenek is struggling with a growing conflict in his family, with constant complaints over trifles and that every meeting ends in a quarrel.'

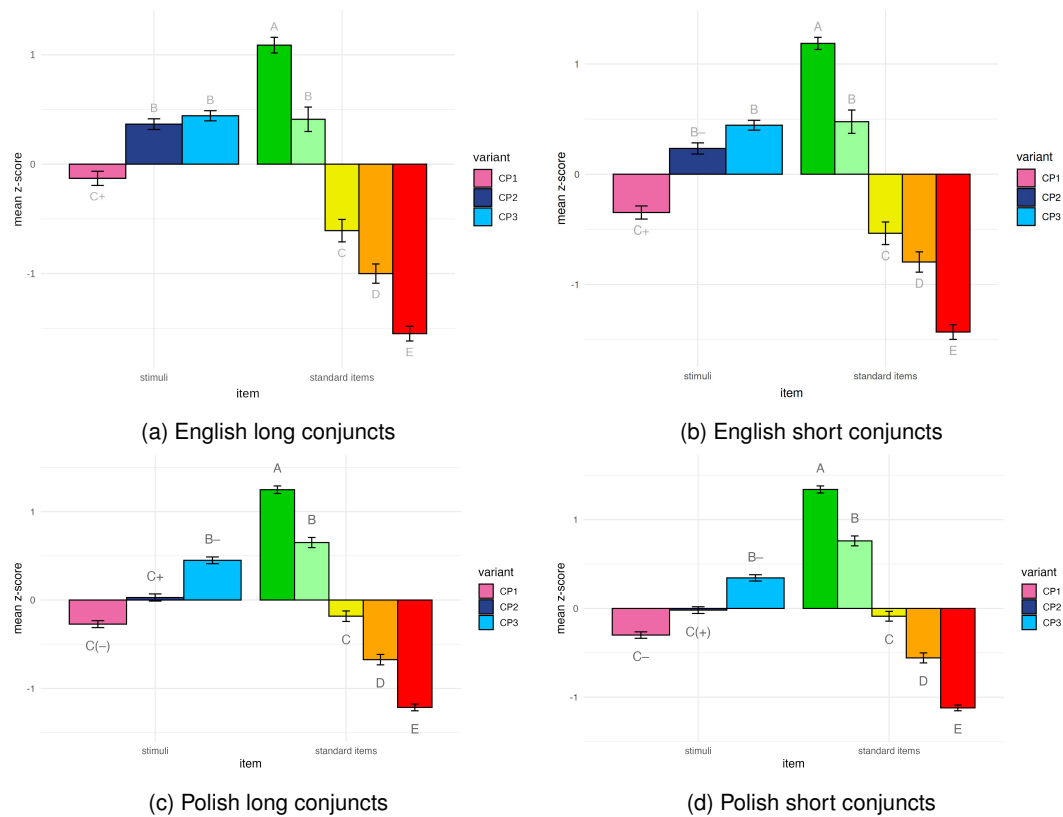


Figure 1: Mean z -scores (with 95% CIs) of stimuli and standard items (A–B grammatical, C borderline, D–E ungrammatical).

References

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