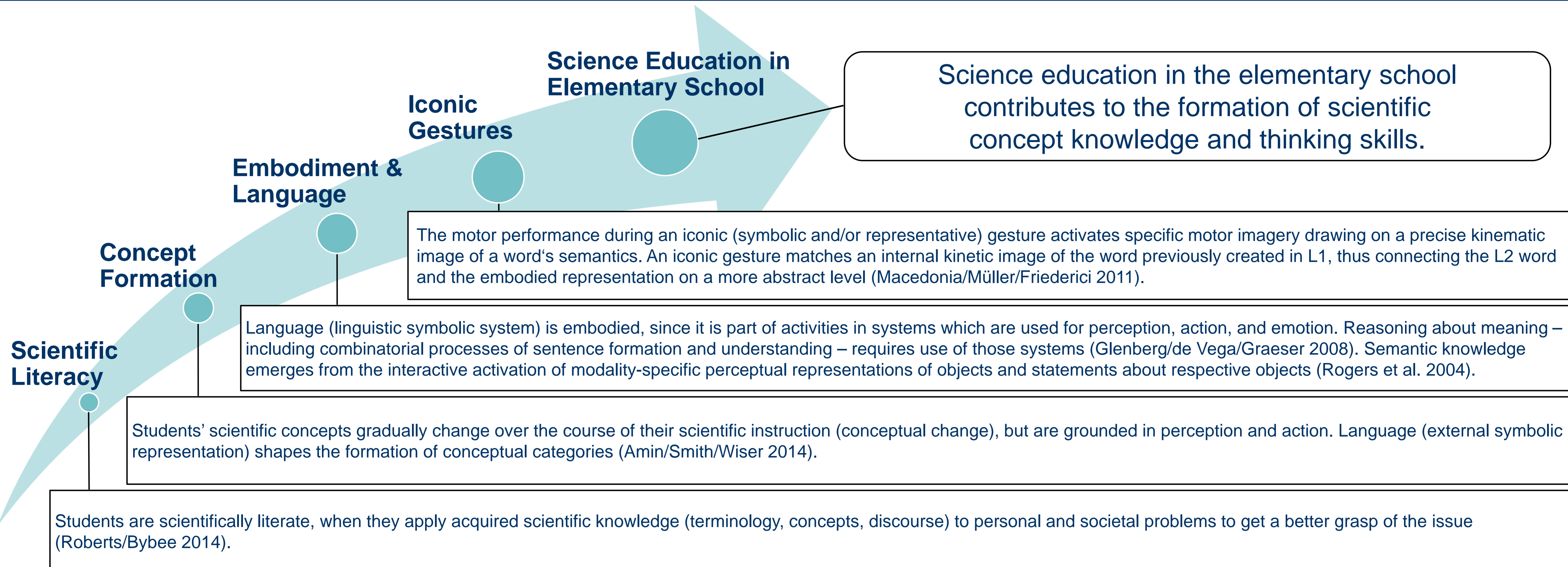


Scientific Concept Learning in SLA and Embodiment

A mixed methods study in CLIL elementary school science classes

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BACKGROUND



OBJECTIVES

Hypotheses

Students who learn scientific terminology through iconic gestures have

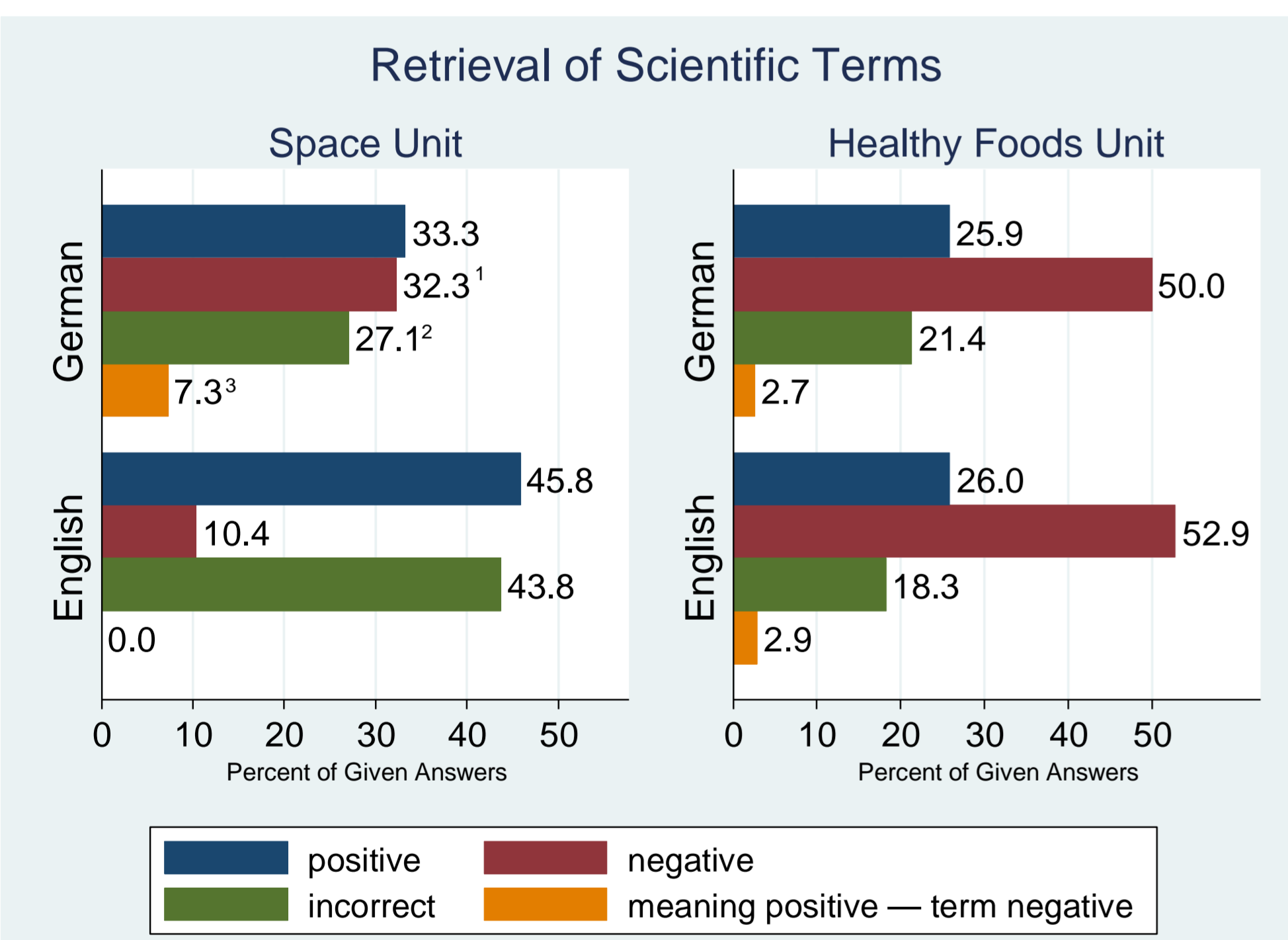
- a higher chance of remembering scientific terminology in the L2;
- a superior retrieval rate of scientific concept information.

DESIGN & METHODS

Matched between-group quasi-experimental design

- iconic gesture group & reading group
- $N = 48$ ($n = 24$): matched on the basis of gender and L1 (German or English)
- 2 teaching units: *Space* and *Healthy Foods*
- pre-tests: standardized language tests for L1 & L2; spatial cognitive ability test
- post-interview:
 - structured interview (individual; videotaped)
 - retrieval of scientific terms after watching corresponding iconic gesture or reading clip
 - description and explanation of scientific terms

