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Processing English object relatives: Where L2 sentence processing differs from L1

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Recent accounts of syntactic difficulties that advanced second-language (L2) learners experience in their L2 (e.g., Sorace, 2011) hypothesize that the underlying cause is the allocation of processing resources. L2 learners employ less-automatic procedures than native speakers, and need to suppress their other language, leading to fewer processing resources to process complex constructions in their L2. We sought to further test this hypothesis by investigating the processing of cross-language structural ambiguities. If L2 speakers need to suppress their L1, the differences between native speakers and L2 learners will become most apparent in such constructions. Furthermore, we predicted that L2 learners with better ability to suppress prepotent information (better cognitive control) will more closely resemble L1 speakers.

We tested 39 native speakers of English, and 71 advanced Dutch late learners of English on English proficiency measures (Peabody Vocabulary, word naming task, C-test) and cognitive control tests (Stroop, Trails, Attentional Network Task). In addition, participants completed a moving-window self-paced reading task in English, which included object relatives as in (1). The relative clause subject was either plural (1a, b) or singular (1c, d); the auxiliary in the relative clause either agreed with the relative clause subject (1a, c) or did not (1b, d). For Dutch learners of English, (1b) creates a potential language conflict since this structure corresponds to a grammatical subject-relative in Dutch (2); (1c) is ambiguous between a subject and an object relative in Dutch. We predicted that Dutch learners of English would be more likely than the native English participants to assign a subject-relative interpretation to English object relatives, and to show a smaller grammaticality effect in the conflict condition (1b) vs. (1a) than in the non-conflict condition (1d) vs. (1c), compared with native English speakers. In addition, we expected these effects to be modulated by cognitive control and English proficiency.

Performance on end-of-sentence questions probing thematic relations suggested that the L2 group selected a subject-relative interpretation more often than the native English for (b), (c) and (d), even though the L2 learners knew the grammar of English object relatives. In the self-paced reading data, the L2 learners showed a smaller and later grammaticality effect ((1b, d) vs. (1a, c)) than native English speakers. This grammaticality effect was stronger and started earlier in L2 learners who had a smaller Stroop effect (better cognitive control), but did not correlate with proficiency. The grammaticality effect in the native English speakers was not affected by cognitive control. In contrast to expectation, the on-line data showed no difference in the grammaticality effect between the conflict (plural subject) and non-conflict (singular subject) conditions in either group.

Our findings suggest that L2 speakers experience L1 interference off-line, but not while processing local agreement relations on-line. In addition, L2 learners with better cognitive control more closely resemble native speakers regarding the timing and size of the on-line effects in complex constructions. This supports the view that native and L2 speakers differ in resource allocation during sentence processing, but that this is not related to suppressing conflicting L2 information.

1a. **[plural subject, grammatical]** Over there is the stewardess who the passenger**s** **have** insulted during the flight.
1b. **[plural subject, ungrammatical]** Over there is the stewardess who the passenger**s** ***has** insulted during the flight.
1c. **[singular subject, grammatical]** Over there is the stewardess who the passenger **has** insulted during the flight.
1d. **[singular subject, ungrammatical]** Over there is the stewardess who the passenger ***have** insulted during the flight.

2. Daar is de stewardess die de passagiers heeft beledigd tijdens de vlucht.
 there is the stewardess who the passengers has insulted during the flight
"Over there is the stewardess who the passengers has insulted during the flight."

Reference

Sorace, A. (2011) Pinning down the concept of "interface" in bilingualism. *Linguistic Approaches to Bilingualism* 1(1) 1-35.