'The mouse pulls on the elephant trunk and coins start to fly in the hat.'

An empirical gesture study on L2 grammatical morpheme learning in middle childhood

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THEORETICAL BACKGROUND

WHY GESTURES?

What kind of practice makes perfect when children learn to use grammatical morphemes in a second language? Michael Tomasello proposes a usage-based approach to language acquisition, asserting that children possess two sets of cognitive abilities: intention reading and pattern finding (2009, 2015). Language learning involves determining structure from usage (Ellis, 2015) however 'usage' can come in many modalities and forms.

WHY GRAMMATICAL MORPHEME LEARNING?

Since young L2 learners frequently struggle with morpho-syntactic structures, such as the plural {-s} and 3rd person possessive {-s} in English, and iconicity plays an important role in pattern finding, it is unsurprising that researchers have called for experiments about which gestures will support learning (Alibali et al., 2013; Cook, 2018; Schiefner et al., 2022; Tellier, 2025) and have mentioned inguistic units, such as words, morphemes, or sentences, as relevant (Gullberg, 2013, p. 1872).

WHY NATURALISTIC EXPERIMENTS?

Previous studies have demonstrated the beneficial role of gesture in L2 acquisition. At the same time, however, this knowledge has not easily translated into improved teaching.

EXPERIMENT

PARTICIPANTS AND CONDITIONS

The present study (N = 19) was conducted to better understand if iconic gestures which embody grammatical morphemes can contribute to pattern learning.
To explore this issue, the gesture speeded fragment completion task (Janzen Ulbricht, 2023) was used to assess changes in response time before and after learning. In week 1 (pretest) and 3 (posttest) in a silent self-paced computer-based task children completed 32 phrases such as 'the car's wind_w' (window) or 'the cars cr_sh' (crash). In a blocked design with condition order counterbalanced, all phrases were completed in both a two-gesture (showing different plural and possessive {-s} gestures) and a one-gesture condition (with a single {-s} gesture).

TRAINING

In week 2 training consisted of four hours of classroom gesture-based activities encouraging learners to create mental representations of these same L2 constructions.
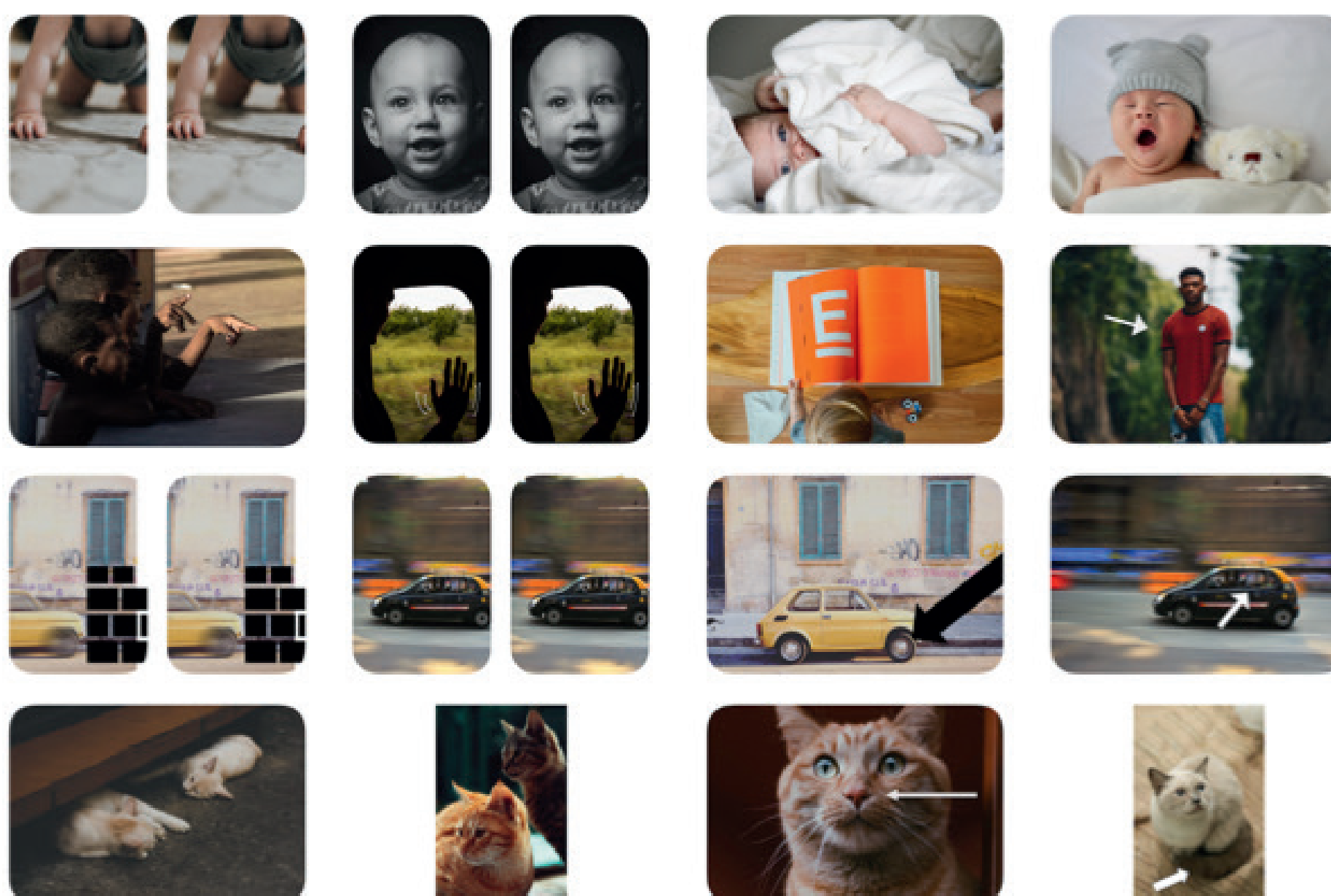
Some activities, such as performing gestures for word-picture pairs, took place in one large group. Other games, such as 'gesture memory' and 'let's make a gif' (see game cards above) took place in small groups.

