Linking Processing to Knowledge through Short-Term Memory for Input
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Background
A transition account of SLA relies on connecting online processing of input to resulting linguistic representations[1]. However, these two endpoints (and interim steps) have been addressed by separate theoretical accounts.

Input: Shallow Structure Hypothesis[2]
Input/Intake → Output: Processing Instruction[3]
Output: Processability Theory[4], Universal Grammar accounts[5]

An integration of theories is complicated by:
- Circularity, mutual influences between processing and prior knowledge. Input processing is causally related to the developing linguistic system, and is itself influenced by knowledge of L1 and L2 competence.
- Initial input processing is uniquely positioned to disentangle the two.
- Lack of common vocabulary of constructs.

The causal sequence (Fig. 1) logically relies on memory, which can serve as the common denominator for theoretical accounts.

Goals
To be passed on to the developing system, intake needs to survive in short-term memory (STM).

Are distortions of L2 input (by L1 and general processing preferences) lasting?

Is short-term memory different for units extracted from input according to L1 or L2 rules by learners in the initial state?

Design
Sequence: exposure (varied by group) followed by test of recognition memory for units extracted from input sentences (Fig. 2)

Figure 2. Sequence of procedures.

Groups (different in exposure only):
- Experimental (E), 2-3 pictures before each input sentence; task—decide if new picture matches the sentence
- Control (C), no pictures (asterisks for same duration as for E group); task—easy or difficult to follow
- Identical recognition memory test

Artificial language:
- vocabulary from cognates between English (L1) and Dutch, French
- structure with opposite parameter values for word order (Fig. 3)

Materials
- 18 sentences following pattern of interest, S-Adj-O-V; 20 fillers ~ 20-25 minutes
- Split 9-9 for testing, rotated among subjects
- Testing: old or new? 78 phrases, words

Exposure Trial Structure
- Visual stimuli: 1166 ms. per picture (or *)
  E: pic. 1, pic. 2., blank screen. C: *, *, blank screen
  Audio of sentence, push → to advance
- Distractor task or new sequence

Participants
- 48 in E group, 26 in C group
- L1 English, no childhood bilinguals, ages 18–24, mean 19.5
- No concurrent foreign language courses

Conclusions
- Without meaning cues (Control group), learners tended to retain sequences extracted by L1 word order rules.
- When provided with cues to meaning, learners (Experimental group) overcame the L1 bias and were equally sensitive to L2 units.
- Contrary to expectations, L2 units were not significantly disadvantaged, compared to units following L1 syntax.

This may underlie the relative ease of acquisition of word order. Structures known to cause more persistent L1 transfer may exhibit an L2-L1 imbalance in STM.

There was considerable variation among participants in the direction of the preference, so effect size is very small and power is low.

Future studies need to pursue the full causal chain from processing to linguistic knowledge (e.g., grammatically intuitions).

References