You can learn a new language without ever using vocabulary cards. Here's how:

Exploring indirect response transfer from native language to a new language using multimodal associations

INTRODUCTION

- A neutral stimulus (S1) can be linked to a stimulus (S2) often paired with an unconditioned response (R) so that the neutral stimulus (S1) also elicits the response (R)
- Previous study from WiSe showed that a response can be transferred across associated stimuli of different modalities

→ **Can responses transfer from a visual German word to a new language word in auditory modality?**

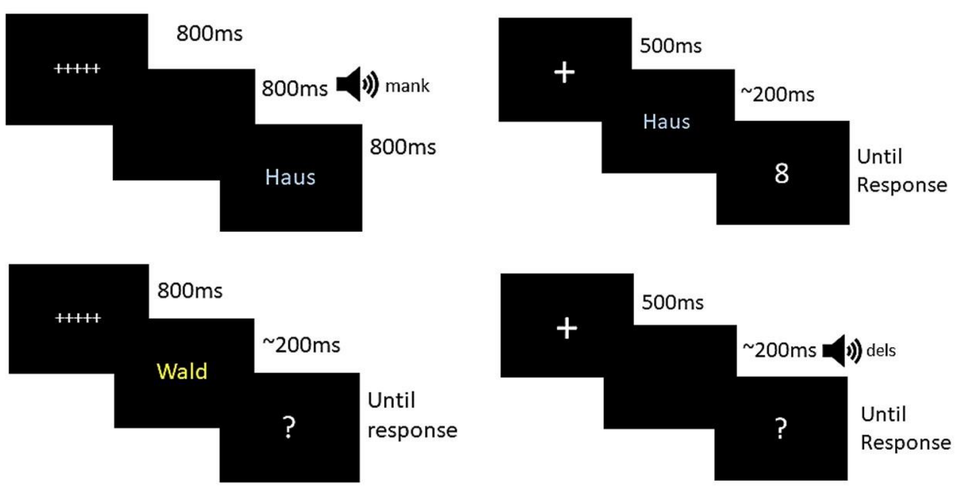
METHOD

N = 71

- S1 audio: "mank"/"dels"
- S2 visual: "Haus"/"Wald"

3 phases (within design):

- Phase 1: connecting S1 and S2; 100 % contingency
- Phase 2: associating S2→R; number identification forced choice task; 90 % contingency
- Phase 3: checking for S1-R transfer; number guessing free choice task
- Awareness questionnaire



RESULTS

Did they learn the association between S2 and response? → YES

Phase 2: comparing valid and invalid trials the valid ones had:

- significantly faster reaction time
  $t(70) = 3.733$, $p<.001$, $d_z = 0.4$
- significantly less errors
  $t(70) = 6.307$, $p<.001$, $d_z = 0.7$

Phase 3: the proportion of valid keypresses was significantly above 50%
$t(70) = 7.287$, $p <.001$, $d_z = 0.8$

Has the transfer of response to S1 occurred?
→ YES

- participants transfer the response to S1 significantly better than chance
  $t(70) = 6.615$, $p<.001$, $d_z = 0.7$

DISCUSSION

Participants transfer the reaction on the German word to the associated pseudoword. This is evidence for indirect response transfer.

...even across different modalities namely visual and audio.

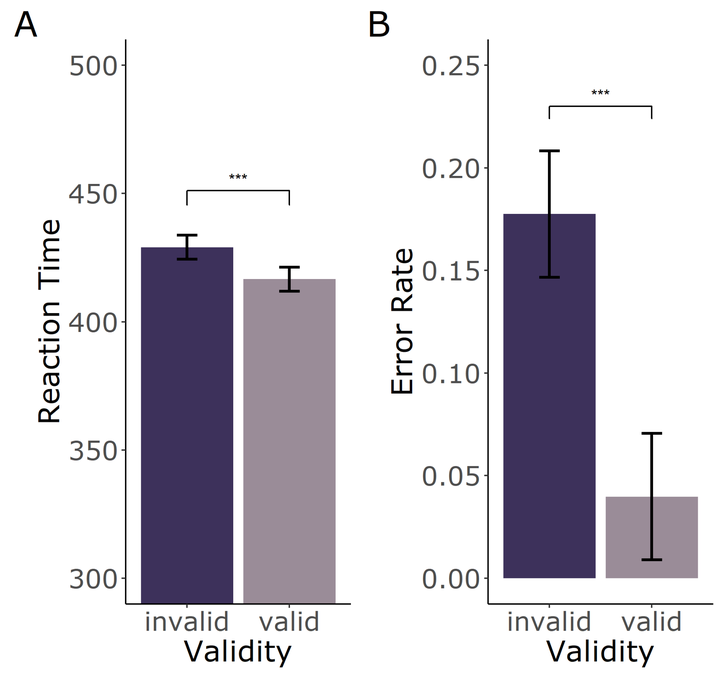
Association between German word and pseudoword was learned.

Haus and *Wald* were confounded with their colours.

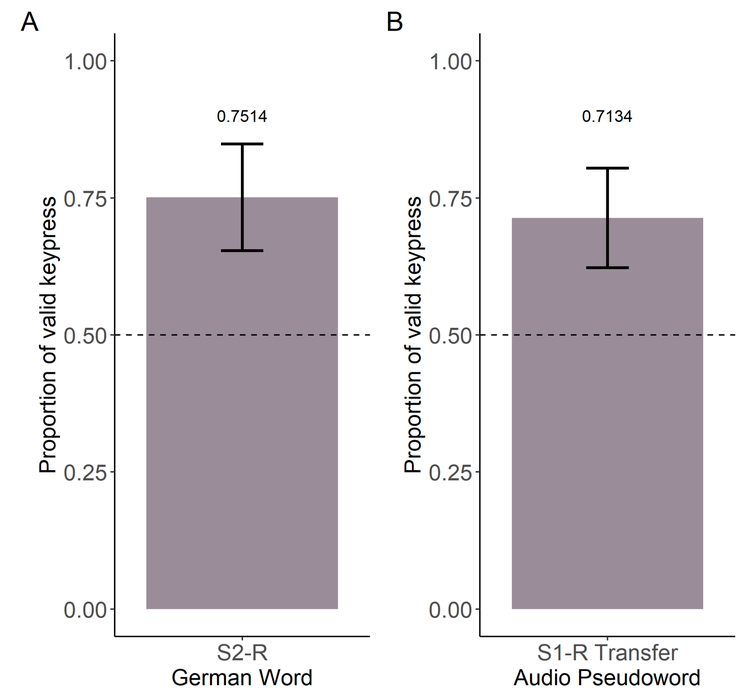
External validity: complex stimuli with application in language learning

Nevertheless, transfer from the visual stimulus occurred.

Performance in Phase 2



Valid guess Proportion in Phase 3



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