

Daxing with a Dax: The relationship between artifact-function polysemy and the design stance



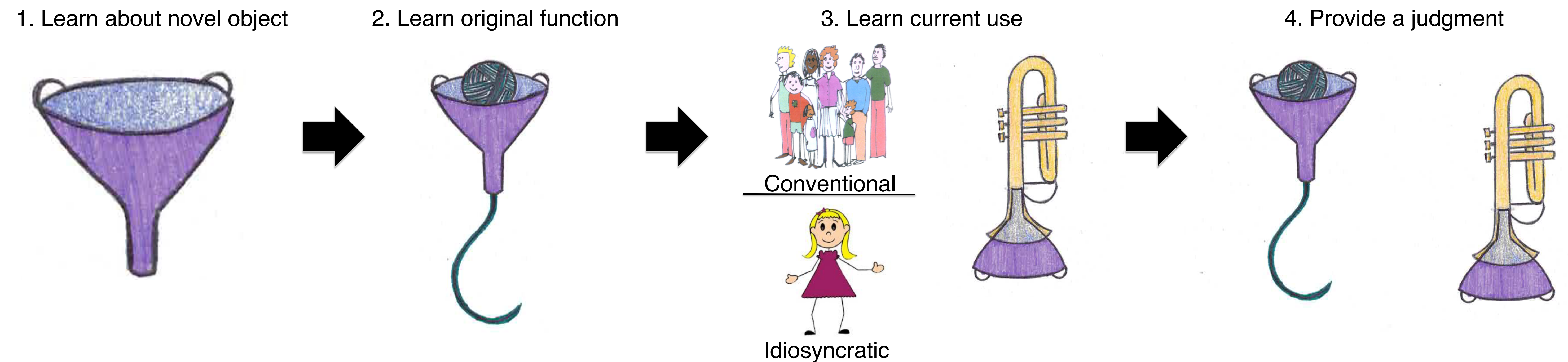
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Introduction

- Adults seem to privilege original function when conceptualizing artifacts, a “design stance”^{1,2}
- By 6-7, children start to develop these subtle intuitions about artifact history³
- But, unclear how this occurs. Potentially language?
- Languages tend to extend word meanings based on function (hammer with a hammer, whisk with a whisk) How does this interact with artifact history?⁴
- **Three experiments assessed how function affects the interpretation of polysemous labels and how polysemous labels affect judgments about function**