PRELIMINARY RESULTS

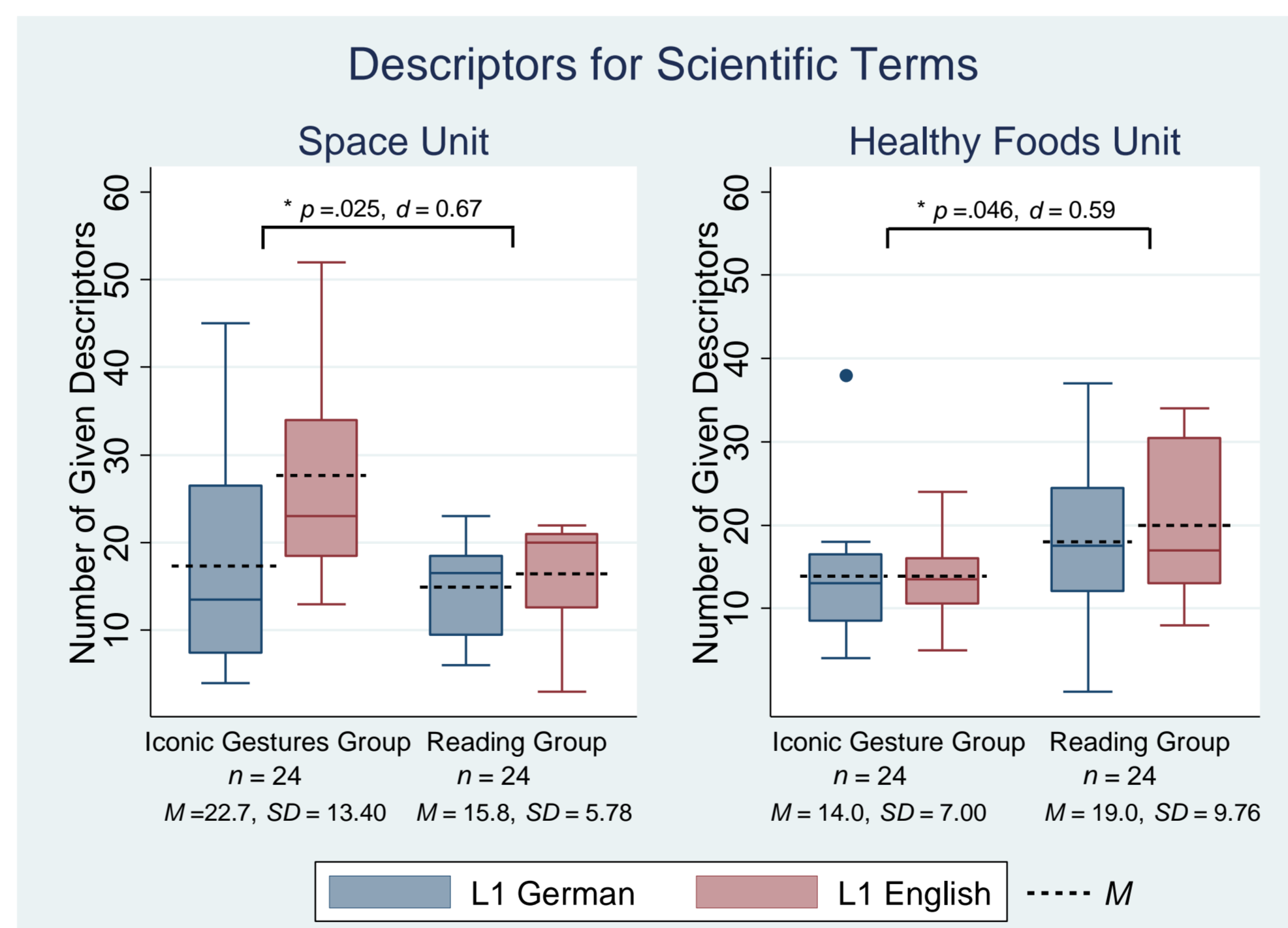


¹($t(22) = 2.5, p = .020, d = 1.02$), ²($t(22) = -2.6, p = .016, d = -1.06$), ³($t(22) = 2.3, p = .035, d = 0.92$)

Performance score (%) for the **retrieval of the scientific terms** after observing the corresponding iconic gesture/movement shows a significant difference between the two **L1 groups** in three categories:

