A little production practice provides a big boost in language learning.

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Language production practice provides a stronger grammar and vocabulary learning experience than language comprehension practice (Hopman & MacDonald, 2018). Unlike in typical classroom environments, learners in that study received either only comprehension exercises or only production exercises. Here we investigate the learning benefits of language production in a more realistic setting in which learners get mostly comprehension practice and only a little production practice.

As in Hopman & MacDonald’s study, English speaking participants learned a 20-word artificial language that described a cartoon world in 7-word sentences. Four word types ended in suffixes agreeing in number and gender. Participants learned this language through interleaved passive exposure and active learning blocks. In active comprehension trials, learners made a match-mismatch judgment on an auditory phrase and an accompanying picture. In active production trials, learners were asked to describe pictures aloud in the novel language. We trained 104 participants in a new Mixed-Experience condition and compared their rates of learning and comprehension to that of participants from Comprehension-Only and Production-Only training conditions (208 participants total). The Mixed-Experience condition was identical to the original Comprehension-Only condition, except that 1 trial in each active comprehension block was replaced with a production trial, affecting approximately 17% of learning trials.

After learning, participants completed speech-picture matching tests to assess understanding of grammatical agreement markers and a grammatical judgment test to assess understanding of agreement rules. Although the Mixed-Experience condition differed from the Comprehension-Only condition in only about 1/6th of the learning trials, the Mixed-Experience participants significantly outperformed Comprehension-Only participants on tests of comprehension. These results show that even a small amount of production practice provides strong learning and comprehension benefits compared to a comprehension-only curriculum. We will discuss potential mechanisms for this effect and implications for language learning.
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Question: How do production- and comprehension practice differentially affect language learning?
Due to the different memory processes involved in producing and comprehending language, Production-Only practice provides a stronger grammar learning experience than Comprehension-Only practice (Hopman & MacDonald, 2018). In order to test whether production practice improves learning incrementally or can provide a strong learning boost, we trained participants in a new Mixed-Experience condition. Learners got mostly comprehension practice and a little production practice, a mixture typical of classroom learning settings.

Hypothesis: Adding even a little production practice will provide strong learning and comprehension benefits compared to a Comprehension-Only curriculum.

Production: stronger learning experience than comprehension
Comprehenders, especially at the early stages of second language learning, may settle for a good-enough interpretation without a detailed analysis of syntactic dependencies (Ferreira & Patson, 2007). While elements of the to-be-produced utterance are held in working memory during utterance planning, binding can happen between them, strengthening learning of dependencies between words.

Tool: Artificial Language

Full Sentence Example
"Vus Fimus Pexus Stam Ot Zeus Chaftem"
Det. Adjective Noun Markings Prep. Verb Location
The-k-s Yellow-k-s Pex-k-s Spots With Grow-k-s Mountain

Grasasal Dependencies
Kind-looking (-k) -us -usu
Scary-looking -ok -oko
Random assignment of:
- suffixes to categories
- root-words to visual referents

Training & Testing Procedure
Passive exposure block (6)

Active learning block (6)
Comprehension: Only (n=52)
Mixed Experience (n=104)
Production: Only (n=52)

Vocabulary Screening (18)

Forced Choice (FC)
- Vocabulary in phrases (18)
- Suffix Understanding (24)

Error Monitoring2 (EM)
- Suffix Agreement (48)
- Word Order (32)

Testing Grammatical Comprehension
FC Suffix Understanding
EM Suffix Agreement

Well-controlled training tasks

Active Comprehension Trial
1. Phrase is played, participant makes match/mismatch judgment. Participant is told whether their judgment was correct.
2. Same phrase paired with correct picture is played auditorily.

Active Production Trial
1. Participant is prompted to describe the picture out loud in the novel language.
2. The correct phrase to describe the picture is played auditorily.

We control for:
- Listening experience
- Task demands and attention
- Vocabulary learning

Theoretical implications & future directions to investigate mechanisms
- Production-training to comprehension-test transfer is in line with shared production-comprehension representations.
- Boost from only 1/6th production practice suggests that becoming a producer changes the way one comprehends.
- Do participants improve only on words they produced, or is there a general benefit of producing to all words?
- To what degree do the inherent production and comprehension practice differentially affect language learning?