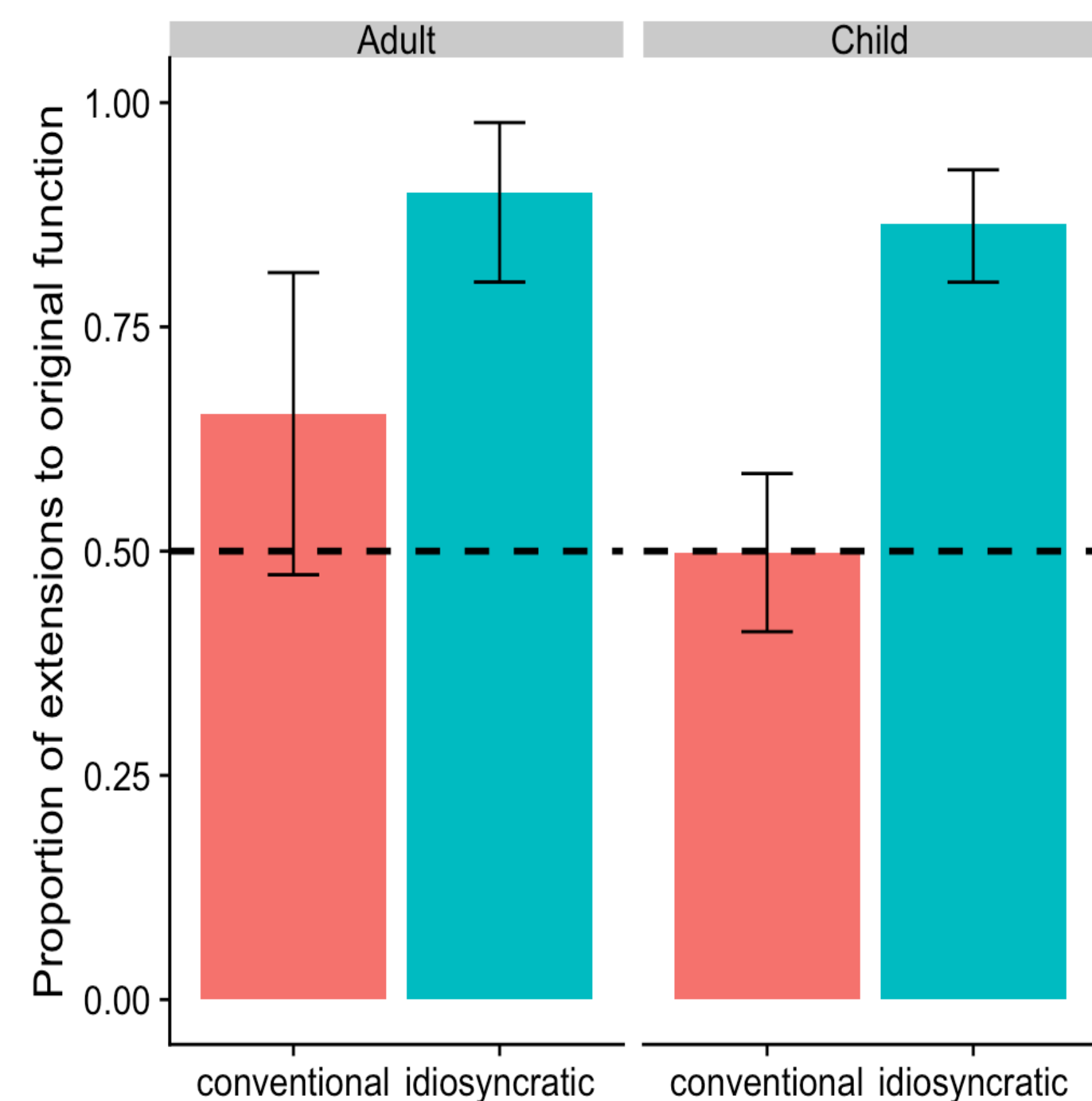
Materials and methods

- Exp. 1 (98 4-year-olds, 36 adults) | Exp. 2 (word extension (polysemy) cond. 82 4 y.o., 36 adult; mutual exclusivity (contrast) cond. 93 4 y.o., 36 adult) | Exp. 3 (81 4 y.o., 36 adult)
- Three practice trials with common items. Five unique trials.



Exp. 1: Design stance replication: Is there an original function preference?

