

Assessing the compatibility and stability of individual grammars through multiple replication

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A major strain of research in Probabilistic Grammar focuses on cases where speakers chose between two or more superficially interchangeable options (*alternations*) and the choices depend probabilistically on soft constraints (see Gries 2017). Often, corpus evidence is used, but some studies also use experimental data in order to corroborate the corpus findings. Some studies have shown how corpus and experimental data converge (e.g., Durrant & Doherty 2010), but other studies have led to diverging results between corpus and experimental evidence (e.g., Dąbrowska 2014). More importantly, Dąbrowska (2012) presents evidence showing that individual speakers have partially incompatible grammars. Similarly, Verhagen & Mos (2016) address the possibility that there might be random between-speaker variability (*incompatibility*), and individual speaker grammars are subject to random fluctuations (*instability*). My research presented here addresses incompatibility and instability as sources of variation in and divergence between corpus and experimental work.

I report results of two repeated replications of two previously published combinations of corpus studies and experiments on binary morphosyntactic alternations in German (Schäfer 2018, Schäfer & Pankratz 2018). The original experiments were replicated twice with the same groups of participants but two months apart, allowing for an analysis of both incompatibility and instability. I find incompatibility effects inasmuch as large groups of participants strongly prefer one variant consistently in a split-100 task. Also, in a self-paced reading (SPR) experiment, one variant incurs a reading time delay regardless of other factors for some participants. As for instability, one third of the participants reacts more or less randomly across the two split-100 replications. I argue that this is likely due to problems of the split-100 task. More dramatically, roughly half of the participants in the SPR experiment show no stable behaviour across replications. I discuss this w.r.t. the usability of SPR in alternation research and its sensitivity to specifics of the experiment. However, the fundamental findings about the probabilistic semantic and morphosyntactic constraints controlling the alternation turn out to be robust across the corpus studies and most of the experiments. I discuss how this might come about in the face of incompatibility and instability, and how it affects linguistic theory, experimental practice, corpus studies, and statistical analysis.

References: Dąbrowska, E. (2012). Different speakers, different grammars. *Linguistic Approaches to Bilingualism* 2, 219–253. Dąbrowska, E. (2014). Words that go together. *The Mental Lexicon* 9(3), 401–418. Durrant, Ph. & A. Doherty (2010). Are high-frequency collocations psychologically real? *Corpus Linguistics and Linguistic Theory* 6(2), 125–155. Schäfer, R. (2018). Abstractions and exemplars: the measure noun phrase alternation in German. *Cognitive Linguistics* 29(4), 729–771. Schäfer, R. & E. Pankratz (2018). The plural interpretability of German linking elements. *Morphology* 28(4), 325–358. Verhagen, V. & M. Mos (2016). Stability of familiarity judgments. *Cognitive Linguistics* 27(3), 307–344.