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The interaction between cognitive individual differences and feedback type

What this research was about and why it is important

It is important to examine the relationship between learners' cognitive individual differences and the outcomes of instructional treatments for two reasons. First, this research can help individualize instruction by determining the type of instruction that best fits the learner's cognitive profile. Second, the findings of this research can shed light onto how learning under different instructional conditions takes place by showing whether the ability underlying a cognitive individual difference factor is involved in the mental processes that are engaged by the instructional condition. The present study investigated whether a group of cognitive individual differences played a role in learners' pretest-posttest improvement and awareness of feedback under implicit and explicit feedback conditions. Results revealed that the role of the cognitive variables changed depending on the outcome (pretest-posttest development or awareness) and feedback type (implicit and explicit).

What the researchers did

- L1-speaking learners of Spanish who had taken two semesters of college-level Spanish participated in the study. The average age was 20.19.
- The target feature was Spanish noun-adjective gender agreement.
- All learners were administered tests from two language aptitude test batteries (Hi-LAB and LLAMA) to measure the following cognitive abilities: associative priming, implicit sequence learning ability, processing speed, phonological short-term memory, attentional control, phonemic coding ability.
- Learners performed a communicative task with a native speaker of Spanish under one of three conditions. Their errors on gender agreement were treated according to their group assignment:
  - In the **implicit feedback** group, learners received recasts reformulating the erroneous part of the utterance;
  - In the **explicit feedback** group, learners received explicit corrections including (1) direct rejections of learners' erroneous utterances and (2) explicitly presented partial reformulations of errors;
  - In the **control** group, learners did not receive any feedback.
- Learners' knowledge of Spanish gender agreement was measured using a grammaticality judgment test and an oral production test immediately before the treatment and immediately after the treatment.
- Learners' awareness of the corrective feedback and linguistic target of the feedback was measured by means of a post-task debriefing questionnaire.

What the researchers found

- Implicit sequence learning ability and the ability to remember errors (error awareness) were related to the implicit group's pretest-posttest improvement.
- Phonological short-term memory was related to the explicit group's pretest-posttest improvement.
- Phonemic coding ability, attention control, and processing speed further were related to learners' awareness in the implicit feedback group.

Things to consider

- Instructional condition determines the nature of the cognitive variables learners draw on when learning under that condition. The gaining of awareness about the linguistic target of the feedback may be cognitively more challenging in the context of implicit than explicit feedback. Our results, however, did not lend a strong support to the claim that awareness is necessary for pretest-posttest improvement.
- Implicit sequence learning ability plays a role in the processing of implicit feedback, whereas short-term memory plays a role in the processing of explicit feedback. If these results are confirmed by future research, it would be possible to recommend the provision of implicit feedback to learners with high implicit sequence learning ability and of explicit feedback to learners with high short-term memory ability.

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