Through *dick* & *dünn*: Cognates and the legacy of diachronic change in synchronic processing

Joshua Booth, Felicia Stich, Isabella Fritz & Aditi Lahiri, University of Oxford
joshua.booth@ling-phil.ox.ac.uk

Linguists and grammarians have always differentiated COGNATES, e.g. English *pound* ~ German *Pfund*, inherited from the same West Germanic source), from LOANS (e.g. E *reptile* ~ G *Reptil*, independently borrowed from French). However, most modern experimental research disregards this distinction, instead (mis)terming any words with form–meaning overlap across two languages 'cognates': e.g. E *ambulance* ~ Welsh *ambiwlans*. Such definitions additionally exclude many true (inherited) cognates, e.g. E *starve* ~ G *sterben*. German and English share many real cognates, but our question is whether they *hinder* or *facilitate* L2 word recognition.

Although modern speakers have no implicit knowledge of their language's history, sound change is *systematic*, resulting in *regular correspondences* between related languages. How does this affect processing, and do the phonological feature specifications of cognates matter? Does the phonological representation of *Zinn* affect the access of *tin* for fluent L2 E speakers? We present the results of a recent EEG study, arguing that the distinction between cognates and loans is as relevant for synchronic language processing as historical linguistics.

Systematic sound correspondences necessarily play a role in the phonology (even where there is no identity). Much L2 literature relies on algorithms of orthographic or phonemic similarity, but not all change is equal: *direction matters*. Due to historical phonological changes in G, certain classes of E–G cognates systematically differ in their **initial** consonant, which might be a stop, fricative or affricate, e.g. E [p]*ath*, [t]*in*, [θ]*orn* ~ G [p͡f]*ad*, [t͡s]*inn*, [d]*orn*.

In our experiment, native G speakers (with high E proficiency) completed a cross-modal lexical decision task in E, hearing a CV fragment prime (e.g. [θɔː]) before seeing a visual target, tasked with identifying whether or not the target was an E word. Reaction times and brain activity were recorded. We entertained the hypothesis that lexical access is not language-selective and fragments may thus *not only* activate the relevant E word, *but also* its G cognate (recall word-initial sounds are critical in word recognition). We expected near-identical G cognates to compete and *hinder* the activation of the E word (cf. Fritz et al. 2023); furthermore, depending on whether the feature specification of the initial consonant of the corresponding cognate **matches**, ***mis*matches** or is tolerated (**no-mismatch**), lexical activation of the target might be inhibited or facilitated. This is illustrated in Table 1:

	English	Extracted features	German cognate feature representation	Feature matching	Activation effect
(i) identical	***m**ild*	[NASAL]	[NASAL]	MATCH	Activated: competition
(ii) tolerated	***th**orn*	[CONTINUANT]	*UNDERSPECIFIED* [PLOSIVE]	NO-MISMATCH	
(iii) mismatching	***t**in*	[PLOSIVE]	[STRIDENT]	MISMATCH	Not activated: no competition
(iv) non-existent	***p**ig*	[PLOSIVE]	—	—	

Table 1: Predicted activation effect of the G cognate; [PLOSIVE] is underspecified and thus not stored in the lexical representation (but is present in the signal, cf. Lahiri & Reetz 2010).

The results support our predictions, with the priming effect affected by condition. 'Identical' cognates had the **slowest** reaction times, as competing cognate forms were activated (hindering access). However, the features of the initial consonant were crucial: 'mismatching' cognates showed no activation of an L1 competitor (as in the 'non-existent' condition, where there was no competition, facilitating access) but reaction times in the 'non-mismatching' condition (e.g. *thorn*) were significantly slower than the 'non-existent' condition. Of particular interest was the 'N400' ERP component, which reflects ease of lexical access (more attenuated with greater facilitation). We expected fragments to activate and prime targets, but that interference from competing L1 cognates would lead to an increased reaction time and less-attenuated N400. **Most strikingly, the N400 was only significantly attenuated for the mismatching and non-existent conditions.** These words were therefore easier to access than the other conditions (where the competing L1 cognate *was* activated, leading to competition and inhibition).