

# Communicative efficiency and language contact

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Research on communicative efficiency has produced a significant amount of evidence of the cost-effective organisation of discourse and grammar (e.g., Gibson et al. 2019; Levshina & Moran 2021; Trott & Bergen 2022). However, less research exists on efficiency in the context of bilingualism, and it may not be obvious what predictions to make in that context. Here we discuss efficiency predictions in the context of language contact and present preliminary typological results from a pilot study.

Contact literature assumes by default that bilingualism leads to linguistic convergence (e.g., Filipović & Hawkins 2018). Convergence may be related to learnability and efficiency at least in the following way (e.g., Ploog 2017). Typological distance between languages is known to cause higher cognitive costs in language learning for the bilingual individual, such as longer learning times (e.g., Cysouw 2013). Increased linguistic similarity may decrease such costs, and thus efficiency. For instance, experimental literature on lexical activation suggests that lexical similarity in related languages (aka cognate facilitation) may – in the right circumstances – increase the likelihood of bilinguals selecting for doppels, words that have the same meaning and form in the learned languages (e.g. *photo* in English; *foto* in Dutch; Ellison & Miceli 2017).

Besides convergence bilingual communication may lead to divergence (or stability). In the literature, social factors are frequently given as causes of divergence, such as maintaining group identity (e.g., Braunmüller et al. 2014; Giles 2016; Tamaredo 2022). However, divergence may be motivated by cognitive factors as well. Evidence from research on translators (Malkiel 2009) and from experimental research on language monitoring in bilinguals (Ellison & Miceli 2017) suggests that these individuals select against doppels. More specifically, when a bilingual needs to use only one language, blocking words in the non-target language is communicatively efficient, but it also leads to divergence. In terms of linguistic structure, the effect of monitoring may be weaker, however.

Here we present a typological approach for researching linguistic outcomes in bilingual ecologies to understand how much of those outcomes could be explained by efficiency. In this approach languages are sampled in sets of three: the Focus Language (FL), the language of interest; the Neighbour Language (NL), which has been in contact with the FL and is the potential source of contact effects in it; and a Benchmark Language (BL), a close relative of the FL. With these sets we evaluate the likelihood that the FL has converged to the NL or diverged from both the BL and the NL. We discuss how this approach can be used for measuring the probability for convergence and divergence by turning controlled counts for similarities and dissimilarities into probability distributions via the beta distribution and sampling from them via Markov chain Monte Carlo sampling. A pilot analysis of 38 Focus languages suggests that the probabilities of structural divergence (.44) and convergence (.45) are about the same. We argue that the convergences may be linked to increased efficiency in bilingual communication, while other factors are needed to explain the divergences as well.

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