The role of categorical proximity and perceptual similarity for referent identification in a preferential looking task

Natalia Arias-Trejo & Kim Plunkett Oxford BabyLab, Department of Experimental Psychology

Background

•Perceptual similarity can guide infants' word extension, contributing to early representations of word meaning (e.g., Smith, 2003; Smith & Samuelson, 2006).
•Conceptual cues such as ontological status and affordable functions can also guide early word meaning (e.g., Gelman & Coley, 1990; Mandler & McDonough, 1993).

Questions of this research

•How does the categorical relationship between two objects (target-distracter) influence familiar referent identification in a preferential looking task?
•Likewise, how does the perceptual similarity between two objects impact referent identification?
•Does perceptual similarity influence referent identification, irrespective of categorical relatedness?

We tested 18-, 21- and 24-month-olds' ability to identify word-object associations when categorical proximity between two objects, as well as their visual similarity is systematically manipulated.

Participants: English learners, born full-term, no hearing or visual problems.
37 x 18-month-olds
(M = 18:10; range 17.16-18.20)
36 x 21-month-olds
(M = 21:03; range 20:15-21:20)
37 x 24-month-olds
(M = 23:30; range 23:18-24:19)

Procedure

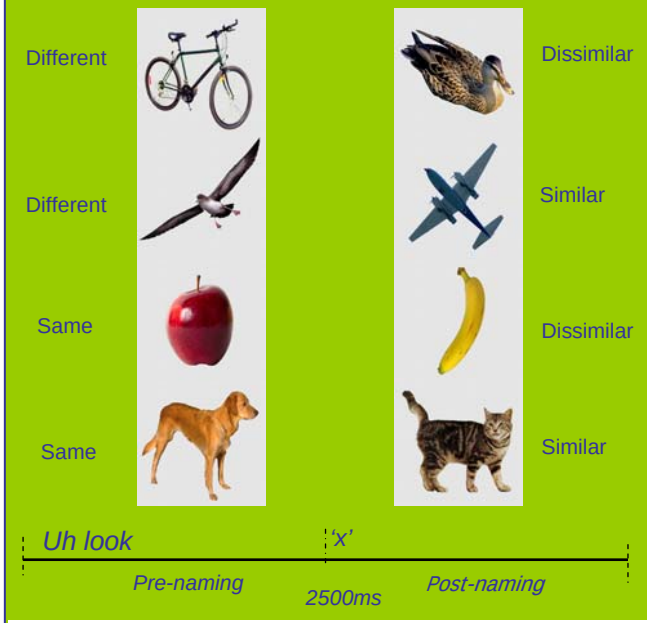
Inter-modal preferential looking task (Golinkoff et al., 1987)

2x2 Design: Categorical compatibility x Percept similarity

•12 Target (T) -Distracter (D) pairs of typical images
•Typicality and Similarity previously rated by adults
•No repetition of visual or auditory stimuli

4 pairs T & D: **Different** superordinate category & **Dissimilar**
4 pairs T & D: **Different** superordinate categories & **Similar**
4 pairs T & D: **Same** superordinate category & **Dissimilar**
4 pairs T & D: **Same** superordinate categories & **Similar**

Examples of four pairing conditions



Analysis

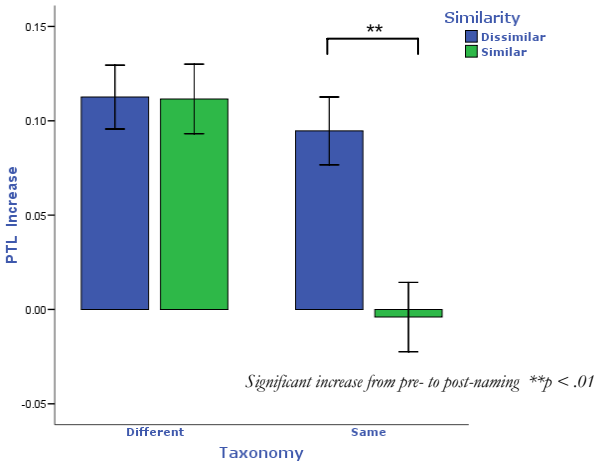
Off-line frame-by-frame (40ms) coding of digital recordings. Inter- & intra-reliability r =. 99 (p <.001)
Only familiar words are analysed (Oxford CDI; Hamilton et al., 2000).

Proportion of Target Looking (PTL) Measure:
Proportion of target looking out of the total looking time to the target and to the distracter *(t/t+d)* in each naming phase.

***PTL Increase** in Graph*
post-naming PTL target – pre-naming PTL target

Results

Anova: Naming (pre/post), Category (same/different), Similarity (similar/dissimilar) & Age (18/21/24)
Naming effect (F(1,107) = 66.11, p = .0001)
Naming*Category*Similarity interaction
(F(1,107) = 6.86, p = .010)
No Age differences



Summary

•Infants' target looking is robust when T and D are drawn form Different categories, irrespectively of their perceptual similarity.
•When T and D are drawn from Same categories, infants' target looking is greater when T and D are perceptually Dissimilar than when they are Similar.

Conclusions

•Word-object associations are mediated by a relationship between categorical status and perceptual similarity.
•18-, 21- & 24-m-olds use their knowledge about different superordinate categories to linguistically disambiguate two highly perceptually Similar objects.
•Perceptual cues are at the service of categorical status.
•Perceptual similarity may be more relevant for early novel word-object associations than for familiar word-object associations.

References

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BUCLD 33, Boston 2008 **Correspondence: natalia.arias-trejo@psy.ox.ac.uk**