

## Time, Space and Direction

### Movement-based preposition teaching in an urban German school

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#### Theoretical Background

##### Why prepositions?

- Prepositions describe how we see space. They require a linguistic and non-linguistic cognitive foundation and are highly relevant to describing and creating narrative space (Lütke 2011).
- For beginning foreign language learners, prepositions are frequent, important, abstract and for teachers often perceived as difficult to teach.

##### Why bodily movements?

- Action, in addition to seeing or hearing information, creates a richer memory trace and provides a physical cue for remembering.
- Movement allows users to shed some of their cognitive load, the burden created by the need to keep track of information.

##### Why gestures?

- ERP research shows that simple gestures can make a difference in how we understand complex language (Holle et al. 2012).
- Research comparing gesture and physical action for learning math have shown that action is not better for representing abstract ideas (Novack et al. 2014).
- Research from multilingual classrooms indicates that gestures may differentially benefit beginning learners (Janzen Ulbricht 2018).

#### Research Questions

In the context of learning and performing a play (14 hours), can we measure a long-term gain in L2 preposition use on a transfer task?

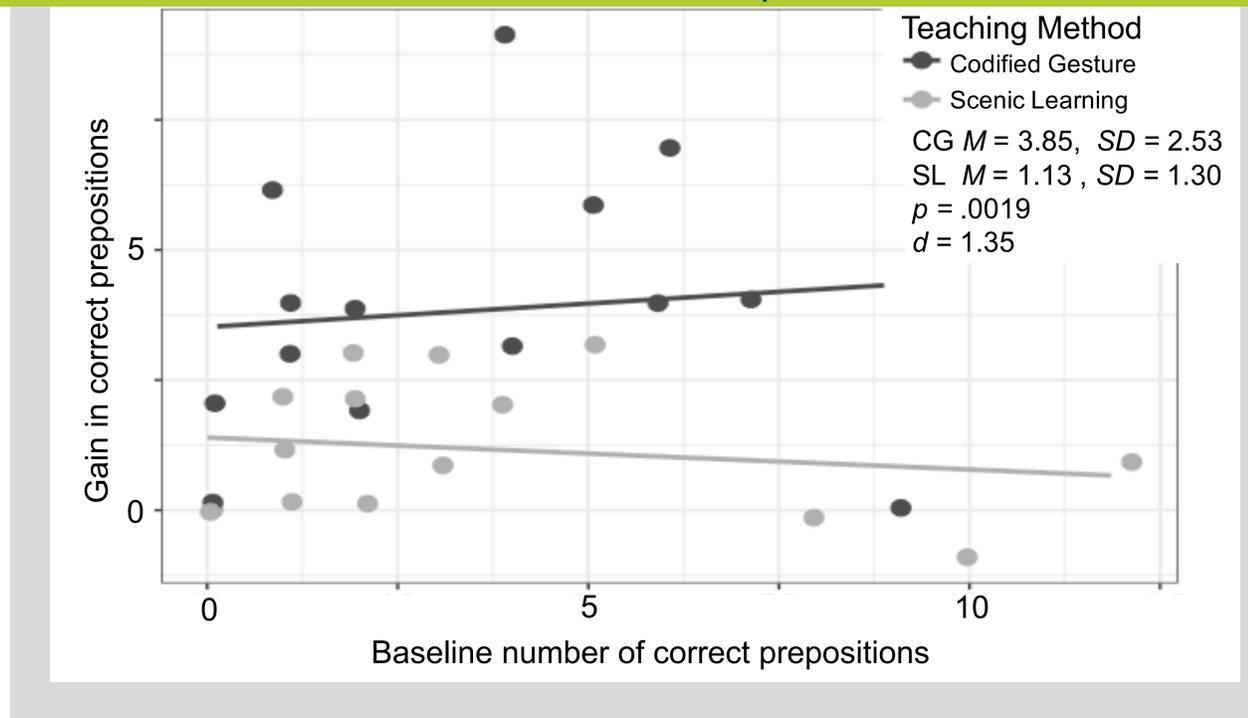
If the same text is learned in different ways (3 hours), both of which utilize movement, are there measurable differences between groups?

#### Experiment

##### Participants and Conditions

- Children from a class of **refugee** (N=10) and **grade 5 children** (N=19) were tested on their use of English prepositions in Week 1, Week 3 and Week 7.
- In Week 2 of the experiment, matched codified gesture (CG) and scenic learning (SL) units were designed for a common English theater project. While learning the text (for a total of 3 hours over 4 days), the children were randomly placed in these two experimental groups where they learned and memorized the same text.
- In the CG group the teacher provided a gesture per morpheme for all the words of the play, meaning words and gestures were learnt together. Consistent with the SL methodology, the teacher taught the children the play supported by movement and the written text (Böttger & Sambanis 2017).

##### Post Test Gain in Prepositions



#### Discussion

- Research has shown that movement and language are closely linked. The present study exploits this relationship by investigating codified gestures as a teaching tool. There is a positive gain in both groups, but in the CG group the odds of a gain is 4.2, while the odds of a gain for the SL group is 1.9. This means that the exposure to the CG condition is associated with twice as high a gain in test results as compared to the SL condition for the prepositions around, over, in, on, under and to.
- While not the only approach to classroom research, using complete methods can establish how different teaching elements, such as gesture type and access to text, work in combination and provide more ecologically valid grounds for generalization than experiments differing in one variable only.
- **These results suggest that codified gestures can help proceduralize preposition learning, resulting in an increased ability to generalize to new situations.**

##### Literature

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- Novack, M. A., Congdon, E. L., Hemani-Lopez, N., & Goldin-Meadow, S. (2014). From Action to Abstraction: Using the Hands to Learn Math. *Psychological Science*, 25(4), 903–910.



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