

# Gradient variability in morphological classes. Examining frequency effects in language processing and production

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This talk is concerned with gradient variability as a result of token frequency influencing grammatical variation. In German corpora, strong (irregular) verbs that are not token frequent show variation between strong and weak (regular) conjugation (Nowak 2015). This empirical finding can be explained theoretically with respect to cognitive constraints. The strong conjugation forms past tense and past participle with ablaut (*geben – gab – gegeben* ‘give – gave – given’). The ablaut pattern is barely predictable from the phonological structure of the base verbs (Köpcke 1999) so that the pattern has to be memorized for each strong verb individually. Hence, strong verbs have to be token frequent to keep the cognitive costs at a manageable level (Bybee 1985). In contrast, the weak conjugation has low cognitive costs as every verb forms the past tense and past participle with *-t(e)* (*lach-te, ge-lach-t* ‘laugh-ed’). Hence, weak forms become more likely with decreasing token frequency.

The result of the cognitive cost trade-off described above is gradient variability: For token frequent elements as well as for token-infrequent elements, stable conjugation is to be expected. Between these poles, variation can be observed. This stance has been well-tested in the domain of language production (Bybee & Moder 1983; Nowak 2013). However, although regular and irregular conjugation have been of interest in psycholinguistics in general (Clahsen et al. 2001; Beretta et al. 2003), the specific influence of token frequency on variation has not been studied yet. A focus on processing seems to be promising: First hints for language variation might be measurable in processing before variation is observable in language production.

The present study tests this hypothesis with the help of a lexical decision task. Eight token frequent verbs (> 13 tpm) are contrasted with eight infrequent verbs (< 2 tpm) that already show variation in corpora (ratio of strong to weak forms is <100/1) and eight infrequent verbs that do not vary yet (ratio of >100/1). Participants are presented weak and strong forms of each test verb and asked to indicate whether they know the presented word. With this design, the study aims at modelling the influence of frequency on the gradient variability of morphological classes.

**References:** Beretta, Alan; Campbell, Carrie; Carr, Thomas H.; Huang, Jie; Schmitt, Lothar M.; Christianson, Kiel & Yue Cao (2003). An ER-fMRI investigation of morphological inflection in German reveals that the brain makes a distinction between regular and irregular forms. *Brain and language* 85(1), 67–92. Bybee, Joan L. (1985). *Morphology: A study of the relation between meaning and form*. (Typological studies in language, 9). Amsterdam, Philadelphia: J. Benjamins. Bybee, Joan L. & Carol Lynn Moder (1983). Morphological Classes as natural categories. *Language* 59(2), 251–270. Clahsen, Harald; Eisenbeiss, Sonja; Hadler, Meike & Ingrid Sonnenstuhl (2001). The Mental Representation of Inflected Words. An Experimental Study of Adjectives and Verbs in German. *Language* 77(3), 510–543. Köpcke, Klaus-Michael (1999). Prototypisch starke und schwache Verben der deutschen Gegenwartssprache. Butt, Matthias & Nanna Fuhrhop (eds.). *Variation und Stabilität in der Wortstruktur* (Germanistische Linguistik, 141–142). Hildesheim, Zürich, New York: Georg Olms, 45–60. Nowak, Jessica (2015). Zur Legitimation einer 8. Ablautreihe: eine kontrastive Analyse zu ihrer Entstehung im Deutschen, Niederländischen und Luxemburgischen. Hildesheim: Olms.