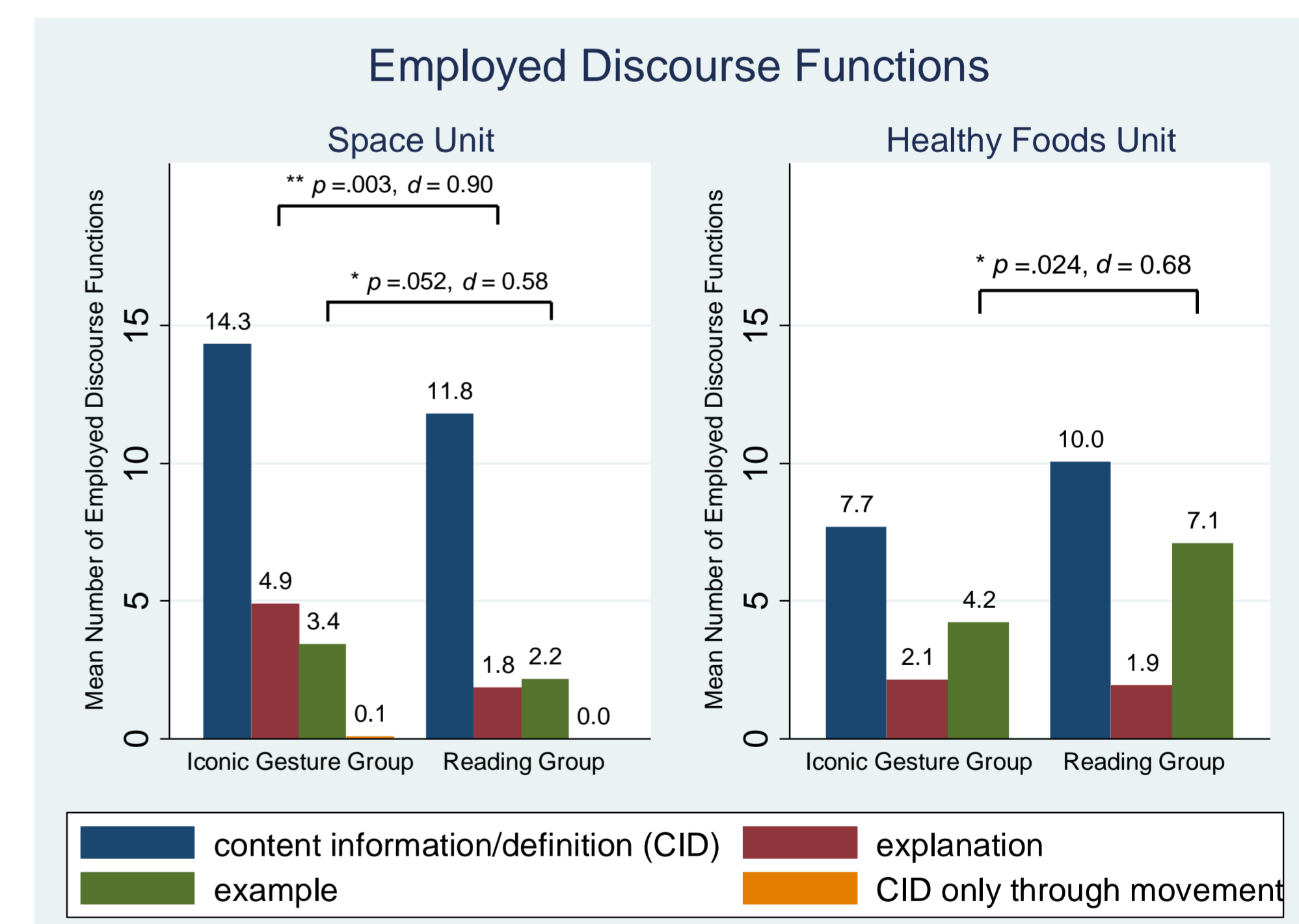
- L1 English students had fewer negative retrieval attempts than L1 German students, but erred more frequently when guessing the scientific term;
- L1 German students seem to remember the meaning but not the term itself.

The difference between the language groups was not statistically significant in the Healthy Foods unit.



Results for reproducing **descriptors for the scientific terms** differ in the two teaching units:

- for the Space unit, the **iconic gesture group** significantly outperformed the reading group; both language groups seem to profit from utilizing the iconic gestures;
- for the Healthy Foods unit the **results are reversed**.



A qualitative content analysis showed that students employed four **discourse functions**. The findings demonstrate that

- in the Space unit the **iconic gesture group** uses significantly more explanations and examples in their discourse;
- whereas in the Healthy Foods unit the **reading group** shows a significantly higher utilization of examples.

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