L2 processing is affected by RAGE: Evidence from reference resolution

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Native-language processing involves not only information integration, but also anticipation, or prediction[^1,^2,^3] for both adults and children[^4,^5]. An open question, which our study seeks to address, is to what extent adult non-native speakers use predictive processing.

Recent work on grammatical gender reveals a dissociation in L2 performance on tasks requiring information integration vs. those requiring anticipation: L2ers perform like native speakers on comprehension tasks involving (ungrammatical) gender-mismatch between nouns and post-nominal adjectives, i.e., disruption of information integration at the adjective[^6,^7]; however, on tasks assessing whether gender cues allow anticipation of upcoming information, even highly proficient L2ers differ from native speakers[^8,^9]. Based on such observations, we propose that non-native speakers have Reduced Ability to Generate Expectations (RAGE) during language processing. Here we present evidence from a different realm of language processing—reference resolution—in support of this hypothesis.

A story-continuation task (adapted from [10]) was completed by 20 advanced L2 learners of English (12 L1-Japanese, 8 L1-Korean) and 24 native speakers; they wrote continuations following a context sentence that described a transfer-of-possession event (see (1)). A 2x2 design varied aspect in the context sentence (perfective/imperfective) and prompt type in the continuation (pronoun/free). Trained judges identified the intended referent of the subject of the continuation, coding for SOURCE (of the context sentence; see (2)), GOAL (3), ambiguous, or other. Previous work shows that native speakers’ coreference expectations on this task are modulated by verbal aspect: Transfer-of-possession events yield more GOAL-continuations when marked by perfective compared to imperfective aspect[^10,^11,^12]. This effect has been tied to end-state salience: perfectives describe completed events compatible with end-state focus (here focus on the GOAL), whereas imperfectives describe ongoing events with no salient end-state. End-state salience (perfective) guides native speakers’ expectations about who will be mentioned next, in this case favoring re-mention of the end-state referent (GOAL). If, in accordance with the RAGE hypothesis, non-native speakers are less able to engage in predictive processing, the effect of aspect on reference resolution should be reduced in the L2 group, yielding a significant aspect-by-group interaction.

To test this meaningfully, we first need assurance that participants comprehend aspect. They thus also participated in a truth-value judgment task (adapted from [13]). Results from this task (Fig.1) indicate clear discrimination between imperfective and perfective aspect, with no significant between-group differences. Results from the story-continuation experiment (Fig.2), by contrast, show differential performance by the two groups, critically reflected in the predicted aspect-by-group interaction ($F_{(1,42)}=6.53, p<0.05$), driven by the influence of aspect on proportion of GOAL-continuations/SOURCE-continuations (for prompts of both types) by native but not non-native speakers. Moreover, L2ers showed an unexpected overall GOAL-bias, potentially reflecting a recency bias, similar to that previously observed with L1 children[^14]. This may point toward processing limitations as an underlying explanation for RAGE: If processing resources are exhausted by information integration, little is left for anticipatory processing. In consequence, non-native speakers generate fewer expectations that may affect reference resolution, relying instead on more superficial heuristics, such as recency, when interpreting ambiguous pronouns.
Patrick gave/was giving a towel to Ron. (He) ________________

He made sure to give him a clean dry one. (SOURCE-continuation for (1), i.e., he = Patrick)

He said “Thank you.” (GOAL-continuation for (1), i.e., he = Ron)

References