RESEARCH QUESTIONS

1 In the context of a group training in which children use gestures corresponding to the plural and possessive {-s}, can a long-term gain in L2 procedural learning for the use of these grammatical morphemes be measured on an individual semantic priming task?
2 Can we find evidence that seeing different grammatical morphemes in gesture form for the plural and possessive {-s} result in measurable differences in response time?

RESULTS

Results (multiple regression analyses on response time) show a mean decrease after instruction in the two-gesture test condition (**p = .039***). This increase in procedural learning suggests that learners can benefit from instruction which acknowledges the role of iconicity in language processing and learning, which visually distinguishes between grammatical morphemes which differ in meaning but sound the same.
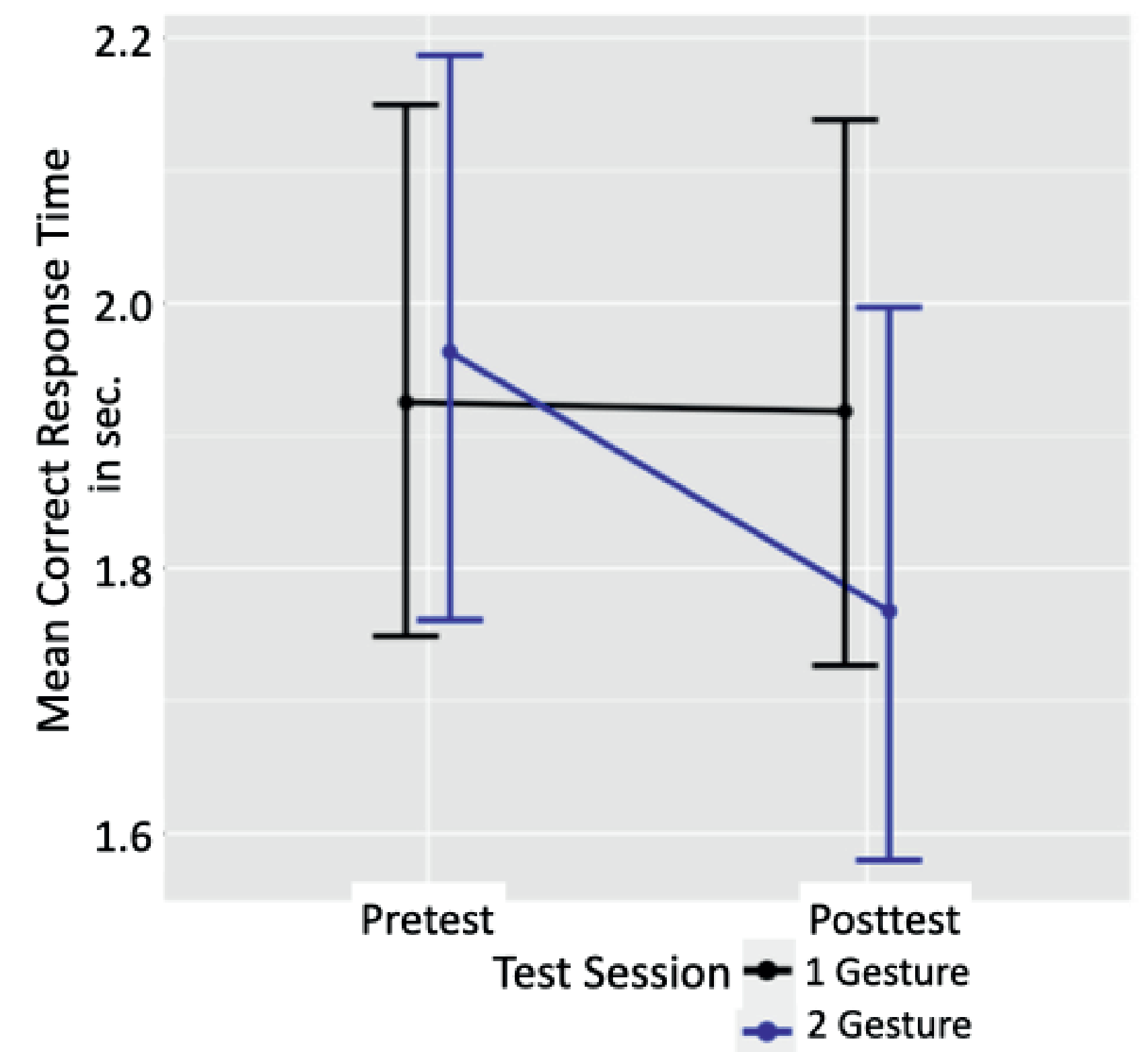
DISCUSSION

Gestures are a central part of classroom situations and offer teachers a powerful tool for supporting learners to acquire, retain and apply knowledge to new situations. This experiment adds to our general understanding of the mechanisms by which children learn and explores the nuances of when grammatical morphemes in gesture form help. In addition, it contributes to evidence-based L2 teaching. Because it was conducted with linguistically diverse groups, the results establish that diverse classrooms under naturalistic teaching conditions can benefit from gestures because they foster long-term memory and performance.