

When and How do Iconic Gestures Impact Early Word Learning?

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INTRODUCTION & AIM

For young children, word learning is a challenging task. Every day, the child will hear many different words and see many different things but how do they correctly map words to their referents?

Across the second year of life, children gradually learn to use different word-learning 'cues' to succeed in this task. Though critically, the initial mapping of a word to its referent does not equate to long-term learning. Two-year-olds can rapidly map novel names to objects and yet forget these mappings after just five minutes (Horst & Samuelson, 2008). Only once children are older are they able to rapidly form robust word mappings which are retained over time. A small amount of experimental research suggests that iconic gestures may benefit 2- and 3-year-olds ability to retain and generalise novel object names (Capone & McGregor, 2005, Capone Singleton, 2012).

We will investigate the impact of iconic gestures on these core challenges of early word learning – mapping, retention, and generalisation – with a specific focus on object names (nouns) which dominate early vocabulary.

METHOD

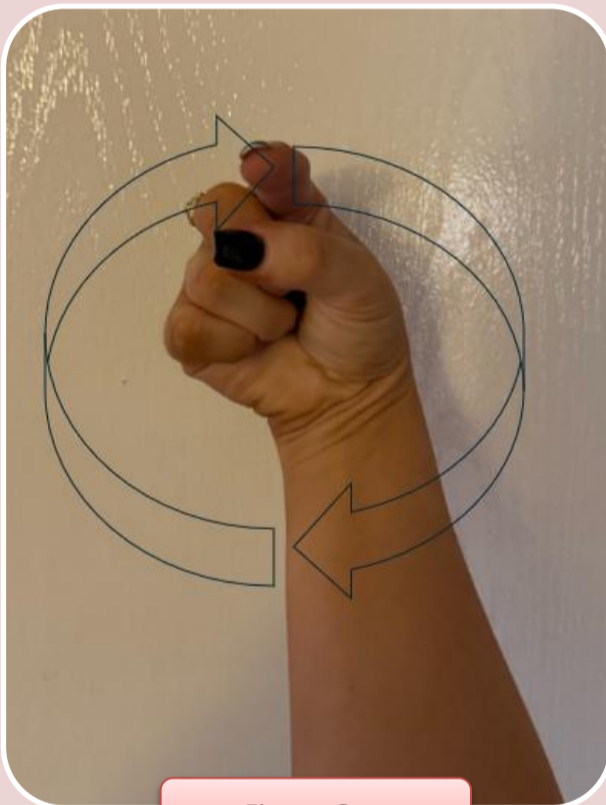


Figure One

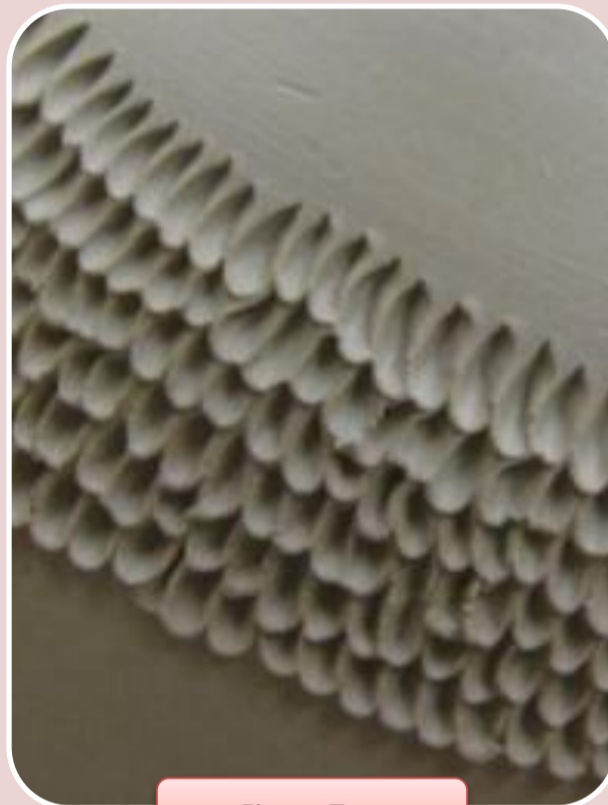


Figure Two

Experiments 1&2 were hosted in the children's educational settings.

The children were presented with two novel objects, and the child was asked to give an object to the experimenter (Figure Three).

Referent selection, and referent retention trials were present for all children.

In one condition, an accompanying iconic gesture will highlight the shape property, such as a rounded gesture (Figure One) for the only rounded object in the array. A control condition saw the experimenter present the novel names without gestures for comparison.

A third experiment is yet to be completed but will clarify the role of iconic gesture in generalisation of novel name mappings.

2-3-year-old children will be presented with 3 objects which will match the base object on one dimension only (shape, texture; Figure Two, or colour), plus 1 distractor.

In one condition the child will be asked to select an object while witnessing an iconic gesture that matches the base object shape.

There will be a control condition with no iconic gestures presented.

