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Does cross-linguistic similarity play a role in reading? A self-paced reading study with Polish-English-Norwegian multilinguals

Although research into multilingualism and third language (L3) acquisition has recently attracted much attention, the area still seems relatively under-researched, especially in terms of cognitive processes underlying L3 sentence comprehension (e.g., de Bot 2004; Jarvis and Pavlenko 2008; Sokolova and Slabakova 2019). Therefore, we conducted a self-paced reading study with L1 Polish – L2 English – L3 Norwegian multilinguals, addressing the role of cross-linguistic similarity in the processing of correct and incorrect sentences in L3. We investigated this factor using four types of constructions: prepositional verbs and adjectives, reflexive verbs, articles, and gender agreement, controlling for potential sources of cross-linguistic influence from L1 and/or L2. Specifically, while the former two constructions are present in all three languages, the latter two exist in two out of the three languages. Within each construction, we manipulated the level of cross-linguistic similarity (similar vs. different) and grammatical correctness (grammatical vs. ungrammatical) (see example sentences below).

We presented our participants (N = 34) with 192 Norwegian sentences, which were displayed word-by-word on the computer screen. Having read one word of a sentence, they had to press the space bar to see the next word, which replaced the previous one. Each sentence was followed by a binary acceptability judgement question, evaluating their metalinguistic knowledge and ensuring they paid attention during reading. The L3 self-paced reading task was followed by an acceptability judgement questionnaire in English, verifying participants' knowledge of L2 English on the constructions under investigation (except for gender agreement, absent in English).

We have analysed the data using linear mixed-effects modelling, with log-transformed reaction times (RTs) at the key word (the word deciding about the grammatical correctness of a sentence) as the outcome variable, and grammaticality and cross-linguistic similarity as fixed effects. For each construction, the hypotheses are as follows:

H1: key words will be read faster in grammatical than in ungrammatical sentences,

H2: key words in cross-linguistically similar conditions (examples (a) below) will be read faster than in cross-linguistically different conditions (examples (b) below), both for grammatical and for ungrammatical sentences.

While the analyses showed statistically significant effects of grammaticality for reflexive verbs ($p < .001$), gender agreement ($p < .001$) and articles ($p = .032$), this was not the case for prepositional verbs and adjectives ($p = .394$). Hence, H1 was largely confirmed by the data. However, H2 did not find support in our data (p-values for condition $> .05$). The results will be discussed in the light of data collected from a control group of 13 Norwegian native speakers.

We hope to inform further the debate on cognitive processes underlying L3 sentence comprehension.

Keywords: cross-linguistic influence, multilingualism, self-paced reading

References:

de Bot, K. 2004. The Multilingual Lexicon: Modelling Selection and Control. *The International Journal of Multilingualism 1*(1), 17–32.

Jarvis, S. & Pavlenko, A. 2008. *Crosslinguistic influence in language and cognition*. Routledge.

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Examples of sentences for the investigated constructions (with their English and/or Polish translations):

1a. Prepositional verbs and adjectives: NO = EN = PL (same preposition in all three languages)

 NO: Direktøren deres betalte for / *om blyanter og papir.

 EN: Their director paid for / *about pencils and paper.

 PL: Ich dyrektor zapłacił za / *o ołówki i papier.

1b. Prepositional verbs and adjectives: NO = EN ≠ PL (same preposition in NO & EN, different in PL)

 NO: Disse rommene er nok for / *på konferanser og møter.

 EN: These rooms are enough for / *on conferences and meetings.

 PL: Te pomieszczenia są wystarczające *dla / na konferencje i spotkania.

2a. Reflexive verbs: NO = PL = EN (verbs reflexive in all three languages)

 NO: Den unge gutten skadet seg / *Ø kraftig i fingeren.

 EN: The little boy hurt himself / *Ø badly in the finger.

 PL: Mały chłopiec mocno skaleczył się / *Ø w palec.

2b. Reflexive verbs: NO = PL ≠ EN (verbs reflexive in NO & PL, non-reflexive in EN)

 NO: Mange feriegjester solte seg / *Ø på stranden.

 EN: Many holidaymakers sunbathed *themselves / Ø on the beach.

 PL: Wielu wczasowiczów opalało się / *Ø na plaży.

3a. Gender agreement: NO = PL (agreement marked on adjectives, nouns neuter in NO & PL)

 NO: Dette dyret er sultent / *sulten om vinteren.

 PL: To zwierzę jest głodne / *głodny w zimie.

3b. Gender agreement: NO ≠ PL (agreement marked on adjectives, nouns neuter in NO, masculine or feminine in PL)

 NO: Dette kjøleskapet er tomt / *tom hele tiden.

 PL: Ta lodówka jest cały czas *puste / pusta.

4a. Articles: NO = EN (indefinite articles, free morphemes in NO & EN)

 NO: Denne filmen er en / *Ø tegnefilm om to prinsesser.

 EN: This film is a / *Ø cartoon about two princesses.

4b. Articles: NO ≠ EN (definite articles, suffixes in NO, free morphemes in EN)

 NO: Denne parken er skogen / *skog hun jogget i.

 EN: This park is the / *Ø forest in which she was jogging.