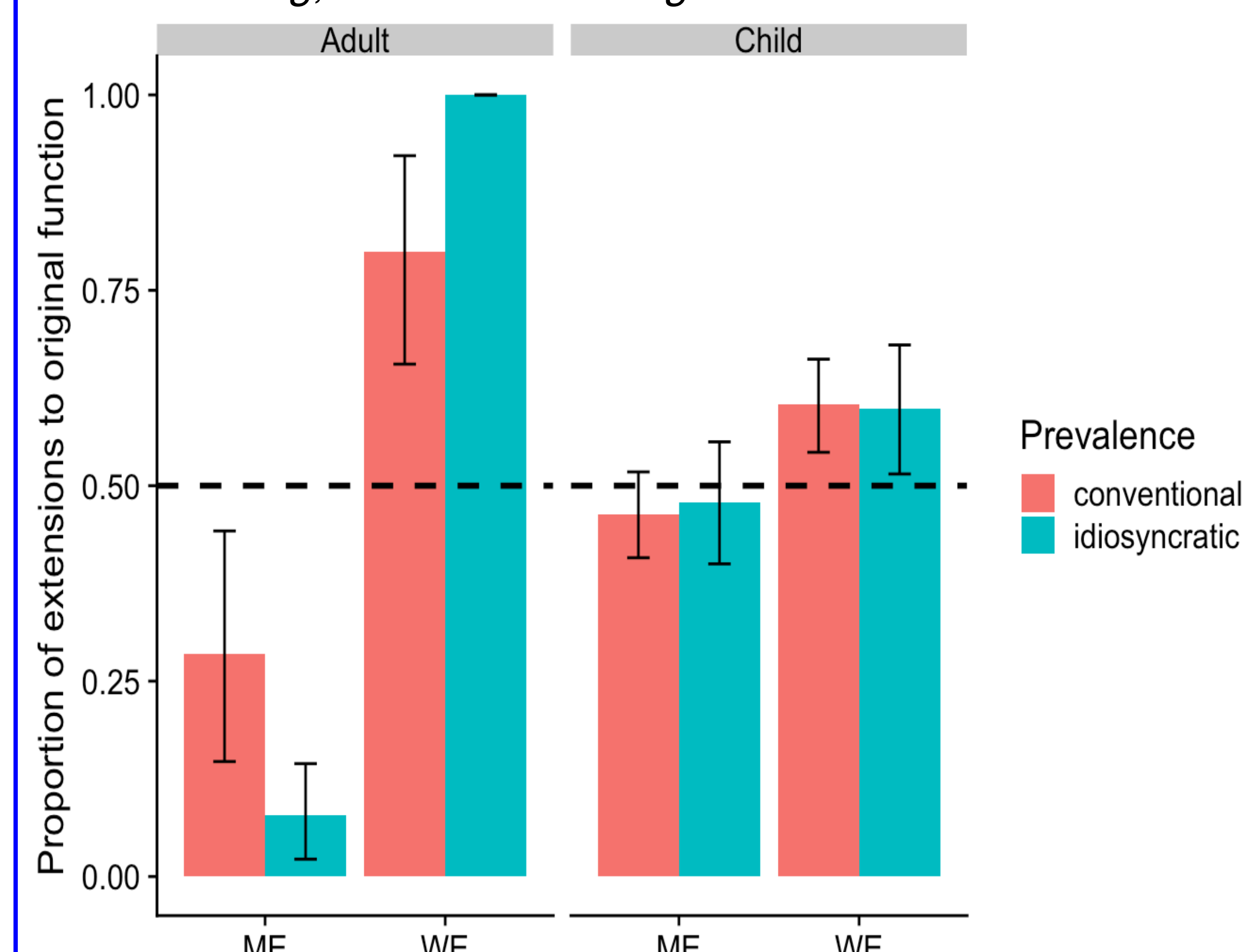
- Unlike previous studies², original function was conventional
- *A long time ago, people made mefs for pulling yarn.*
- *Now, everyone / Tina uses mefs for holding trumpets.*
- *Is the mef really for pulling yarn or holding trumpets?*



Both groups affected by conventionality but only adults showed design stance in more stringent conventional cond.

Exp. 2: Choose this, not that: How is artifact-function polysemy understood?

