

Cognitive mechanisms of L2 errors and “fossilization”: An ERP study

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Most adult learners of a second language (L2) fail to reach a native-like level of proficiency in that language, but continue to speak with an accent and make grammatical mistakes. This phenomenon has been labeled L2 ‘fossilization’, and is estimated to affect 85-95% of adult learners (Birdsong, 2004). With respect to grammatical mistakes, it is particularly puzzling that they occur despite extensive exposure to correct L2 input, which is apparently not used by the learner for (permanent) error correction.

The present study used event-related potentials to investigate the cognitive reasons of this as yet unexplained phenomenon. One account is that learners fail to notice the discrepancy between the (correct) input and their own (incorrect) L2 representations (Schmidt, 2001). We tested this hypothesis in 24 native speakers of German immersed in a Dutch-speaking environment for at least two years. The critical grammatical feature was Dutch word gender, for which even experienced German learners show systematic error patterns based on inappropriate L1-L2 transfer (e.g., Lemhöfer et al., 2010).

In two EEG-experiments, participants read Dutch sentences containing target nouns that were preceded by a definite determiner, which in Dutch differs for the two gender categories neuter and common gender (*het* vs. *de*). 40 of the 80 critical nouns were items known to be particularly ‘difficult’ for German learners in terms of gender assignment. In Experiment 1, each target was preceded by either its correct or its incorrect determiner. After the EEG session, participants were asked for the correct determiners of the target nouns in an offline questionnaire, resulting in about 33% errors. In contrast to a native Dutch control group, who showed the standard P600-effect for determiner violations, no effect – when based on ‘objective’ determiner correctness – was observed for the L2 learners. However, when re-categorizing the presented determiners into those that matched or mismatched the responses of the respective L2 participant in the offline determiner production task, the P600-effect emerged for the mismatching relative to the matching condition. These results show that L2 learners did perceive discrepancies between L2 input and own gender representations as subjective determiner violations, at least under circumstances where the input contained a high percentage of obvious errors.

However, receiving obviously incorrect L2 input is untypical of immersion in a native L2 environment. Therefore, in Experiment 2, a more realistic situation was created by using only objectively correct determiners. In this context, the 33% incorrectly represented items might still trigger a P600-effect due to the correct input representing a ‘subjective violation’, compared to correctly represented words. However, no P600-effect was found for definite

determiners that deviated from the 'subjectively correct' ones. This result suggests that in a normal situation with 'unsuspicious' input, L2 learners indeed do not notice the difference between that input and their own errors, even though their language system is able to do so, as demonstrated in Experiment 1. This 'failure to notice', possibly resulting from a lack of attention, explains the subsequent failure to learn from the input.

References

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