Reading in AVT contexts: an eye-tracking investigation of cognate and non-cognate processing

Cognates are words that have the same meaning whilst also sharing a high degree of formal similarity (i.e. orthographic overlap) between two languages (e.g. literature$_{EN}$ - literatura$_{PL}$). When two languages refer to a concept by using exactly the same word (i.e. orthographic identity) these words are referred to as identical cognates (e.g. *chaos* in English and Polish).

The SLA literature attests to a *cognate facilitation effec*t when isolated L2 words are read by bilinguals, consisting of faster reaction and processing times for cognates relative to non-cognates. Facilitation effects in lexical decision tasks are sometimes found for non-identical cognates (Dijkstra et al. 2010) but for the most part research shows facilitation for identical cognates (e.g. Libben and Titone 2009). Facilitation is reduced as orthographic overlap decreases (Comesaña et al. 2015) or disappears for non-identical cognates (e.g. in Duyck et al. 2007). Moreover, the cognate facilitation effect is not always present when reading cognates in sentences, especially in high-constraining contexts (for an overview, see Lijewska, 2020).

Overall, few studies have investigated cognate processing via eye tracking above the single-word level (e.g., Balling, 2013; Duyck et al., 2007; Van Assche et al., 2013) and, to our knowledge, no study to date has explicitly investigated cognateness via eye tracking when processing subtitled video. Very few eye-tracking studies examined the learning of non-cognates via subtitle reading (Montero Perez et al., 2015; Wang and Pellicer-Sánchez, 2022), but cognates remain largely unaddressed in audiovisual contexts.

Our study compares cognates and non-cognate processing by re-examining data from an eye-tracking experiment where participants watched BBC documentary excerpts with English subtitles whilst being monitored by an EyeLink 1000 Plus eye tracker. Two subtitle speeds are considered: 12 and 20 cps (characters per second). We analysed both early (gaze durations, skipping rates) and late (total times, fixation counts) eye-tracking measures, and examined whether any differences occurred between identical and non-identical cognates. We also checked whether cognate effects could be found in bilingual (n=42) viewers (Polish natives with advanced L2 English skills) as compared to monolingual English speakers (n=51).

Because authentic video was used, all targets (20 cognates and 20 non-cognates) appeared as part of the subtitles (i.e., in their sentence context). All targets were controlled for part of speech, length, corpus frequency, number of occurrences, subtitle position, and the presence of a referent in the image. Cognates and non-cognates were also matched for all the above variables.

(Generalized) linear mixed-effect models were used to analyse the eye-tracking data. We assessed whether the cognate facilitation effect remains or disappears in subtitle reading, and whether it is affected by subtitle speed, nativeness (monolinguals vs. English-Polish bilinguals) and the degree of English-Polish orthographic overlap. In this talk, we will present details of the methodology and key results of the analyses. Given the popularity and ubiquity of video in the modern world – most of which now comes with subtitles – our study contributes to understanding reading mechanisms in multimodal sentence processing and assessing the potential usefulness of subtitled video for L2 learning.

(496 words without title and bibliography)

Bibliography

Balling, L. W. (2013). Reading authentic texts: what counts as cognate? *Bilingualism: Language and Cognition*, 16(3), pp. 637-653.

Comesaña, M., Soares, A. P., Ferré, P., Romero, J., Guasch, M., & García-Chico, T. (2015). Facilitative effect of cognate words vanishes when reducing the orthographic overlap: The role of

stimuli list composition. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 41*(3), pp. 614-635.

Dijkstra, T., Miwa, K., Brummelhuis, B., Sappelli, M., & Baayen, H. (2010). How cross-linguistic similarity and task demands affect cognate recognition. *Journal of Memory and Language, 62,* pp. 284-301.

Duyck, W., Van Assche, E., Drieghe, D., & Hartsuiker, R. J. (2007). Visual word recognition by bilinguals in a sentence context: Evidence for nonselective lexical access. *Journal of Experimental Pyschology: Learning, Memory, and Cognition*, 33(4), pp. 663-679.

Libben, M. R., & Titone, D.A. (2009). Bilingual lexical access in context: evidence from eye movements during reading. *Journal of Experimental Psychology: Learning, Memory, and Cognition*. Vol. 35, No. 2, pp. 381-390.

Lijewska, A. (2020). Cognate processing effects in bilingual lexical access. In R. Heredia, and A. Cieślicka, *Bilingual Lexical Ambiguity Resolution*. Cambridge University Press: Cambridge, UK, pp. 71-95.

Montero Perez, M., Peters, E., & Desmet, E. (2015). Enhancing vocabulary learning through captioned video: an eye-tracking study. *The Modern Language Journal*, 99(2), pp. 308-328.

Van Assche, E., Duyck, W. & Brysbaert, M. (2013). Verb processing by bilinguals in sentence contexts. The effect of cognate status and verb tense. *Studies in Second Language Acquisition*, 35, pp. 237-259.

Wang, A. & Pellicer-Sánchez, A. (2022). Incidental vocabulary learning from bilingual subtitled viewing: an eye-tracking study. *Language Learning*, 72(3), pp. 765-805.