RESULTS & DISCUSSION

Experiment One: 2.5-3.5 YEARS

- At training, a Wilcoxon Test ($v = 1051, p < .001$) which indicated participants did correctly identify objects at a rate significantly higher than chance ($\mu = 50$).
- At test, a Wilcoxon Test ($v = 276, p < .01$) which indicated that at test participants correctly identified objects at a rate significantly higher than chance ($\mu = 50$).

Experiment Two: 18-27 MONTHS

- At training, a Wilcoxon Test ($v = 363.5, p < .001$) indicated that the participants were performing at a rate significantly higher than chance ($\mu = 50$).
- At test, the mean accuracy was 64.6% (SD = 24.9). A Shapiro-Wilk test indicated that the scores were normally distributed ($W = 0.90, p = .14$) and therefore required a parametric t-test. This test showed that accuracy did not significantly differ from chance ($t(11) = 2.03, p = .067$) and a corresponding Wilcoxon signed-rank test confirmed this result ($V = 37, p = .080$). Thus, while the performance mean was numerically above chance, this difference was not statistically reliable.

Combined Analysis of Experiment One and Two

- A Wilcoxon rank-sum test was conducted to compare training accuracy between Experiment One and Experiment Two. There was a significant difference between experiments ($W = 1429.5, p < .51$), The same test was used to compare test accuracy between Experiment One and Experiment Two. There was no significant difference between experiments ($W = 235.5, p < .5$), indicating that children's retention performance was similar across both experiments.

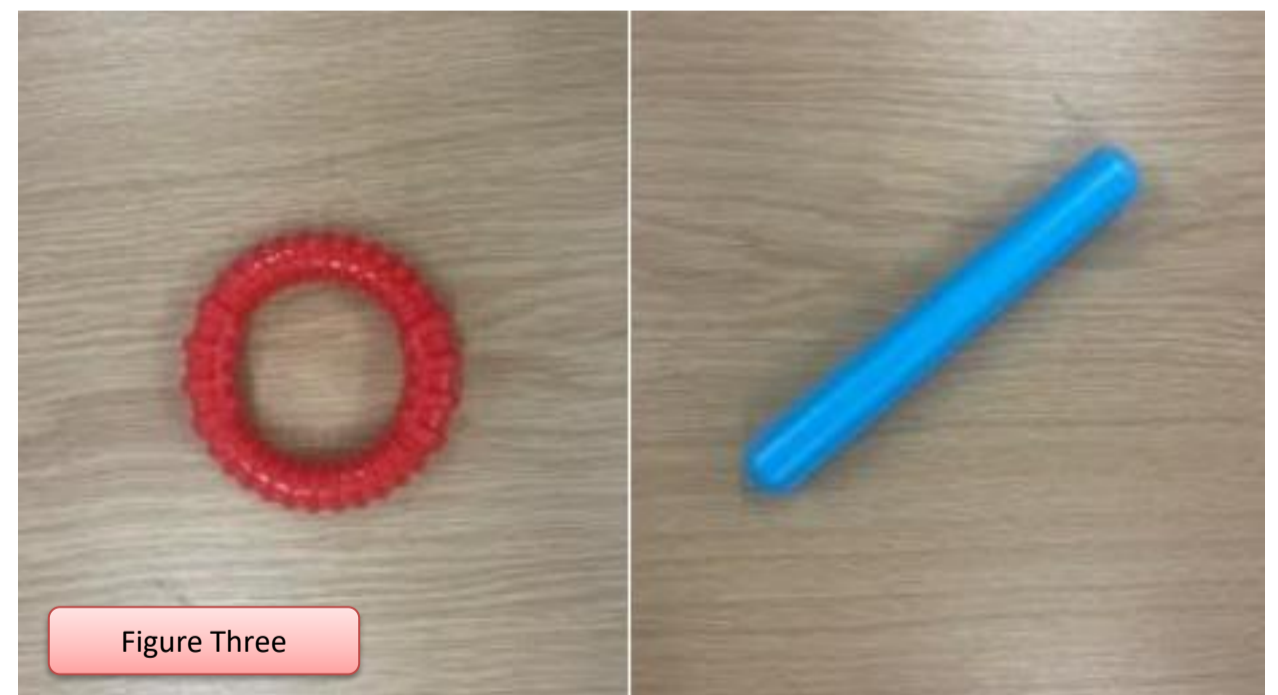


Figure Three

CONCLUSION

Experiments One and Two show us that iconic gesture does in fact have an impact on word learning, however the age in which this becomes effective is not evident in our research to date. Experiment Three will give us an insight on how children generalise objects, if the shape bias is revealed within our research, and how iconic gesture may impact this also.

The combined results of these first three experiments may inform parent and practitioners about the best usage of iconic gestures and timing for introducing to children.

REFERENCES

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- Horst, J. S., & Samuelson, L. K. (2008). Fast mapping but poor retention by 24-month-old infants. *Infancy, 13*(2), 128–157.