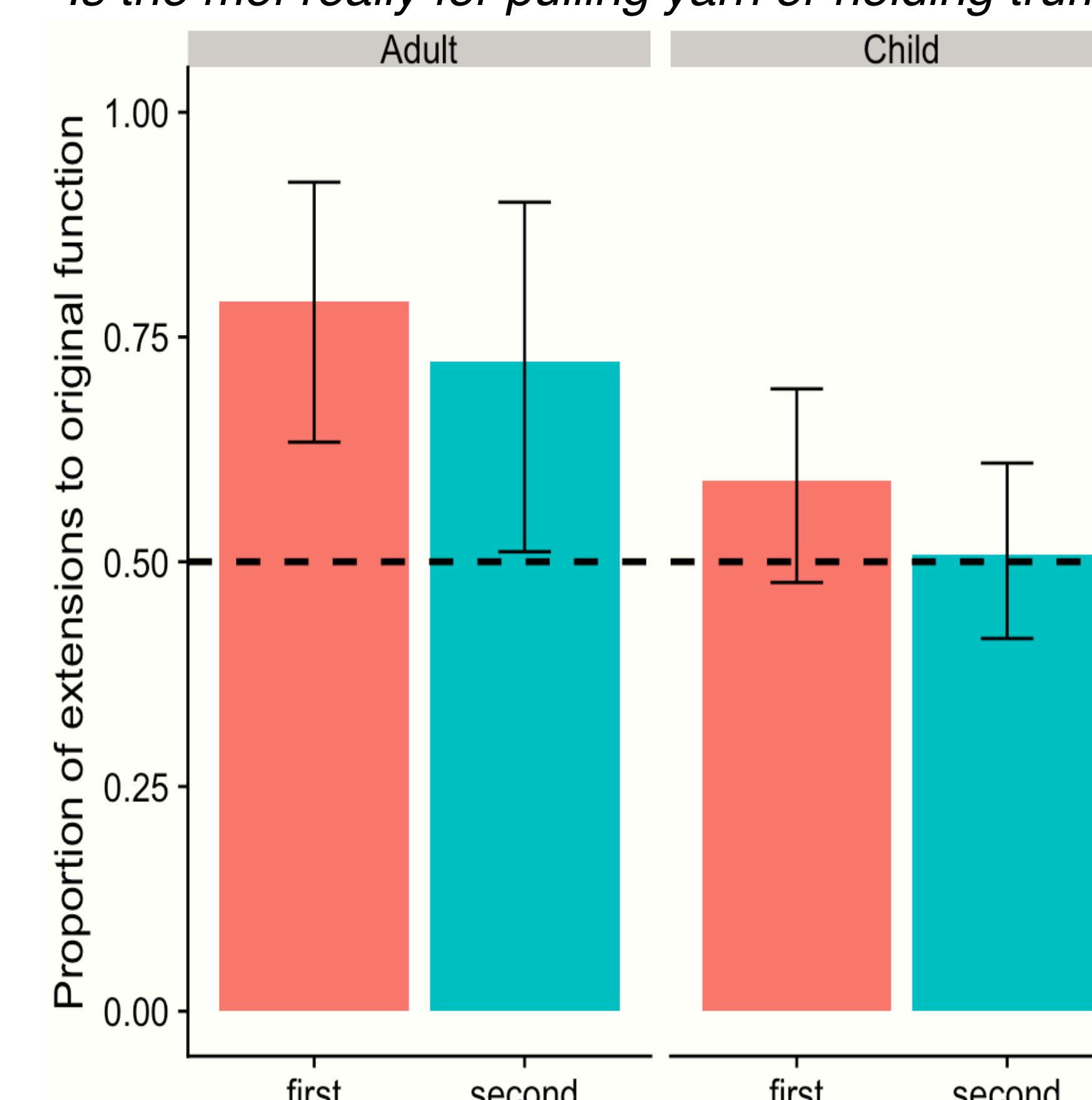
- Word extension (WE) or mutual exclusivity (ME) task
- *A long time ago, people made mefs for pulling yarn.*
- *Now, everyone / Tina uses mefs for holding trumpets.*
- *One picture is meffing and one is zotting. Touch meffing, don't touch zotting!*



Adults affected by conventionality AND label but children only by label & to lesser extent.

Exp. 3: Language & design stance: Does polysemy shape function judgment?

- Conventional only. X axis indicates which function took polysemous label.
- *A long time ago, people made mefs for pulling yarn and they called this meffing / zotting.*
- *Now, everyone uses mefs for holding trumpets and they call this zotting / meffing.*
- *Is the mef really for pulling yarn or holding trumpets?*



Adults always took design stance. Children showed trending effect of polysemy on original function.

Conclusions

- Replicated previous findings that adults (but not 4-year old children) show design stance
- 4-year-olds expect artifact-function polysemy to correspond to original, designed function
- Polysemy might help to develop design stance
- **Studies provide insight into relationship between artifacts, functions, and potential role of polysemy over development**

Literature cited

1 Defeyter, M. A., Avons, S., & German, T. C. (2007). *Developmental Science*.
 2 Defeyter, M. A., Hearing, J., & German, T. C. (2009). *Cognition*.
 3 Kelemen, D., & Carey, S. (2007). In *Creations of the mind: Theories of artifacts and their representation*.
 4 Srinivasan, M., & Rabagliati, H. (2015). *Lingua*

Acknowledgments

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